Exploring the Utilization of TV PrintCast Technology in Satellite Based Training of Panchayat Members (Local Self Government members) of Karnataka

Dr.B.Phalachandra, Professor and Head, Department of Education, Regional Institute of Education (NCERT), Mysore 570006,India. bphala@gmail.com
bphalachandra@yahoo.co.in

1.0 INTRODUCTION

Training is a cardinal component of any professional development; and it has to run parallel with the entire length of the career in order to upgrade and update the professional skills. Various modes of training are available and teleconferencing is one of the new methods, which combines the advantages of modern media and the interactive possibilities of conventional training. One-way video and two-way audio teleconferencing mode of training is in use and has been found large acceptance in India.. As of now more than 6 locations in India have the facilities for conducting teleconference. A number of national and State institutions, universities and Government departments are using this method for training their personnel. The launch of EDUSAT (Educational Satellite) and efforts of ISRO (Indian Space Research Organisation) and various other National, Regional and State level agencies has led to wider use of the teleconference mode for education and training of various personnel in different sectors such as Education, Agriculture, Health and Rural Development One such institution is ANS-SIRD, situated in Mysore. The SATCOM (Satellite Communication) centre for Karnataka is located here; the centre has a small studio and an uplink earth station and functions as a teaching end.

2.0 ORIENTATION OF HORTICULTURE AND HEALTH PERSONNEL

The TDCC network was used by various agencies including the Departments of Health and Horticulture. The objective of the training was integrating mental health programmes in primary health centres. The programme-covered topics like psychosis, depression, common mental disorders and alcoholism.
The issues covered in the horticulture programme included banana tissue culture with the objectives of popularising tissue culture of banana and solving the problems of banana cultivators.

The details of both the programmes is summarised and given in the table below:

Details		
User Agency	Health Dept.	Horticulture Dept.
Date	28 – 29 May 2004	3 July 2004
Topic	Mental Health	Banana Tissue Culture & Mushroom Cultivation
Objectives	Integrating mental health in primary health centres	Popularising tissue culture of banana; solving problems of banana cultivators; providing information on mushroom cultivation and nutritive value of mushrooms
No. of Resource Persons	02	05
Mode of Transaction	Lecture & demonstration	Lecture & demonstration
Instructional Materials Used	Slides, graphics & video clippings	Graphics, video clippings and actual specimens
Location of Receiving Ends	Dist. Headquarters	Taluks
No. of Receiving Ends	23	Banana – 20; Mushroom – 13
Target Audience	Medical Officers	Farmers

Sample size: In all 13 centers have been observed and information has been collected from 250 respondents.

Sample For Observation

Observation	Health Dept.	Horticulture	Total
Teaching centre	01	01	01*
Receiving centres	05	07	12
Total	06	08	13

Sample Of Respondents

Respondents	Health Dept.	Horticulture	Total
Decision makers	01	01	02
Producers	01	01	01
Anchor persons	01	02	03
Resource persons	02	05	07
Facilitators	05	07	12
Participants	120	105	225
Total	130	121	250

The findings of the two ITP programmes conducted to train health workers and horticulture persons is given below:

Planning Process Of User Agencies:

- Mostly, there is only a last minute preparation for the ITP.
- There is no formal and regular need assessment of training.
- The concerned wing / sector selects the resource persons and anchors, based on the experience and expertise of the individuals.
- The resource persons themselves prepare the teaching aids.
- All the anchors, resource persons and majority of the facilitators have had no training or experience in ITP. Training manual and additional literature was prepared for one of the two ITPs observed.
- Dissemination of information regarding the ITPs is through official letters, phone, radio, local newspapers or messengers

Utilisation In Terms Of Attendance:

- It is estimated that 547 participants were trained in the health programme and 546 in the horticulture programme.
- The attendance ranged from 17 to 31 at the receiving ends of the health programme, the average being 23.5 per centre; it ranged from 15 to 36 in the horticulture programme, the average being 26 per centre.
- In the health department, the topics did not seem to influence the attendance, but in the case of the farmers, the topics have a decisive influence on attendance.
- There is a general pattern in the attendance during any day of the ITP; it seems to be the maximum during the middle of the programme; both at the beginning and at the ending of the programme, it seems to be less.

Perceptions With Regard to ITP:

A. General Perceptions

- It is very novel and interesting.
- The component of video makes it interesting.
- There is no loss of training as in the conventional cascade mode.
- Question answer session is very useful.
- Target has direct contact with the experts in the field irrespective of the physical distance.
- Clarifications for doubts and solutions for problems are instant.
- There is scope for immediate up-gradation of knowledge and technical know-how.
- Personal touch with the trainees is lacking.
- Trainers have no opportunity to gauge the interest, perceptions and feelings of the trainees.
- There is no scope for practical training or hands on experience
- There is some degree of monotony in this mode of training.

