



Commonwealth of Learning

**Commonwealth Educational
Media Centre for Asia**

Teleconferencing A Training Kit

New Delhi, India

JUNE, 2004

Contents

PREFACE.....	5
ACKNOWLEDGEMENTS	8
Section 1 : Teleconferencing : Technology for Education and Training	9
Section 2 : The Technology of Teleconferencing	19
Section 3 : Lesson and Session Planning.....	30
Section 4 : Development of Programme Materials, Audio-Visual Aids and Presentation	45
Section 5 : Teleconference : Preparation and Management	62
Section 6 : Guidelines for Orientation of Personnel.....	73
Section 7 : Monitoring and Evaluation of Teleconferencing	79
Case Study – I	90
Case Study – II.....	95
Case Study – III.....	98
Case Study – IV	102
Case Study – V	111
Glossary of Technical Terms	119
Annexure-I	131
Annexure-II	135
Annexure-III.....	141
Annexure - IV	143

PREFACE

A knowledge-based workforce requires opportunities to continuously expand their academic and professional competencies and skills to meet the challenges of a changing work environment. Many people, who need to upgrade their academic and professional qualifications, are unable to leave their places of residence and work for social, economic and other reasons, and need to have access to training at the work place or at home.

Whether it is the educational, corporate, or governance sector there is a need for information, communication and education.

Innovative technologies and delivery strategies are increasingly being used in order to meet the challenges of up-grading and up-dating knowledge and providing accessible learning opportunities through communications.

The growth of telecommunications has made it possible for institutions to use a variety of delivery strategies to reach their learners/participants. Teleconferencing is one such strategy that has great potential for *distance education and training, capacity building, decision-making and monitoring*. A flexible technology, it can be used equally well for varied participant groups in different settings, situations and purposes.

Teleconferencing makes it possible to *connect the resource persons at one end and the learners/participants gathered at dispersed centers, and to engage them in dialogue, discussions and doing activities with effective learning outcomes*. The medium brings in *interactivity* as is possible in a face-to-face group situation.

In the field of education and training, which is the domain of this manual, early experimentation with teleconferencing dates back to the 1980s, when Instructional Television Fixed Service (ITFS) in the United States and Canada enabled students to interact in a live television classroom with their teachers. Students could watch the lesson on their home television sets, and then use their telephone to connect to the studio where they could ask for clarifications on both content and activities. Pilot projects in other parts of the world also showed the potential of this delivery strategy, and Australia was among the first countries to use teleconferencing in distance education.

Using teleconferencing for education in the developing countries took much longer. In some parts of the world, such as in India, it has been in use since the early 1990s. It is a more recent phenomenon in other countries. But irrespective of where experimentation has taken place, evaluation has revealed the importance of attention not only to the technology, but also to the content, presentation and interaction techniques and evaluation.

A large number of manuals and how to do kits focus on the technical aspects. Few address the planner, the resource person or other personnel, who have key roles to play. Our experience showed that it was necessary to focus on *assessment of information needs, instructional design, preparation and presentation* in a teleconference and on the *inter-relationship between the medium and the delivery of content*. We have tried to address precisely these issues in developing this manual for use by individuals and institutions in the planning, design, management, and evaluation of teleconferencing as an educational strategy.

The manual is structured in such a way so as to help *the academic, the trainer and the planner* in working out the teleconference activities systematically through the entire process, which though given in a sequence, may run parallel for different members of a teleconferencing team. The manual can be used either sequentially or in a modular fashion.

The manual has been divided into **seven** sections, each section dealing with a particular aspect of teleconferencing.

The **first section** of the manual provides *basic information* on teleconferencing, its strengths and limitations, and broad areas of its application.

Depending upon the availability of technological configurations and nature of learner groups, teleconferencing can be done through audio only, audio along with graphics or audio and video signals.

Section two describes *different types* of teleconferencing and hardware requirements that are commonly practiced these days.

Section three discusses the type of effort that should go in determining the *topics*, structuring the *lesson plan*, and designing activities before, during and after teleconferencing sessions to achieve the teaching/learning objectives.

Since the resource person in a one-way videoconference cannot physically see the learners/participants, s/he must use teleconferencing as a vehicle to motivate and stimulate the learners, provide interactivity and give the learners a significant and challenging learning experience.

Section four discusses that the potential of the medium lies in making it a truly engaging and *interactive experience* for the learners/participants. This calls for mastering the presentation techniques, and developing an understanding about suitable programme formats. The use and preparation of suitable graphics at appropriate junctures helps to make the presentation more lucid and alive. The use of graphics can range from simple cards and pictures to computer presentations.

Effective planning and designing for teleconferencing is an essential part of the process. Equally important is providing production resources at the teaching end, and proper learning environment and facilities at the user end.

Section five spells out the *preparations, organization and management* issues required at the teaching end and the user end/learner centres.

While the resource person is in control of most activities in the conventional teaching, success of teleconferencing depends upon co-operation and co-ordination among several players.

Section six describes the scope and nature of *orientation of the various teleconference personnel* at the teaching end and user end/learner centres to enable them perform their tasks and roles effectively.

Section seven, the concluding section, focuses on *monitoring and evaluation*. Like any other technology, teleconferencing needs to be constantly monitored and evaluated to use it in an effective and cost-efficient manner. The feedback information should be helpful in

making right decisions at the right times. The section provides useful hints on what information may be collected, at what stage, through what methods and tools, and how.

Each section ends with sample transparencies. The trainers can adopt/adapt these with food results in their training programmes.

Video segments at important junctures accompany the text. The video segments have been designed to clarify certain ideas, concepts and situations contained in the text. It is, however, conceded that the video illustrations are not comprehensive so as to cover all sections of the manual, and trainers can add materials suitable for their topics. Also, all the video examples are from India due to constraints of time and funding. The effort is mainly to demonstrate the effectiveness of video along with the text in enhancing the teaching-learning process.

The manual not only addresses some of the queries that users face to determine whether or not this is the most effective delivery strategy in reaching the target groups but, at the same time, it also assists with the operation of the system in an effective and cost efficient manner.

Your comments and suggestions regarding this manual for education and training would be reflected in the new editions, and that would develop the entire effort into a collaborative and meaningful exercise.



Dr. Usha Vyasulu Reddi

Director, CEMCA

ACKNOWLEDGEMENTS

This manual is the result of team effort and all members of the team deserve our sincere thanks. We are particularly thankful to Ms. Jai Chandiram, Chief Consultant on this project, who contributed substantially to the writing and content editing of the manual. She was also responsible for preparing the video segments accompanying the text.

The production of the video would not have been possible without the co-operation of many institutes, which permitted viewing, selection and use of their respective video footage. In this respect particular mention is made of the ISRO (DECU-SAC), NCERT (CIET), IGNOU (EMPC-DPEP), Institute of Chartered Accountants of India, National Informatics Centre, Direcway, Hughes Estorts Communication Ltd., Mana TV, Govt. of Andhra Pradesh, Bricks IIT Kanpur, Agha Khan Foundation and Sakshi. Production and editing of the video was done at the Impulse, New Delhi.

Dr. Jagdish Singh was a great help in co-ordinating the work, and shaping the manual. Other contributors whose efforts we would like to gratefully acknowledge are Mr. V. Rama Rao, Dr. Kiran Bansal, Dr. B. Phalachandra and Dr. Bela Trivedi. Dr. Alistair Inglis and Ms. Buddhini Gayathri Jayatilleke sent us case studies in respect of their respective countries namely, Australia and Srilanka, for which they deserve our thanks.

Ms. Snehlata Tandon spent hours on the computer doing language editing and we appreciate her dedication.

Mr. Pankaj Khare, Programme Officer, CEMCA managed the production of the manual, design and layout. His contribution is gratefully acknowledged.

Most of the graphics used in the manual were taken from the Microsoft ClipArt Gallery. The same is duly acknowledged.

Finally, our thanks are due to Mr. Sunny Joseph, Office Assistant, CEMCA for his ungrudging co-operation in processing the materials.

Section

1

Teleconferencing : Technology for Education and Training

Overview : This section discusses different types of technologies for education and training. It identifies the criteria for selection of appropriate technologies for different purposes, applications, situations and learner groups. The section introduces and defines the technology of teleconferencing, its strengths, and functions. The materials in this unit are introductory, and the topics introduced here are covered in greater detail later.

Introduction

Different types of educational technologies have evolved from time to time.

Each new technology has addressed questions of improving information reach and delivery, quality of teaching and learning outcomes in relation to specific problems and situations including costs, user friendliness and scale.

The following types of technologies are available in education and training:



☞ Print

☞ Audio-visual aids

Non-projected aids: pictures, charts, posters, models, specimen, etc.

Projected aids: films, slides, computer-aided presentations, etc.

- ☞ Mass media
 - Narrow-casting, using audio/video systems for groups
 - Broadcasting, using radio and television
- ☞ Teleconferencing
 - One-way video two-way audio conferencing
 - Two-way video conferencing
 - Audio-graphic conferencing
 - Audio conferencing
- ☞ Computer mediated learning
 - Web on-line learning
 - Others

The new technologies co-exist with the old technologies and often converge in combinations to achieve better results in learning. Teleconferencing is a good example of convergence of technologies.

Selection of Educational Technologies : Criteria

Given the wider choice of using technologies in diverse settings, it is now a matter of selecting appropriate ones for a particular teaching-learning situation. The following criteria will help in the selection of technologies:

- ☞ Access
- ☞ Cost and Number of learners
- ☞ Teaching Functions
- ☞ Interactivity and User Friendliness
- ☞ Organizational Issues
- ☞ Novelty
- ☞ Skills
- ☞ Speed



The above list has been developed on the basis of work done by Tony Bates (1991). Each criterion can be analysed further:

Access

- ☞ Who are the learners – their needs, their level, their background?
- ☞ Where will they be learning – at home, in the workplace, at a learning centre?
- ☞ Is the technology easily accessible to the learners?

Cost and Number of Learners

- ☞ Are the costs of production, delivery and maintenance for using the technology affordable?
- ☞ Are the costs appropriate to the number of learners who will be enrolled?

Teaching Functions

- ☞ Is the technology suited to the kinds of learning required?
- ☞ Has the technology the potential to convey the level of facts, attitudes and skills the program of study requires?

Interactivity and User Friendliness

- ☞ Does the technology facilitate the learning process, enable the learners to respond in some way to the teaching material and get feedback from the teaching end?
- ☞ Is the technology user-friendly?

Organizational Issues

- ☞ How open is the organization to change?
- ☞ Is the organization ready to use the technology?

Novelty

- ☞ Is this a novel technology for the learners?
- ☞ Is this a technology that will engage the particular group of learners?
- ☞ Is it appropriate for their style of learning?

Skills

- ☞ What are the skills required by the learners to use this technology?

Speed

- ☞ How fast can the project be implemented using this technology?
- ☞ How much training do staff and learners need in order to be able to use it?
- ☞ Does the organisation have the ability to revise the materials as often and as quickly as the learning environment demands?

From the points of view of the teaching functions, interactivity and user friendliness, **teleconferencing** emerges as an appropriate technology for reaching varied clientele groups in diverse settings. With the advancement of communication technologies and reduction of costs, various organizations are opting for this technology in their education and training programmes.

What is Teleconferencing?

The word '**tele**' means distance. The word '**conference**' means consultations, discussions. Through teleconferencing two or more locations situated at a distance are connected so that they can *hear* or *both see and hear* each other. It allows the distant sites to *interact* with each other and with the *teaching end through phone, fax, and e-mail*. The interactions occur in *real time*. This means that the learners/participants and the resource persons are present at the same time in different locations and are able to communicate with each other. In some situations, questions can be faxed/e-mailed early for response by the resource persons

Three essential features of teleconferencing are :

Learners/participants present at particular time and in dispersed places

Resource persons present at the same time at the teaching end or different teaching ends.

Interactions between

- # Learner – resource persons/AV materials at the teaching end(s).
- # Learner – learner at the learner center
- # Learner – facilitator/materials/activities at the learner center
- # Learner – learner at/between other learner centers
- # Resource person – resource person.



The communication in teleconferencing is both *vertical* and *horizontal*, and the emphasis is on *interaction* at all levels. *Meaningful interaction in real time is the strength of teleconferencing*, and this sets it apart from other technologies used in education. The one-way limitation of educational broadcasting is overcome through the technology configuration.

Stimulating responses to visuals, situations, dialogue, discussion, sharing, active experimentation, project work, etc. encourage interactivity, resulting in different transactional processes such as:

- Conceptualization
- Concretization of experience
- Reflective observation
- Application

These and other transactional processes of this nature accelerate learning and communication skills. Learning is systemized as it takes place in a structured teaching-learning environment.

Teleconferencing could have different technical configurations and applications. It includes use of telephone for audio conferencing, graphics in addition to audio for audio-graphic conferencing, television and/or computer for video conferencing. The video conferencing could be one-way video two-way audio or two-way video. The configuration can be simple or complex. The presentation can be just talk/discussion or it can be highly structured using sophisticated visual support.

In today's terminology video conferencing and teleconferencing are similar as they function on the same pattern.

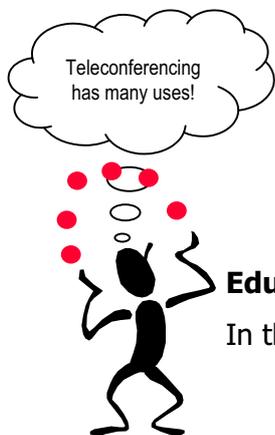
Functions of Teleconferencing

The functions of teleconferencing in education and training are to :

- Impart information, build attitudes, provide role models, etc
- Upgrade skills
- Share experiences
- Facilitate problem solving
- Offer counseling
- Supervise/conduct/guide project work

The learner and participant groups could vary from students, teachers, grass root level functionaries, community groups, farmers, housekeepers, experts, administrators to high level executives.

Uses of Teleconferencing



Teleconferencing is essentially a means for communication and training. It can be used for information dissemination, guidance in response to policy, consultations with experts, focused group discussions, interviews, etc. As a technology, it has broad applications in education, training and development, business/corporate communication, governance and professional and medical courses/services.

Education

In the academic area, teleconferencing is useful for the following activities:

Delivery of full courses, lessons, tutoring, project work and training can be provided to the students through teleconferencing,

Delivery of certificate level courses for professional development. These courses can be modular and multi-media in nature comprising print, contact programmes, and audio-video conferencing.

Partial support to courses through counseling, etc.

Introduction of short/new courses in skill development, vocational training, professional development, and to address problems related to introduction of new curriculum, and lack of teachers and facilities.

Tutoring in difficult areas of the curriculum.

Remedial learning and off-hours teaching can be provided.

Enrichment, updating, guidance to additional learning resources, extension of existing courses.

Interaction by students with scientists, experts, decision and policy makers, etc. to obtain multiple perspectives on an issue.

Apart from academic activities, teleconferencing is used for administrative matters such as:

Problems solving and counseling on admissions, examination, status of courseware materials distribution,

Guidance and advice on course content, expectations, assignments, grading, credits, etc.

Training and Development

Teleconferencing is used to provide training and staff development for capacity building in agriculture, health, nutrition, family welfare, etc. in remote rural areas. It reaches out to a large number of groups such as community workers, farmers, functionaries, etc. for extension activities, sharing of experiences, raising of issues, introducing government schemes, projects, mobilizing for activities and conducting campaigns

Teleconferencing has been effectively used for empowerment of women and local self-government bodies and training of grass root workers spread over large geographical areas.

Business/Corporate Communication

In the business and corporate sector, teleconferencing has been used for a variety of purposes such as organizing conferences, interviews for recruitment, project supervision, problem solving, consultations, information dissemination and training of the personnel. Education, training, instruction, information and counseling are merged resulting in an overall improvement in staff performance.

Governance

Using teleconferencing facilities, planners, administrators and executives can directly and simultaneously interact with people at all levels for speedy dissemination of policy, execution and monitoring the implementation of projects, problem solving, and providing expert consultations.

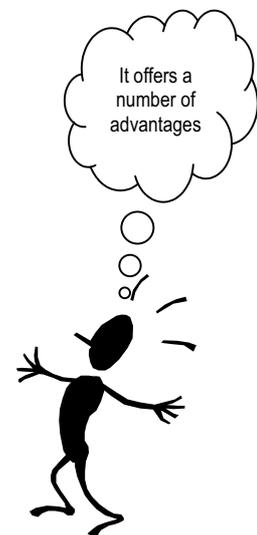
Professional and Medicinal Courses and Services

Medicine is an area in which teleconferencing is being increasingly used. Hospitals can provide medical services to remote areas with expert diagnosis and medical advice. Similarly, many professional training institutes are using the teleconferencing mode to provide quality teaching support to widely dispersed student community

Strengths of Teleconferencing

Teleconferencing offers a number of *advantages* to organizers, administrators, educators and learners.

- ## It provides learning to large groups, which are geographically dispersed.
- ## For organizations, delivery costs are reduced with resultant cost-benefit in terms of time, traveling and spread of resources over large groups
- ## It makes the best use of the available resources by expanding the learning opportunity and taking the resources to the learners.
- ## It overcomes time or scheduling problems for the learners who can assemble at a learning center for a limited period only because of their full time or part time work, and family and community commitments.
- ## It can be designed to meet local specific requirements of training in terms of content, language and conditions.
- ## Training is of high quality and consistent. There is exposure to multiple perspectives from the primary sources, and therefore as the input from the resource persons is direct, there is little loss of quality in transaction.
- ## There is greater appeal, motivation and retention of information as a variety of teaching methodologies are used.



- # By using animation, graphics and other techniques, teleconferencing is good at showing processes for demonstrations and experiments, thereby concretizing learning.
- # By conveying sights, sounds, and the spirit of the subject, it provides a more rounded view of an issue.
- # It provides uniformity of training, which is interactive. On the basis of feedback, instructors can make appropriate shifts in the teaching strategies to meet learner needs.
- # The element of interactivity in teleconferencing is encouraged through dialogue and by stimulating responses to situations and visuals. The opportunity of dialogue allows the learners to discuss, question, and challenge issues. Stimulating the learners to respond to situations and visuals leads to higher processes of learning. As the learners become familiar with the technology and its practices, their communication and learning skills are enhanced.
- # Interactivity gives a sense of participation and an active environment for learning. The learners feel themselves to be a part of the 'real-life' learning situation, and though located on different sites they feel they are connected. Relationships are established as in a group situation.
- # For the field functionaries in remote rural areas, it reduces the sense of isolation, encourages sharing of concerns and ideas, and helps solve their problems.

Limitations of Teleconferencing

Teleconferencing has its limitations, but these can be overcome to a great extent by corrective measures and using appropriate content, planning, organization and management.

For example, for effective interaction, there is a limit to the number of learning centers. If the number of centers is increased, time for interactivity for each center is correspondingly reduced. However, this can be overcome to a great extent by using fax and e-mail technologies along with telephone lines. Another way is to rotate the question-answer sessions among different groups of centers. This strategy would take care of language differences as well.

Since teleconferencing demands real time interaction, the learners are required to be present at particular times and places. It may be difficult for them to do so because of logistics problems and other reasons, resulting in poor attendance at the sessions. However, the proceedings can be recorded and sent to such learners as cannot attend at the learning centers. Experience shows that learners benefit a great deal even from recorded versions. For those who have participated, repeatability provides new insights.

In Conclusion

Teleconferencing to be effective for any type and purpose would require planning, teaching strategy, development of content and materials, presentation techniques and evaluation. All these aspects in the context of education and training are dealt

with later in this manual. The next section deals with the different types of teleconferencing.

PRACTICAL EXERCISE

1. Show relevant video segments to the group for a discussion.
2. Divide the participants in small groups (no more than five in a group).

Give the following assignment to each group and ask each group to prepare their respective reports/proposals. Each group will have 15 minutes to prepare their proposal. Give each group 10 minutes for presentation and discussion

List what technologies and their combinations are being used in the different organizations for training, education and communication. State individual preferences with reasons for the choice.

Identify areas where the participants would like to use teleconferencing for training, problem solving, and imparting information. State why.

Ask each group to present its report.

3. Identify and list the advantages and benefits of teleconferencing as compared to broadcasting instructional/educational television programmes.

Sample Transparencies

Types of Educational Technologies

- ☞ Print
- ☞ Audio-Visual Aids
- ☞ Mass Media
- ☞ Teleconferencing - a Convergence of Technologies
- ☞ Computer Mediated Learning

Selection of Educational Technology: Criteria

- Access
- Cost
- Number of learners
- Teaching Functions
- Interactivity
- User Friendliness
- Organisational Issues
- Novelty
- Skills
- Speed

Teleconferencing suits most kinds of teaching functions, is interactive and user friendly. With the advancement of communication technologies and reduction of costs many organizations are using it to reach out to varied clientele groups in diverse settings.

Features of Teleconferencing

Learners/participants at a Particular Time and in Dispersed Places.

Resource Persons Present at the Same Time at the Teaching End

Interactions Between

- Ø Learner - learner at the learner centre
- Ø Learner - learner at the other learner centers
- Ø Learner - facilitator/materials/activities at the learner centre
- Ø Learner - resource persons/AV materials at the teaching end
- Ø Resource person – resource person.

Functions of Teleconferencing

Impart Information, Build Attitudes, Provide Role Models, etc.

Upgrade Skills

Share Experiences

Facilitate Problem Solving

Offer Counseling

Uses of Teleconferencing

Education

Training and Development

Business/Corporate Communication

Governance

Medical Courses/Services

Strengths of Teleconferencing

- €# Accessible to Geographically Dispersed Groups
- €# Communication at National/Regional/Local Level
- €# Quality Teaching using multiple Teaching Resources
- €# Real Time Interaction from Remote Target Groups
- €# Use of Various Teaching Methods enhances Learning
- €# Cost Effective

Limitations of Teleconferencing

- Limit on Number of Learner Centres for Intensive Interaction
- Logistics Constraints for Learners to Participate at the Given Time

Section

2

The Technology of Teleconferencing

Overview : The materials in this section describe different types of teleconferencing technologies, and define application areas and hardware requirements of each type. The information on television based one-way video and two-way audio conferencing, which is the main focus of this manual, is presented in greater detail.

Introduction

Different types of teleconferencing technologies can be classified as under :

- ☞# Video conferencing (Television based or computer based)
 - ∇# One-way video and two-way audio conferencing
 - ∇# Two-way video conferencing
 - Roll-about video conferencing
 - Point-to-point video conferencing
 - Multipoint video conferencing
- ☞# Audio conferencing
 - ∇# Dial-up mode
 - ∇# Meet-me mode
- ☞# Audio-graphic conferencing

Video Conferencing

In video conferencing, the resource persons at the teaching end may use mainly television cameras to show demonstrations, activities, discussions, etc. (television based video conferencing) or may transmit the visuals generated through computer (computer based video conferencing). In reality, videoconferences of the television kind may also include computers for display of power-point slides, graphics, etc. Similarly, computer based teleconferences may contain video cameras (or, more commonly, 'web cameras', which are low resolution versions of video cameras) to enable multi-media exchange.

The groups located at the learner ends can see as well as listen to the resource persons through video monitors.

Interactivity between the learners/participants and the resource persons may happen through audio only (one-way video and two-way audio conferencing) or the same facilities as available at the teaching end may also be used at the learner centers for exchanging both visual and audio information among all the participating locations (two-way video conferencing).

One-Way Video and Two-Way Audio Conferencing

Among the different forms of video conferencing, it is the television based one-way video and two-way audio conferencing, which is commonly used in the context of education and training. It consists of three major elements:

Teaching End

User End/Learner Centres

Telecommunication Links

Teaching End : This can be a room or a studio from which the resource person conducts a live lesson to the learners/participants through audio-visual means. In the simplest case, a single video camera faces the resource person, while a microphone picks up his/her voice.

In more sophisticated systems, the teaching-end resembles a broadcast TV studio, with a multi camera setup for different uses such as showing graphics, etc. Other equipments used are videocassette recorders (VCRs), computers and other video sources.



A Teaching End

A Vision Mixer mixes outputs from cameras, VCRs, computers, etc and produces a mixed video output for transmission.

An EPABX telephone board, with at least two incoming telephone lines, facilitates receiving audio interactions through telephone calls from the learner ends.

For a make-shift teaching end, which may have to be set up in a rural location for temporary use, it is of course possible to improvise the necessary technical system on a van, e.g. an EFP (Electronic Field Production) Van used by broadcasting organizations. In this case, a generator set, which can be carried in the same EFP van, can power the set-up.

Learner Centres : Display of video at the learner centres is arranged through a television set/video monitor of sufficient size for the viewing comfort of the learners as a group. If the group were too big, a projection TV system on a wide screen would be preferable. Audio can be listened to either through in-built speakers of the TV monitors or external speakers.

It may also be necessary to provide for a back-up power source (i.e. generator or inverter) particularly when the power supply is erratic.

For purposes of interaction, provision is made at the learner centres for calling in the teaching end through normal telephone lines, fax and e-mail.



A Learner Centre

Telecommunication Links : The communication links to interconnect the teaching end and learner centers can take a variety of forms. Since both motion videos as well as audio signals need to be transmitted on the outbound path (that is, from the teaching end to learner centres), this channel needs to be a broadband one for better quality of sound and visual.

If the teaching end and learner centres are all located within the same building or within the same educational campus, they can all be interconnected by *coaxial cables* to provide the *broadband connections*.

If the locations are more dispersed, *optical fiber links* or *satellite communications* are employed. Satellite link up is particularly convenient to transmit the teaching end activity in a 'broadcast' mode to a large number of widely dispersed learner centres. For this purpose the video and audio signals from the teaching end have to be transmitted through a satellite 'earth station' which converts them into a high power beam of electromagnetic waves directed towards the satellite. The satellite in turn beams the signals earthward to spread them all over its coverage area.

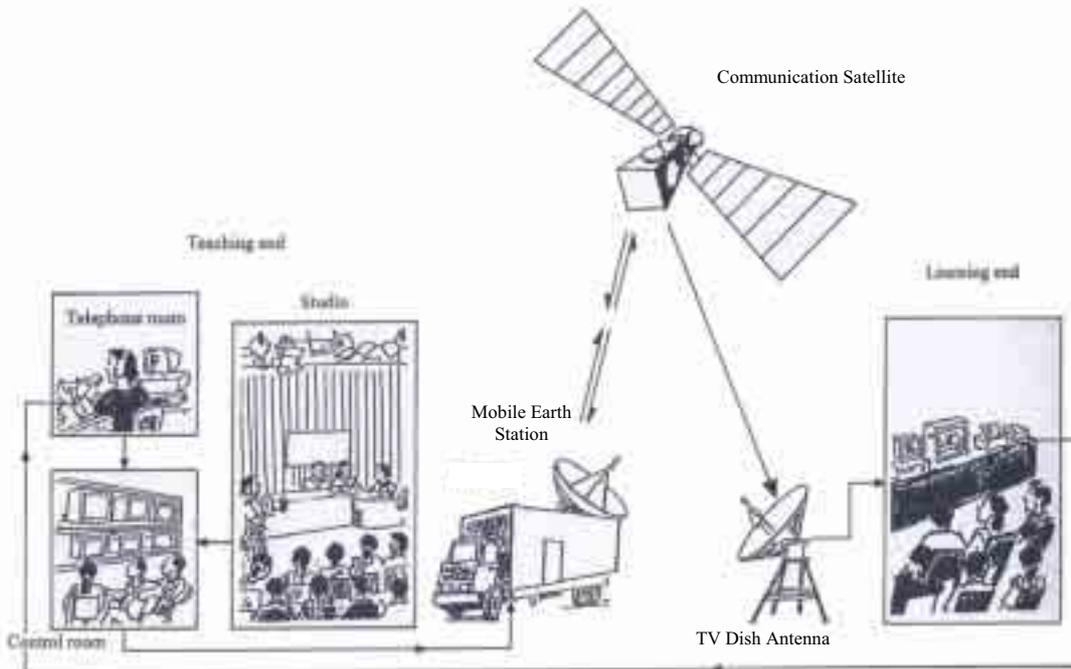


Satellite Uplinking Dish

The earth station can also be transportable and mobile when mounted on a lorry.

Any learner center located within the coverage area can receive the transmissions when suitably equipped with a dish antenna and associated equipment for direct reception of the signals. The signals can also be picked up and distributed in a given area through cables.

The following figure illustrates configuration of one-way video and two-way audio conferencing of this kind.



Now-a-day's, digital transmission is done as against the traditional analogue transmission, with the former using less telecommunications capacity (band-width) of the satellite.

Usually, a large communications pipe (2 Mbps approximately) serves the outbound path, while much narrower links are used for the inbound paths (from the learner centres to the teaching end). This is because educational conferencing situations

are asymmetrical in nature, with a large outflow of information from the teaching end to the learner centres, while the inflow from any single learner centre back to the teaching end is only in trickles. Judicious use of bandwidth for optimum communications among the participating locations is made possible by techniques like Time Division Multiplex (TDM), Time Division Multiple Access (TDMA), Pre-Assigned Multiple Access (PAMA), Demand Assigned Multiple Access (DAMA), etc.

The video conferencing can also be recorded, and later sent to those learners for their learning who could not participate in 'real time'.

Two-Way Video Conferencing

While the one-way video and two-way audio conferencing systems are instances of point-to-multipoint communication, two-way video conferencing systems are generally instances of multipoint-to-multipoint communications with facilities for exchanging visual as well as aural information among all the participating locations.

Different conferencing systems under this category are:

Roll-about Video Conferencing.

Point-to-point Video Conferencing.

Multipoint Video Conferencing

In all the above conferencing systems, use of portable, desk-top equipment like standard PCs, computer monitors, mini cameras which can be mounted right on top of the computer monitor, etc have become commonplace.

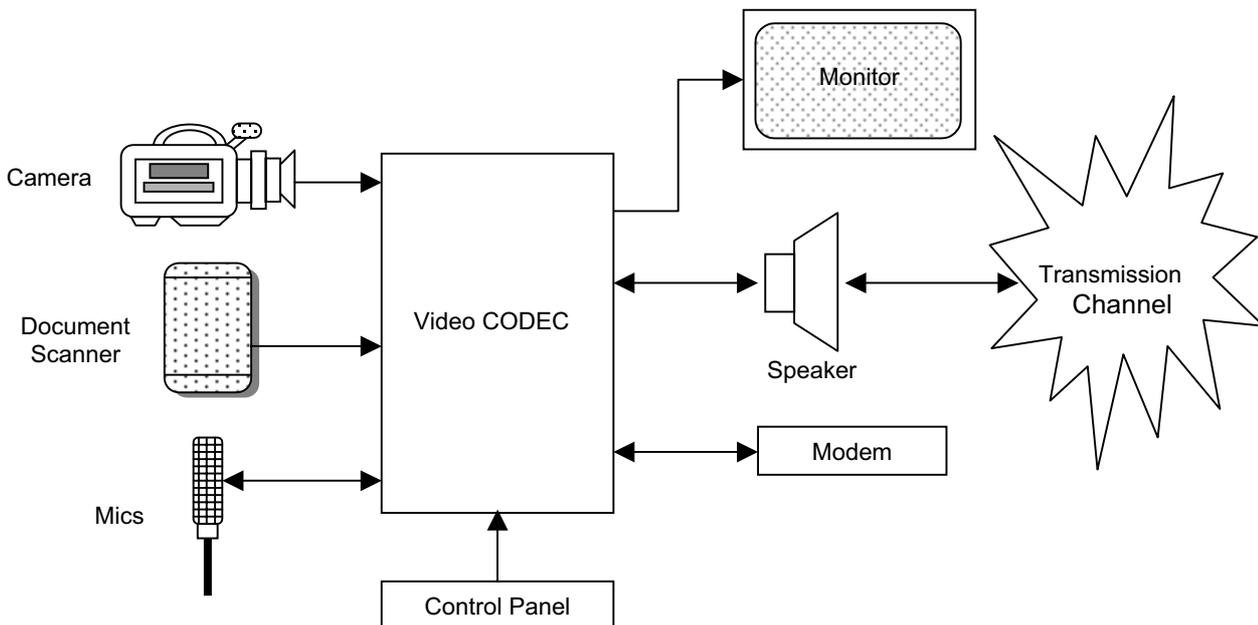
Roll-about Video Conferencing : A roll-about video conferencing system is one that can be wheeled into a traditional conference room and connected through telecommunication links to other similar systems located at different places. Video/audio devices like cameras, microphones, monitors, speakers, document scanners, etc are all part of the hardware that comprises the roll-about system at each of the places. These devices are interconnected at each location to a **Video Codec** and a control panel, with the help of which real-time motion video transmissions are made possible to other inter-connected locations in the conferencing network.

The video codec, along with the control panel, forms the heart of a typical videoconference network. It receives analogue signals from sources like cameras, document scanners, microphones, etc and converts them to digital. The digital output from the codec then gets transmitted to other locations through the transmission network via appropriate modems. Simultaneously, video codec receives distant digital feeds through the network and after converting them to analogue passes them on to output devices like video monitors, loudspeakers, etc.

Depending on the specifications of the video codecs used at different places and the bandwidth capabilities of the communication channel, bit rates ranging from 64 Kbps to over 2 Mbps are possible in a typical video conferencing situation. Other things remaining constant, technical quality of motion video increases as the bit rate increases. But higher bit rates consume higher bandwidth on the communication channels, with resultant cost implications.

Video compression techniques and video conferencing transmission protocol have been standardized so that equipment procured from different manufactures can be integrated with ease for rigging up conferencing systems and made to communicate with each other through the use of interfacing devices.

The following figure illustrates the basic configuration of a video conferencing system of this kind.



For better eye contact with distant participants, the camera is located just above the video monitor and the conference table is located in front of them. The camera can be remote-controlled for pan, tilt, zoom and focus, and functions from the control panel but is handled either by one of the participants themselves or separately by a technician. A separate camera is used, with separate controls of its own, for showing graphics, etc. Images can be displayed either on separate monitors or a single monitor with windows in it to show the individual images.

Communication links among the participating locations can be Integrated Services Digital Network (ISDN) telephone lines, optic fiber, microwave, cable or satellite depending on the geographical dispersal of the sites, terrain conditions and other logistics.

For advice on suitable phone systems, contact the local telephone authorities.

Point-to-point Video Conferencing : Point-to-point video conferencing enables multimedia communications between any two points at which the participants may be single individuals or groups. They may be conducted through video telephony or desktop-to-desktop personal computers (PCs) or even through roll-about systems.

Video phone-based conferences take place on standard telephone lines. Picture quality generally tends to be rather poor with limited resolution, small size and even poorer reproduction of movements. At best only about 10 frames per second of visuals can be transmitted. However, the sheer simplicity and spontaneity of these devices can make them very handy for private/business meetings on a one-to-one basis. A typical videophone consists of a telephone with a tiny video camera and a small colour monitor screen associated with it. The camera can have a field of view to accommodate 6 or 7 people as group, when necessary.

Desktop-to-desktop conferencing gives a much better quality for point-to-point conferencing involving individuals or small groups gathered at either end in front of a PC screen. These PCs can be made to communicate over existing Local Area

Networks (LANs), Wide Area Networks (WANs), dial-up ISDN lines or special dedicated links.

Multi-media information consisting of motion video, still images, audio and data can be sent and received at specific windows on the PCs. Desktop-to-desktop conferencing sessions can also be used to share drawings, blue prints, textual material, etc in real time.

Point-to-point video conferencing has more potential in the corporate sector and governance than in the education sector.

Multipoint Video Conferencing : Multipoint video conferencing systems involve at least three locations to interact with each other simultaneously in real time. Point-to-point conferencing systems can be upgraded for multipoint use by creating a hub at the central site and arranging matters so that the video conferencing traffic can be switched dynamically among the different locations through the central hub. The central hub houses the Network Management System, variously called as Multi-User Control Unit (MCU), Network Controller, etc, which enables the necessary switching among the network nodes, and incorporates other features such as remote monitoring and control of the individual sites, controlled access, apportionment of bandwidth among the locations, etc.

In the beginning, MCUs were proprietary items, designed to operate with Codecs of a particular manufacturer. With the adoption of international standards for multipoint video conferencing, the MCUs design has also been standardized for operation with codecs of different makes, so that inter-operability among conferencing systems of different makes/manufacturers becomes possible. MCUs can also be leased from major telecommunication service providers operating in the country to set up specific conferencing events containing dissimilar equipment facilities at different sites. Such leasing of MCUs from established service providers can be advantageous if the users are widely distributed or mobile and the conferencing requirements are occasional.

Dedicated multipoint video conferencing systems set up for education and training generally operate in a 'star' topology with the teaching end co-located with the communication hub, and the learner ends (nodes) connected to the hub with two-way telecommunication links. Satellite links are the favored mode for larger distances and difficult terrain conditions.

Audio Conferencing

Audio conferencing is concerned with two-way voice communication among multiple locations in real time. This generally operates through the public telephone networks. At the simplest, audio conferencing can be among 3 or 4 different locations through the normal telephone instruments. Sometimes, audio conferencing through the public radio network, using phone – in facilities can be used.

Individual microphones for the participants and external speakers at each location are employed in professional systems to carry out the conferences in a hands-free manner. Such systems can also enable a group of people to participate from each of the locations, rather than single individuals.

Audio conferences are routine phenomena in the corporate world. Countries like Australia, New Zealand, Canada and India where populations are widely dispersed have successfully used this technology in education as well.

The technical system of a typical audio conferencing network invariably consists of an **Audio Bridge**. This device is somewhat similar to an EPABX board at which a number of telephone lines are terminated. Telephone calls can be received at or sent out from the bridge and all the lines can be combined such that the callers can simultaneously talk among themselves as if in a conference. There can be as many participating locations in an audio conference as the number of telephone lines that the bridge can handle.

Professional quality audio conferencing systems also incorporate the following features:

- Acoustic treatment for the conference rooms for better clarity of speech and to reduce sound disturbances from outside.

- Use of leased lines or ISDN in place of normal telephone lines.

Basically, there are two different ways in which the audio conferencing takes place:

- 'Dial-up' Mode

- 'Meet-me' Mode

'Dial-up' Mode

In this mode, the bridge operator initiates the calls to the individual locations one by one and initiates the conference mode after completing the dial-up process.

In case the number of locations involved exceeds five or so, this mode consumes a lot of time in setting up the conference and so the 'Meet-me' mode is preferred.

'Meet-me' Mode

In this mode, the different locations are expected to dial-in to the audio bridge on the designated telephone numbers at the appointed time of the conference. The operator at the bridge receives each of these calls and puts them on hold. Once all participants have called-in, the operator initiates the conference mode and the conference begins. The switching mechanism at the bridge also provides for late callers to be admitted into the conference.

The disadvantage is that all the locations should have the means for making long-distance calls and also that a better sense of punctuality is needed on their part to call in exactly at the right time. Holding time for the callers is more and that can prove expensive.

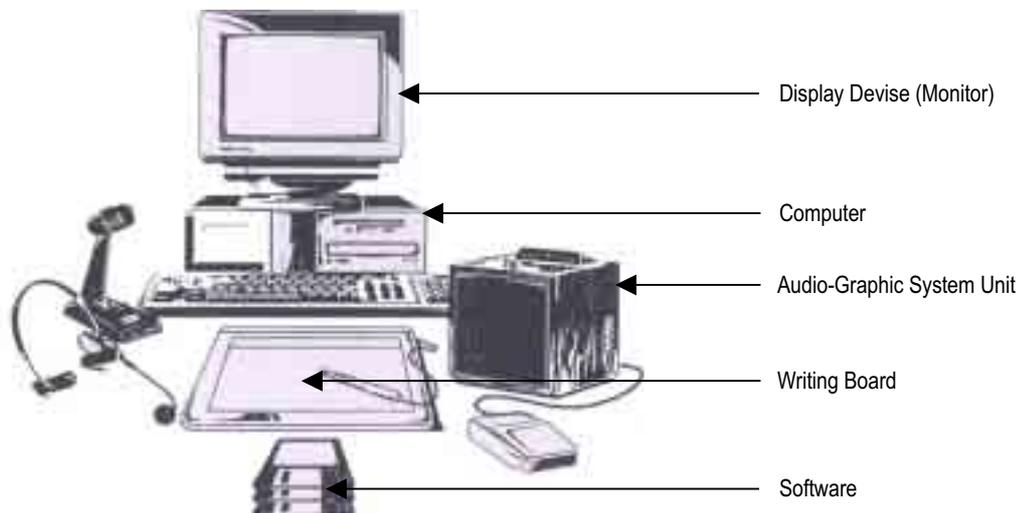
Normal telephone conversations take place in the so-called **half-duplex** mode, i.e, the same pair of lines is used for talking as well as for listening. Half-duplex network causes noise buildup on conference systems, especially where many locations are involved.

Dedicated lines employing the **full-duplex** mode, i.e, separate pair of lines for talking and listening or ISDN links can avoid this problem and a more natural flow of two-way conversations.

For the best available options, the local telephone service provider may be consulted.

Audio-graphic Conferencing

In audio-graphic conferencing, static visuals like graphics, charts, pictures, photographs, etc can also be exchanged through the same communication links, in addition to audio. In more sophisticated versions of audio-graphic conferencing slow-scan video images, such as of the participants themselves, can also be exchanged.



Audio-graphic Conferencing

Teaching End : Some of the more common visual enhancement technologies used in audio-graphic conferencing systems are:

Facsimile systems: for sending pages of scanned print material for the learners to receive paper copies.

Tele-writing devices: for writing that could be transmitted and projected in the learner centers on an overhead projector/TV monitor

Slide-projectors/microfiche

Slow-scan TV Systems (SSTV)

SSTV is a particularly useful value addition. The hardware at the teaching end basically consists of conventional Closed Circuit Television (CCTV) cameras, monitors and other accessories along with 'scan conversion' devices, which reduce the bandwidth of the visual signals from the original 5 MHz to around 1 KHz, so that the same can be sent out on voice-grade circuits.

Multiple cameras can be used e.g. one camera with freeze frame for shooting the participants, a second one to shoot flip charts, etc and a third one mounted on a caption stand to view pre-prepared graphics, maps, etc. Other sources like power point slides on a computer and video cassettes play back can also be integrated with SSTV. The images can also be recorded on a VCR for later use.

Learner Centres : A similar *scan converter* is required at the receiving/learner centers to reconstruct the video signals to standard TV format.

≠# The learner centers can have a variety of display options ranging from small portable video monitors placed individually in front of the learners or a bigger monitor for group viewing, or a projection TV on wide-screen for much larger gatherings.

- ⚡ The learner centers can interact with the teaching end through audio only or by using a combination of telephone and other technologies such as e-mail, fax, etc to move both voice and visual information to different centres.

For situations where most visual requirements in an educational context can be met through still graphics and images, audio-graphic conferencing can be as effective as video conferencing. It proves cost-effective as only telephone lines are used for carrying voice and visual signals. However, the quality of visuals may not be that good.

In Conclusion

While different types of teleconferencing have their special strengths and application areas, the most prevalent type in the context of education and training, as already mentioned, is television based one-way video and two-way audio conferencing. The operational definition of teleconferencing as used in this manual refers to this one-way video and two-way audio teleconferencing.

Each type of conferencing requires planning and designing strategy. This aspect of conferencing is dealt with in the next section.

PRACTICAL EXERCISE

1. Show relevant video segments to the group for a discussion
2. Take the group for field visit to one of the following or both sites depending on the availability of the facilities:

Studio/Teaching end: Let the groups go round and observe the studio which is fully equipped with multi camera set up, the control room and equipments for receiving telephone calls, fax and e-mail.

(It is suggested that the visit is arranged during a teleconference session so that the groups can watch the presentation by the resource persons, moderation by the anchorperson, interactivity between the resource persons and the learner, etc.)

Learner Centre : Let the groups visit a learner centre and study the equipments for receiving audio and video signals and sending feedback to the studio, standby power source, seating arrangement and selection of the room for seating the learners.

(It is suggested that the visit is arranged during a teleconference session so that the groups can watch the presentation by the resource persons, moderation by the anchorperson, interactivity between the resource persons and the learners and the role played by the facilitator)

Sample Transparencies

The Technology of Teleconferencing

- ⚡ Video Conferencing
- ⚡ Audio Conferencing
- ⚡ Audio – Graphic Conferencing

Video Conferencing

≠# One-way Video Two-way Audio Conferencing

≠# Two-way Video Conferencing

Roll-about Video Conferencing

Point-to-point Video Conferencing

Multipoint Video Conferencing

Audio Conferencing

≠# Dial-up Mode

≠# Meet-me Mode

Audio Graphic Conferencing

≠# Teaching End

Audio Equipment (microphones, speakers)

Facsimile Systems

Tele-writing Devices

Slide-projectors/Microfiche

Slow-scan TV Systems (SSTV)

≠# Learner Centres

Audio Equipment (microphones, speakers) E-mail and
Fax Facilities

Scan Converter to Reconstruct Video Signals

Display Systems (monitors/projection screen)

Section

3

Lesson and Session Planning

Overview : The materials in this section support discussions on planning the various tasks involved for effective teleconferencing. The materials discuss selection of topics, design and development of the lesson plan for a teleconference session and planning the session itself. The materials further point out that there could be several possibilities of structuring the session depending upon the learners' abilities, selection of formats, presentation, and treatment of content.

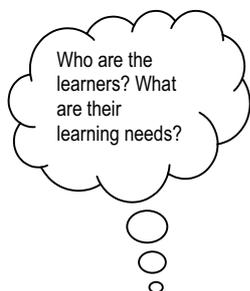
Introduction

A lesson plan, of any given subject, is a scheme of teaching the selected topic for achieving specific objectives. This section on lesson planning for a teleconference session discusses the requirement for the selection of need-based topics, and structure of knowledge, skills and experiences in relation to a given topic to achieve the learning objectives within a period of time. To achieve this, the lesson plan needs to incorporate the tasks and activities to be done before, during and after teleconference session to be effective. These activities and tasks can be categorized as under:

- 1) Activities: Before Teleconference
- 2) Activities: During Teleconference
- 3) Activities: After Teleconference

Activities : Before Teleconference

Before teleconference activities cover four important aspects



- ⌘ Assessment of Information Needs/Identification of Objectives
- ⌘ Selection of the Topic
- ⌘ Treatment of the Topic
- ⌘ Selection of the Resource Persons
- ⌘ Preparation of Preparatory Reading Materials and Activities.

Assessment of Information Needs/Identification of Objectives

The broad learning objectives of the teleconference are determined on the basis of an assessment of information needs of the learner group.



For the purpose, form a team of teachers/extension functionaries/subject experts, instructional designer, communication specialist and researchers to discuss the following:

- ⌘ Current status of information, knowledge, skills, motivation and attitude of the learner group.
- ⌘ Nature of job/task to be done and the type of information, knowledge, skills, motivation and attitudes needed by the workers/researchers for better understanding of the subject.
- ⌘ Areas of interest and information needs, which other learning resources are not meeting or are unable to meet adequately.

In some cases, the team may have to be provided with data collected from the field on the above aspects, as well as information about the demographic characteristics of the learner group such as age, gender, socio-economic status, etc. To do that, a quick study may need to be conducted on a representative sample of the target learner group to support and facilitate the work of the team.

The identification of themes/topics for the teleconferencing session is on the basis of the well-considered recommendations of the team. The key questions to be addressed here are:

- ⌘ What is the profile of the target audience?
- ⌘ What are their needs?
- ⌘ What are their training and learning tasks?
- ⌘ What should be the objectives of the teleconference session?
- ⌘ What strategies, media resources can be built into the teleconference architecture to achieve the objectives?
- ⌘ Who are the experts/teachers available on the selected subject?

The teleconference session is planned on the basis of the course unit or training tasks or topics that will meet the learning and training needs of the target group. Consult teachers, course counselors and students regarding knowledge, skills required. Identify subject areas and hard spots in the curriculum that need to be clarified and updated.

Selection of the Topic

Planning at this stage is comprehensive, covering interests and skills development of the target group. For example, as a target group, the primary school teachers, should not feel that while they gained on the pedagogical aspects of teaching, their knowledge about the subject matter was not up dated after the exposure. Such a result would diminish the impact and utility of the teleconference.

The same principle for selecting a topic would apply for any target group.

For the certificate and degree programmes in the formal system, the planning will have to be done more rigorously. Selection of the learning areas and learning processes for presentation through teleconferencing should explore the resources of television and multi media to supplement the self-study print-learning package. Supplement with examples from the field, which the classroom teacher cannot provide.

The selection and planning for teleconference support courses should be integral to course development. The course team should identify suitable topics for each available medium, including teleconferencing. In case the input of teleconferencing is introduced at a later stage, the exercise for the selection of appropriate topics for teleconferencing will have to be carried out in a systematic manner by the academic faculty and counselors.

Selection of topics can be made on the following criteria :

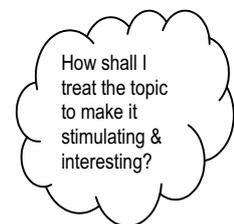
- ⌘ It should be need based.
- ⌘ It should be important and relevant to the target group.
- ⌘ It should generate interaction. In other words, the topic should have the potential to make the learners enquire, discuss, enter into a dialogue, reflect on their existing knowledge and experience, and motivate them to think of ways they can apply what they are learning.
- ⌘ It should take the learners outside the classroom. Bring in actuality and case study into the classroom. It should allow visualization and treatment through video excerpts, charts, posters, graphics, audio recordings, etc to create interest.



Treatment of the Topic

Effective teleconferencing requires planning, effective use of media resources and experts. Having selected the topic, the next step is to do *content research*, consult experts and identify problem areas:

- ⌘ Break up the topic in *segments* and explore the visualization through a variety of resources, demos, graphics, actuality, etc.
- ⌘ Build in *question and answer session* and provide stimulus for response, Ensure that the key points are covered and opportunity given for analysis, synthesis and application.
- ⌘ Be selective in content and do not attempt to cover complex material in a short time, otherwise there will be an information overload. Emphasize those aspects, which lead to understanding the basic concepts.
- ⌘ Concretize abstract concepts through demonstrations and activities. Take the learner outside the classroom. Bring in actuality and case studies in the classroom



- ☞ Enhance learning and create interest through visualization and treatment such as inputs of video excerpts, charts, posters, graphics, audio recordings, etc.
- ☞ Address the question on how best to teach the content and use of a variety of visual materials, interactive techniques and formats.
- ☞ Bring in professional experts to provide specific expertise
- ☞ Choose the most appropriate teleconference format for effective results
- ☞ While developing content, the principle challenge is how to keep the learner motivated, interested and actively involved throughout

Although a detailed discussion on teleconference formats is provided in the next section, some teleconference formats are briefly described here:

Illustrated lecture : In this format, the resource person uses a variety of visual materials to illustrate the ideas, concepts and practices in his/her lecture.

Interview : In this format, a moderator interviews expert(s) to obtain information, views and opinions on issues from the point of view of the learners. Adding visuals helps comprehension and create interest.

Panel discussion : The reason for using this format is that as the experts discuss a given issue amongst themselves, the learners get different points of view or perspectives on the topic.

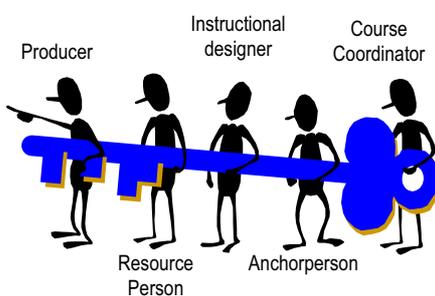
Case study : This format presents from the field visual problems, situations and issues, 'actuality' cases to stimulate the learners to reflect and draw conclusions.

Project work : Through this the learner can be assigned a 'project' addressing problems, which require research in the field, consultations with experts to find solutions through experimentation, discussions, etc.

Field visit : 'Actuality' is pre-recorded and used in the teleconference session to show the real situations, and cases, which is otherwise not always possible in the normal classroom situation

Demonstration : Through a demonstration, processes and principles are illustrated.

Drama : Dramatization of a situation/ideas engages the learners.



Teleconferencing is a Team Effort

Quiz game : This format stimulates and encourages the learners to directly participate in the content.

A combination of formats will bring in variety to best meet the educational needs.

Since the treatment of the topic, visualization, and selection of the format(s) are specialized activities, a team comprising the course coordinator, the resource persons, anchorperson, instructional designer and the programme producer could be formed for optimum results.

Provide adequate opportunity to the team to work together with a view to :

- ☞ Identify specific areas in each topic that need enhancement of knowledge, understanding, skills and/or change of attitude. Base the specific learning objectives on these parameters.

- ⌘ Address the questions on how best to teach different components of the content, through what format or combination of formats.
- ⌘ Identify suitable resources, audio-visual (AV) materials and activities to enhance learning.
- ⌘ For example, in skill-oriented programmes, video segments showing different angles, viewpoints in slow motion demonstrate what cannot be seen even in actual situation. Complex processes can be broken down and further illustrated through models, animation, etc. These processes can be prerecorded in the field and edited to collapse time. It is best to story board and ensure that everyone has a clear idea as to what has to be done, when and how.
- ⌘ Simple practices demonstrated 'live' by the resource persons, would create interest and be cost-effective at the same time.
- ⌘ Decide whether the video inputs need to be produced in-house or commissioned. Copyright clearances for archival materials, illustrations, music must be obtained as per the intellectual property rights laws.
- ⌘ Search for the required materials/inputs within the organization and other sister organizations so that duplication of effort could be avoided.

The joint exercise by the team should result in :

- ⌘ A detailed scheme of presentation of the topic, clearly indicating the key concepts, words, visuals and the activities to be done 'on-air' at the teaching end as well as by the learners 'off-air' at the learner centres.
- ⌘ A time schedule for the preparation of various inputs indicating who will do what and when.

Selection of the Resource Persons

The resource person should :

- ⌘ Be an expert in the subject
- ⌘ Have good communication skills (verbal clarity, pleasant voice, correct pronunciation, pauses and inflexions at the right places)
- ⌘ Generate enthusiasm
- ⌘ Have good listening skills
- ⌘ Be familiar with the equipment and aware of its capabilities/limitations
- ⌘ Alter teaching strategy to suit learners' needs
- ⌘ Anticipate difficult areas and make advance preparation for responding to questions
- ⌘ Have a pleasant personality and can follow a particular style, whether serious, chatty, humorous or witty
- ⌘ Act as a guide and a friend.
- ⌘ Be familiar with the background of participants and understands their needs, hopes and aspirations



Preparation of Preparatory Reading Materials and Activities

It is important that learners/participants come for the teleconference session in a state of readiness to learn and respond. 'On-air' time is used efficiently if they are provided background information about the topic, the content and the resource persons in advance of the session so as to give them sufficient time to complete certain pre-conference activities e.g. reading of materials or performing tasks/activities

The information and instructions about the activities can be sent in advance or indicated in the course material or communicated separately or individually to enable learners come prepared.



Send the Support materials to the learners well in advance

Since the learners are widely dispersed, getting the instructions and materials to them must be accomplished well in advance. For this, it may be necessary to especially prepare certain recorded/reading materials or instructions, and dispatch these to the learners before hand. As such, the level of planning at this stage must be quite meticulous and in-depth, specifying what action will be done by whom and within what time period.

The reading materials should preferably be well illustrated. Resource persons can also refer to the specific portions of the materials during the teleconference session, through diagrams, procedures, etc., and guide the viewers/learners at the learner centres. For example, the resource person will be able to say, 'at this point of our discussion, please turn to page 12 of your document and look at the diagram showing.....'

Activities : During Teleconference or Session Planning

A session is the structure of knowledge, skills and experience that are designed to achieve the learning objectives within a specified period of time.

Generally, the structure of the session should provide the learners with a short teaching session using a variety of approaches supported by visual materials followed by interaction and activities. This part of the section will deal with:

- ☞ Outline of a Teleconference Session
- ☞ Duration of a Teleconference Session

In structuring the teleconference session, keep in mind some characteristics of how adults learn:



- ☞ They learn from trial and error.
- ☞ They draw lessons from the best practices.
- ☞ They recall past experiences and make their mental references.
- ☞ They construct plans.
- ☞ They respond to concrete challenges.

Accordingly,

- ☞ Engage their process of thinking.
- ☞ Involve them in problem solving.

- ☞ Encourage and promote explorations and interpretations of ideas and concepts.
- ☞ Provide opportunities to predict and draw conclusions.
- ☞ Provide opportunities for practice.
- ☞ Provide adequate time for transacting the concepts.
- ☞ Ensure frames of reference are made clear to them.

The learners can be motivated to learn from each other also

Outline of a Teleconference Session

A typical teleconference session has three main components; structure each segment for interest and information load.

Start of the Session

Body of the Session

End of the Session

There could be several possibilities in planning the session. It would depend upon the learners' abilities, format, complexity level and treatment of the content. The approach could be structured: experts explaining, asking and responding to questions. It could be open: the learners coming already prepared for discussion with the panel. It could have the session starting with the presentation of a case study or a field visit followed by comments from the learners. It would depend on the objectives of the session.

Similarly, the time allocation between the presentation and interactivity could be different in different situations. The interactivity could be at the end or interspersed in between the presentation.

Devote 25-60 percentage of the time to the learner activity and participation.

Depending upon the number of learning centers, only some centers may be allowed to interact while other centers just watch and listen, benefiting from the discussions.

The centers could also be rotated for interactivity. This will equalize the opportunity for all groups.

In short, structure a teleconference session to meet specified objectives. Use previous experience, imagination and knowledge of the target group to plan the session. With this basic understanding of a teleconference session, its three main components are briefly described here.

Start of the Session

- ☞ Introduce the topic and the objectives of the session; the learner should know what are the learning tasks and what are the expected outcomes.
- ☞ Try and get the attention of the learners to stimulate discussion and address problems that need to be challenged by recalling an interesting anecdote/surprise comment, by asking a question/posing a problem or by using a situation.

- ☞ Use the learners' previous knowledge, experience and values, and summary of the last session, if there was one, to establish the objectives
- ☞ State the approach or the methodology of teaching the topic
- ☞ Do a roll call, if feasible and required.
- ☞ Instruct the learners when and how to call (i.e. time schedule for calls), and give them relevant information relating to phone numbers, fax, e-mail, etc.
- ☞ Introduce panel members, experts and guests.
- ☞ Discuss previous assignments.
- ☞ Give information on local group activity, which will take place during the breaks in the session. The various activities could be:
 - Quizzes
 - Problem solving exercises
 - Mastering concepts
 - Discussion on case studies presented on video
 - Peer group presentation
 - Discussion on field visits, etc

Body of the Session

- ☞ Set agenda for the discussion; ideally, it should be just one point.
- ☞ Set time for discussion of point(s) - the decisions should be clear and reflect the groups' views.
- ☞ Announce the focus of each expert and time schedule
- ☞ Present concepts – by anchorperson/resource person
- ☞ The anchor person should direct the flow of discussion from one resource person to another as per the time schedule
- ☞ Encourage and motivate the learners for interaction. Let the learners ask questions or give views on presentation.
- ☞ Answer questions.