B. Participants' Perceptions Specific To The Two ITPs Observed

- 99% liked the programme / wanted such programmes to be broadcast again and gain.
- 84% have found the content of the ITPs useful.
- 82% have understood the content fully or to a great extent.
- 88% have rated the instructional materials used good.
- 82% have found the time allotted for interaction sufficient.
- 81% are satisfied fully or to a great extent with the answers given by the resource persons to their questions.
- 83% have rated the video quality good.
- 75% have rated the audio quality good.

Similarly large number of ITP (Interactive Television Programme) is being carried out by various agencies in Karnataka .In this context it was decided to explore the possibility of using a Printcast technology to enhance interaction.

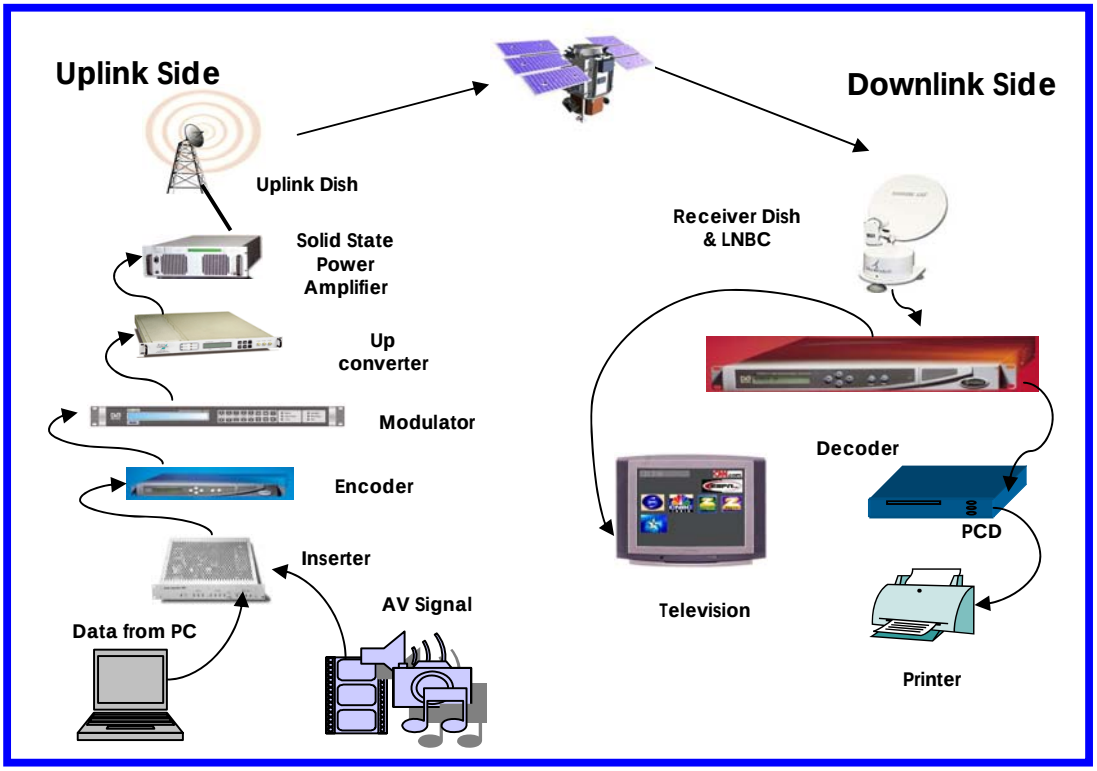
Technology has pervaded every field in this world – education, commerce, law, tourism, governance, entertainment, etc. Every day we come across technological innovations and up gradations and these find their way into the ongoing systems. In the fields of teaching and training, a number of technologies have been put to good use – the print, radio, television, computer and satellite. The latest addition to these information communication technologies (ICT) is the **PrintCast.**

3.0 THE PRINTCAST TECHNOLOGY:

As the name implies, this technology brings together broadcasting and printing; with the help of this, the data that is being broadcast on the television or radio can be printed at the receiver end without disturbing the TV viewing or radio listening experience. Television and Radio have a broad geographic reach and deliver the "last mile" link virtually everywhere; as against these, the PC and the internet have not penetrated the rural and suburban areas to any notable extent. Another significant point is that the mass media like radio and TV score very high in attention capturing but rather low in information retention; it is vice versa with the print media like newspapers. PrintCast or Print Augmented Broadcasting is an attempt at combining the plus points of both TV/radio and the print. 'This new technology has the ability to augment TV viewing experience with a "print" artifact that is retained, referred and retrieved at convenience.'

3.1 The Infrastructure: This technology requires certain additional infrastructure – the tele-text inserter and the print-ready non-stream data at the broadcaster end and the PrintCast decoder and the printer at the receiver end. The following diagram shows how these additional equipments are integrated with the existing broadcast infrastructure.