End of the Session

- ☞ Give a clear summary of key points/decisions, with visual support, if possible.
- ☞ Present problems for further application, study, research, discussion
- ☞ Give course reference materials, library work
- ☞ Advice on laboratory practical work and experiments for practice sessions

- ☞ Describe assignments to be done
- ☞ Describe the assessment procedure and grading system
- ☞ Reflect your concern for learners' difficulties
- ☞ Provide positive feedback, and generate confidence by explaining the criteria for evaluation. Evaluation should be caring, collaborative based on sharing of interests and experiences.
- ☞ Check learners/participants satisfaction through feedback and ask for suggestions for bettering the learning transaction
- ☞ Advise facilitators for follow up on sending questions, problems through e-mail, fax, etc.
- ☞ Assure that response to the learners' queries will be immediate
- ☞ Ask learners to evaluate the session and fill in feedback form.
- ☞ Announce next teleconferencing date, topic and schedule

Some of the above-mentioned end of the session activities relate to student audiences only, and may not be relevant for the other learner groups.

Duration of the Teleconference Session

Depending on the objective of the teleconferencing, there may be considerable variations in duration. Normally, a teleconference session is as long as a standard class room period of 50-60 minutes. In the event the session is planned for the whole day or for 3-5-6 hours, it needs to be planned with suitable breaks for activities at the learner centres, hands-on practices, group discussions, readings, etc.

In all cases, for the sessions to be effective, oral presentations supported with illustrations and expert participation will bring in variety and will help to sustain attention. These sessions can be for 20-30 minutes. It may be followed by question answer session or a change of activity such as doing a demonstration, case study on video, etc.

Structure and allocate time to learner activity and participation.

The duration of the conference will depend upon the complexity of the content and the nature of problems to be discussed by the participants. To enable a large number of participants to engage with the resource persons, time will have to be allocated. Keep in view that the participatory discussion merits time.

Teleconference may be a single session or it may be spread over several sessions in a progressive manner, each session taking off from the previous one, recapitulating what was done earlier and linking it to the next one.

For example, in a 7-day teleconference programme on in-service training of primary school teachers, there may be two sessions on each day – one in the forenoon and the other in the afternoon, each of two to two and a half hours. During each session, there may be a break of 30-50 minutes for the learners to discuss issues, problem solving, demonstrate, create materials, answer worksheets, etc. An example is given below to demonstrate accommodation of two sessions in a day :

MORNING SESSION

TOPIC : SCHOOL READINESS

- 0900 – 1000 hrs (Off-Air)** At learner end with facilitator
- Reporting of previous day's work
 - Briefing about day's topics
 - Study of module: School Readiness
- 1000 – 1115 hrs (On-Air)** Studio End with resource persons
- 1000-1030 hrs
- Introduction to the topic School Readiness and the panelists
 - Presentation-cum-Demonstration on School Readiness
- 1030 – 1115 hrs
- Participants interact with the panelists
 - Summing up and instructions for group activity
- 1115 – 1130 hrs**
- Tea Break
- 1130 – 1210 hrs (Off-Air)**
- Group activities and discussion among the participants on the guidelines provided
- 1210 – 1300 hrs (On-Air)**
- Participants interact with the panelists
 - Summary key points
 - Brief next session
- 1300 – 1400 hrs**
- Lunch Break

AFTERNOON SESSION

TOPIC : MULTIGRADE TEACHING

- 1400 – 1420 hrs (Off-Air)** Study of the module : Multi-grade teaching
- 1420 – 1550 hrs**
- 1420 – 1450 hrs (On-Air)
- Introduction to the topic Multi-grade teaching and the panelists
 - Discussion on problems of school management
 - Time schedule and teaching learning strategies in multi-grade classes illustrated with video excerpts and situational analysis.
- 1450 – 1550 hrs (On-Air)
- Participants interact with the panelist
 - Summing up
 - Instructions for group activities
- 1550 – 1600 hrs**
- Tea Break
- 1600 – 1635 hrs (Off- Air)**
- Group activities/discussion among participants on the guidelines provided
- 1635 – 1720 (On- Air)**
- Participants interact with the panelists
 - Summing up

Source : Phalachandra B. (1997) Report on Primary Teachers' Training through Interactive Video Technology, NCERT, New Delhi, India.

Activities : After Teleconferencing

The facilitator at each learning centre should be advised about the follow up activities.;

- Check learner satisfaction through feedback and ask suggestions for bettering the learning situations.

- ☞ Check with the learners about the suitability of time of telecast
- ☞ Clarify learners' queries related to availability, circulation of tapes, costs, address, etc.
- ☞ Advice on peer group mentoring/learning
- ☞ Ensure gender participation, cultural and social equity
- ☞ Inform learners regarding registrations, course credits, etc.
- ☞ Collect the feedback forms and send the consolidated report to the organization
- ☞ Process records of learners' attendance, performance, progress, participation and follow up questions through e-mail, fax, etc.
- ☞ Follow-up payment for telephone calls and other bills.

While planning a session keep the following key points in mind:

- ☞ Identify and commission the resource persons well in advance of the session and brief them on the objectives and key points. Ensure they will have time to prepare and collect audio-video and graphic materials to support their presentations.
- ☞ Discuss with the resource persons about the development of the content and its presentation in a logical and sequential manner, working out time schedules for all. Practice/dry rehearse with the resource persons so that they are comfortable with their presentation, including handling of equipment and demonstrations for the camera.
- ☞ The resource persons and the producer should have the opportunity to jointly plan and prepare the AV support materials including video clippings.
- ☞ Monitor the preparation of the AV materials as per the time schedule. Check for interest, spelling mistakes, legibility.

This activity is done in advance with the team comprising the resource persons, the producer and the anchorperson.

Additional Arrangements for two-way teleconference

A two-way videoconference will require additional arrangements of cameras and microphones to cover the learners' presentation and demonstrations or the participation of resource persons at the second teaching end.

The protocol will have to be established either in terms of visual cues, raising hands or time-sharing supported by verbal clues, such as, "and we are now going over to...."

In Conclusion

Effective session planning is just the beginning of a teleconference. The next section focuses in depth on the development of appropriate presentation formats and materials for a teleconference.

PRACTICAL EXERCISE

- 1) Show relevant video segments to the group for a discussion
- 2) Divide the participants in small groups (not more than five in each group). Each group will have 20 minutes for their presentation followed by discussion. Ask each group to structure a teleconference session of 50-60 minutes on a topic.

The group will select the topic requiring teleconference support from the course material provided to them. The group will justify their choice of topic/treatment and incorporate the essential features of a teleconference session (i.e. objectives, key points, treatment of the content, formats, visual support, activities, approach to interactivity, etc).

Materials : Provide the group with a copy of the course study unit/material, news print sheets and pens.

Sample Transparencies

Lesson and Session Planning

This comprises selection of topic(s), design and development of lesson and session(s) in the three stages of a conference:

- ## Before Teleconference
- ## During Teleconference
- ## After Teleconference

Activities: Before Teleconference

- ## Assessment of Information Needs/Identification of Objectives
- ## Selection of the Topics
- ## Treatment of the Topics
- ## Selection of the Resource Persons
- ## Advance Planning, Preparation and Distribution of Preparatory Reading Materials

Activities: During Teleconference

Activities depend on Learners' Abilities, Complexity of topic, Difficulty level, Programme Format, etc.

☞ Outline of a Sample Teleconference Session

Start of the Session

Body of the Session

End of the Session

☞ Duration of a Teleconference Session

Start of the Session

Anchorperson

☞ Introduces Topic/Objectives/Resource Persons.

☞ Briefly describes presentation methodology

☞ Draws on Observations/Learners' Knowledge and Experience/Feed-back of Previous Conferences to support/set Objectives of session

☞ Sets Agenda for Discussion

☞ Takes Roll Call (if required)

☞ Instructs Learners When and How to Call

Body of the Session

Resource Persons

☞ Present Concepts

☞ Invite Interaction

☞ Answer Questions from Learner Centres/Studio Audience

☞ Direct the flow of discussion

Anchorperson

☞ Moderates the flow of discussion from one resource person to another as per the Time Schedule

☞ Controls interaction between Teaching End and Learner Centres

☞ Informs about Group Activity (to be) performed during breaks in the teleconference session

End of the Session

Anchorperson

- ⌘ Summarizes
- ⌘ Presents Problems for Further Study/Application
- ⌘ Invites resource persons to wind up their respective presentations
- ⌘ Resource Persons
- ⌘ Wind up their respective presentations
- ⌘ Suggest Reference Materials, Library Work

Anchorperson

- ⌘ Gives Assignments and the rules pertaining to completion and submission of the same
- ⌘ Describes Assessment Procedure
- ⌘ Assures quick response to Learners' Queries which remained unanswered during session
- ⌘ Requests Learners to complete/submit Feedback Forms
- ⌘ Advices Facilitators to Send Feedback, Follow-up on Learners' Queries/Problems
- ⌘ Announces Date/Topic Schedule(s) of future Teleconference Sessions

After Teleconference Activities

Facilitator

- ⌘ Collects completed Feedback Forms and submits Consolidated Report
- ⌘ Checks Learner Satisfaction
- ⌘ Checks Suitability of Telecast Time
- ⌘ Answers Learners' Queries about administrative matters
- ⌘ Ensures Learner Participation
- ⌘ Processes All Records
- ⌘ Completes Payments, etc.

Key Points in Session Planning

- ⌘ Identify and Commission Resource Persons in Advance
- ⌘ Discuss/Develop Content, Presentation Format with Resource Persons and Producer
- ⌘ Practice/Dry Rehearse with Producer
- ⌘ Monitor the Preparation of AV Materials

Arrangements for Two-way Video Teleconference

Additional requirements

- €# cameras/microphones . display systems at the second teaching end (learning centre)
- €# establish visual/verbal protocol for moving from one centre to the other

Section

4 Development of Programme Materials, Audio-Visual Aids and Presentation

Overview: The materials in this section support discussions on presentation techniques, formats and interactive strategies, and the development and use of audio-visual aids for effective communication.

Introduction

Communication can be made more effective if the presentation formats and materials developed are able to achieve the desired response from the learners. This section deals with each aspect separately under the following categories:

- ☞ Presentation Techniques
- ☞ Formats and Interactive Strategies
- ☞ Design and Use of Audio-Visual Aids

Presentation Techniques

Good communication skills overcome the barrier and problem of isolation faced by the distance learner. The materials in this part describe presentation techniques to perform on camera, create interest, and motivate the learners to learn and to communicate effectively.

Presentation and performing on camera makes people nervous and uneasy. This is normal as even the most experienced performer gets butterflies in the stomach. A lot of instructions are given to the resource persons in the studio and this can be confusing to an inexperienced presenter. To overcome these problems, know the

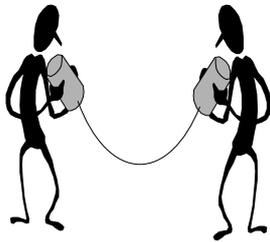
content of the session thoroughly, learn skills to motivate, communicate effectively, add a personal touch to the communication wherever possible, come early to the studio and get familiar with the equipments and the studio practices well in advance of telecast time. Some more hints have been provided for the presenters, below.

Hints for Performance

- ⚡ Be early at the studio so that you may familiarize yourself with the camera, the studio practices and the procedures of displaying materials, and have time to relax for a good performance.
- ⚡ Look into the camera lens to establish contact with the audience. Shifting eyes sideways can be distracting to the viewers.
- ⚡ Avoid thumping the table or moving your chair, as the sound gets magnified when telecast.
- ⚡ Avoid rocking and swaying in the seat. This could also be distracting to the viewers.
- ⚡ Remember, camera exaggerates movements in a close up. This does not imply becoming stiff. The only caution is not to make too rapid and sudden movements. Movements should be natural.
- ⚡ If movement is required from one position to another, cue the producer and cameraperson with a verbal direction. "Let's move to the table and see what it" before you actually move. The floor person will mark the area in which the movement has to take place.
- ⚡ In addition, rehearse all movements and demonstrations and identify the workspace. Work these movements in advance with the cameraperson and producer, as the producer has to plan for the coverage of the movement for the cameras, lights and microphones. Remember to gesture and move a little more slowly than you would in real life.
- ⚡ Practice the use of the pointer in definite movements and hold it in position. Don't move the pointer unnecessarily as this too can be distracting.
- ⚡ Keep notes on cards or on thick sheets, which will not rustle as you refer to them. Prepare your materials on the computer for easy display.
- ⚡ While working on the blackboard, address the camera when explaining.
- ⚡ When interacting with the other panelists, it is best to show interest and convey a sense of listening attentively by nodding and looking at the speaker. Avoid interrupting or disturbing the other speakers with 'yes yes hmmhmmm.'
- ⚡ When discussions get 'hot' and all speakers speak simultaneously, nothing can be heard. It is best to find an opportunity and wait for your turn to make your point.
- ⚡ Workout in advance time allocation for your presentation.
- ⚡ Dress simply. Clothes should be in solid colours. Small checks or close stripes disturb the electronic signal Avoid bright white and black. Use normal street make-up.

Establishing Contact

There are several ways to provide a personal touch and relate with the learners/participants during the session. Some suggestions are :



Establish a personal contact

Make an informal roll call of the learning centers at the start of the session or just mention the centers by way of identifying them. Check how many learners/participants are there, and what their responses have been to the previous teleconference, and problems in assignments. These interactions should be brief and meaningful.

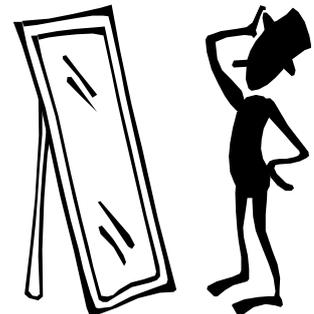
Be friendly. Interact with the learners early into the program and often. Get to know the facilitators/learners and address them by name or at least name the center. For example, "Will Ms. in center tell us about her experience in ?"

Draw on commonalities. For example, "The center at and the center at both have the common problem of being located in remote places. Will Mr. in center..... tell us what the difficulties are in receiving the study materials"? If possible, get photographs of the learners and flash them on the screen or visit the learning centers and establish a personal contact. Keep in touch with the learners through phone calls, e-mail, etc.

Television is an intimate medium. Speak on a one to one basis, rather than to a group, a class or a public meeting, and appear interested in what is being said.

Look into the lens of the camera and maintain eye contact. The audience will feel as though they are being addressed directly and individually. If this eye contact is not maintained and the eyes shift from side to side, viewers will wonder what is happening outside the frame. This is distracting.

If you are new to performing on camera, practice at home in front of a mirror.

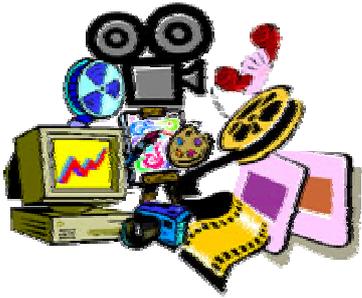


Practice in front of a mirror before going on the floor

Motivating the Learners

The biggest challenge in distant learning is to create and sustain interest. Learners will respond to stimulating quality teaching, which engages and challenges them. Be crisp in the presentation:

- ⌘ Set the agenda for the session so that the learner knows what to expect.
- ⌘ Set the allocation of time for the key points.
- ⌘ Show interest in the subject. Enthusiasm is catching. It is amazing how much the language (choice of words), tone of voice, body language is able to communicate and motivate.
- ⌘ Vary the pace of the presentation.
- ⌘ Use different methods to teach; games, quizzes, demonstrations and questions.



Use a variety of resources

- ≠# Use a variety of media resources; photographs, video excerpts, diagrams, charts, word captions, group discussions, interviews. Interactive techniques and questions will raise perceptions and stimulate participation. Simple hints that sign post the learner will help in making the program memorable.
- ≠# Create a relaxed atmosphere and anticipate the mindset of the learners.
- ≠# Anticipate questions on the basis of previous experiences, and prepare to provide the answers accordingly.
- ≠# Encourage the learners to communicate interests, concerns and questions.
- ≠# Treat each question adequately, add to the question rather than dismiss it as not worth a response or by saying, 'it does not come within the purview of the present discussion', 'it has already been answered', 'it is not clear', and the like.
- ≠# Respond through e-mail/phone calls/fax to the queries (of the learners), which were not taken up during the on-air session.
- ≠# Provide guidelines to the learners about additional learning resources.

Communicating Effectively

A few suggestions to the resource person/anchorman for effective communication:

- ≠# Thorough familiarization with the content and topic for discussion through readings, cross-references and research is essential. Nothing will give more confidence than familiarity with the subject and clear selection of the key points to be communicated.
- ≠# Reach the studio early enough to work out details of presentation, and phone-in procedures. Co-ordinate and develop a common understanding with the other resource persons and the production team about the presentation of the content. In the studio many preparations will be in progress: lights, camera check, microphone placement and other checks. These activities can be distracting and can create anxiety in the performer. So be prepared about the content presentation as many things can go wrong and quick adjustments would have to be made.
- ≠# Structure the presentation to move in a sequential and progressive manner from simple to complex, known to unknown, concrete to abstract and knowledge to application giving adequate examples pertaining to different situations, and allowing opportunities to the learners for reflection and analysis.
- ≠# Establish relationships and explain links from one concept to another with verbal cues, "This is important, watch this carefully as this is essential in understanding the next idea".
- ≠# Use verbal and non-verbal language to emphasize important points and establish relationships between abstract and real life terms.



- ⚡ Be concise. The opening should catch the attention as it sets the tone for what is to follow. Long introductions are boring and distracting.
- ⚡ Plan in advance and identify segments/sequences that can be dropped because of time constraints. Usually, there is more material than can be covered and phone calls and responses can take more time than expected. Ensure that the producer is informed of these possibilities.
- ⚡ Avoid the textbook approach, and the 'talk only' method of presentation.
- ⚡ Ensure the inclusion of fresh ideas and approaches to the learning. Invite experts/professionals from the field to participate, and illustrate the presentation with video excerpts, demonstrations and illustrations.
- ⚡ Repeat and summarize main points.
- ⚡ Use appropriate and simple language.
- ⚡ Keep voice well modulated
- ⚡ Pace the delivery appropriately, neither too fast nor too slow.

PRACTICAL EXERCISE

Ask the participants to prepare and present a 3-minute presentation for the camera. Encourage exploration of different formats. Record and playback for analysis by the participants.

Ask participants to discuss the factors, which influence the success of the teleconference and those, which diminish its effectiveness.

Formats and Interactive Strategies



Use interactive strategies

Effective teaching requires a careful analysis of the learning tasks and identification of the critical areas in the subject area. Materials have to be developed that will help to meet the learner's needs to understand and master the tasks. The materials in this part discuss various approaches to teleconference formats and interactivity in development of program materials to stimulate response from the learners.

The teleconference program has to have a sequence and segmentation that will actively guide the learner to understand the concepts. Care must be taken that the material and examples are relevant to the learners' experience, challenging and interesting. Meaningful interaction goes beyond the simple situation of the learners/participants asking the questions and obtaining replies; it is more concerned with the processes of dialogue, sharing of experiences, discussion, reflection, and application of knowledge

The interaction has to be not only vertical between the learners and the resource persons, but also horizontal among the learners, with the facilitators and with the learning materials.

The possibilities of interaction in teleconferencing need to be explored to create interest and participation at all levels.

- ☞ Learner – resource persons/AV materials at the teaching end.
- ☞ Learner – learner at the learner center
- ☞ Learner – facilitator/materials/activities at the learner center
- ☞ Learner – learner at other learner centers
- ☞ Resource person – resource person.

Cognitive or Action Oriented Activities

Activities have to be built in for the learner to be actively involved and respond. There could be many interactive activities: listening, responding to questions, dialogue, discussion, performing a task, observation, analysis, etc. These activities can be meaningfully structured in the programme.

These activities can be cognitive or action-oriented. For example, a cognitive activity could be getting the learner to identify a particular disease after showing a series of pictures of common diseases.

Similarly, giving a multiple-choice question and asking the learner to tick the correct response on the work sheet or note their correct response could be another cognitive activity.

Another example of a cognitive activity could be directing the participants to listen carefully and then asking them questions to test comprehension. The learners can be given a problem to solve, express their viewpoints regarding it based on their own experiences and knowledge. Given a situation and the variables, the learners may be asked to exercise the best option or present various role models in the same situation, and let the learners study and discuss the best practice.

In an action-oriented activity, the learners may be asked to repeat words, sentences, tables, etc. after the resource person. The resource persons can use a variety of materials to stimulate responses from the learners through interactive techniques, presentation strategies and audio-visual materials.

These techniques can be incorporated in the text, visual component of the program to create and sustain interest in the subject and motivate the learners to learn.

Counselors/facilitators at the learner centers can encourage interaction through project work, activities and reading materials.

In addition, the learners have the support of peers at the center. Horizontal learning also takes place as the learners at the other centers respond to each other's questions and observations.

Programme Formats

The interactivity can also be built into different programme formats such as:

Illustrated Lecture : Explore the possibility of illustrating lectures with a variety of visual materials to concretize information. Begin with review of previous lesson or check level of knowledge through a question-answer session. Generate interest through a dramatic eye catching visual. Use teaching aids, text and other media resources to illustrate points Build in interactivity through questions and answer

sessions. Provide variation, if possible, with video excerpts that take the learner to the field. Provide opportunities for feedback and practice.

An easy style and pace of delivery interspersed with humour will hold attention and create interest.

Team Teaching : Team teaching brings in skills and experiences of two teachers to present different aspects of the subject. Alternatively, one takes the role of the theory presenter and the other provides practical applications of the concepts. The approach in team teaching should be to supplement, enrich and clarify. It is a good way of providing variety and breaks the monotony of presentation by a single teacher as well as reducing the teaching load.

Interview : The function of an interview is to get information, views, opinions and attitudes to issues from experts. Identify topics and work out the points to be covered. Choose speakers who are good communicators. Brief them on the level of the learners so that the speakers can tailor their information suitably. If required add visuals to enhance comprehension. Provide opportunity to the participants to interact with the experts.

Celebrity guests add zest to teaching and provide a high to students to get a close view on current situations and trends.

Panel Discussion : Panel discussion is done to present different points of view or perspectives of an issue. Select discussants with different viewpoints and limit the panel to 3-4 speakers giving sufficient time to cover the topic. Provide the learners an opportunity to interact and clarify their perspective.

Conversation : In this, the concepts are discussed and clarified through conversation and dialogue between two people.

Case Study : Case studies bring actuality into the classroom. These studies are compressed in time and provide a great learning resource. It focuses on the key situations and allows the viewer to observe and draw conclusions. For example, teaching place value to children of different abilities through different activity methods. Each method of teaching can be a case by itself, giving different rates of success. The learners can see the demonstration of the children working with the materials. This demonstration is more convincing than descriptions through words. Case studies are best pre-recorded and edited. Teachers can give their approaches, viewpoints and experiences. The learners can also express their feelings and their difficulties. The resource persons can extend and supplement, followed by the learners/participants taking part in the discussion.

Similarly video coverage of field visits and interaction with the experts enrich learning. Participants can be provided an opportunity to get a look at actual situations and question experts. For example, guided visits to a television news studio, to a biotechnology laboratory, maintenance of city water supply system, etc. Interviews and interactions with experts will add value.

Brainstorming : The function of brainstorming is to get the learners/participants to voice their ideas in order to create a list, and suggest solutions to problems based on their participation.

Identify the problem, which is relevant to the group, is clear and concise.

Encourage the learners/participants to analyze the problem and give their ideas and suggestions.

Alternatively, the resource persons may lead the brainstorming, and the learners/participants can contribute to the discussion.

Drama : Ideas, attitudes and different perspectives of an issue can be dramatized. Dramatizing situations is helpful in situational analysis. Role-play by participants can create understanding of relationships and dynamics of behaviour. Drama format engages the learner to reflect and link to real life situations. Creative expressions involve the learner to develop a variety of skills.

Humour and puppets can be used in sensitive areas. Learners learn by repeating what they have heard in the play.

Prerecorded dramas can also be used for generating response.

Project work : Project work can challenge the learners to actively participate and work collectively for solutions. For example, two groups are assigned to identify the causes of air pollution in the city. The groups research the problem and find the solutions through their study and consultation with the experts. The groups present their findings for discussion and evaluation.

The group processes doing the project work can be recorded and evaluated at many levels: team building, participation and sharing of responsibility, approach to working on the problem and the practicality of the operation. This process can also have active participation by other learner groups.

Field visit : 'Actuality' is pre-recorded and used in the teleconference session to show the real situations, and cases, which is otherwise not always possible in the normal classroom situation

Demonstration : Demonstration can be arranged to illustrate principles and processes.

An expert demonstrates an activity, beginning with theoretical assumptions and moves into practical applications.

The demonstration can be live or pre-recorded, followed by discussion by the learners.

Quiz, Game : A quiz or a game based on the content of the lesson allows the learners to participate directly into the subject matter. This can be pre-recorded or performed live. The competition itself is a motivator and encourages the learners to participate.

Question and Answer : Experts may ask the questions with a view to encourage the learners to think, express and participate.

This can be done in various ways like filling the blanks, providing multiple choices and Yes/No type questions, etc.

Questions, for comprehension, application, analysis and evaluation have to be carefully structured to address the difficulties in the concept. Framing questions is an art and requires practice.

Other Interactive Strategies

Apart from the above-mentioned interactive techniques, learners can be provided with other opportunities for interaction in various ways . This may include:

Especially designed self-learning reading materials for the learners suggesting practice exercises at the end.

Breaks during the teleconference session for the learners to do individual/group activities, holding group discussions, etc.

Learners mailing feedback/comments to the resource persons and establishing contact with them.

These are some common ways of inviting interactivity. There could be others; the purpose being to get the learners to participate, talking, sharing, thinking and solving problems. A combination of different interactive formats will meet the educational needs and generate interest.

PRACTICAL EXERCISE

Show relevant video segments to the group for discussion

Divide the participants in small groups (not more than five in each group). Give them 20-30 minutes for the exercise:

Ask each group to select a topic in their respective field and suggest a format or a combination of formats, and highlight the interactive techniques in their presentation..

Let the groups present their respective scripts, and follow it up with discussion.

Design and Use of Audio-Visual Aids



Think visually

Think Visually : The key to effective communication on television is to "show, do and tell".

This part of the section describes various audio-visual materials with emphasis on preparation and use of graphics for effective television presentation.

Visuals come in many forms; text (written words), graphics, models, demonstrations, experiments, etc. Visualization extends to all techniques to present the concept/idea. For example, use of puppets to teach value education through a story, etc. The audio-visual aids may be in the form of :

- ☞ Graphics
- ☞ Models
- ☞ Specimens and real objects (plants, frogs, nest, etc)
- ☞ Video and animation, cartoons
- ☞ Audio excerpts
- ☞ Demonstrations and experiments
- ☞ Computer aided presentation

Among the above-mentioned audio-visual aids, this section examines the relevance of graphics for communication in greater detail as they form the mainstay of educational television programs.

Graphics

Graphics are a visual aid and help to present ideas, concepts and key issues. Graphics are two-dimensional visuals, and are in the form of illustrations, pictures, diagrams, sketches, drawings, maps, charts, tables, cartoons, photographs, posters and slides.

Graphics could be key words, key points and definitions, which emphasize and support verbal information. Graphics focus attention on the concepts, concretize information, clarify ideas, create interest, express, explain and supplement information

Function of Graphics : Graphics help to signpost important points and act as an aide memoiré.

Preparation of Graphics: Graphics can be prepared on computer using software, such as Photoshop, Image Ready, Illustrator, Atmosphere Builder, Page Maker, etc. Some software are simple to use, others are complicated. Most studios are equipped to prepare the graphics and connect the computers on-line to display the graphics.

Graphics are made on special paper/cards. Title cards and credit information is also in the form of graphics

Graphics can be animated through simple techniques of push and pull, slide and reveal.

Display Systems for Graphics : To display graphics there are many arrangements. Most studios are equipped with graphic display systems such as caption stands. These are display stands where card graphics, pictures, photographs, etc are numbered and stacked in sequential order or distributed between two stands so that the transition between each card is smooth.

For any teleconference session, first check the availability of the graphic display systems in the studio so that the materials can be planned and prepared accordingly. For example, if no slide projector is available, the slides will have to be printed for display.

An overhead camera especially mounted and placed for display of graphics to be operated by the presenter is also made available in some studios as per requirement.

Displaying Graphics : Graphics can be displayed in the following ways:

Sequential : One after the other

Supered : This is juxtaposition of two images, from two cards, over each other. Super cards are usually in black with white or yellow lettering

Keyed : Keying is similar to super, but in this process the image from one card is electronically cut into the picture of the other card.

Animated : Graphics can also be animated with simple techniques to reveal in parts by using pull or push cards. Use animation techniques to :

⌘ Reveal

⌘ Animate (blink, reveal, move, fly, etc)

⌘ Color code

⌘ Point

- ☞ Highlight
- ☞ Underline (blink)
- ☞ Box
- ☞ Italics
- ☞ Icons (e.g. a pencil to indicate 'note')

The above animation techniques will help the learner to follow the illustrated material with ease while it is being presented.

The producer and the cameraperson should be briefed before hand about what is to be displayed, how and when and in what sequence. The cards on the display board are usually changed with the help of a floor assistant. Decide the verbal cues such as 'Change' or 'Next' so that the change can be made smoothly. Make sure these cues are decided and rehearsed in advance and communicated to the production team.

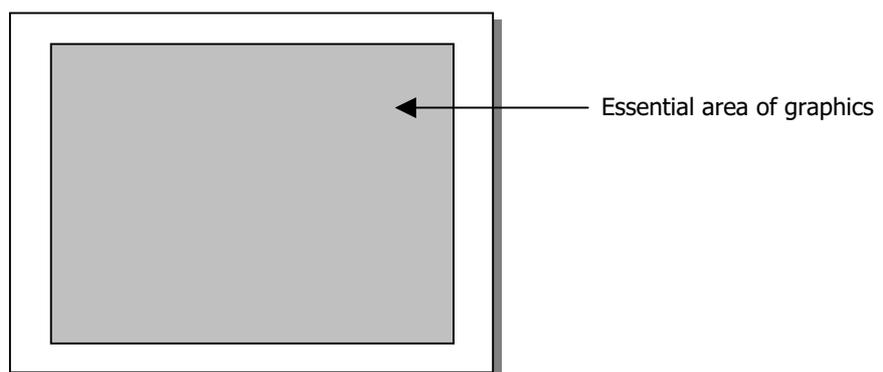
Keep the cards 'on air' for enough time, so that the learners have time to mark the details, read and note down, if necessary. A good way to judge the display duration is to read the captions silently at normal reading speed.

Designing Graphics

Designing graphics for television is a specialized area requiring creative and artistic skills. Most studios have graphic designers/artists for this work. Take the help of a graphic designer or the help of desktop software to prepare graphics.

Aspect Ratio of Graphics : The television screen is in the aspect ratio of three units high and four units wide i.e. 3 : 4.

All information is contained within this aspect ratio. Any information, which does not come within this aspect ratio, will not be seen in the frame.



Aspect Ratio of 3 : 4 of TV Graphics

Showing Graphics Out of Aspect Ratio : If the visual such as in the form of a model or a real object were vertical, the camera frame needs be widened for a long shot to accommodate it. But by doing so, the visual on the screen may be so much reduced in size that it may become illegible.

Another way of showing vertical visuals, not within the aspect ratio, would be to mount it on a large card, and the camera frame composed to show a part of it, and tilt the camera from up to down or vice-versa, and reveal the information in parts.

The same can be done for horizontal visuals, for which the camera would have to pan from right to left or vice versa

A shortcoming in this method is that the viewer does not get the picture, which is whole and clear at the same time.

The best approach would be to first treat the visuals as far as possible to the aspect ratio for telecast.

Essential Area of Graphic : The studio monitors show more at the edges of the screen, which when transmitted results in some peripheral loss on the TV screen at the user end. Thus within the aspect ratio is the essential area or the critical area, and all essential information should be composed in this area

Size of Card : Take a card of the size of 14 inches x 17 inches (36 cm x 43 cm).

Mark a border of 2½ inches (6.25 cm) to define the scan area, i.e. 9x12 inches (23 cm x 31 cm). Within this, the essential area should be about 7½ inches x 10 inches (18 cm x 24 cm). It can go up to 11 inches x 14 inches (27 cm x 35 cm) or reduced to 6 inches x 8 inches (15 cm x 20 cm).

Colour of Card : Background colour should be pastels or light coloured and the words can be in high contrast colours. For example, with a light grey background colour, use lettering in black or on navy blue background, use lettering in yellow.

Texture of Card : Use matte finish paper. Avoid shiny or glossy finished paper as it reflects light and is disturbing on the screen.

Font Type : Select type face/style, font size, colour with care.

Choose font sizes and types, which are well spaced, bold and legible. The material should be readable from a distance of six to eight feet on a 24 inch screen. For this, font size 26-30 point minimum or 0.75 cm width should be right.

Check the length of lines, size of margins, spacing of information

Color is an important design element. Use color to reflect the mood of the program and to code information.

Layout of Information : This should be pleasing to the eye and easy to comprehend.

The information should be placed in the essential area. .

Number of Lines : Not more than five. If the matter is complex, use headings and simple short sentences. Key words/points are better than full sentences.

Other Types of Graphics

The above was about specially prepared card graphics .If illustrations and diagrams have to be displayed from the textbooks, it is best to get a graphic artist remake the illustrations and diagrams on the proper sized cards. In case illustrations and pictures in their proper size answering the requirement of aspect ratio are available, you may paste them on to the cards for display. Be careful that you are not violating the copyright laws in using the materials.

Similarly, other illustrations such as maps, charts, tables, drawings, etc. have to be made especially for television. The maps in the books and those displayed on the walls are not suitable for TV as these are too crowded, not colour coded for TV, too small or too big. Ensure that the maps used are authenticated.

Character Generator

Some studios are equipped with a character generator. This equipment is like an electronic typewriter, and can be used to generate letters and numbers directly on the screen during the telecast. This facility is used mostly for titles, end captions, names of resource persons for super or key, scrolling phone numbers and addresses, etc. for the information and instructions of the learners.

Writing Board

Work on the blackboard or white board needs to be designed for legibility. Classroom teachers are usually used to working on the whole surface of the board. Since this is usually not in the aspect ratio, normal blackboard material on a long shot, composing the full material, will not be legible or aesthetically pleasing. The solution is to divide the board in four frames, each of 3:4 ratio and work within these frames one at a time for writing. Each frame in close-up will appear neat and legible. The size of lettering would have to be worked out in consultation with the producer.

Paper Board

At times, the television presenter/teacher is required to develop complex mathematical formulae or chemical equations. It may then be best to use a paperboard to write on. For this, mount an overhead camera over workspace. Place either white or off-white paper of A-3 size.

☞ Use black thick point sketch pens for writing.

☞ Minimum size of lettering should be 26 points.

Practice on the paperboard to determine the use of space, size of lettering and change of pages before going on air. With a bit of practice it will be as easy to write and explain as if working on the writing board. Pointing on captions has to be precise and slow so that the camera can follow the movement.

Graphics workspace can also be used for display of materials.

Computer Presentation

It is now possible and a common practice to present illustrated material with the help of computer. The software helps you to create the materials in templates that give a professional look.

Many companies have developed software, which is easy and fast to create graphics. Anyone can prepare word captions, which can be presented in different styles such as drive-in, flying, camera, type writer, drop-in, fly from top, wipe right, dissolve, etc. The possibilities are endless:

Diagrams and charts can be prepared using the appropriate software tools.

Photographs can be scanned and digitized.

Images from the digital cameras can be downloaded into the computer.

Images can be edited and reworked and unwanted details can be painted out.

Brightness and colours can be changed or enhanced.

Special templates (slides) can be created in the computer to meet individual needs. Store the templates in the computer in the sequence of presentation requirement.

The slides can be changed and displayed with ease, making presentation interesting, easy and flexible.

Most computer service shops will provide this service for creating graphics.

Digital Images

Digital images are grid of coloured dots known as pixels. When viewed from a distance the dots appear to merge, and appear as a realistic picture.

The more the pixels in the picture and the finer detail, higher the quality of the pictures, drawings, and diagrams, etc.

Copyright

As per international agreement all photographs and illustrated material is copyrighted. Permission has to be obtained and credit given to the authors. Many authors/publishers give permission for usage of materials for educational and non-commercial purposes. Unauthorized use of materials is prosecutable by law.

To get copyright clearance there are societies that act on behalf of authors/publishers and explain what can be used and usually the charges are minimal or the authors/publishers can be approached directly. It is important to clear the extent of usage of all creative work.

PRACTICAL EXERCISE

Show video examples of good graphics and computer presentations.

Distribute a selection of complex written materials, illustrations, tables, etc among the participants. Give them 20-30 minutes to complete the task. Ask the participants to:

- 1) Choose the ones suited for TV presentation.
- 2) Simplify other materials using proper font size, colour, optimum number of lines, etc.
- 3) Develop simple animation techniques wherever possible.
- 4) Prepare: Title card, Tables, Illustrations

Display the materials prepared by the participants on the television screen, and discuss clarity, readability, legibility, information load, and communicability with the group.

Materials required, Colored sheets and Pens and scale

Similarly, ask them to prepare the material required for your presentation on the computer using software such as Photoshop.

Display or project the material and check for appearance, legibility and comprehension.

Sample Transparencies

Development of Programme Materials, Audio-Visual Aids and Presentation

- ⌘ Presentation Techniques
- ⌘ Formats and Interactive Strategies
- ⌘ Design and Use of Audio Visual Aids

Presentation Techniques

Anchorperson/resource persons

- ⌘ Establish Contact
- ⌘ Motivate the Learners
- ⌘ Communicate Effectively

Establish Contact

- ⌘ Take an informal Roll Call
- ⌘ Address the Centre/Learner by Name
- ⌘ Speak on one-to-one Basis
- ⌘ Draw on commonalities
- ⌘ Speak to the camera
- ⌘ Be interested and focused on the subject

Motivate the Learners

- ⚡ Set the Agenda at the Start
- ⚡ Allocate time for interaction
- ⚡ Vary the pace of Presentation
- ⚡ Encourage the Learners to Communicate and Interact
- ⚡ Anticipate Questions and prepare yourself to answer
- ⚡ Treat each query adequately.
- ⚡ Inform learners about responding to unanswered queries through e-mail, telephone, etc after the session
- ⚡ Guide Learners About Additional Learning Resources

Communicate Effectively

- ⚡ Familiarize Yourself Thoroughly with the Content before session
- ⚡ Structure the Presentation in a Sequential and Progressive Manner
- ⚡ Plan in Advance/Identify Segments that can be omitted due to time constraints during transmission
- ⚡ Avoid a Talk-only method/text book approach
- ⚡ Introduce fresh ideas/approaches to Learning
- ⚡ Establish Relationships/Links between Concepts
- ⚡ Be Concise
- ⚡ Repeat and Summarize Main Points
- ⚡ Use Simple Language
- ⚡ Modulate Voice
- ⚡ Pace Delivery

Formats and Interactive Strategies

- ⚡ Cognitive and Action Oriented Activities
- ⚡ Programme Formats
 - Illustrated Lecture
 - Team Teaching
 - Interview
 - Panel Discussion
 - Brainstorming
 - Drama
 - Project Work
 - Demonstration
 - Quiz, Game
 - Question and Answer
 - Other Interactive Techniques

Other Interactive Techniques

- ⌘ Especially Designed Self-learning Reading Materials
- ⌘ Practical Exercises
- ⌘ Individual/group Activities During Break
- ⌘ Learners Establish Contact with the Resource Persons.

Design and Use of Audio-Visual Aids

- ⌘ Graphics
- ⌘ Models
- ⌘ Specimen/Real Objects
- ⌘ Video and Animation of Cartoons
- ⌘ Audio Excerpts
- ⌘ Demonstrations/Experiments
- ⌘ Computer Aided Presentations

Development/Use of Graphics

- ⌘ Types of Graphics
- ⌘ Functions
- ⌘ Display Systems in Studio
- ⌘ Graphics Design
 - Aspect Ratio
 - Essential Area
 - Size/Colour/Texture of Card
 - Font Type/Layout/Number of Lines
- ⌘ Adapting Other Graphics for TV/Copyright Issues
- ⌘ Character Generator
- ⌘ Writing Board
- ⌘ Paper Board
- ⌘ Computer Presentations

Section

5

Teleconference : Preparation and Management

Overview: The materials in this section cover the important areas of management and organizational aspects of teleconferencing, activities, which need to be done at the teaching end and the user end/learner centres for effective outcomes.

Introduction

The management and organizational aspects of teleconferencing can be dealt with at different stages of the teleconference both at the teaching end and the user end:

☞ Teaching End : Preparations and Management

Pre-conference Preparations

Conference Preparations in Studio

During Conference Management in Studio

☞ User End/Learner Centres : Preparations and Management

Pre- conference Preparations

Conference Preparations at Learner Centres

During Conference Activities

After Conference Activities

Teaching End : Preparations and Management

The teaching end consists of the up-linking facility and a studio. Studios differ in their technological configurations depending on the type and sophistication of the hardware. At its simplest, the studio can be a small room with a single video camera set up. On the other extreme, it could be a full-fledged studio with a multi-camera set up and corresponding video monitors for different uses, and a battery of other equipments. The design and equipments of the studio will depend upon the nature of activities planned for a single person presentation or complex performances, including drama, etc. (See section 2 for details of studio equipments).

Depending upon the resources and requirements, a studio may be hired or established. In all cases, it is crucial to adequately prepare for the teleconference, which can make the difference between good and bad quality presentation.

Pre-conference Preparations

Given that the clientele group has been identified and specific topics of teleconferencing based on assessment of their learning needs determined, the next aspect is identification of the resource persons, anchorpersons, and assignment of topics, based on their fields of study and experience, for presentation during the session.

Arrange orientation of the resource persons and the anchorpersons about TV presentation techniques. (See section 6 for orientation of the teleconference personnel)



Adopt team-mode production

Orientation of the personnel and assignment of the topics need to be done well in time so that they get sufficient lead-time to plan and prepare themselves for the presentation.

Also, arrange interaction sessions among the resource persons, anchorperson and the production team to agree upon the presentation strategy, structure and schedule of presentation and preparation and use of AV materials.

Conference Preparations in Studio

Make sure that the production team, the technicians, the resource persons and the anchorperson report about one to two hours before the commencement of the teleconference, depending upon the sophistication of the studio set up and nature of the teleconference programme, to attend to the following:



- ☞ Check that the hardware is functional and the resource persons and the anchor person get familiar with the studio set up, studio terminology and floor manager's signals
- ☞ Arrange lighting/make up of the resource persons/anchor person
- ☞ Check/rehearse the sequence of presentation and placement of various visuals to be used during the presentation. The producer should have a clear idea of the sequence of presentation and what visuals will be shown and when and how.

- ⌘ Arrange the card visuals on the display stand in their proper sequence, generate characters, and keep computer-aided presentations ready for use.
- ⌘ Collect and arrange the materials in the studio for showing demonstrations/activities, if any, during the presentation.

During Conference Management in Studio

Given the complexity of studio production, it is necessary to complete the start-up preparations well before the conference is telecast, as any thing can go wrong at any time and last minute adjustments may have to be made during the presentation/transmission.

User End/Learner Centres : Preparations and Management

Prepare the learners and the facilitators for reception of the teleconference sessions.

Pre-conference Preparations at Learner Centres

The facilitators at the site and learners will need advance publicity, information and materials regarding the purpose of teleconferencing.

If the teleconference is planned with face-to-face teaching, the facilitators and site resource persons will need to organize, prepare and collect materials required for training and interaction.

Pre-conference preparations involve the following activities:

- Selection of Learner Centres
- Decision about Number of Centres
- Advance Information to Learners
- Advance Information to Facilitators
- Other Advance Preparations at User End/Learner Centres

Selection of Learner Centers

For an occasional use of teleconferencing facilities, it would be cost effective to use the receiving facilities set up by another agency. In that case, the learner centers need to be informed and directed to co-operate. If the technology is being used regularly, the user may consider setting up new learner centers. In either case, the following criteria will be useful for selection of good learner centres:

- ⌘ Facilities for down-linking, regular power supply, standby generator/inverter, telephone/fax/e-mail for interaction
- ⌘ Security of the hardware
- ⌘ Suitable space for viewing - free from outside noise and reverberation of sound.
- ⌘ Comfortable seating of the learners.
- ⌘ Accessibility of the centre to cut down traveling costs and commuting time of the learners, resource persons, facilitators and technicians.



- ⌘ Learner centers' need to inform the learners in advance about the sessions.
- ⌘ Facilities for boarding and lodging, when needed.
- ⌘ Local community support, if the centre is to be set up outside an established institution.

It is desirable to visit or communicate with each proposed site/centre for its selection.

Number of Centers

The number of centers will depend upon the strength and the spread of the learners/participants, and nature of the teleconference programme. Generally, 30-40 learners are accommodated in a centre. If more than one room is to be used at a learning centre for seating the learners, there should be a provision of parallel telephone and viewing facilities and additional facilitator(s) for each room.

It would be advisable to restrict the number of centers for highly interactive programmes so that each centre gets enough time for interaction.

Alternately, allocate time slots to different sets of centers by rotation for interaction in case the number of centers is more than can be handled with ease. Or some centers interact, and others just watch. Experience shows that even those, who do not interact directly, benefit from the transaction.

Advance Information to learners

An important aspect is to prepare background information and materials for the learners to support the teleconference sessions. To this end, information and materials to be prepared for them should include:



Prepare advance materials
for the learners and the
facilitators

Schedule of the teleconference giving dates, time, duration, location of the venue and how to reach it.

Benefits to them vis-à-vis their participation in the teleconference

Learning objectives, content and activities of each session to be done before, during and after the session.

Reading materials and references for further study. The study materials may have to be especially prepared for the purpose.

Names and particulars of the participating resource persons.

Number and names of other centers, and expected strength of the learners.

A general profile of the target learners/participants.

Guidance on viewing, note taking, procedure for asking questions, etc.

The information and the materials can be sent directly to the learners or sent to the facilitators for distribution among the learners at the appropriate time.

Advance Information to Facilitators

The facilitator may be sent the information and materials for the learners for their perusal, and a few extra copies or advice for duplicating the materials in case some learners report at the conference without the materials.

In addition, the facilitator, who may not be the subject expert, needs to know:

What the approach to teaching will be in the conference (lecture, discussion, study materials, references, activities, and materials required for doing activities, etc.)

What the learning outcomes/learners' expectations will be

How and what the learners should prepare themselves, and materials regarding the subject and the topic

Contact address and telephone numbers of the organizers for making queries/clarifications.

Procedure of monitoring and evaluation, methods of data collection and who will do what and when.

The information for the facilitators can be prepared in the form of checklists and notes. The materials should reach them well in time, at least a week in advance of the date of the conference.

Other Advance Preparations at User End/Learner Centres

Some other important activities, which need to be completed by the planners before the teleconference are:

Developing checklists/proformae, schedules and research tools for use by the evaluators.

Identification of the facilitators/evaluators, and their placement at different centers.

Orientation of the facilitators and the evaluators. Give them sufficient practice in knowing, and using the checklists, tools, (see Section 6 for orientation of the teleconference personnel.)

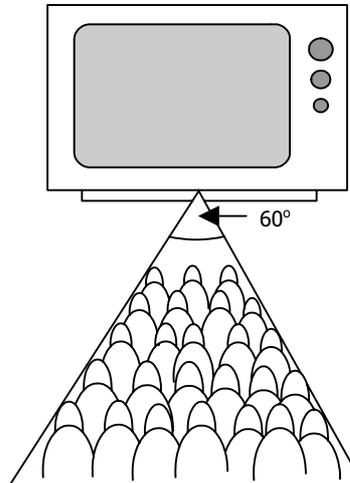
Entering into a hardware maintenance contract with a reliable agency, if the contract does not already exist with the host institution.

Conference Preparations at Learner Centres

The facilitator needs to arrange the following at the learner center before the learners show up:

- ⌘# The learner center is equipped with a large size TV set. Most domestic TV sets do not have good sound for large classrooms and audience. The new TV sets have better sound systems so that listening can be comfortable. If necessary, arrange for an extra speaker to ensure good listening facility.
- ⌘# The TV set is placed at the eye level of the viewers for comfortable viewing. The height for placement of the TV set will depend whether the learners would be seated on the floor or in the chairs.
- ⌘# The room should have good acoustics. Clap to check echo and reverberation. When the room is full with the human bodies, some of reverberation sound will be absorbed. If it still persists, curtains and carpets need be placed to absorb the sound. Remember, big halls are not suitable, as they often need acoustic treatment for enhancing listening. Selection of the room is important.
- ⌘# The room should not be totally dark for watching television as this strains the eyes. Let there be adequate light for the learners to write and take notes. However, light should not fall on the face of the viewers nor should it reflect or fall on the TV screen.

- ☞ Place the telephone near the TV set, but not very close to it as it may result in audio problems. Keep the fax and computer for e-mail, if available, along with the telephone.
- ☞ Display the dial number of the studio and instructions for how to make a call to the studio close to the telephone.
- ☞ Ensure there is power supply, and back up power source (i.e. generator or inverter).
- ☞ If a generator is to be used, keep it at a distance so that the sound produced by it does not disturb the learners during the conference.
- ☞ Check if all equipments are functional and properly tuned, and a technician is available on call. Keep the telephone number of the cable operator, technician, etc. handy for any last minute assistance required.
- ☞ As the learners start coming, seat them. There should be a distance of about two meters between the set and the first row for the set of the size of 52 cm, as it is not healthy for them to sit close to the TV set. The last row should ideally be not beyond eight meters from the set for good view of the picture.
- ☞ The arrangement for seating should be different from the ordinary classroom arrangement, because while the viewers in the middle may be able to watch, those seated at each side would not be able to see properly even if they crane their necks. The ideal arrangement for seating is within an angle of 30° . But if the audience is large, it could be extended to 40° .



Seat the learners at a proper distance and the angle for watching TV

- ☞ Distribute the worksheets, reading materials and schedules of practical activities among the learners.

During Conference Activities

The facilitators need to do the following during a conference :

- ☞ For formal systems the facilitator can during the roll-call provide information on the attendance and other relevant information, related to study materials and assignments. This information helps the teaching end to make the necessary adjustments in their teaching strategy. This information can be sent by fax, e-mail, on-line computer systems, etc.

- ☞ As the teleconference is dependant on verbal information, ensure quiet listening conditions. The noise from outside should be checked and minimized.
- ☞ Arrange the materials for doing such activities during the break and/or after the conference, as per schedule,
- ☞ Ensure all such activities are carried out.
- ☞ Encourage the learners to interact and ask relevant questions. Club the questions of similar nature for meaningful interaction, and guide the learners how to make a call. After calling, the call may be placed in a queue, and/or put on hold. Some systems ask for the question to be recorded so that it can be fed into the live telecast at an appropriate time.
- ☞ The anchor on the screen will acknowledge the call with a visible nod and/or a verbal cue signaling to go ahead and speak. Watch for the gesture or cue from the studio. Avoid saying 'hullo.... hullo....' Identify yourself and ask the question. Be brief and to the point.
- ☞ When the anchorperson from the teaching end is ready to take the question, immediately turn down the volume of the television set. This is important otherwise the sound coming from the television will drown the caller's voice, and the question may not be audible to the studio and to the other learning centers.
- ☞ Raise the volume of the television set, as the resource person gets ready to answer the question.
- ☞ Disconnect after the question has been acknowledged, understood and answered. Some organizations to save cost may ask you to close the phone after your question; others who have more lines and recording systems have no objection to learners continuing with follow-up questions. This depends on the etiquette established by the organization, costs involved and availability of telephone lines.
- ☞ Observe the learners' reactions in the classroom and note down the nature of discussion, chitchat or other activities among them, as this will indicate their interest and attention level.
- ☞ Record the teleconference on VHS for review and study purposes, if required and recording facilities are available.

After Conference Activities

The facilitators need to do the following after the conference:

- ☞ Announce the schedule of the next teleconference and see that it is well understood by the learners.
- ☞ Distribute forms for obtaining feedback of the learners, collect filled-in forms and dispatch these to the concerned agency, along with his/her own feedback report based on observations and informal discussions with the learners.
- ☞ Informally find out the following from the learners:
 - Was the purpose and objectives of the teleconference met?
 - Was the conference effective?

Did they find the teaching effective?

What would they recommend for improvement in the lesson/program?

- €# Clear all payments for food, generator and other facilities, and disburse dues among the learners, technicians, etc.
- €# Switch off the supply of power to the equipments. However, the inverter should remain connected, and the power continues to flow through it to keep it charged for the next use.

Management of Teleconference at the School Level

Teleconferencing as a technology is being increasingly used for the education of the children in the schools. While most of what has been described above in connection with the adult learners applies to school environment also, some additional points need special consideration.

- €# Check against the tendency to seat a large number of children of all standards and sections in one big hall to expose them to a common teleconference programme. The halls generally have an echo problem, making it difficult on the part of the children to comprehend audio. Those seated at the far end have the problem in comprehending visuals on the small screen. Crowding adds to the noise. It also causes physical discomfort to them – all this reducing the effectiveness of the exercise.
- €# Collect only a manageable group (30-40) of such children as will benefit the most from the given teleconference programme in a suitable room with good acoustics. If the group were large, it would be better to equip more than one room with TV set than to have every one accommodated in a hall.
- €# Allow them sufficient time to settle down before the programme starts.
- €# It is far more important to prepare the children than the adult learners in support of the teleconference session. This may be done by circulating background information and materials among them before hand, and the teacher discussing with them relevant facts and figures with a view to motivate them to learn from the programme.
- €# Encourage the children to interact with the resource persons by asking relevant questions during the programme.
- €# Follow-up the programme with activities and a discussion with them about the objectives and purpose of the programme and provide additional information based on the questions asked by the children during the programme

In Conclusion

Considering the complexity of teleconferencing, orientation of the personnel involved in teleconferencing at the teaching end and user end/learner centers need to be done effectively so that they are able to play their role. The next section focuses on orientation of personnel

PRACTICAL EXERCISE

Ask the participants to prepare a checklist for use of the facilitators showing activities to be done by them before, during and after the conference. Discuss.

Discuss the following points with the participants:

Why a big hall room is not suitable for holding a teleconference?

Why the TV room should not be totally dark?

Why learners should not sit very close to the TV set?

Why more than 30-40 persons should not participate in a teleconference at a learner center?

Sample Transparencies

Teleconferencing: Preparations And Management

- ☞ Teaching End
- ☞ User End/Learner Centres

Teaching End: Preparations and Management

- ☞ Pre - conference Preparations
- ☞ Conference Preparations in Studio
- ☞ During Conference Management in Studio

Pre-conference Preparations at the Teaching End

- ☞ Identification of Resource Persons/Anchorperson
- ☞ Orientation of the Selected Persons
- ☞ Assignment of the Topics
- ☞ Interaction Among the Resource Persons, Anchor Person and the Production Team
- ☞ Preparation of the AV Materials

Conference Preparations in Studio

- ⌘ Check Hardware is Functional
- ⌘ Complete Lighting and Make-up of the Presenters
- ⌘ Presenters Get Familiar with Equipment and Studio Practices
- ⌘ Dry Rehearse Presentation and Decide Placement of Visuals with the Producer
- ⌘ Arrange Visuals in Sequence
- ⌘ Arrange Materials Required for Demonstrations/Activities in Studio

During Conference Management in Studio

- ⌘ Arrive early to avoid last minute rush
- ⌘ Be prepared for improvisation and adjustments during transmission

User End/Learner Centers Preparations and Management

Pre – conference Preparations

Conference Preparations at Learner Centers

During Conference Activities

Pre-Conference Preparations

- ⌘ Selection of Learner Centres : Criteria
- ⌘ Deciding Number of Centres
- ⌘ Dispatch of Advance Information and Materials to Learners and Facilitators
- ⌘ Other Advance Preparations
 - Preparation of Checklists/Proformae/Schedules/Research Tools for Use by the Facilitators and Evaluators
 - Identification of Facilitators/Evaluators
 - Orientation and Placement of Identified Personnel
 - Ensuring Faultless Equipment Performance

Conference Preparations at Learner Centers

Facilitator to Check :

- ⌘ TV functional and placed at eye level
- ⌘ Telephone/fax is functional and placed near the TV
- ⌘ Acoustics of room
- ⌘ Display studio number/calling instructions
- ⌘ Availability of Power Supply/Back-up Power Source
- ⌘ Availability/presence of Technician during transmission
- ⌘ Participants are seated at the proper angle and distance from the TV
- ⌘ Work sheets, Reading Materials, Schedules of Practical Exercises, etc. are distributed among the Learners

During Conference Activities

Facilitator to :

- ⌘ Maintain Silence
- ⌘ Guide latecomers to find seats
- ⌘ Check and minimize outside noise
- ⌘ Keep such information ready as might be asked for by the teaching end
- ⌘ Provide materials required for doing activities
- ⌘ Assist learners to carry out activities
- ⌘ Encourage and guide learners to interact correctly
- ⌘ Club questions of similar nature for meaningful interaction
- ⌘ Lower volume of TV when learner asks a question and raise the volume after the questioning is over
- ⌘ Observe learners reactions
- ⌘ Record the Teleconference on VHS for later use, if required

After Conference Activities

- ⌘ Announce schedule of the next Teleconference
- ⌘ Distribute Feedback Form among the learners,
- ⌘ Dispatch completed forms to the concerned agency
- ⌘ Ask the learners for their comments/suggestions about the teleconference
- ⌘ Complete all records and payments
- ⌘ Switch off power supply, keep Inverter on charge for next use

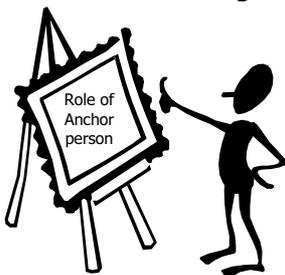
Section

6 Guidelines for Orientation of Personnel

Overview: The materials in this section describe the scope and nature of briefing and orientation of the teleconference personnel at the teaching end, and at the user ends to enable them perform their respective tasks and roles effectively.