Chart 1. Integration of Broadcast and PrintCast Infrastructure



Courtesy: HP Labs India, Bangalore.

3.2 Working Of PrintCast: At the broadcasting end, whatever data should be made available for printing is fed into the computer; it could be text or pictures, slides or power point presentations; there is a device called the inserter that inserts these data into the regular audio/video signals. After insertion, the signal is encoded and transmitted using the standard equipments. At the receiver end, the PrintCast decoder (PCD in figure) extracts the data (XHTML print part of the document) from the TV signal and once the user gives a print command to the decoder using a remote, the data is sent to the printer for printing. The PrintCast decoder is similar to the standard set top box but for some additional features like a USB port for connecting to the printer. This technology has been developed by the HP Labs.

4.0 NEED FOR THE STUDY

PrintCast, being a new technology, needs to be tested in the field before it could find wide acceptance. This technology has the capacity to augment TV viewing with a print artifact. Does it help the subject experts in delivering the content of training more effectively? Does it enhance the participants' comprehension of the content? Is it user friendly? How far is it feasible in terms of functioning and usage? The research study attempted to answer these questions; it is a study in the effectiveness / usefulness of this new technology.

5.0 OBJECTIVES

1. To observe the utilization of PrintCast in real time.
2. To understand how PrintCast facilitates the subject experts in imparting training.
3. To identify how much the PrintCast enhances TV viewing among the participants.
4. To assess the increase in the participants' understanding of the content resulting from the use of PrintCast.
5. To understand how PrintCast aids in the flow of information within the peer group.
6. To find out how the print material is used.
7. To assess the perceptions of different stakeholders – participants, facilitators at the receiving ends, subject experts in the teaching end and the HP Labs – about the utility of PrintCast.

6.0 METHODOLOGY

A classical experimental – control design has been adopted in this research study in order to compare the TV viewing situation with and without PrintCast. Both qualitative and quantitative data have been collected using a variety of tools and techniques. The study was carried out in four phases. Data were collected in phase I to provide the baseline for the study. During the interim phase, data were collected mainly for observing how the new technology was getting integrated into the system. The time gap between the first and the second phases is a purposive one; with the introduction of any innovation, the end users generally find it difficult to associate themselves with the new technology. The gap provides them time to get used to it. Data collected in phase II provide the information about the sustainability of interest among the resource persons. Thus a comparative picture of the utility and the rate of success of PrintCast over a period of time in the field situations emerges. Phase IV was meant for getting the feedback on the PrintCast technology from the experimental centers during the training itself through the teleconferencing mode.

7.0 TOOLS AND TECHNIQUES

Interview, Focus Group Discussion (FGD) and observation have been the main techniques used here. The tools used in this study, are given below.

7.1 Tools

All the tools used in this Study have been developed by DECU. The questionnaire for the participants has been translated into Kannada and used. The following tools were used for data collection.

- Observation Schedule for Experimental Centre
- Observation Schedule for Control Centre
- Questionnaire for Participants at Experimental Centre
- Questionnaire for Participants at Control Centre
- Questionnaire for Resource Persons at Experimental Centre
- Questionnaire for Resource Persons at Control Centre
- Guidelines for Focus Group Discussion at Experimental Centre
- Guidelines for Focus Group Discussion at Control Centre
- Observation Schedule for Teaching End
- Interview Schedule for Subject Experts
- Interview Schedule for HP Labs Manager

8.0 SAMPLE

The three-day training of village Panchayat members has been observed at the teaching end as well as at ten receiving ends (wherein 735 participants underwent the training); in all 79 observations have taken place to collect the data from all these centers during all the phases.The first phase lasted from 5th to 25th January 2006. Interim Phase Jan 23 to Feb 22,06 and II phase 16 Feb 4 March and III Phase from 7-8 March, 06. Responses have been collected through questionnaires / interviews from 393 participants, 78 resource persons and 14 subject experts and also from the HP Labs representative. In addition, 73 Focus Group Discussions with about 375 participants have been conducted.

9.0 MAJOR FINDINGS

Findings, based on the data analysis, are presented here in relation to the teaching end and receiving ends..

9.1 Teaching End

Observation:

- Twenty-eight receiving ends were being catered to by this programme.
- The total number of participants was 783 in phase I and 443 in phase II.
- In phases I and II respectively, 92 and 44 questions were received by the teaching end.
- Lecture and discussion were the teaching techniques used in the training.
- Video was the only instructional material.
- The audio and the video quality of the programme were good on all the days.
- The functioning of the PrintCast was good.
- The uploaded documents were the Government Orders relevant to the topics of training.