Introduction

Teleconferencing to be effective requires organization, coordination, communication and management skills in all personnel involved in the various tasks. Apart from the already oriented studio staff, the resource persons who use the technology to transact the content, the anchorpersons who conduct and moderate the presentation, the facilitators who manage the learner centers and the researchers concerned with monitoring and evaluation need to be oriented to do their respective jobs effectively. Orientation of the personnel broadly falls into the following categories:



Arrange orientation of personnel

- Orientation of the Programme Producers
- Orientation of the Resource Persons
- Orientation of the Anchorpersons
- Orientation of the Facilitators
- Orientation of the Researchers/Evaluators

Orientation of the Programme Producers

Programme producer is the head of the team comprising technicians responsible for production of the programme. The producers are already trained in the grammar and the basics of television for effective communication. They, however, need to understand the special requirements of teleconferencing for educational and development purposes. Their orientation should include:

Understanding the learning objectives, planning the sequence of the programme and identifying corresponding visuals/activities in consultation with the resource persons and the anchorperson.

Pre-recording interviews, field visits, demonstrations, etc. as the need be, with the help of the resource persons.

Arranging preparation of studio graphics, and assisting the resource persons prepare other graphics, visuals and activities.

Briefing the resource persons and the anchorperson about the cameras, microphones and other studio practices, and rehearsing the programme before going on the air

Overseeing that all-important learning points, visuals, activities, etc. are covered/shown and meaningful interaction takes place during the programme.

Participating in the discussions on feedback and evaluation for the purpose of improving the production quality and utilization of the programme.

Orientation of the Resource Persons

Resource persons are the subject matter experts. They are responsible for content development, scriptwriting and presentation. They need to understand the medium for effective communication. Specifically, the orientation programme should include:

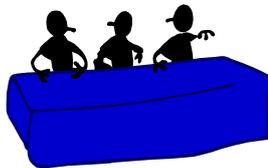
- ⌘ Understanding principles of learning for distance learners
- ⌘ Planning the lesson in a logical and sequential manner highlighting the learning objectives and identifying before, during and after conference activities for participation of the learners.
- ⌘ Writing the script
- ⌘ Using interactive techniques and other strategies and formats to engage the learners to discuss, think, reflect, and apply the learning in real life situations.
- ⌘ Framing appropriate questions to check comprehension of information and concept, to stimulate discussion, etc.
- ⌘ Preparing and using graphics and other AV materials.
- ⌘ Handling questions of the learners, repeating the question for clarification and for the benefit of those who may not have heard or understood the question, giving complete but concise replies in a friendly and encouraging manner and learning to handle awkward and difficult questions.



- €# Supplementing, clarifying and coordinating with other resource persons on the panel.
- €# Familiarization with on camera performance, studio practices, and effective presentation techniques.
- €# - Appropriate dressing for TV appearance such as avoiding black and white clothing, close stripes and small checks.

Orientation of the Anchorpersons

The anchorperson conducts the teleconference and moderates the experts. Generally, the anchorperson is quite familiar with the subject matter, but may not necessarily be an expert on it. The briefing programme should include:



Teleconferencing begins with greeting and introduction

Greeting and welcoming the learners/participants.

Opening and introducing the topic and the objectives in an interesting manner through an anecdote, surprise comments, question, posing a problem, using and quoting the learners' existing experiences and values, The challenge is to get the attention of the learners from the start, and keep them interested and motivated to learn the topic.

Introducing the experts and giving their background

Instructing the learners on time schedule for questions and answers, when and how to call the studio, information relating to the telephone numbers, fax, e-mail, etc.

Moderating the flow of presentation in accordance with the schedule

Inviting comments/questions from the learners at the appropriate times

Taking up relevant questions, avoiding duplication in questions and facilitating/encouraging the centers to participate.

Directing the questions to the appropriate resource person, and ensuring that the questions are adequately answered.

Instructing the learners about the activities during the break and after the conference. These could be mastering concepts, hands-on activities, discussion on case studies, peer group presentations, quizzes, readings, etc.

Summarizing the key points at the end, concluding and thanking the experts.

Announcing next teleconference date, topic and schedule and pre-conference activities.

Reminding the learners to provide information on schedules and activities and feedback in the prescribed forms and time frame.

Instructing the facilitators/evaluators about follow-up activities.

Orientation of the Facilitators

The facilitators manage the user end, extend support for smooth and effective conduct of the teleconference, monitor and do follow-up activities. They provide

the necessary link and liaison between the teaching and the user end/learner centre.

Each center has at least one facilitator to look after the administrative/organizational matters, and support the academic activities. The facilitator may also support the work of counselors or academic persons to conduct face-to-face activities. Whether a centre would have more than one facilitator would depend upon the number of participants, tasks to be carried out, and individual attention required before, during and after the teleconference.

Their orientation programme should include:

Getting familiar with the operation, use and up-keep of the hardware comprising TV, telephone, fax, e-mail, etc.

Carrying out administrative functions such as registration and marking attendance, distribution of materials and proformae, clearing payments, etc.

Seating the learners and maintaining discipline.

Encouraging the learners to ask relevant questions, clubbing the questions for meaningful interaction, and guiding them how to make a call.

Arranging activity materials and creating the conditions for the conduct of appropriate activities before, during and after the conference

Monitoring and observing learning behaviour of the learners during the conference.

Obtaining feedback from the learners.

Preparing feedback reports.

Coordinating with the teaching end, project manager and the local communicator.

Organizing substitute programs or showing videotapes in the event of non-transmission of the service, and attending to any unforeseen emergency at the learner centre.

Orientation of the Evaluators

The evaluators are placed to monitor the presentation and reception of the teleconference programme, obtain feedback data and evaluate its impact on the learners. It is important that they communicate the findings speedily within the specified time frame to enable the planners take timely decisions to improve the system. The identified personnel to function as evaluators would need orientation on the following aspects:

- ☞ Understanding the objectives of monitoring, feedback and evaluation.
- ☞ Familiarization with the data collection tools such as interview schedules, how and when to use them. For this, they may practice on a sample of the learners/participants.
- ☞ Developing observation techniques and how to use them.
- ☞ Holding in-depth interviews, focused group discussions, etc., and how to conduct them.
- ☞ Tabulation, analysis and interpretation of data.

- ☞ Preparation of the report and its executive summary.
- ☞ Presentation of the findings.

In Conclusion

After having oriented the personnel and completed necessary preparations, the next important task is to monitor and evaluate the conference. The next section focuses on the importance of monitoring and evaluation and how to do it.

PRACTICAL EXERCISE

Divide the participants in small groups (not more than five in each group). Ask each group to prepare orientation schedules of a 2-day orientation programme for the resource persons or facilitators or evaluators. Give them 20-30 minutes for the activities

To prepare orientation schedule for resource persons, take a specific target group such as in-service training programme of the primary school teachers.

To prepare orientation schedule for facilitators, identify a functionary from the study center

To prepare orientation schedule for evaluators, identify in-house and/or student researchers.

Ask the groups to present their respective orientation schemes and discuss.

Discuss the implementation of the orientation programme through the teleconference mode.

Sample Transparencies

Orientation of Personnel Checklist and Guidelines

- ☞ Orientation of the Resource Persons
- ☞ Orientation of the Anchorpersons
- ☞ Orientation of the Facilitators
- ☞ Orientation of the Evaluators

Orientation of the Resource Persons

- ⌘ Understand the Medium for Effective Communication
- ⌘ Understand Principles of Learning for Distance Learners
- ⌘ Use Effective Interactive Techniques
- ⌘ Plan Lesson Presentation
- ⌘ Write Scripts
- ⌘ Prepare Graphics and Other AV Materials
- ⌘ Frame Questions
- ⌘ Handle Questions,
- ⌘ Practice Camera Presentation
- ⌘ Dress Appropriately for TV Presentation

Orientation of the Anchorpersons

- Conduct a Session
- Introduce Topic/Objectives of the Session
- Introduce the Resource Persons
- Motivate Viewers to Participate
- Select Relevant Questions
- Summarize Key Points
- Instruct Learners about Follow-up Activities
- Practice Camera Presentation
- Dress Appropriately for TV Presentation

Orientation of the Facilitators

- Manage the Learner Centre Activities
- Coordinate with the Teaching End
- Operate, Use and Upkeep the Hardware
- Make Appropriate Viewing Arrangements
- Encourage Learners to Interact
- Obtain Feedback
- Prepare Feedback Report
- Conduct Activity
- Organize Substitute Programmes

Orientation of the Evaluators

- ⌘ Monitor the Preparation of Teleconference at Planning, Presentation and Utilization Stages
- ⌘ Understand the Strengths/limitations of the Medium
- ⌘ Develop Tools for Data Collection
- ⌘ Prepare Evaluation Report
- ⌘ Present Findings

Section

7

Monitoring and Evaluation of Teleconferencing

Overview : The materials in this section bring out the importance of monitoring and evaluation to constantly improve upon the system. To be effective, monitoring and evaluation effort should be comprehensive covering the planning, presentation and utilization aspects of teleconferencing. The materials also discuss important methods and tools of data collection, and present a modular scheme of data collection.

Introduction



Invest time and resources in monitoring and evaluation of teleconferencing

To be useful in taking right decisions at the right times, monitoring and evaluation effort and activities should be systematic and comprehensive and not lop-sided. The process should cover all aspects of planning, presentation and utilization. This would mean collecting information at the various stages of teleconferencing and looking at the system in its totality. The monitoring and evaluation process of teleconference can be examined under the following categories:

- 1) Monitoring and Evaluation Activities
- 2) Methods of Monitoring and Evaluation
- 3) Data Collection Tools
- 4) Preparation and Presentation of Report

Monitoring and Evaluation Activities

To be effective, the monitoring and evaluation process should cover all the different stages of the conference comprising:

- ☞ Before Teleconference/Project Activities
- ☞ Pre-teleconference Activities
- ☞ During Teleconference Activities
- ☞ Post-teleconference Activities

Before Teleconference/Project Activities

Monitoring and evaluation activities related to the project and the 'before teleconference' stage comprise:

- ☞ Tasks analysis and entry level behaviour of the target clientele group, their information needs, interests and expectations from teleconferencing.
- ☞ Demographic data of the learners/participants.

The above information should help the programme planners and subject experts determine broad and specific learning objectives, identify appropriate themes/topics, and plan sequencing, and scheduling of teleconference sessions in a systematic manner.

Depending upon the nature and the spread of the clientele group, collect the requisite information by using the following research methods, singly or in combination:

- ☞ Analyzing the curriculum, tasks and job requirements of the learners/participants.
- ☞ Mailing questionnaire to a representative sample of the learners/participants or administering the questionnaire to a sample of the learners/participants in a group situation, such as in a class, meeting, etc.
- ☞ Interviewing a sample of the learners/participants using an interview schedule.
- ☞ Conducting in-depth interviews with some selected knowledgeable, experienced individuals representing the target learners/participants.
- ☞ Holding in-depth interviews with the teachers, extension functionaries, supervisors and such other persons who know the learners/participants and about their needs.

Participatory Rapid Appraisal (PRA) methodologies can also be effectively used at this stage. These are a growing family of qualitative approaches and methods that emphasize the researchers and the learners working together to make appraisal, analysis and plans. It is an exercise in communication and translating the local knowledge gained into learner oriented decisions and course of action.

Participatory Rapid Appraisal methods are variously called as Rapid Rural Appraisal (RRA); Participants Rural Appraisal (PRA) and Participatory Action Research (PAR).

Some common PRA techniques are participant observation, preference ranking, brainstorming, focus group discussions and in-depth interviews. Social mapping and Seasonal and Historical mapping techniques are also used in some situations. In

this, a group of participants are encouraged to draw a map (such as of their village) and to plot symbols in relation to the issue under investigation such as where the drain or the hand pumps are and should be, or to portray the changes in the demographic and natural resources in their situations and set up over a period of time and what is expected after a certain period of time.

Generally, two or more PRA techniques are combined for better results.

Pre-teleconference Activities

As the learners/participants report to register themselves for the teleconference, collect the following pieces of information from them:

- ☞ Profile of the learners/participants. It includes name, gender, age, training, experience, nature of job, educational qualifications, exposure to media including teleconferencing, level of motivation for participation in the teleconference, etc.
- ☞ Expectations from the teleconference
- ☞ Awareness about the objectives of the teleconference
- ☞ Receipt of advance information, instructions and relevant study materials concerning the teleconference.
- ☞ Difficulties, if any, in reaching the centre, and participation in the teleconference. This would include responses about the distance, accessibility, and suitability of timing and scheduling of the teleconference sessions.
- ☞ Current status of knowledge, understanding, skill, attitude, and practices in relation to the specific learning objectives of the teleconference.

This information would help in knowing:

- ☞ Whether selection of the learners/participants matches the learning objectives.
- ☞ Whether expectations of the learners/participants are consistent with the expected achievements.
- ☞ State of preparedness/enthusiasm of the learners/participants for benefiting from the teleconference.
- ☞ Suitability of timings and schedule of the teleconference sessions for the learners/participants.
- ☞ Logistics problems of the learners/participants.
- ☞ Baseline performance of the learners/participants, which could be useful for determining the teaching strategy, and also comparing it later with the terminal performance to evaluate the impact of the teleconference.
- ☞ Relationships between the terminal performance such as the learning outcomes and the demographic characteristics of the learners/participants. For example, whether age of the learners/participants had influenced the learning outcomes.

The requisite information can be collected by: -

- ☞ Administrating a set of interview schedules/questionnaires to the learners/participants.

- ⌘ Administering knowledge test and other tests and scales to the learners/participants.
- ⌘ Conducting in- depth interviews with some selected learners/participants.

During Teleconference Activities

It would be useful to collect the following information during teleconferencing:

- ⌘ Strength of the participants
- ⌘ Learning conditions such as adequacy of space, comfortable seating, noise level in and outside the room, disturbance caused by persons coming in and going out of the classroom, acoustics problems, etc.
- ⌘ Functioning of TV reception set, and quality of picture and sound.
- ⌘ Functioning of telephone, fax, e-mail, and audio problems, if any.
- ⌘ Breakdown of equipments, and frequency and duration of such breakdowns, availability and use of standby arrangements, nature of activities done by the learners during the breakdowns.
- ⌘ Pattern of delivery such as presentation by the resource persons, demonstrations, use of AV materials, question-answer sessions, etc. and time-wise break up of different segments of the conference session(s).
- ⌘ Extent and quality of interactivity along with the name and number of centers, which participated.
- ⌘ Learning behaviour of the learners/participants such as watching attentively, taking notes, chitchatting among themselves, looking outside the window, feeling restive, etc.
- ⌘ Nature of activities done by the learners/participants during the break vis-à-vis the schedule, and their involvement in doing these activities, such as practice exercises, group discussions, reading of study materials, etc.
- ⌘ Extent and quality of guidance and supervision by the facilitators for the learners to do activities during the break.

The above information should help in judging the quality of organization and management of teleconferencing, functioning of equipments, interest level of the learners and role played by the facilitators for taking appropriate mid-course corrective measures, and in making decisions for improving upon the future conferences.

This information can be collected by recording observations using pre-prepared schedules and checklists. To be useful, analyze, interpret and report the daily observations to the concerned agency as soon as possible.

Post-teleconference Activities

After each day and at the end of the series of the teleconference sessions, it would be useful to obtain feedback of the learners/participants. It should include:

- ⌘ Opinion of the learners/participants about the content, relevance, load, comprehensibility, attention holding capacity, language, delivery and presentation, interactivity, utility, effectiveness of teleconferencing, logistics and other problems, if any, faced by them for participation, and their suggestions for improving the content, the delivery and the system.



Obtain feedback of the learners

€# Gain in knowledge, understanding, skills, change in attitude of the learners/participants in relation to the specific objectives of the teleconferencing.

In addition, obtain information from the planners, user agency, resource persons, anchorpersons and facilitators with a view to:

€# Study the process of planning for the teleconference.

€# Ascertain the extent of involvement and commitment of the user agency in selecting the learners/participants, preparing them better with the supply of advance information, reading materials and other relevant details, selection and orientation of the resource persons, anchorpersons, facilitators and evaluators, and supervision of the teleconference sessions.

€# Opinion of the resource persons and anchorpersons about the content and presentation, preparedness, facilities and satisfaction with their involvement in teleconferencing, problems, if any, faced by them, and their suggestions for improving the presentation.

€# Opinion of the facilitators about the selection of the learner centre, equipments and facilities and materials for doing activities at the center, orientation, satisfaction with their involvement in teleconferencing, problems, if any, faced by them and their suggestions for improving the administrative and organizational aspects of teleconferencing.

The above information should help in evaluating the impact of the teleconference, and determine factors, which contributed towards success of teleconferencing or impeded its progress.

The requisite information can be collected by :

€# Administering a set of questionnaires and/or interview schedules to the learners/participants and other respondents.

€# Holding in-depth interviews with some selected learners/participants, particularly those who were regular and took keen interest in the teleconference, and other respondents.

€# Arranging focused group discussions among the learners/participants to discuss certain important issues such as relevance, presentation techniques, interactivity, etc and the ways to improve the delivery.

€# Administering knowledge test and other tests and scales to the learners/participants. The same tests and scales as administered at the start of the conference may be repeated. Additional tests may be prepared to cover such content areas and objectives as were covered in the teleconference but were not anticipated earlier. Administering the tests and scales after the teleconference even when no such tests were administered at the start should help form an idea about its effect or impact on the learners/participants.

Methods of Monitoring and Evaluation

Basically, an appropriate mix of the following methods can be used to obtain necessary information:

- ☞ Observations at the teaching end as well as at the user ends
- ☞ Participatory Rapid Appraisal (PRA) methods
- ☞ Questionnaire surveys
- ☞ Interview surveys
- ☞ In-depth interviews
- ☞ Focused group discussions
- ☞ Case studies

Data Collection Tools

- ☞ Observation schedule and checklists for use at the teaching end.
- ☞ Observation schedule and checklists for use at the user ends/learner centres.
- ☞ Observation schedule to record the attention and interest level of the learners/participants.
- ☞ Attendance sheet.
- ☞ Proforma to obtain profile of the learners/participants.
- ☞ Questionnaires.
- ☞ Interview schedules.
- ☞ Opinionnaires.
- ☞ Knowledge and other tests and scales.
- ☞ Guidelines for interviewing planners, user department, resource persons, anchorpersons, facilitators, and participants.
- ☞ Guidelines for holding group discussions among the participants.

Some sample tools are given in the annexure to adopt/adapt for your purpose.

Data Collection Schedule/Modules

Data can be collected using the following modules:-

- Module – 1 Data are collected from the target audience through questionnaires, interview schedules and analysis of curriculum to determine their information needs, job requirements, entry-level behavior and expectations from the medium.
- Module – 2 Data are collected from the teaching end through observations. It includes information about the format of presentation, teaching methods, use of AV materials, delivery strategy, co-ordination among the resource persons, anchorperson and the producer, handling of question-answer activity, problems faced.
- Module – 3 Data are collected from the user ends/learner centres through observations. It includes attention level, viewing environment, interactivity, functioning of equipments, audio-visual quality, role-played by the facilitators, management of the sessions and problems faced.

- Module – 4 Data are collected from the learners/participants through administration of questionnaires/opinionnaires, interviews and group discussions to elicit their feedback with respect to various inputs, attainment of programme objectives and suggestions for improving the medium.
- Module – 5 Data are collected from the participants through administration of tests and scales to find out their entry-level behaviour, and effect and impact of the teleconference.
- Module – 6 Data are collected through interviews with the planners to understand the process of planning and involvement of the stake holders; from the user agency about the process of selection of the participants and preparing them to receive the lessons, their opinion about the utility of the medium and ways to improve it; from the resource persons, anchorpersons and facilitators to obtain their opinion about their orientation, preparedness and satisfaction of their involvement in teleconferencing, facilities provided, problems faced by them and suggestions about areas of improvement.

Preparation and Presentation of Report

Data collected at the pre (start), during and after the teleconference must be processed, analyzed, interpreted, presented in the form of a written report and dispatched to the concerned groups of people as soon as possible. The monitoring and evaluation effort would be a waste if it does not result in a readable report in the shortest possible time. It should particularly focus on the strengths and weak points of the conference and make specific suggestions about how to improve the sessions from all aspects.

To enhance the utility of the evaluation effort, the report may be presented and discussed in a group representing the views of all concerned in the planning, presentation and utilization of the medium followed by circulation of the summary of the report to make it a common knowledge. The draft copy of the report should be circulated earlier for corrections, where necessary.

In Conclusion

Teleconferencing is an expensive proposition. With its potential of reaching out to a large number of beneficiaries simultaneously, it can be cost-efficient if used in a systematic and effective manner. This requires constant monitoring and evaluation of the planning, presentation and utilization aspects of teleconferencing.

PRACTICAL EXERCISE

Divide the participants in small groups (not more than five in each group) .Ask different groups to prepare the data collection tools on the following aspects of teleconferencing, and present them before the entire group for discussion:

Design a proforma to obtain profile of the learners/participants

Develop an observation schedule for use at the user ends/learner centers

Prepare a questionnaire to find out the opinion of the participants about the various aspects of teleconferencing e.g. content, relevance, load, comprehensibility, attention holding capacity, language, delivery and presentation, interactivity, attainment of the conference objectives, and suggestions for improving the outcomes.

Develop an interview schedule for interviewing the planners about the process of planning, identification of themes/topics.

Sample Transparencies

Monitoring and Evaluation

- ⌘ Before Conference Project Activities
- ⌘ Pre-Conference Activities
- ⌘ During Conference Activities
- ⌘ Post Conference Activities
- ⌘ Data Collection Schedule
- ⌘ Preparation and Presentation of Report

Before Conference Project Activities

Set Broad and Specific Objectives for the Sessions through :

- ⌘ Determination of Entry-level Behaviour, Information Needs
- ⌘ Identification of Interests and Expectations of Target Learners from the Conference
- ⌘ Preparation of a Demographic Profile of Target Learners.

Use the following Research Methods and Tools :

- ⌘ Analysis of Curriculum, Tasks and Job Requirements of Learners
- ⌘ In-depth interviews with Learners, Teachers/Extension Functionaries
- ⌘ Questionnaire Surveys
- ⌘ Questionnaire in a Group Situation
- ⌘ Participatory Rapid Appraisal (PRA) Techniques

Pre-Conference Activities

Collection of Data from Participants regarding:

- ≠ Attendance Level
- ≠ Profile of Participants
- ≠ Expectations from the Conference
- ≠ Awareness about the Conference Objectives
- ≠ Receipt of Advance Information, Instructions and Relevant Study Materials concerning the Conference
- ≠ Logistics Constraints for participating in the Conference
- ≠ Current Status of Knowledge, Understanding, Skill, Attitude, Practices in Relation to the Objectives of the Teleconference

Above data to help ascertain :

- ≠ Suitability of Objectives
- ≠ Appropriate Selection of Participants
- ≠ State of Preparedness of Participants
- ≠ Suitability of Timings and Schedules of the Conference, and Logistics Problems of Participants.
- ≠ Baseline Performance of Learners

During Conference Activities

Collect Information from Participants/through Observations regarding:

- ≠ Learning Conditions and Environment
- ≠ Functioning of Equipments
- ≠ Quality of Reception
- ≠ Pattern of Delivery
- ≠ Extent and Quality of Interactivity
- ≠ Learning Behaviour of Participants
- ≠ Nature of Activities done by Participants During the Break.
- ≠ Quality of Guidance Involvement and Supervision by the Facilitators

Above data to help:

- ≠ Judge the Quality of Teleconference

Use the following Research Methods and Tools

- ≠ Observation Schedules
- ≠ Checklists to Record Observations

Post-conference Activities

Collect Information from Participants about:

- ☞ Opinion of Participants about the Session
- ☞ Gain in Learning

Collect information from Planners, User Agency, Resource Persons, Anchorpersons, and Facilitators with a view to:

- ☞ Study the Process of Planning
- ☞ Ascertain the Extent of Involvement and Commitment of the User Agency
- ☞ Opinion of the Resource Persons, Anchorpersons, Facilitator about their Level of Satisfaction and Suggestions

Above data to help

- ☞ Improve future sessions/series of conferences

Use the following Research Method/Tools

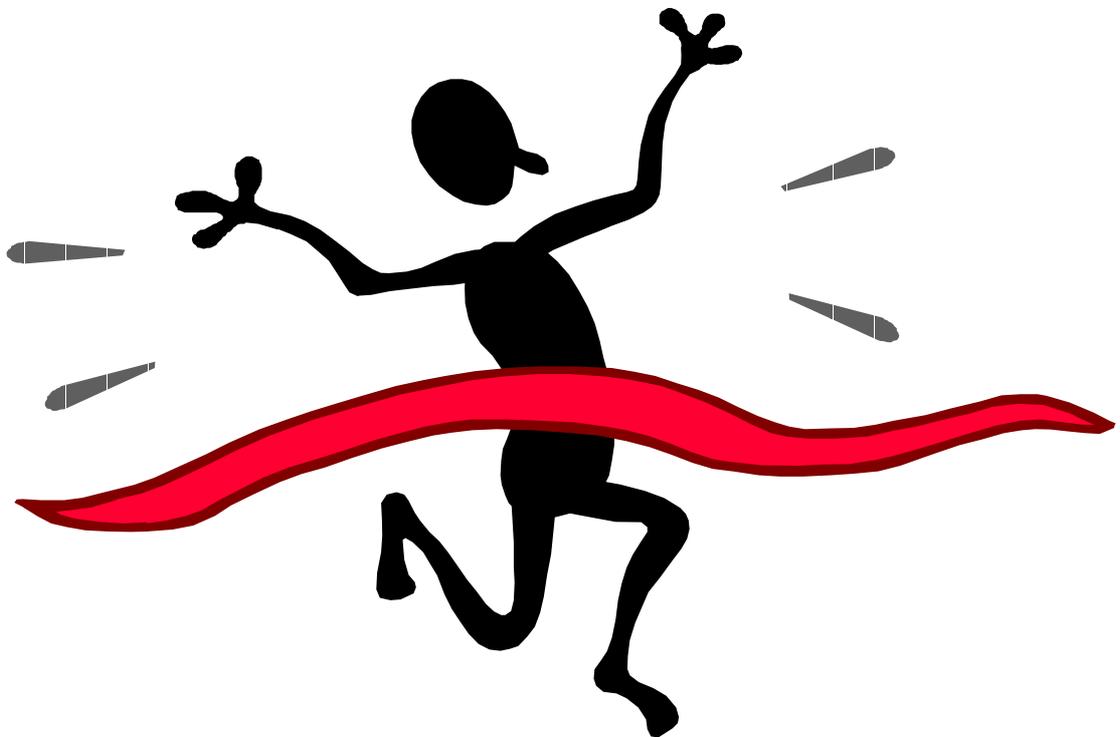
- ☞ Feedback Questionnaire
- ☞ Knowledge and other Tests and Scales.
- ☞ In-depth interviews
- ☞ Focused Group Discussions
- ☞ Case Studies

Data Collection Schedule

- | | |
|-----------|--|
| Module 1. | Data Collection from target Learners about their Information Needs and Entry Level Behaviour to Determine Board and Specific Objectives of the Teleconference. |
| Module 2. | Data Collection from Teaching End to Study the Delivery Pattern, Teaching Method and Interactivity |
| Module 3. | Data Collection from the User Ends about the Learning Environment, Learning Behaviour and Activities by the Learners, and Role Played by the Facilitators |
| Module 4. | Data Collection from the Participants to Elicit their Feedback and Suggestions. |
| Module 5. | Data Collection from the Participants to Find out the Effect and Impact of the Teleconference. |
| Module 6. | Data Collection from the Planners, User Agency, Resource Persons, Anchor Persons and Facilitators to Study the Process of Planning, Involvement and Satisfaction of the Personnel and their Suggestions. |

Preparation and Presentation of Report

The Report Should Focus on the Strengths and Weaknesses of the Entire Exercise and, in Simple Language, Provide Specific Suggestions for Improvement of Future Conferences.



Case Study – I

Use of Audio Teleconferencing in Distance Education in Australia

Alistair Inglis

Victoria University of Technology, Australia

How teleconferencing came to be used in Australian tertiary distance education

It is well known that Australia was a pioneer of distance education at the schools level through the Schools of the Air based on the Royal Flying Doctor Service. However, the Schools of the Air served primary and secondary school students. Tertiary distance education in Australia was based on a correspondence model.

Distance Education has had a long history in Australia at the tertiary level dating back to 1916. For the first fifty years the number of institutions involved in distance education was quite small and courses were delivered with a combination of lecture notes, postal library services and residential schools. In the 1960s the Australian government established a binary system of tertiary education through the establishment of degree-granting colleges of advanced education and many of these CAEs looked to distance education to expand their enrolments.

Following the establishment of The Open University in Britain, the Universities Commission held an enquiry into whether an open university in Australia would be feasible. The enquiry concluded that an open university should be established. However, due to an economic downturn the government failed to take any action on the recommendations in the report. This left the way open for a rapid expansion of distance education. In particular they began looking for ways of increasing the extent of student-student and student-tutor interaction. Teleconferencing, which was only then becoming possible because of the introduction by the then national telecommunications carrier of a point-to-multipoint conference bridging service, seemed to offer some potential in this regard.

Teleconferencing first came into widespread use in tertiary distance education in Australia in the early 1980s. Institutions that were early pioneers in use of the medium included the Darling Downs Institute of Advanced Education DDIAE, (now University of Southern Queensland), Central Queensland University, Deakin University, the University of South Australia, Mitchell College of Advanced Education (now Charles Stuart University), Adelaide College of TAFE, Curtin University of Technology, Australia.