9.11 Perceptions Of Subject Experts:

- 93% of the subject experts feel that the PrintCast technology is user friendly.
- 93% perceive the technology to be helpful in training.
- 93% think that it increases TV viewing among participants.
- 79% feel it would increase information sharing among the peer group.
- 71% think it would increase the level of retention in participants.
- 64% feel it would increase the level of comprehension among participants.
- 29% consider it cost effective.

9.12 Perceptions Of HP Labs Representative:

- According to the HP Labs representative, PrintCast enables information to reach the grass roots without loss in time.
- It could be used in distance education both in the formal and non-formal types.
- The cost of installation of equipments at the teaching end would depend on the existing equipment and its compatibility with the PrintCast system; a tele-text-enabled encoder, a standard data inserter as a part of the broadcast equipment and a PC for data creation and insertion would be required.
- For the installation at each receiving end, the cost is estimated to be in the range of US $ 450- 500 for one time investment in equipment.
- There will be recurring cost for paper, ink cartridge, electricity and maintenance.
- Expanding the project to all the districts in the State would depend on the State Government's willingness to partner it.

9.2Receiving Ends

Observation:

- There was no difficulty in operating the PrintCast in any centre.
- The print material was legible.
- The PrintCast technology had not caused any disturbance in the audio and the video quality of the transmission.
- In phase I, 63% and in phase II, 74% of the participants had got their own copy of the print material.
- Though many participants expressed willingness to pay for the copies, all of them prefer it free of cost.
- There is no evidence of positive influence of PrintCast on the attendance of the participants.
- PrintCast has not influenced participation as inferred from the percentage of participants asking questions.
- PrintCast does not seem to have made any impact on the attention/interest of the participants as observed from their behavioural activities during the training.

9.21 Perceptions Of Participants:

- About 75% of the participants prefer conventional method of training to TDCC.
- 80% found the training useful.
- Above 80% of the participants have been able to understand the language and the content of the tele-lecture fully or to a great extent.
- 85% have given positive opinion on the programme.
- Almost 90% were satisfied (fully or to a great extent) with the clarifications provided by the resource persons.
- 95% think that the print material helps them understand (fully or to a great extent) the content of the training.
- 95% also think that it is easy to remember (completely or to a great extent) the topics discussed if the print material is available.
- 73% feel that the print materials provide additional information.
- 67% of the participants say that they discuss the print material.
- The panchayat members were happy that they could get the G.O.s of a few years, which hitherto had been inaccessible to them.
- They propose to use the print outs for discussions in the panchayats and some plan to put them up in the notice boards for wider dissemination.

9.22 Perceptions Of Resource Persons:

- 98% perceive the technology to be increasing the level of comprehension in participants.
- 98% also perceive it to be increasing the level retention among the participants.
- 89% are greatly satisfied with the technology.
- 85% feel that the technology facilitates sharing information within the peer group.
- 84% perceive it to be greatly helpful to the participants.
- 67% consider it to be cost effective.
- 58% think it increases TV viewing among participants to a great extent.
- 53% feel it affects the level of participation and attendance of participants to a great extent.

10.0 SUGGESTIONS TO IMPROVE TECHNOLOGY

Suggestions to improve the technology had been solicited from all the stakeholders. Other than these, an analysis of the data itself points to certain steps to be taken to get more substantial evidences of the utility of the technology. All these are listed below.

- 'Save' option should be there so that the print out could be taken any time.
- There should be a beep sound to indicate the availability of a document for printing.
- Colour print feature should be added.
- Photocopying facility should be available in the receiver end itself.
- Facilitators need more training.
- Greater awareness should be created about PrintCast and a booklet on PrintCast should be made available.
- Sketches / schematic representations of what is being explained by the experts should also be sent through PrintCast.
- The subject experts should be apprised of the technology much in advance so that they could explore its use in training.
- PrintCast technology should be tried in different situations where the participants of phase I would be available for phase II also so that the impact of the technology could be better understood.
- The technology could be tried in various content-intensive training programmes such as health, agriculture, animal husbandry, education and so on.
- A delayed test on content could be administered to the participants in order to assess the impact of PrintCast on retention.

10.1 CONCLUSION

PrintCast technology is easy to operate and user friendly; does not interfere with the audio or video quality of the transmission; and the print outs are legible. Going by the perceptions of the stakeholders, this technology is helpful in training, increases the level of retention and comprehension among participants and facilitates flow of information within the peer group to a great extent; increases the level of participation and TV viewing also to some extent. As per the observations made at the receiving ends, the technology does not seem to have any influence on the attendance, participation (as revealed by the question answer session) or interest / attention (as revealed by the behavioural activities during the training) of the participants. The present Study was very limited and on a specific small group of participants. There is a need to try the PrintCast technology in various fields with different target audiences before we could arrive at a conclusion on its utility and feasibility.