The types of technologies used in teleconferencing in Australia

Early adopters of teleconferencing experienced considerable technical problems in using teleconferencing effectively. When teleconferencing was first introduced loudspeaker telephones that had then become available at reasonable cost from a number of telephone manufacturers were used. The loudspeaker telephones employed simple voice-activated switches to prevent feedback occurring. However, the voice-activated switches often caused clipping of the voice signal. Distance education providers had to rely on the national telecommunications carrier, Telecom, to bridge telephone lines to set up a multipoint conference call. The bridging service was reliable but many telephone lines were more than thirty years old. Consequently, the quality of telephone signals varied considerably and this affected the performance on the loudspeaker telephones.

Improvements in the technology of teleconferencing over the past two decades have removed many of the technical problems that were experienced initially. Introduction of competition into the telecommunications marketplace, together with the partial privatization of the national telecommunications carrier, has led to substantial upgrading of the switched telephone network particularly in regional areas. Specialized teleconferencing terminals such as the NEC Voice point and the Polycom range of teleconferencing terminals diminished or

eliminated the problem of voice switching. As a result, institutions have reverted back to the use of conventional teleconferencing. Today, the main difficulty that teachers experience in participating in teleconferencing is learning to modulate their voice appropriately. However, this is something that is quickly learnt with experience.

While distance education providers in Australia have mainly used the switched telephone network for teleconferencing, there was a period during which many institutions experimented with the use of satellite communications. In 1983, what was then the DDIAE became involved with the University of the South Pacific in a project teaching USP students in Fiji, Vanuatu and Tonga. The contract for the project stipulated that DDIAE would provide weekly teleconferences as part of the teaching. The USP had been using the aging ATS-1 satellite for teleconferencing and had installed satellite stations at each of its study centres. DDIAE discovered that the footprint of the ATS-1 satellite extended over the East coast of Australia. The Institute installed a satellite station and connected directly into the USPNet satellite network. It used this station to conduct the teleconferences until ATS-1 went out of service and USPNet shut down.

When Australia launched its own communications satellite, various state governments took initiatives to enable their tertiary institutions to trial the use of the satellite communications in distance education teaching and administration. The main reason why tertiary institutions were interested in satellite communications was to reduce cost. The national telephone network was a government monopoly at the time and the line charges for teleconferencing were very high. However, the introduction of competition together with improvements in technology lowered the costs of teleconferencing and satellite communication is no longer used for teleconferencing except in remote outback regions.

Some institutions engaged in trials of various systems to combine graphic with voice communication with teleconferencing. However, with the development of the Internet interest in combined graphic and voice conferencing waned.

Quite a number of institutions have moved into video conferencing from teleconferencing. However, video conferencing is a separate field, which won't be covered in this paper. In any case, video conferencing has not played a large role in distance education because the cost of the technologies required limited its availability. Where video conferencing is used in tertiary teaching at the present time it is mainly for teaching between different campuses of multi-campus institutions.

Uses of teleconferencing

Australian distance education providers follow the resource-based learning model of distance education (Inglis, et al, 2002). That is, teaching is based on the use of more or less self-contained learning packages. Teleconferencing is therefore used to support or augment the student's use of the learning package.

In the following section four different ways in which audio teleconferencing has been used in Australia are described.

a) Mainstream distance education

Some of the most interesting work in the use of teleconferencing to support distance education has taken place in Queensland.

Queensland is Australia's second largest state in terms of area. The state capital, Brisbane, is located in the South Eastern corner of the state and most of the state's universities are also located in the South Eastern corner. Small to medium sized cities are scattered along the 2,5000 kilometer Eastern coastline. Inland from the coast, there are a number of large mining towns as well as a number of large towns supporting the agricultural industries. The state is therefore characterized by a large number of centres of population spread over a very wide area. Distance education plays a particularly important role and distance education providers use teleconferencing to enable students to interact with each other and with their tutors.

Teleconferencing was introduced into tertiary distance education in Queensland in the late 1970s. What were then the four major distance education providers shared the cost of equipping a series of about eighteen study centres with loudspeaker telephones.

The establishment of the Queensland Open Learning network provided that state with a robust administrative infrastructure to provide local support for the delivery of distance education programs. The network provided study centres in major towns and cities throughout the state and each of these study centres then have been able to serve as points at which students may connect into teleconferences. This network of teleconference centres has enabled distance education providers in Queensland to provide a higher level of service for a given cost than would have been the case if students had been connected in from their homes.

Distance education providers in Australia have used teleconferencing in two main ways:

1. At the beginning of the semester and at other key times teleconferences are used to enable students to get rapid solutions to problems they may be experiencing such as failure to receive a complete set of study materials or errors in enrolment.
2. Throughout the semester teleconferences are used to support students learning by enabling students to ask questions of their teachers, discuss issues together and with their teachers, and be guided to additional learning resources.

Distance Education providers in Australia have not generally made as creative use of teleconferencing as users of online discussions are now making.

The University of Southern Queensland (USQ), which is the university that emerged from Darling Downs Institute of Advanced Education, is one of the most active users of the Open Learning Network for teleconferencing. Teleconferences were scheduled to run for an hour. Teleconferences are scheduled in the early evening. Several teleconferences can be conducted concurrently. Distance education students studying through USQ are able to request an audiotape copy of the discussion in any teleconferences that was provided for them that they were unable to participate in. More recently, teleconferences have also been placed on a streaming server immediately afterwards so that students can listen in to the teleconference at their convenience. These two services reduce the need for students to participate and consequently reduced the number of participants. Staff at USQ is given advice and training in the use of teleconferencing (Richardson, et al., 2002).

b) Use of teleconferencing for indigenous education

Australia has a significant indigenous population. While Australia's indigenous population was almost completely neglected when it came to opportunities for engaging in postsecondary education until the second half of the twentieth century, a number of tertiary educational institutions are now providing programs specifically for these people. The Australian aboriginals have an oral culture. Many aboriginal communities are located in remote areas. Both from a cultural as well as from a geographic perspective, teleconferencing has been found to be a particularly suitable medium for delivering educational programs to these communities.

The Adelaide College of Technical and Further Education was one institution that has over the years been particularly active in this particular use of teleconferencing. Like the DDIAE, the Adelaide College of TAFE used teleconferencing to link to groups of learners in study centres.

c) Use of teleconferencing to support collaborative learning

At the University of New England, a project funded by a National Teaching Development Grant awarded by the then Committee for the Advancement of University Teaching (CAUT) trailed the use of a combination of teleconferencing and voicemail to support collaborative learning groups involving students learning at a distance (Dymock and Hobson, 1998).

The project team based their rationale for the project on previous research that had shown that students were much more open in their communication when teachers were not present. The goals of the project were to assess the effectiveness of teleconferencing as a way of supporting collaborative groups.

The students involved in the trial were undergraduate and postgraduate students in three education subjects. At the beginning of each subject the lecturer responsible for subject convened an initial teleconference, which was used to explain the purpose of the discussion groups, ascertain which students wished to participate in the groups and provide advice to participants on how to use the groups. Those students who indicated that they wished to participate were then formed into groups that then continued to meet by teleconference at intervals throughout the semester.

The first teleconference was set up by Telstra's Confertel service. However, for subsequent teleconferences students dialed into UNE's conference facility.

Half way through the project, the project team added a voicemail facility to allow students to leave messages for staff and staff to leave messages for students. This provided a means for groups to seek and obtain clarification of issues that had come up in discussion without requiring the lecturer to come into a teleconference.

The series of trials were evaluated by means of questionnaires.

The majority of students who responded to the evaluation survey indicated that they found the discussions worthwhile. However, the main value of the teleconferences was seen to be in helping to break down the sense of isolation. When asked to say how the teleconferences could be improved, many of the respondents said that they thought that the teleconferences would have been more useful had the lecturer participated. Many said that they found the lack of structure of the teleconferences diminished their value.

d) Use of teleconferencing in continuing education

Teleconferencing is a medium that is very suited to continuing education and many Australian universities are very actively involved in the provision of continuing education programmes. Use has been made of teleconferencing to support such programs.

Use of teleconferencing to support continuing education in the field of nursing was discussed by Wilkin (1989). Charles Stuart University was involved in the conduct of a trial programme funded by the NSW Department of Health to provide a continuing education programme to new and experienced graduates (Hart, 1990). The programme comprised 46 teleconferences involving 500 nurses. The nurses were located in hospitals, community health centres, a regional health department, two prisons. The programme of teleconferences was developed following a survey to identify areas of interest. Conference calls were placed to participants in their workplaces and each conference involved participants in between 6 and 10 locations.

An evaluation of the programme found it to be particularly cost-effective. For many of the participants it reduced the sense of isolation as well as offering reassurance and stimulation and encouraging a sharing of concerns and ideas (Hart, 1990).

Current and likely future trends

Probably the most important factor likely to have an impact on the way in which teleconferencing is used in distance education will be the growth in Web-based instruction.

Most universities in Australia are working actively to develop their use of the World Wide Web for teaching and learning. One of the advantages of online learning is that students do not need to be available at particular times to participate in discussions. Another advantage is that a record is also kept of what has been discussed that is available for later reference. For the distance education provider, switching to online discussion can offer the opportunity to lower costs.

The statistics that USQ has been keeping shows that participation in teleconferences has been falling for the past five years (USQ Distance Education Centre, 2002). However, there are a couple of factors other than lack of time that might explain this trend. Irrespective of the true cause of the fall in participation it is to be expected that the trend to replacing teleconferences with online discussions is likely to continue. Online discussions can be more easily integrated into the overall delivery system. Another factor that is likely to hasten the trend to online discussion is the growth in international operations.

References

- USQ Distance Education Centre (2002) Telephone/Audiographic Tutorial Evaluation, Outreach Services, University of Southern Queensland, Toowoomba.
- Dymock, D. & Hobson, P. (1998) Collaborative learning through audio conferencing and voicemail — A case study. *Distance Education*, 19 (1), 157-171.
- Hart, G. (1990) Peer learning and support via audio-teleconferencing in continuing education for nurses. *Distance Education*, 11 (2), 308-319.
- Inglis, A., Ling, P. and Joosten, V. (2002) *Delivering Digitally: Managing the Transition to the Knowledge Media*, Kogan Page, London.
- Richardson, L., Dorman, M., King, S., and Fryer, C. (2002) Unpublished handout for DEC Workshop/Seminar: Teletutorials – What's in them for you and your students.
- Wilkin, C. (1989) A projected use of audio-teleconferencing in the continuing education of nurses. *Distance Education*, 10 (2), 298-307.

Case Study – II

Non-Formal Education Through Teleconferencing in Sri Lanka

Buddhini Gayathri Jayatilleke

The Open University of Sri Lanka

Teleconferencing in Non Formal Education – targeting mainly at homemakers

Background

To counter the growing menace of soap operas and other purely entertainment programmes sponsored by private television, the Television Authority of Sri Lanka called the Rupavahini Corporation started an innovative TV programme in April 2000. Entitled 'Nuga Sevena', that is, 'Shade of the Banyan Tree' in keeping with the old tradition of teaching in the open space under the shade of a large tree, it is a one-way video, two-way audio teleconferencing programme. It now reaches all TV owning homes in all parts of the Island, numbering around 2.2 million.

For five days a week, Monday through Friday, three and a quarter-hours in the morning each day, from 8.15 a.m. to 11.30 a.m. the live teleconference engages its home-based national audience for the purpose of educating them. The programme is mainly directed at the non-working women. However; retired civilians and unemployed youth are also targeted. There is evidence that this programme is more popular among rural women (59%) than urban women (40%).

Objectives

The focus is mainly on non-formal education of the women with the objective to empower them through imparting information, knowledge and developing skills.

The themes range from home and family care, nutrition, cookery, astrology, resolving conflicts and establishing relationships in the family to small income generating activities and micro enterprises.

The programme is in Sinhala language. About 13 percent of the population speaks Tamil language. However, most people in Sri Lanka understand Sinhala.

Format of Presentation

The anchorperson introduces the topics and schedule of the programme of the day. There could be eight different topics on a single day. Different anchorpersons present different themes on different days of the week to establish an association between the anchorpersons, the themes and the days. Usually, there is a guest artist who is a celebrity. The presenter introduces the guest artist and conducts a live 'chat' with him/her at the beginning of the programme. The programme is interspersed with popular songs, light entertainment items to bring in variety.

More often it is a live interview of the expert by the anchorperson. This is followed by a lively discussion between the expert(s) present in the studio and the viewers from their homes. The anchorperson moderates the discussion from the studio. In certain themes such as gardening, precoded video clips based on an interview or a demonstration or a field visit is telecast in between the live discussion in order to clarify the concepts and practices.

Viewers, wherever they are located in the Island, can telephone the Rupavahini studio on dedicated telephone lines to ask questions and get additional information and clarifications. On an average about 10-20 questions are received on telephone.

Some viewers prefer to mail their questions beforehand, which are taken up by the expert(s) in the relevant segments.

It is interesting to note that telephone calls are received from all parts of the island irrespective of the distance, and at peak hours when telephone tariff is high, indicating the popularity of the programme. At the inception of the programme the time duration was two hours. As the programme gained popularity, the duration was extended to two and a half hours and again to the present time slot of two and three quarter hours.

Evaluation

Evaluation studies have indicated that the viewers find the programme interesting and practically useful in their day-to-day activities. The opinions expressed by the viewers were that the programme helped them to

- improve their knowledge (55%)
- spend their leisure time profitably (41%) and
- find opportunities for self employment (24%) - (Audience Survey, 2001).

The programme is rated high among other programmes telecast during this time slot. Ninety one percent of the total viewers are switched to Nauga Sevana. This programme has helped wean the viewers from passive watching of purely entertainment programmes, and use their viewing time more meaningfully. Three most useful themes were cookery (74%) health discussions (65%) and handicrafts (51%).

Pays For Itself

A unique feature of this teleconference programme is that it pays for itself. It generates enough revenue from sponsorship and advertising to become a self-sustaining model for educational use of teleconferencing.

Teleconferencing in Non Formal Education – targeting at school children

Background

Encouraged by the success of 'Nuga Sevana', a similar educational television programme was initiated in April 2002 targeting at youth and school children. This is a two-hour teleconference on air for 5 days a week every afternoon from 3-5 p.m entitled "3 to 5 – Sande Nimnaya" (Twilight Valley). It is an enrichment programme mainly targeted at school children (grade V onwards) and youth but of interest to the general audience as well.

Objectives

The programme mainly focuses on confidence building among youth. The objective is to empower youth through imparting information, developing skills and competencies so that they could face the life with confidence.

The themes range from language skills, sports, marshal arts, archeology, history, appreciation of artwork and nature and health issues. Some themes enable viewers to engage in micro enterprises like motor mechanics.

The programme is in Sinhala language.

Format of Presentation

Two anchorpersons present the programme as a team. There could be six to seven different topics on a single day. The themes of the programmes vary according to the day of the telecast like in "Nuga Sevana".

To capture the interest of the viewers, some problems/questions are posed at intervals during the programme. Usually a young group of participants are invited for the programme and they participate in the quizzes. Viewers could also participate and give their answers

over the phone. The correct answers are presented either at the end of the each segment or at the end of the programme.

There are live discussions on various themes. The presentation style is similar to “Nuga sevana” and viewers can participate from their homes through telephone lines. On an average about 10-15 questions are received on telephone and about 200 through mail.

Evaluation

Evaluation studies point towards the success of the programme. Target audience rating is approximately 23 percent.

Pays For Itself

Like “Nuga Sevana”, this teleconference programme also generates enough revenue from sponsorship and advertising to become self-sustaining.

References

- Audience Survey and Research (2000) *Audience Survey - 17 - 21 July 2000, Audience Survey and Research Unit, Sri Lanka Rupavahini Corporation, Colombo, Sri Lanka*
- Audience Survey and Research (2002) *Air time Survey, Audience Survey and Research Unit, Sri Lanka Rupavahini Corporation, , Colombo, Sri Lanka.*
- Nuga sevana Audience Survey (2001) *Kurunegala District, 10-11 2001, Research Information and research and training Unit, Sri Lanka Rupavahini Corporation, Colombo, Sri Lanka*
- Research report (2003) *Audience Survey and Research Unit, Sri Lanka Rupavahini Corporation, Colombo, Sri Lanka*
- SRL TV scan (2002) *Target audience ratings for the period 23rd – 29th December 2002, Survey Research Lanka (Pvt) Ltd. Colombo, Sri Lanka*

Case Study – III

Teleconferencing in India: Rural Development

Bela Trivedi

Director, TIME Education and Research Foundation, Ahmedabad, India 380015.

Introduction

India has been using satellite technology for educational purposes since the 1970s to create awareness among the general population for socio-economic and development issues, vocational training, capacity building, in-service training of development functionaries, governance and administration, and distance education. Satellite technology was first used for broadcast television and later for teleconferencing with different configurations. The present case study deals with India's experience in using teleconferencing, particularly in its one-way video two-way audio configuration, for rural development.

The Beginning

The Indian Space Research Organisation (ISRO) is concerned with space applications for national development.

A Group constituted by the ISRO in 1991 to suggest possible new applications of satellite-based communication technologies (SATCOM) beyond broadcasting recommended promoting the use of teleconferencing networks for training and education besides several other applications.

The Development and Educational Communication Unit (DECU) of ISRO identified as the nodal agency started exploring the technical and pedagogical possibilities of the technology of teleconferencing. After a few attempts in other areas, the first modest experiment for rural development was successfully conducted in 1992 by training the trainers of Adult Literacy Programme in the State of Gujarat in collaboration with the Gujarat Vidyapeeth.

Training and Development Communication Channel (TDCC)

Between 1992-1995, DECU conducted a series of 24 experiments in the use of one-way video two-way audio teleconferencing in collaboration with 14 different user agencies in different parts of the country.

Encouraged by the success, an exclusive satellite-based channel called Training and Development Communication Channel (TDCC) was operationalised for use of teleconferencing technology in February 1995.

Later, a project on use of Satellite for Rural Development (GRAMSAT) aiming at extensive use of satellite technology for rural development all over the country was initiated.^{1*}

Spread of Network

One-way video two-way audio interactive network has witnessed phenomenal growth in the country since the operationalization of the TDCC. There has been steady increase in the number of user agencies, areas of teleconference applications, target groups, teaching ends, receiving sets, and add-on technologies.

User Agencies

Apart from different Open Universities and other Central and State Educational Institutes, which use the technology for distance education of their clientele, development

¹ Some private IT companies like Reliance, SPIC, ICICI in India also lease out up-linking facilities, but they have not shown interest in rural development, and the tariff charged by them are also comparatively much higher.

departments such as Agriculture, Forestry, Watershed Management, Education, Health, etc. of the various State governments are the major users of this interactive technology. They use the technology mostly for retraining and capacity building of their rural – based functionaries.

Women and Child Development Departments and the Panchyati Raj (rural local self – government) institutions have emerged as other users.

In many a case the technology has been made accessible to the rural population for their education, and for creating awareness among them about state sponsored development and welfare schemes.

Some state governments like Gujarat, Andhra Pradesh, Orissa regularly use the technology for smooth and effective governance at the district and block level with rural development in mind.

A number of non-government organizations e.g. Self Employed Women's Association, (SEWA) Ahmedabad Women's Action Group, (AWAG) Agha Khan Rural Support Programme (AKRSP), UNICEF, Child Relief and You (CRY), etc. use the technology to educate, up date and enhance the competency of their target populations.

In all, around 56 different user agencies use the teleconferencing technology for rural development.

Areas of Teleconferencing Applications

Major issues addressed include watershed management, social forestry, tree plantation, employment schemes, power sector reforms, disaster management, prevention of heat stroke, control of tuberculosis, and other development oriented areas.

In future, legal literacy, gender sensitivity, youth empowerment, etc. would also be taken up.

Target Groups

As with the areas of applications, the target groups have diversified to include NGOs, self-help groups, elected representatives of self – government bodies, para-medical staff, Anganwari (kindergarten) workers, the block and district level functionaries, and general masses.

Teaching Ends

Starting with DECU in Gujarat, five more institutions have set up studio and up-linking facilities. Those for rural development include the Madhya Pradesh Administrative Academy at Bhopal, Madhya Pradesh, Fly Away Terminal (FTA) and Studio at Cuttack, Orissa, Abdul Nazir Sahib – State Institute of Rural Development (ANS-SIRD) at Mysore, Karnataka and Remote Sensing and Communication (RESECO) Gandhi Nagar, Gujarat. Mobile studios and up-linking facilities are also set up at different sites as per requirement.

Receiving Ends

There has been marked growth in the number of receiving ends equipped with the Direct Reception System (DRS) television sets. It comprises a dish antenna fixed at the rooftop for direct reception of signals from the satellite. Initially installed at the district level, a number of States are now in the process of taking them to the block level in the rural areas.

With the implementation of the GRAMSAT project, availability of the receiving terminals is widening.

Add-on Technologies

The usual technical configuration comprises one-way video, two way audio with return audio from the receiving ends through normal STD telephone lines.

In addition to the STD lines, questions are now also received through fax. Computers are being used, and e-mail facilities have been incorporated at some centres.

In one of the development communications project operating in the tribal belt of Jhabua in Madhya Pradesh, where STD lines are not easily available a custom made computer called Demand Assigned Multiple Access (DAMA) has been installed at each receiving end for interactivity. DAMA uses the same satellite link for real time talk back also. The system enables the registration of a centre in the beginning of the lecture session, and the sequential asking of questions from each centre later, eliminating holding time.

The one-way video two –way audio technical configuration initially started in analog mode has been converted to digital mode for better quality.

Integrated Services Digital Network (ISDN) technology has been tested successfully, paving the way for two-way video on demand. Already the state of Andhra Pradesh is using two-way video teleconferencing in the governance sector in a big way.

Evaluation and Feedback

A number of evaluation studies have brought out the strengths and potential of teleconferencing for rural development. These include: ability to reach out to a large number of functionaries and people in remote areas, establishing rapport with the groups and making them feel connected and part of the system, speedy and cost-effective communication, and high quality training with little loss in transmission. Most trainees liked the technology as against the conventional mode of training, and demanded more such programmes for themselves.

However, not all rural development communications project using the interactive technology have met with equal success. Some have shown better performance than others. Some factors which impeded effective communication, fuller utilization and impact of the technology have been identified as under:

- ⌘ Ad-hoc planning
- ⌘ Lack of advance publicity to the programme, preparation of the learners and facilitators.
- ⌘ Deficient organization and management practices
- ⌘ Inadequate preparation on the part of the resource persons,
- ⌘ Lack of co-ordination among the resource persons, programme producers and the anchorperson.
- ⌘ Lack of software training to all concerned and hardware training to facilitators for operation and maintenance of equipments.
- ⌘ Predominant use of lecture method in place of interactive formats and techniques of presentation.
- ⌘ Lack of systematic record keeping, monitoring, process documentation and evaluation

Promising cases

Some successful cases of the use of the technology for rural development are described as under:

Satellite based Teleconferencing for Training and Development by Remote Sensing and Communication (RESECO), Gandhinagar, Gujarat

Started in 1995 at 25 district level locations with the help of DECU/ISRO, the State Government has since set up its own teaching end comprising studio and up linking facilities at RESECO, Gandhi Nagar. The receiving facilities have since been extended to 150 locations and more sets are being set up at the block level.

The teleconferencing technology is widely used in the State in the areas of health, agriculture, women and child development, rural development, Panchyati Raj, etc.

The Departments of Health, Agriculture, Forest, Panchyati Raj, Rural Development, Food and Civil Supplies, Women and Child Development, Education, Gujarat State Council of Educational Research and Training, Sainik Welfare Board are the regular users.

A unique feature of the project is that the facilities are used by several non-government agencies like the SEWA, AKRSP, and AWAG. Other user agencies are Gujarat Agriculture University, Bahasaheb Ambedkar Open University, and Technical Education through Satellite.

An integral component is E-governance for smooth and effective administration by the State government.

Return audio is by using STD telephone lines. ISDN lines are now being used, starting with Rajkot district. Apart from this, the State Government has its own network with return audio and video through web camera that is used for governance and administrative purposes.

Satellite Communication for Rural Development by Abdul Nazir Sahib – State Institute of Rural Development (ANS-SIRD) SATCOM Centre, Mysore, Karnataka

The project started as early as 1995 using ISRO facilities at Bangalore, and later from DECU at Ahmedabad. Subsequently, five State Departments including Rural Development, Agriculture, Education, and Health together took the major initiative in setting up its own studio and up-linking facilities the ANS-SIRD SATCOM Centre at Mysore in 2001.

The project covers all the 20 districts of the state. Receiving sets have been provided at the District Institutes of Educational Technology. It is proposed to expand the facilities at the block level by installing 259 additional DRS TV sets all over the State.

The switch over of the system from analog to digital is in process.

The project aims at retraining of rural functionaries, and increasing accountability and transparency of administration.

GRAMSAT – North-Eastern Region by North- Eastern Space Application Center, Shillong

The North Eastern Region in the country, comprising seven states namely, Assam, Arunachal, Meghalaya, Manipur, Mizoram, Nagaland and Tripura, is characterized by geographically difficult terrain. Much of the area has tribal predominance. The North Eastern Council as the apex body looks after the development of the region.

Social, economic, political and cultural conditions in these States demand more efforts for development. The region faces some peculiar complex problems like insurgency, security threats, drug trafficking, etc.

The project initiated in 2001 aims at reaching out remote areas in the region for providing useful, relevant information for development. Equally important objective is to facilitate co-ordination, reviewing, monitoring and other administrative functions between the States. E-governance for smooth and effective governance by the State governments is one of the key concepts of this project.

12 DRS sets have been installed at the district level on an experimental basis in Meghalaya. With the setting up of the teaching end at the North Eastern Space Applications Centre, Shillong, Meghalaya, interactive training centers are being established in other states also.

Detailed information on these and other rural development projects using the interactive satellite technology can be had from the author. Her e-mail address is sattvik@yahoo.com/timeahmedabad@rediffmail.com

Case Study – IV

Teleconferencing in India : Teacher Training

B. Phalachandra

Reader, Regional Institute of Education, Mysore, Karnataka, India - 570 006

Introduction

India faces the challenge of regularly retraining a large number of teachers spread over vast geographical areas in different content areas and pedagogical aspects in the shortest possible time. It is not possible to cope with the numbers through institutional training alone. There is also quality dilution and transmission loss when the training input finally reaches the teachers through various levels from the master trainers through key resource persons and down to the trainer resource persons.

To meet the twin challenges of reaching out to a large number of teachers with quality training, different educational agencies in the country have been organizing satellite-based interactive teacher training programmes. The present write-up discusses the experiment conducted by the National Council of Educational Research and Training (NCERT) to examine the feasibility of using one-way video two-way audio teleconferencing technology as an alternative to the conventional cascade approach to train relatively large number of primary teachers in mathematics in the Southern state of Karnataka. The study concludes by highlighting the potential of the technology in teacher training, and lessons learnt in this regard.

Objectives

The objectives of the experiment were to:

- ⌘ Familiarize teachers with minimum levels of learning in the six selected topics in mathematics suggested in the form of competency statements to be attained by the children at the primary level.
- ⌘ Encourage teachers to adopt child-centered and activity-based approach to teaching.
- ⌘ Develop a package of multimedia materials including print, video programmes and activities.
- ⌘ Stimulate interactivity and higher level learning skills among the participants.
- ⌘ Assess the effectiveness and to gain insight into the organizational, managerial and technical constraints and problems in the use of interactive technology in theme-based teacher training.

Materials

The educational multimedia package comprised :

- ⌘ Self-instructional print materials on the selected six topics; each of 5-6 pages. The contents in the self instructional materials included
 - ∅ Introduction to the activities of the day.
 - ∅ Listing of competency statements of the day's concept/theme.
 - ∅ Teaching methodology/activities.
 - ∅ Raising questions regarding teaching competencies.
 - ∅ How evaluation could be done to ascertain the understanding/development of competencies among the students.

- ∅ Listing of common errors committed by students in learning of the concept/competency and asking the participants to list some more based on their class-room experience.
- ∅ Questions, the participants would like to ask/clarify with respect to:
 - £ Content
 - £ Methodology
 - £ Evaluation of the students
- ≠ Interactive presentation by the resource persons using video and other audio-visual materials. The video clippings (each of 5-10 minute duration) were used mainly to show how a teacher normally handles the topic in the actual classroom situation. In all, 12 video clippings (about two per theme) were developed. The total duration of the video inputs was 90 minutes. Charts depicting various examples were also used for enriching live presentations
- ≠ Interaction through telephone and fax.
- ≠ Individual and group activities at the start and during the breaks (off AIR sessions)
- ≠ Self-instructional guides for doing activities (Activity Sheets)
- ≠ Intervention (supervision, guidance and discussion) by the facilitators

System Configuration

The system had three major components namely, teaching end, learner centers and space segment.

Teaching End

The TV studio with an Uplink Transportable Remote Area Community Terminal (TRACT) located at the Indira Gandhi National Open University (IGNOU), New Delhi functioned as the teaching end. The resource persons used the studio to make audio-visual presentations and also respond to the queries by the learners. Three exclusive telephone lines and a separate line for the fax were provided at the studio for receiving the calls.

Learner Centres

The District Institutes of Education and Training (DIETs), one in each of the 20 Districts of the State, served as the learner centers. Each centre was equipped with a Direct Reception System (DRS) TV Set, Telephone with STD connection. The centers interacted with the Teaching End by means of a voice link through STD telephone lines and Fax.

A room equipped with furniture (tables and chairs) for about 35-40 participants to assemble and participate in the conference was provided at each centre.

Space Segment

An extended C-Band Transponder of the Indian Satellite (INSAT) 2C was used for transmission of the audio-visual signals.

Stages of Planning and Implementation

The following activities were undertaken to plan and implement the programme.

- ≠ Discussion with Teacher Educators, Distance Educators and Media Experts to plan the strategy of implementing the programme.
- ≠ Discussion and co-ordination with the networking institutions such as the Indian Space Research Organisation, IGNOU, NCERT, Directorate of State Educational Research and Training, State Institute of Rural Development and the DIETs.
- ≠ Analysis of the curriculum and identification of the hard spots, themes and topics in Mathematics
- ≠ Development of the training curriculum and design

- ⌘ Identification of eight resource persons (expert teachers/teacher educators) for lesson development and presentation
- ⌘ Organisation of workshops of teachers, media experts, and teacher educators for finalizing video inputs
- ⌘ Development of video clippings/programmes, previewing and packaging
- ⌘ Development of self-instructional materials (study materials)
- ⌘ Development of activities, activity sheets and self instructional activity guides
- ⌘ Development of research and evaluation tools
- ⌘ Printing and distributions of various materials among learner centers
- ⌘ Orientation and training of the selected resource persons
- ⌘ Orientation of the principals of the DIETs to carry out their administrative and academic responsibility in the context of teleconferencing.
- ⌘ Orientation and training of the facilitators. About 60 faculty members of the DIETs were trained to take this role (two per center).
- ⌘ Orientation and training of 20 investigators/observers (one per center)

Training Curriculum

As a result of discussion with the teachers and teacher educators, hard spots in the curriculum were identified and weightage in terms of time was also worked out.

Topic	Transaction Time
Minimum Levels of Learning	2 hrs. 15 mnts
Place Value	3 hrs. 45 mnts
Addition	6 hrs
Subtraction	6 hrs
Multiplication	6 hrs
Division	5 hrs
Total time of transaction	29 hrs

In each topic, important issues were identified. For example, in case of ADDITION, the following issues were taken up :

- ⌘ Minimum Levels of Learning concerning addition.
- ⌘ Steps involved in teaching addition.
- ⌘ Addition symbol and addition of single digit numbers.
- ⌘ Addition of two digit numbers with and without carrying extendable to three digit numbers.
- ⌘ Activities to facilitate teaching addition.
- ⌘ Life related situations in addition.
- ⌘ Analysis of common errors committed by children in addition and remedial teaching.
- ⌘ Evolving basic table in addition.
- ⌘ Strategies for evaluating child performance.

Training Design

It was a 5-day training programme from 9.30am to 5.00 pm. There were two sessions per day, one in the forenoon and the other in the after noon. Out of six training hours available per day, 2½ hours were utilized for "Off-Air" individual and group activities and 3½ hours "On- Air" for teaching-end initiated activities such as presentation and demonstration, question –answer, etc.

Each session started with study of self-instructional print materials (5 to 6 pages) followed by presentation and demonstration by resource persons. The demonstrations were either pre-recorded or live. In each session, 2 to 3 experts moderated by an anchorperson made presentation and interacted with the participants.

The presentation was followed by interaction in the form of question-answer or sharing of experiences and suggestions through telephone and fax. The fax machine was not provided at the learner centers. The facilitators were, however, open to use the facility available in the market on payment basis. Provision was also made for the participants to reply to queries of their counterparts of other centers.

In all, about 250 telephone calls and 210 fax messages were received at the teaching end.

Individual and group activities at the learner centres guided by the facilitators followed the interaction session. The number of activities varied from 3 to 6 per theme and provision of 30 to 40 minute time was made for completing the activities.

Finally, another interaction session with the resource persons was held on issues relating to the individual and group activities carried out by the participants.

Sample design of a typical session as it emerged is shown as under :

Inputs	Time slot (in minutes)
Briefing by the facilitator and study of print material (OFF AIR)	60 minutes
Introduction to the topic & panelist (ON AIR)	5 minutes
Presentation & Demonstration (ON AIR)	10-25 minutes
Panel Discussion (ON AIR)	5-10 minutes
Participant's interaction with panelists (ON AIR)	25-40 minutes
Summing up and Instruction to Group	5-10 minutes
Activities (ON AIR)	
Individual and Group Work (Off AIR)	70 minutes
Participant's interaction with panelists (ON AIR)	20-25 minutes
Summing up (ON AIR)	5 minutes

Provision was also made on the last day to obtain feed-back from the participants and facilitators about the effectiveness of the training methodology, user friendliness, strengths and weaknesses of the system.

Monitoring and Evaluation

The evaluation of the experiment was conceived as a continuous and concurrent activity of the programme. For this purpose, four sets of questionnaires were developed to get feedback from the participant teachers, and observers/facilitators. These comprised (i) Achievement Test, (ii) Observation Schedule, (iii) Opinionnaire-cum-Rating Scale, and (iv) Diary. A copy each of some of the research tools used in the study are given in the appendix.

Conduct of the Programme

All the required preparations such as development of print and video materials and orientation of the personnel were completed a fortnight before the start of the programme.

The dry run of the programme was done a day before to check the working of the equipments, reception of the signals and simulate the training programme including administration of evaluation tests.

The actual training programme was organized for five days from 17-21 February, 1997

Programme Outcomes

More than 700 primary teachers including about 52% female teachers were trained in the activity-based teaching of mathematics at the primary level. A majority of the participants were from state-run rural schools. .

In addition, a good number of other people such as pre-service student teachers in the DIETs, secondary teachers, functionaries of the State Department of Education and parents benefited indirectly from the programme.

There was significant gain in the achievement (knowledge and understanding) of the participants in all the six themes transacted during the training programme as shown in the Table 1.

Table 1: Significance of means differences in achievement of participants in different themes

Theme	No. of items	Means		Standard deviation		t-ratio	P
		Pre	Post	Pre	Post		
Minimum Levels of Learning	10	5.40	7.02	2.09	1.99	15.86	.000
Place Value	08	4.76	6.41	1.45	1.39	21.17	.000
Addition	10	2.28	5.37	1.49	2.04	29.03	.000
Subtraction	10	5.37	6.78	1.70	1.84	15.33	.000
Multiplication	10	6.02	7.25	1.55	1.44	16.62	.000
Division	10	5.16	6.59	1.83	1.89	14.91	.000
Total	58	28.99	39.41	7.02	8.34	26.61	.000

A majority of the participants (90%) found the training inputs very useful or useful. The most useful input being question-answer sessions followed by interactions with facilitators and study of reading materials.

The performance by the resource persons and their responses to the queries were found to be satisfactory.

Systematic observations made during the programme indicated a high degree of motivation among the participants. They participated with enthusiasm in group activities and interactive sessions.

In Conclusion

The experiment demonstrated the effectiveness of one-way video two-way audio interactive technology to train a large number of primary teachers in the theme based programmes like mathematics. The programme infused enthusiasm and enhanced self-esteem among the participants. They expressed satisfaction, and preferred the technology to the conventional mode of teacher training.

Attention paid to the planning of each session, development and distribution of materials orientation of personnel and visually rich presentations contributed to the success of the experiments.

Getting the observers' report each day by fax to get to know what actually happened in each centres so as to make changes in the next day schedule, if required, was a great help.

Extensive use of graphics with titles such as "your observation is right", "we are hearing, please speak", "give chance to other centres", "yes", "no", "thanks for your suggestion", "no more questions, please", saved valuable time for more meaningful transactions.

The experience gained in the programme provided an additional input to the implementation of the Distance Education Programme (DEP) in the on-going comprehensive District Primary Education Programme (DPEP) in the country, and in planning and implementing more than 80 similar training programmes for different target groups in about 15 states.

Reference

Satellite based primary teachers' training vis-à-vis other models, published in *Staff and Educational Development International*, 2001, 5(2).

Detailed information on the programme can be had from the author. His e-mail address is Bphalachandra@yahoo.co.in or bphala@rediffmail.com

Appendix 1

Opinion/Reaction Scale for Obtaining Feedback of Participants on Different Aspects of Training Programme

S.No.

S.No.		Very useful	Useful	Not useful
1.	Usefulness of Inputs			
	Reading material			
	TV Presentation and Demonstration			
	Panel Discussion			
	Question-Answers			
	Group Activity			
	Discussion with Facilitators			
		Yes	No	No response
2.	Whether reading material was complete and covered all the themes transacted ?			
3.	Did you find any difficulty in understanding the concepts explained in the reading material?			
4.	Could you go through the material in the given time ?			
5.	Were there any lapses errors in the TV presentation and corresponding demonstration ?			
6.	Was TV presentation interesting ?			
7.	Was the language used in TV presentation			

- clear?
8. Was the speed of TV presentation alright ?
 9. Did the panelists consolidate TV presentation and demonstration ?
 10. The time allotted for panel discussion

More than sufficient	Just sufficient	Not sufficient	No response
----------------------	-----------------	----------------	-------------
 11. The sound/voice on telephone was

Very clear	Clear	Not clear
------------	-------	-----------
 12. Give your comments regarding the questions asked by participants – questions were relevant

All the Most of time	Some the time	Not at all time
----------------------	---------------	-----------------
 13. The time allotted to question-answer Session was

More than required	Sufficient	Too less
--------------------	------------	----------
 14. Give your comments regarding the role of facilitators

Very helpful	Helpful	Not helpful
Agree	Undecided	Disagree
 15. The information provided in the programme was useful
 16. The quality of TV presentation was
 17. The sound was clear
 18. The panelists were knowledgeable and had a command on the subject
 19. All primary teachers should be given provided training similar to the one given to us
 20. Training through teleconferencing programme is better than face-to-face training

Appendix 2

Observation Schedule
(To be filled in by the Investigator)

Dates				
01.	Strength of participants present during the session on presentation of the report of previous day work. (This is not applicable on the first day) General comments, if any	Almost all	A few	Very few
02.	The way the facilitators introduced days programme. General comments, if any	Good	Average	Not good
03.	Distractions noticed during telecast. General comments, if any	Yes	No	
04.	Strength of participants who could watch TV without any difficulty. General comments, if any	All of them	Few of them	Most of them
05.	Quality of sound of TV telecast. General comments, if any	Clear	OK	Not clear
06.	Strength of participants who watched TV panel discussion with attention/concentration. General comments, if any	Almost all	Few	Very few
07.	Gender-wise opportunities provided during group activities and question answer session. General comments, if any	Mostly male teachers	Mostly female teachers	Equal opportunities to both
08.	Telephone worked effectively. General comments, if any	Yes	No	

09.	Panelists' response to participants' General comments, if any	Very Satisfactory	Not satisfactory	questions were satisfactory
10.	Enthusiasm among participants during question answer session were enthusiastic. General comments, if any	To a great extent	To some extent	Not at all
11.	Group activities carried out by participants. General comments, if any	All	Few	Not done
12.	Panel discussion was General comments, if any	Not useful	Useful to some extent	Very useful

Appendix 3

Daily Diary
(To be filled by the Investigator)

Name of the Centre		Date	
Session		Morning/Afternoon	

Record your expectations and actual achievements in brief with reference to each of the major themes discussed during the session.

--

Appendix 4

Information Schedule
(Use of Telephone)

NAME OF THE CENTRE		DATE	
SESSION		MORNING/AFTERNOON	
TOPIC			
1) Time of dialing			
2) No. of attempts made to get the telephone line of getting connected			
3) Total duration (in minutes) of asking questions/comments/observations			
4) No. of questions asked			
5) No. of observations/comments made			
6) No. of participants who could speak on phone			
7) No. of facilitators who could speak on phone			
8) Time by which the telephone was disconnected			
9) Write down in brief the questions/observations made by participants on telephone			
10) Write down in brief the questions/observations which the participants wanted to ask, but could not			
11) General comments, if any, on the question-answer segment.			

Appendix 5

Activity Sheet
GROUP WORK
SUBJECT-SUBTRACTION

CENTER'S NAME

DATE

MEMBERS (NAMES) IN GROUP

Please discuss the following in your group and provide the consolidated response.

Here are some subtraction problems done by some students. Identify the errors that have been committed by the students and also suggest remedial measures to help them

- | | | |
|-----|--|---------------------------------|
| i) | 25
7
<hr style="width: 100px; margin: 0 auto;"/> 22 | Errors

Remedial Measures |
| ii) | 203
14
<hr style="width: 100px; margin: 0 auto;"/> 191 | Errors

Remedial Measures |

What other types of errors are usually committed by students in your class while doing subtraction problems? Mention with examples.

In today's television lesson on subtraction while subtracting 19 from 37, 3 packs of 10 sticks each and 7 individual sticks were used. Is it appropriate to use beads or spike abacus instead? Do similar subtraction problems using three kinds of subjects in your group and describe your experience in the space given.

Case Study – V

Teleconferencing in India : Distance Education Initiatives in the District Primary Education Programme

Compiled by **Jagdish Singh**,
Consultant, CEMCA, New Delhi

Introduction

In keeping with the Constitutional Directive under Article 45 of the Constitution, providing basic education (Classes I to VIII) to all children in the age group 6-14 has been a top priority and a challenging task for the country. Various policies and schemes were launched by the Central and State governments since independence to achieve the target. A comprehensive programme called the District Primary Education Programme (DPEP) was taken up in 1994 for the same purpose. The DPEP differs from other programmes in so far as it adopts a holistic approach with a number of areas of intervention including distance education to realize the ultimate goal of Universal Elementary Education.

As a major input to the training initiatives, the Distance Education Programme (DEP) was launched in 1997 as an Indira Gandhi National Open University (IGNOU)- National Council of Education Research and Training (NCERT) collaborative project and was placed in IGNOU for its operation. The DEP has been in operation in 18 States. The major emphasis is to strengthen the on-going training programmes for teachers and other functionaries by providing distance learning inputs and materials. The programme intends to evolve a sustainable system of in-service training linked to improve the effectiveness of the teaching-learning process in the primary schools and meeting the social demands for universalisation of primary education in the country.

The present case study describes the experience gained in the use of teleconferencing as an input of the DEP programme in the Eastern State of Orissa.

Objectives and Thrust Areas of DEP-DPEP

DPEP aims at attaining the following objectives:

- ☞ To provide technical support in designing, developing, producing and delivering distance learning inputs and materials for training primary education personnel.
- ☞ To build capacity among institutions and people at national, state, district and sub-district levels in designing, developing, producing and delivering distance learning inputs and materials.
- ☞ To assist in reducing transmission loss by suitable Distance Learning interventions, thereby increasing consistency and quality of training efforts
- ☞ To develop materials and organize training inputs for selected district level personnel.
- ☞ To assist in augmenting the existing Educational Management Information System to incorporate data-base related to training.
- ☞ To develop a mechanism to assess trainee performance for providing credits leading to certificate.

To major thrust areas in DEP are :

- ☞ Development of
 - Self-instructional print materials
 - Video programmes

Audio programmes, and

Radio programmes

- ☞ Radio/video script writing
- ☞ Teleconferencing
- ☞ Orientation of the District Institute of Education and Training (DIET) Block Resource Centre (BRC) and Cluster Resource Centre (CRC) personnel and other resource persons in conducting teleconferencing.
- ☞ Capacity building of personnel in DIETs and the State Council of Educational Research and Training (SCERT) in conducting evaluation and research activities.

Initiation of DEP in Orissa

In an effort to finalise detailed State and district plans for DEP interventions in the DPEP states, two national level technical workshops were held. The first workshop was conducted at Mumbai from April 29 to May 2, 1997 and the second workshop was held from 19th – 21st June 1997 at New Delhi.

This was followed by a series of State level planning meetings with the following activities.

- ☞ Drafting a comprehensive five year strategy plan of DEP keeping in view the State DPEP Action Plan
- ☞ Preparation of annual action plans with schedules of activities including methods and procedures for implementation and budget allocations for each year.
- ☞ Creation of a core group for technical support

The guidelines facilitated the State efforts in developing strategies for capacity building and production of distance learning materials for effective use in the on-going training programmes in the State. The following stages had been envisaged.

Preparatory Stage

Preparatory workshop for development of distance learning materials and multi-media packages.

Training of Script Writers and Script Writing

- ☞ Training-cum-development workshop for audio script writers.
- ☞ Training-cum-development workshop for video script writers
- ☞ Training-cum development workshop for self-instructional print materials.

Preparation of Scripts for Production

- ☞ Audio-workshop for finalisation of production scripts.
- ☞ Video-workshop for finalisation of production scripts for video programmes
- ☞ Workshop for finalisation of the self-instructional print materials.

Production

- ☞ Production of distance learning materials and multimedia packages.
- ☞ Duplication and Dissemination of Distance Learning Materials and Packages
- ☞ Delivery Strategies for Distance Learning Materials, and
- ☞ Monitoring and Evaluation

Composition of State Team for DEP

At the national level, DEP has a separate office and organisational structure of its own within the framework of IGNOU to promote, stream line and coordinate distance-learning activities in the DPEP States.

The State Project Office of the DPEP is the state level nodal agency and is responsible for all activities including distance education in the State. It has close linkage with DEP, IGNOU, NCERT and obtains expert support for the development and implementation of the training programmes. The DIETs, BRCs and CRCs also act as the district, block and cluster level agencies to carry out the support activities.

To coordinate DEP activities in the overall scheme of the DPEP, Distance Education Co-ordinators (DECs) are appointed and placed under the authority of the Project Director. In Orissa, two DECs are in position.

Formation of State Resource Group on DEP

The State Resource Group on DEP is a composite body consisting of faculty members of different teacher training and research institutes of the State. The Group undertakes various programmes under DEP including planning and preparation of materials and giving advice for implementation of the DEP activities. It also reviews progress of activities and forwards Annual Work Plan and Budget for consideration and approval of DPEP authorities, and ensures sustainability and inclusion of the activities in the State budget.

DPEP Support to DEP

The State Project Office extends financial support for the DEP specifically for the following:

- Printing and supply of materials
- Training of facilitators and panelists for tele-conferencing
- Expenditure on tele-conferencing at the learning end
- Production of Radio programmes
- Production of Television (Doordarshan) programmes

Capacity Building

DEP-DPEP has been making persistent efforts for capacity building of primary school teachers and other functionaries in the development of learning materials in various areas. The emphasis is on meeting the district specific needs through learning materials inputs in the form of print, audio, video and teleconferencing.

Development of Self Instructional Print Materials

Three volumes of Self Instructional Print Materials entitled "EKALAVYA" were developed in various workshops for content enrichment of primary school teachers in mathematics, vernacular language and environmental studies. The development of the materials was based on prior identification of the hard-spots in the competencies and related content areas.

Development of Audio Programmes

35 scriptwriters were trained in audio script writing and editing in a workshop mode. They developed, reviewed and finalized eleven audio scripts for production.

In addition 13 radio scripts were developed on content and contextual issues. Radio programmes based on the scripts were produced and broadcast by the All India Radio,

Cuttack as a part of the DPEP activities. It included two phone-in programmes, one radio bridge programme on the national network and six programme in the two tribal dialects.

Video Programmes

In a workshop, eight video programmes already available with the State Institute of Educational Technology were adopted, modified and revised for the purpose of the DEP. The programmes were used in the teacher training programmes. The copies of the video cassettes were sent to the districts for their use.

Subsequently, in another workshop eight additional video scripts were developed on child-centered education through activity-based classroom transaction.

Tele-conferencing

Teleconferencing is, perhaps, the greatest achievement made in the Distance Education Programme of the DPEP, which has made significant impact on capacity building, providing support to training inputs, and sharing ideas and information in an interactive mode.

Teleconference programmes had been planned on regular monthly basis. Twenty one programmes of the different duration of 1 – 3 days as shown in the accompanying list have been telecast with facilities made available through Orissa Gramsat Pilot project at FTI Studio, Cuttack and learning centres situated at the DIETs/DRDA Conference halls in the district headquarters. These programmes were planned and conducted in collaboration with IGNOU, New Delhi. It has been possible to reach out to more than 23,000 teachers, parents and other functionaries concerned with primary education in the State for their orientation and training and sensitizing them on various issues.

In order to organize the teleconferencing programmes effectively, fifteen orientation programmes and workshops were organized for the facilitators, the resource persons and other district personnel and for the development of the learning materials for academic support to the learners/participants.

Feedback Study on Teleconferencing

An evaluative study was taken up with a view to assess the strengths and weaknesses of conducting training through tele-conference programmes. The study was undertaken for the tele-conference programme on "Universalisation of Primary Education in the Context of Girl Education" held on 19 - 20 June. 2001.

The major findings are:

- (i) Participants were enlightened about the various issues of primary education concerning girl children.
- (ii) Participants gained maximum knowledge about the special strategies to be adopted for tribal areas in the context of girl child education, problems of girl children, and formation of Mother Teacher Association (MTA).
- (iii) Participants suggested similar tele-conference programmes on role of Mahila Mandals (Women's groups), role of teachers on girl education, vocational training to the girl child and training of MTA.

Other findings :

- ⌘ The participants expressed satisfaction over the language used by the panelists in delivering the content areas.
- ⌘ Anchorperson presented the sessions in a well-structured manner.
- ⌘ The panelists had good expertise in the content areas were quite competent in answering the questions.

In Conclusion

DPEP was launched in the country in 1994 to address three pivotal and inter-related issues of access, quality and equity in primary education in a holistic manner.

DEP plays a major role in achieving the objectives of DPEP through capacity building in distance mode of delivery, production and dissemination of distance learning materials, and sharing of information and training through interactive media.

The most notable achievement in the DEP in Orissa has been the training through tele-conferencing to reach out to a large group of target audiences. That the technology has been well received by the participants is reflected in their interactions during the programmes and feed-back comments.

Resource Materials

This write-up is based on the Report entitled 'Distance Education Initiatives in District Primary Education Programme, Orissa, (India) 2003, published by the Project Officer, DEP-DPEP, IGNOU, New Delhi.

List of Teleconference Programme

S.No	Title of the Programme	Period	No. & Nature of participants	Outcomes
1.	Activity based Padagogy	14 - 15 January 2001	360 BRG, BRCCs DIET faculty	Teacher benefited on activity-based transaction of curriculum
2.	Academic support system	31 st October - 1 st November, 2000	399 BRCCs, CRCCs, S.I. of Schools	Role and functions in providing academic support to primary teachers
3.	Curriculum and textbooks for primary schools	22 nd January 2001	692 teachers, parents educationists and NGOs	Opinions received for the development of new textbooks with activity-based teaching learning process
4.	Tribal Education in Orissa	5-6 February 2001	716 D.I. of Schools, DIET faculties, CRCCs, Teachers	Orientation of planning team in the district, participatory planning process
5.	Tribal Education in Orissa	21-22 March 2001	640 Teacher, TWR, Tribal leaders, S.I. of Schools, facilitators, D.I. of Schools. DPCs Nodal Officers	Orientation of teachers, parents, tribal leaders, administrators on the specific needs and process of education of tribal children
6.	Alternative Schooling in DPEP Orissa	27 th April 2001	350 teachers, BRCCs, CRCCs. A.S. Instructors and VEC members	Orientation on Alternative Schooling as a community venture in providing access to out-of-school children.
7.	Sharing of finding of mid-term Assessment Survey conducted in DPEP districts	28 th April 2001	337 teachers, BRCCs, CRCCs, S.I. of Schools, DIET faculty members	Sensitized on the finding of MAS and its relevance on enhancing learning achievement
8.	Integrated Education for the disabled in DPEP, Orissa	28 th June 2001	412 persons including IED, Tribal and Gender Coordinators, teachers and parents	Sensitized on various efforts made under IED programme

S.No	Title of the Programme	Period	No. & Nature of participants	Outcomes
9.	Education for girl children	19 - 20 June 2001	729 persons including Gender Coordinators, members of MTA and Parent Teacher Association (PTA), Teachers, BRCCs, CRCCs and Tribal Coordinators	Oriented on different strategies adopted for girl children in Orissa for universalisation of primary education
10.	EGS and AIE in Orissa	28-30 June 2001	3750 participants including Sarpanchs, Village Education Committee (VEC) members, Non Government Organisations (NGOs) and Govt. Officials	Sensitized regarding the provisions of EGS & AIE
11.	EGS & AIE in Orissa	30-31 July and 1 st August 2001	794 participants including S.I.s of Schools, VEC members, volunteers and NGOs	Sensitized regarding the management, structure, academic design of EGS & AIE
12.	Management Information System (MIS) for effective planning	28-29 August, 2001	548 participants including D.I.s of Schools, BRCCs, CRCCs, DIET faculty members	Exposed on data-based planning process using data from DISE, cohort analysis etc.
13.	Community Mobilisation programme	10-11 September 2001	870 participants including D.I.s of Schools and S.I.s of Schools, Block Development Officers(BDOs), CDPOs, DWOs, Anganwari Workers (AWWs), NGOs, parents and Sarpanches of 16 DPEP districts	Sensitized regarding the mass community mobilization programme NINAD –II (2001)
14.	District information System for Education in DPEP and Department for International Development (DFID) districts of Orissa	15 th October 2001	543 S.I.s of Schools, D.I.s of Schools, BRCCs, CRCCs & Headmasters.	Oriented in the revised format for collection of educational data from district level.
15.	EGS & AIE in 8 Non-DPEP districts of Orissa	18 – 20 October 2001	1258 Govt. Officers, VEC members, NGOs, Teachers, Headmasters, S.I.s of Schools, D.I.s of Schools, Collectors and DIET faculty members	Sensitized regarding the implementation of EGS and AIE in the non-DPEP districts
16	Orientation to members of schools committee for effective school management	16 – 29 November 2001	6572 no. of VEC members, PRI, NGO, S.I.s, D.I.s, BRCCs, CRCCs, DWO, AWW.	Exposed to the roles of School Committees (VECs) in management of primary schools
17	District Planning for the year-2002-2003	8 th April 2002	400 numbers of BRCCs, CRCCs, D.I.s, DIET faculty	Oriented on development and effective planning at district level, block level and village level
18	VEC training on effective school management	18 – 25 April 2002	1760 VEC members, Presidents, S.I.s, D.I.s. AWWs	Sensitized on community ownership for effective school management (Ama School)
19	Sarva Siksha Abhiyan- SSA (Education for All) in Orissa	18 th September 2002	1115 participants: DWO, AWW, Lady Sarpaches, NGOs, SIS, DIS, CDPO, PRI	Sensitized regarding the concept, objectives and implementation of Sarva Shiksha Abhiyan in Orissa

S.No	Title of the Programme	Period	No. & Nature of participants	Outcomes
20.	Implementation of Educational Management Information System (EMIS)	28 th November 2002	835 participants including BRCCs, CRCCs, S.I.s of Schools, D.I.s and DIET faculty members	Oriented for the implementation of Educational Management and Information System in the expansion and SSA districts.
21	National level programme on SSA at EMPC Studio, IGNOU Bhubaneswar	3 rd April 2003	15 participants including State Project Director, Director, Stae Institute if Educational Management and Training (SIEMAT), Addl. Director (Planning), Director, TE & SCERT, Director, IGNOU Regional Centre, Bhubaneswar and other high level State Officers	Review and interaction on implementation of SSA programme by the state functionaries.

References

- Anderson, J. S. (1987) A Historical Overview of Telecommunications in the Health Care Industry, *The American Journal of Distance Education*, 1 (2), 53-60.
- Baker, M.H (1995) Distance Teaching with Interactive Television, Strategies that Promote Interaction with Remote Site Students, *A Humanities and Social Science Dissertation Abstracts International*, 55 (8), 1250 - A.
- Bates, T. (1991) *Technology in open learning, and distance education : a guide for decision makers*, . Vancouver : The Commonwealth of Learning and The Open Learning Agency.
- Bates, T. (1995) *Technology, open learning, and distance education*, London : Routledge.
- Bloom, B. S. (1956) Taxonomy of Educational Objectives Handbook, 1 : *The Cognitive Domain*, New York : David McKay Company Inc.
- Collins, M. P. and Berge, Z. L. (1994) Guiding Design Principles for Interactive Teleconferencing, Paper presented at the Pathways to Change: New Directions for Distance Education and Training Conference, September 29, 30, and October 1, 1994, University of Maine at Augusta.
- Commonwealth of Learning, Canada (1993) *Audio and Audio- Graphic Teleconferencing, Modules 1, 2 and 3*, Prepared by Educational Technology and Consulting, Alberta, Canada.
- Hackman, M. Z. and Walker, K. B. (1990) Instructional Communication in the Televised Classroom: the Effects of System Design and Teacher Immediacy on Student Learning and Satisfaction, *Communication Education*, 39, 196 - 206.
- Hillman, D. C., Willis, D. J., and Gunawardena, C. N. (1994) Learner-interface Interaction in Distance Education : An Extension of Contemporary Models and Strategies for Practitioners, *The American Journal of Distance Education*, 8 (2), 30 - 42.
- Keegan, D. (1990) *Foundations of Distance Education*, 2nd Edition, New York : Routledge.
- Kelleher, K and Gross, T.B. (1985) Teleconferencing: Linking People Together Electronically, Prentice Hall, Inc; Eaglewood cliffs, New Jersey.
- Kolbi, D.A. (1984) *Experiential Learning : Experience as the Source of Learning and Development*, New Jersey : Prentice Hall, Inc;.

- Menon M.B. and Phalachandra B. (2001) Information and Communication Technology for Professional Development of Primary Education Personnel. Paper Presented at the International Workshop, IGNOU, New Delhi.
- Moore , M.G. (1983) *The Theory of Independent Study in Distance Education : International Prospectives*, Eds. D. Sewart, D. Keegan and B. Holmberg, London : Croom Helm.
- Moore, M. G. (1989) Three types of interaction. *The American Journal of Distance Education*, 3 (2), 1 - 6.
- Moore, M. G. (1993) *Theory of Transactional Distance in Theoretical Principles of Distance Education* D. Keegan (Ed.), New York : Routledge.
- Parker L.A. and Olgren. C.H. (eds) (1984) The Teleconferencing Resource Book, *A Guide to Applications and Planning*, Elsevier Science Publishers B.V. (North Holland) Centre for Interactive Programme, University of Wisconsin – Extension, USA.
- Shale, D., and Garrison, D. R. (eds), (1990) *Education at a Distance*, Malabar, FL: Robert E. Krieger Publishing Company.
- Pulist S.K. (2000) Challenges, Convergence and Integration of Synchronous and Asynchronous Technologies in On-line Learning, *Indian Journal of Open Learning*, IGNOU, New Delhi, 9 (3), 381-391.

Glossary of Technical Terms

- Analogue/Analog** : An electric signal that varies continuously, as opposed to a digital signal, which can occupy some fixed, discrete values only. Modern electronic communication systems are increasingly based on digital technology, in preference over analogue.
- ASP** : Application Service Provider, a company that provides
- Third-party services and software over the Internet** : Active Server Page, a type of web page that is an interface with one type of program that runs on a web server, often providing custom content for users. Used commonly for e-commerce.
- Asynchronous** : With reference to video and data signals and devices: not being precisely in step, not of the same frequency, or not happening together in time.
- Bandwidth** : The range of frequencies that can be accommodated in a communications channel. The term also refers to the information carrying capacity of a communication device or system.
- Bit** : Abbreviated form of the term 'binary digit'. Usually it means a single 1 or 0 : the smallest unit of information in digital communications. A group of bits (usually 8 or 16 bits) makes a 'Byte'.
- bps or b/s** : Bits per second.
- Bridge** : An electronics equipment that is used for combining several circuits/communication lines. For example, an audio bridge is used to combine several telephone lines during an audio conferencing.
- Broadband** : A communication channel containing a large bandwidth. In particular, a communication channel which is wider than 3 KHz
- Broadcast** : A one-to-many communications system that is also one-way (that is, without any reverse path for live interactivity).
- CCIR (now ITU-R)** : From the French for the International Radio Consultative Committee. An International Telecommunications Union (ITU) (United Nations) body that mainly sets international standards for radio and satellite telecommunications.
- CCIR 601** : A CCIR recommendation regarding various standardized image resolutions for coding high quality video images, primarily for broadcasting. Provides the foundation for MPEG I and MPEG2 resolutions and coding.

- CCITT (now ITU- T)** : From the French for the International Telegraph and Telephone Consultative Committee. An International Telecommunications Union (United Nations) body that sets international standards for telecommunications.
- Channel** : A specific signal path or a specific portion of the frequency spectrum or a group of frequencies allotted for communications.
- Chrominance** : That portion of a composite video signal containing the color information (amplitude and phase information representing color-hue and saturation) in the image.
- Coaxial Cable** : A cable that consists of a central metal wire surrounded by a metal tubing or braided outer conductor. Coaxial cables are used to carry high frequency signals from one place to another.
- Codec** : Abbreviated form of the term Coder-Decoder. It is an electronic gadget that converts analogue signal to digital and vice-versa.
- Color Burst** : The part of an NTSC or PAL composite video signal, which provides a reference for the demodulation of the color information in codecs and video monitors.
- Common Carrier** : A telephone company or similar supplier of non-private telecommunications services (telecommunications usage).
- Component Video Signal** : A video signal where the red (R), green (G) and blue (B) picture components are present as individual signals. Synchronization information may be included with the G signal or may be a separate signal. Less commonly (for videoconferencing, s-video), luminance and chrominance signals (YIQ or YUV) may be provided as separate signals, also referred to as component signals.
- Composite Video Signal** : A video signal incorporating luminance, chrominance and synchronizing information.
- Compression, data** : The process of reducing the quantity of data necessary to transmit or store. See also below.
- Compression, lossless** : A process that allows data compression and its expansion to its original form without any loss of information. PKZip, ZOO and ARC are common examples.

- Compression, lossy** : A process that compresses data in such a manner as to make complete recovery of the original data impossible. This approach is commonly used for still- or motion-images where the recovered image only needs to be subjectively acceptable. Examples include JPEG, MPEG 1, MPEG2, MPEG4, H.26l and H.263. Note that lossy compression provides significantly greater available compression than lossless compression.
- Computer Conferencing** : Interactive communications using computers and tele-communications links. Interactivity can be either in real-time (eg. on-line chat) or asynchronous (e.g., e-mail).
- Conditional Replenishment** : In motion video compression, the conditional transmission of information from blocks of pixels in adjacent video frames only if the content has changed materially or after a certain period of time has passed.
- Continuous Presence** : A video processing, transmission and display technique that electronically combines parts of two separate video images for transmission in a single data stream. At the receive location, the images may be displayed on a single monitor or alternatively on two side-by-side monitors.
- In practice, continuous presence is generally implemented by extracting the horizontal center half of the video image from two cameras and electronically stacking the two halves into a single video signal for transmission. At the receive location, both images may be viewed stacked on a single video monitor, one above the other, or separated for viewing on side-by-side monitors.
- CSDN** : Circuit Switched Digital Network.
- DACS** : Digital Access Cross-connect System. Included as part of public and private digital networks, a DACS may commonly switch DS3, DS I and DSO signals and is useful for configuring complex networks. A DACS is not a substitute for an MCU.
- Data Base** : Digital storage of information in a structured manner, so that it can retrieved in any required order or format.
- dB** : Decibel. One-tenth of a Bell, a logarithmic measurement of acoustic or electrical power, voltage or current ratios.
- Dedicated Lines** : Telecommunication lines which are leased (typically on an annual rental) for unlimited use among specific locations.

- DES** : Data Encryption Standard. A 64-bit private-key encryption technique developed by the US NBS. An encryption system that encodes communications, providing security and "privacy" of communication by making interception and decoding impossible (for all practical purposes).
- Dial-up Lines** : Telecommunication link up among specific locations by switching through telephone exchange.
- Digital** : See 'Analogue'
- Digital Access Cross-connect System (DACCS)** : A network central office device which enables any TI facility or any of a TI 's 24 channels to be switched or cross-connected to one or more TI (DS 1) and/or DS3 facilities.
- Digital Signal** : Signal represented by a sequence of binary bits representing ones and zeros.
- Differential Interframe Coding** : In motion video compression. The transmission of only the difference information between adjacent video frames.
- Diversity (transmission use)** : In telecommunications, reliability may be improved by use of various forms of diversity throughout the system. These may include time, space, frequency, route, path or other forms of diversity. Different degrees of availability (or reliability) may be achieved depending upon the nature of the diversity used.
- DRS** : Direct Reception System. A dish antenna and associated equipment system designed for receiving signals from communications satellites.
- DSL** : Digital Subscriber Line, a generic term encompassing a family of moderate speed access using a subscriber's existing copper lines.
- DSP** : Digital Signal Processor, an often massively parallel microprocessor optimized for high efficiency processing of communications' signals.
- DSU** : Digital Service Unit
- DSX-I** : Digital Signal Cross-connect level 1, a DSO or T1 switch and interface specification.
- Earth Stations** : Ground station meant for transmission and reception of signals (audio/video/data) to and from a satellite.
- EBU** : European Broadcasting Union. Headquartered in Geneva CH and with its technical center in Brussels BE, the EBU is an association of European and world broadcasters. The EBU also provides programming to its members, including the Eurovision Network.

- EEPROM** : Electrically-Erasable Programmable Read-Only Memory. A non-volatile but electrically alterable form of semiconductor storage. These devices are present in some telecommunications equipment such as codecs, permitting long-term storage of configuration, dialing and related information for easy recall by the user.
- FCC (Federal Communications Commission)** : A US body regulating, approving and licensing radiated electromagnetic signals including broadcasting and telecommunications.
- FDA** : Frequency Division Multiplex. A modulation technique by which the total capacity of a communication channel is subdivided and allocated to individual nodes.
- FDMA** : Frequency Division Multiple Access. A method by which a communication channel is accessed by a group of nodes by subdividing the channel capacity access frequency division multiple using (FDN) technique.
- Fiber Optics** : (Also called 'optical fiber'). The fiber-like glass threads used for communications through laser beams.
- Footprint** : In the context of satellite communications, it refers to the coverage area of a satellite on the ground, within which the satellite signals can be received.
- Forced Intraframe Coding** : 1. In motion video compression, immediately following a significant scene change, the differential, predictive and inter-frame coding aspects are temporarily disabled. The information then transmitted for the first changed frame is derived entirely from within that frame.
2. In motion video compression, the technique where static parts of the image are periodically refreshed to mitigate the effects of error build-up in the system.
- Forward Error Correction** : A mathematical technique in which a syndrome is generated and transmitted with data. At the receive location, processing of the syndrome, along with the data, will allow correction of errors caused by the transmission system. Depending upon the FEC technique used and how it is applied, the transmitted codec signals may be made more or less robust in the presence of line transmission errors.
- fps** : Frames (usually motion video frames) per second.

- Frame Delete Compression** : In H.261 and H.263 motion video compression, the act of totally discarding from zero to three consecutive video frames as part of the video compression process. Its use depends upon the degree of video motion existing and the aggregate bit rate. Because of the large data loss with this technique, this is truly a compression approach of last resort.
- Front Porch** : With reference to a composite video signal, that portion of the signal between the end of the active video on each horizontal scanning line and the leading edge of the horizontal synchronization pulse (communications, television usage).
- Full Duplex** : A telecommunication channel which permits bi-directional flow of signals (that is, both transmission and reception at the same time) between any two points.
- Half Duplex** : A telecommunication channel which permits bi-directional flow of signals, but not at the same time. For example, on half duplex channel, you can take either talk or listen, but one at a time. Example: the normal telephone system.
- HDTV** : High-Definition Television. Any of a number of television technologies providing an image aspect ratio of about 2:1 and resolution far superior to PAL or NTSC.
- HTML** : HyperText Markup Language, a subset of SGML, commonly used for Internet Web-page design.
- HTTP** : HyperText Transport Protocol, the method used for Internet domain addressing.
- Interface** : A device that helps interconnect different circuits or components of a system(s).
- IP PBX** : IP Private Branch Exchange. A telephone data and video switching system, usually located on customer premises and belonging to the user. Makes use of technologies like VoIP, H.323 and Ethernet.
- ISDN** : Integrated Services Digital Network. A digital communications network that enables integrated exchange of data, voice and visual (multimedia) information.

- JPEG** : Joint Photographic Experts Group. An ISO video compression standard for storage and transmission of a variety of still graphics image formats (not only NTSC in origin). It may be used in conjunction with fully compliant ITU- T codecs and includes both lossy and lossless modes. Note that so-called "motion JPEG" is a proprietary means of motion video transmission, and is not a standard.
- Kbps (Kb/s)** : Kilobits (thousands of bits) per second.
- KBps (Kb/s)** : KiloBytes (thousands of bytes or octets) per second.
- LAN** : Local Area Network, usually used to connect workstations to a server or to each other.
- LAP** : Link Access Protocol (frame relay use, LAPD)
- LCD** : Liquid Crystal Display. A very low-power device capable of displaying characters, words and symbols, often built into a codec or videoconferencing room control panel.
- Lip Sync** : The maintenance of sound (i.e., speech) exactly in step with movement in a visual image (i.e., faces). Because the processing time for the video portion of the signal in a low-speed codec is about 100 times longer than the audio processing time, codecs usually incorporate adjustable audio delay circuitry to delay-equalize the two signals, to maintain lip sync.
- Luminance** : The portion of a composite video signal that represents the monochrome or brightness part of the image.
- MbPS (Mb/s)** : Megabits (millions of bits) per second.
- MBps (MB/s)** : MegaBytes (millions of bytes or octets) per second.
- MCS** : Multipoint Conference Service
- MHz** : MegaHertz. In analog signals, millions of cycles or alternations per second.
- Modem** : Abbreviation for Modulator-Demodulator. A device that receives digital signals, modulates them on to an analogue carrier and gives out the output in the analogue form. It also demodulates the analogue signals back to digital form.
- MPEG** : Moving Pictures Experts Group, an ISO image standards group.

MPEG1

- : MPEG 1 is the first of a family of motion video and audio compression standards. It provides DCT lossy compression with rather high quality. It is intended for broadcast quality applications, with resolutions based upon the CCIR (now ITU-R) 601 standard for video coding. Used three coding prediction protocols: Intraframe coding or I-Pictures (no prediction), P-Pictures, incorporating motion prediction from the previous video image and, B-Pictures (bi-directional prediction) which include motion prediction one frame ahead as well as from the previous frame. MPEG2 has largely supplanted MPEG 1.

MPEG2

- : MPEG2 is the second in a family of motion video and audio compression standards. The result of a natural evolution from MPEG 1, it provides DCT lossy compression ranging from low to rather high quality although not as good as MPEG 1. It is intended for broadcast quality applications, with resolutions based upon the CCIR (now ITU-R) 601 standard for video coding. Used three coding protocols: Intra frame coding or I-Pictures (no prediction), P-Pictures, incorporating motion prediction from the previous video image and, B-Pictures (bi-directional prediction) which include motion prediction one frame ahead as well as from the previous frame. MPEG2 also has a coding mode at 24 frames per second, matching that of motion picture film, useful for offline image encoding. MPEG2 has largely supplanted MPEG 1 and is used for coding multimedia images from CD-ROM, DVD, broadcasting, pay TV and high quality videoconferencing. MPEG2 also includes more coding decision points than MPEG 1, permitting rather fine control of image quality over time in response to the needs of other channels in applications like DBS.

MPEG3

- : The MPEG3 standard was intended as an ultra-high quality solution that was abandoned during development, and does not therefore exist. However, the term "MPEG3" is sometimes incorrectly used to describe MPEG2layer 3 audio (MP3).

- MPEG4** : MPEG4 is a standard intended to satisfy the needs of content authors, network service providers and end users. It is complex and extensible standard and is an attempt to provide all things to all people. It covers aspects including sprites, speech synthesis, streaming video, multimedia and many other aspects including a foreground-background coding technique which will likely supplant MPEG2 for broadcast applications, as it uses about one-half the bandwidth for equivalent quality.
- Multiplex** : To sequentially incorporate several data streams into a single data stream in such a manner that each may later be recovered intact.
- PAL** : Phase Alternate Line, the European 625-line, 25-frame per second color-television standard.
- PBX** : Private Branch Exchange. A telephone/data switching system, usually located on customer premises and belonging to the user. In contrast to Centrex which is largely located on the common carrier's premises. Some modern PBXs provide effective switched digital interfaces for operation of switched 56 Kbps and ISDN videoconferencing.
- PCM** : Pulse Code Modulation, a basic form of digital modulation where an analog signal is sampled, each sample is quantized independently of other samples, and then it is converted to a digital signal.
- Picture Element** : The smallest discrete part of a video image, the size of which is controlled by the analog-to-digital conversion sampling process and subsequent other compression processes. The more picture elements per line, the higher the resolution of the image. To convert the number of H pixels to a close approximation of TV lines of resolution for the NTSC system, simply multiply the number of H pixels by 0.78. Furthermore, each 80 TV lines of resolution (NTSC) require 1 MHz of analog bandwidth for transmission.
- PIP** : Picture-In-Picture display. A video display mode in which a one-quarter or smaller size video image is superimposed over a full-screen video image. PIP is especially useful as a preview monitor for one-monitor videoconferencing installations and for TV receivers.
- Pixel** : Picture element.
- PPP** : Point-to-Point Protocol, often used for Internet access.

- Receive-Only Codec** : A video codec only able to receive communications signals and process them for local output, for use at receive locations in point-to-multipoint or broadcast applications such as DBS where two-way communication with the sending location is not required.
- Redundancy (telecommunications)** : Alternative and/or duplicate transmission paths, routes, equipment and power in various combinations to enhance the reliability of a telecommunications infrastructure.
- RGB Video Signal** : A video signal where the red (R), green (G) and blue (B) picture components are each present as individual signals. Synchronization information may be included with the G signal or may be separate.
- SECAM** : System Electronique Couleur Avec Mernoire, the 625-line color television standard used in France and the former Soviet Union.
- Send-Only Codec** : A video codec able only to originate (transmit) communications signals, for use at the sending location in point-to-multipoint or broadcast applications when two-way codec communication between locations is not possible or required.
- Slow-Scan TV (SSTV)** : A system of transmitting/receiving still-video images over narrowband telecommunications links. Motion video content gets reproduced as a series of low-resolution images with jerky motion.
- SMPTE** : Society of Motion Picture and Television Engineers
- SONET** : Synchronous Optical NETwork
- TCP/IP** : Transmission Control Protocol/Internet Protocol. Networking protocols providing communications across interconnected networks (including the Internet). The networks may incorporate diverse hardware architecture computers and various operating systems. TCP/IP includes communication, connection and routing standard protocols.
- TDMA** : Time Division Multiple Access: A method by which different nodes in a network are enabled to access the same communications channel by turns. Each node is allocated specific time slots for transmission/reception of signals.

TDM	: Time Division Multiplex. The technique which different nodes of a network can transmit signals through the same communications channel by making use of staggered time slots. TDM is complementary to TDMA.
Time base Corrector (TBC)	: A jitter-removing device used in conjunction with a playback from a VCR. It provides sufficient timing stability to permit successful encoding of the video signal by a video codec. Some codecs include a built-in TBC.
Transponder	: A satellite-borne device that receives signals transmitted from the ground, amplifies them and re-transmits them on a different frequency towards the earth.
TQM, Total Quality Management	: A corporate philosophy or mindset focused on quality, a precursor of ISO 9000.
UPS	: Uninterruptible Power Supply. A secondary power supply that provides service when the main AC power degrades or fails. A UPS may include batteries or a motor generator (MG) set with flywheel energy storage (a no-break system).
Video Server	: An audio and video file server, often with multiple terabyte hard disk capacities, connected to LANs and WANs with high-speed facilities like ATM or FDDI. Usually uses H.320, MPEG or Motion-JPEG video compression. Used for training on demand to the desktop and many other purposes including marketing and entertainment.
VoDSL	: Voice over Digital Subscriber Loop, techniques permitting transmission of telephony over DSL
VoIP	: Voice over Internet Protocol, a series of techniques permitting transmission of telephony over the Internet. Often makes use of ITU-T G.7 audio compression recommendations.
VSAT	: Very small Aperture Terminal, referring to satellite earth stations with small antenna diameters, often intended for transportable applications.
WAN	: Wide Area Network, typically an inter-city network.

Wavelet image coding : Unlike the broadband DCT used for video compression for applications like videoconferencing and DBS in algorithms like MPEG2 and P .263, wavelet coding is generally narrow band, with the coding and filtering tailored to a specific application. Wavelet coding is especially efficient and powerful when applied to phenomena with discontinuous or spiky data. Some wavelet applications include compression of well-defined data sets such as signatures and fingerprints. At the other extreme, wavelet coding has applications for machine vision and other more complex applications. In addition to the image processing aspects, the wavelet family of mathematics functions is widely used for digital signal processing for diverse applications ranging from astronomy to seismology.

XLR A circular three-conductor shielded connector
Commonly used in professional applications for connection of low-level balanced audio signals to and from equipment.

Annexure-I

OBSERVATIONS AT THE TEACHING END

OBSERVATION SCHEDULE

(One for each session)

General Information

1. Date
2. Location
3. Name of the programme
4. Number of learner centres
5. Target audience
6. Number of sessions during the day
7. Serial number of the session
8. Time and duration of the session
9. Objectives of the session
10. Topics covered during the session
11. Names and number of resource persons
12. Name of the anchorperson

Pre-Conference Activities

13. How much time before the telecast did the resource persons, anchorperson arrive at the studio?
14. Nature and duration of interaction among the resource persons, anchor person and the production team before the telecast about the presentation
15. Other activities concerned with presentation undertaken before the telecast such as arranging the graphics for display, setting up demonstrations/ practicals, etc.

Presentation Techniques

16. Presentation techniques used by the resource persons (tick whichever applicable)
Lecture
Team teaching
Panel discussion
Interview
Quiz, game
Question- answer
Any other (please specify)

17. Facilities available in the studio for use of A.V. materials, and those actually utilized during presentation.

Studio Facilities	Available		Not Available
	Used	Not used	
Black board			
Writing board with overhead Camera			
Graphics display stand			
Slide projector			
O.H.T projector			
Power point presentation			
Demonstration			
Any other (please specify)			

18. Any other relevant observation about the studio facilities, and those actually used.

Interaction

19. Time allocation between
Presentation
Interaction with the learners
20. Was interaction interspersed during the presentation or at one-time only, say at the end?
21. Number of learner centers, which participated in the interaction
22. Number of learner centers, which did not participate in the interaction and possible reasons for non-participation.
23. Modes of receiving calls from the learner centers, and frequency of their use.

Mode of receiving calls	Frequency of use				Not Available
	Most Commonly	Commonly	Rarely	Not used	
Telephone					
E-mail					
Fax					
Any other					

24. System of receiving telephone calls
Direct
Recorded
25. If direct, how much holding time was averaged?

26. Did the system provide for asking supplementaries?
 27. Audio quality of in-coming telephone calls (such as disturbance due to sound from the TV set at the learner centre)
 28. Quality of Interaction

Good Satisfactory Poor

Quality of questions

Quality of responses

29. General comments about the interactive session

Role of the Producer

30. Activities done by the Producer,

Activities	Done well	Done Casually	Not done
Interacting with the resource persons and anchorpersons about the scheme of presentation Guiding the resource persons about on camera performance, doing demonstration, etc. Arranging visuals in their sequence and showing them at the right moment Reviewing and discussing the end result with the resource persons, anchorperson for future improvement Any other activity (Please specify)			

31. General comments about the role of the producer.

Performance of the Anchorperson

32. Activities of the anchorperson

Activities	Done well	Done Casually	Not done
Introducing the topic Moderating the discussion. Conducting the interaction Instructing the learners about making calls/activities/filling evaluation sheets. Instructing the facilitators. Concluding the session Any other (Please specify)			

33. General comments about the performance of the anchorperson.

Performance of the Resource Persons.

34. Activities of the resource persons

Activities	Done well	Done Casually	Not done Casually
Presenting the content/concept(s) Preparation and use of supporting A.V. materials. Coordinating with each other about division of topic, time schedule Listening attentively and supporting each other Motivating the learners Handling questions adequately and in a friendly manner Any other (Please specify)			

35. General comments about the performance of the resource persons.

General Comments

36. General comments about the conduct of the conference at the teaching end.

Annexure-II

OBSERVATIONS AT THE LEARNER CENTRE

OBSERVATION SCHEDULE

(To be filled by the evaluator, one for each session)

General Information

1. Date
2. Name of the centre
3. Name of the programme
4. Target audience
5. Number of sessions during the day
6. Serial number of the session
7. Objectives of the session
8. Topics covered during the session
9. Time, sequence and duration of different segments of the session such as presentation, interaction, off-air activities at the beginning and during the break.

Time	Segments	Duration (in minutes)

10. Number and name(s) of facilitator(s)

Attendance

11. Number of participants

Gender	At the beginning of the session	At the end of the session
Female		
Male		
Total		

12. General observations about the punctuality and entry behaviour (such as exited, active, anticipatory, not exited, casual, unconcerned, etc.) of the participants

Pre-session Activities

13. How much time before the telecast did the facilitator(s) arrive at the centre

14. Activities done by the facilitator(s)

Activities	Scheduled			Not scheduled
	Done well	Done casually	Not done	
Testing the equipments Preparing the classroom Seating the participants Briefing the participants about the topic, objectives, and the approach to the teaching Giving instructions when and how to call Distributing study materials, activity sheets, etc. among the participants Any other (please specify)				

15. General comments about the pre-session role of the facilitator(s).

16. Activities done by the participants before the session

Activities	Scheduled			Not scheduled
	Done well	Done casually	Not done	
Study of materials Doing practicals Group discussion Any other (please specify)				

17. If certain scheduled activities were not done by the participants, reasons thereof

18. General comments about pre-session activities by the participants

During the Session Observations

About the learning environment (classroom)

19. Participants were seated

On the floor

In the chairs

Both on the floor and in the chairs

20. Seating space was

Congested
Comfortable

21. Situational factors

Factors	Very disturbing	Somewhat disturbing	Not disturbing	Remarks, if any
Out-side noise Acoustic problem Commotion in the classroom				

22. Describe the arrangement of the viewing room, with the help of a diagram on a separate sheet at the end of this schedule. Give here your general comments about the learning environment

About the learning behaviour of the participants

23. What was the learning behaviour of the participants?

Learning behaviour	During presentation		During interaction		Remarks (such as particular segments when attention/interest was lost)
	Yes	No	Yes	No	
Attentive (as evidenced by watching silently, etc) Showing interest (as evidenced by taking notes, etc) Any other (please specify)					

24. General comments about the learning behaviour of the participants

About the quality of transmission

25. What was the quality of transmission?

Good Satisfactory Poor

Audio

Video

About the interactive activity

26. Was the interaction interspersed during the presentation or at one-time only, say at the end?

27. Modes of calling the teaching end and frequency of their use.

Mode of receiving calls	Available					Not available
	Frequency of use				Not functional	
	Most Commonly	Commonly	Rarely	Not used		
Telephone						
e-mail						
Fax						
Any other						

28. System of receiving telephone calls at the teaching end.

Direct

Recorded

29. Did the system provide for asking supplementaries?

30. Did the centre actively participate in the interactive session?

Yes (Go to Q 31)

No (Go to Q 36)

31. Number of participants wanting to ask questions

32. Number of participants who could ask questions.

33. Number of attempts that were made to get through the telephone line

Total attempts made	Number of successful attempts	Average holding time	Number of questions asked

34. Describe the technical disturbance (such as poor audio quality) and non-technical disturbances (such as noise in the classroom) if any, during the interactive session.

Nature of disturbances
Technical 1. 2.
Non-technical 3. 4.

35. Describe the role played by the facilitator(s) during the interactive session

Activities	Done well	Done casually	Not done
Motivating the participants to interact			
Assisting the participants formulate relevant and meaningful questions, clubbing questions to avoid duplication, etc.			
Making the calls			
Any other (please specify)			

36. If the centre did not actively participate in the interactive session reasons thereof.

About Interruption in Transmission

37. There may be interruption(s) in transmission due to power failure or some other reason. Were there any such interruptions?

Yes (Go to Q38)

No. (Go to Q 40)

38. Number and duration of the interruptions, if any, in of the transmission,

Duration of interruption in minutes	Reasons	Affected segments of the programme	Remarks, if any

39. Role played by the facilitator and activities done by the participants during non-transmission of the programme.

About off-air activities

40. Teleconference may provide for a break between the session for the participants to do certain activities. If it did in the present situation, mention the off-air activities done by the participants

Activities	Scheduled			Not Scheduled	Remarks, if any
	Done Well	Done casually	Not done		
Reading the material					
Doing practicals					
Group discussion					
Any other (please specify)					

41. Role played by the facilitator(s) in guiding the participants carry out off-air activities

Post-session Activities

42. Briefly describe the post-transmission activities such as participants reading the materials, discussing questions/comments generated in the sessions, etc. and the facilitator giving instructions for next day's programme, discussing the content with the participants, clearing payments, etc.

Annexure-III

Interview Guidelines

Guidelines for Interviewing of Participants

1. Background of the participants--name, gender, age, occupation, education, experience, training, media exposure (newspapers, radio, TV, etc.) previous exposure to teleconferencing, knowledge related to the given topic, etc.

Note : Only essential background information should be obtained and recorded.

2. The in-depth interview can be built around the following points

Selection of the topic

The selection of the given topic was relevant

Treatment of the topic

Presentation by the experts was engaging

A.V. materials were well prepared.

Quality of interaction

Interactive session was stimulating

Questions by the participants were relevant and important

Answers given by the experts were satisfactory

Interaction with other participants and the facilitator was educational

Questions asked by other centers added to the perspectives, and pointed towards new dimensions

It gave me an opportunity to express and ask questions

Usefulness of the teleconference

It increased level of knowledge

It enhanced level of understanding and clarified concepts

It improved skills

It would help apply the knowledge in the real life situations

Language

It was simple and understandable

Pace of delivery

It was appropriate

Logistics

It was easy to reach the centre

Time schedule

It was convenient

General comments

The general experience was rewarding. It can be recommended to other areas of training, and groups

Note : The individual evaluators are free to formulate their own questions, and the order in which these are asked. However, all essential points should be covered before closing the interview.

3. Given below are a list of sample questions that could be asked:

If you were to conduct the programme, what more would you do to make the presentation lively?

Was the discussion in the interactive session meaningful?

How do you like the experience of learning the given topic through teleconferencing as opposed to the teacher in the classroom

Annexure-IV

ATTENDANCE SHEET

(To be filled by the facilitator)

1. Date
2. Name of the centre
3. Name of the programme
4. Target audience

Number of participants	Sessions			
	I	II	III	IV
Female				
Male				
Total				