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OA/ID Number: 52074
Folder ID Number: 52074-006

Folder Title:
Telecommunications Teleconference '79

Stack: **Row:** **Section:** **Shelf:** **Position:**

Teletraining Institute
P.O. Box 233 Middleton, Wisconsin 53562

WHAT IS THE INSTITUTE?

Teletraining Institute is a non-profit organization formed to assist other non-profit groups in efforts to improve group communication. As the name implies, the focus of the institute is on the use of tele-media (generally narrow band media capable of transmitting over regular telephone lines) to help meet particular communication needs.

SERVICES AVAILABLE TO NON-PROFIT ORGANIZATIONS

- Rental of an Institute-owned Meet-Me Teleconferencing Bridge for use during teleconference programs sponsored by non-profit groups.(See attached form for more information.)
- Rental of teleconferencing station equipment.
- Consultation regarding teleconferencing system design & operation.
- Consultation concerning teleconference program design & implementation.
- Presentation of orientation programs on teleconferencing procedures & techniques.

MEET-ME TELECONFERENCING

In a Meet-Me Teleconference people across the country meet with each other without having to travel. A Meet-Me Teleconference uses a sophisticated bridging device to link all locations quickly and efficiently via ordinary telephone lines. By simply dialing a predetermined telephone number at program time, individuals or groups are interconnected in a few seconds.

The Meet-Me Teleconferencing Bridge can accomodate up to 20 separate locations. The bridge is also capable of handling up to four simultaneous teleconferences of five locations each (ideal for utilizing buzz groups as a program technique).

Teletraining Institute is making bridge time available to non-profit organizations on a contract, or individual-meeting basis. A rate sheet/ inquiry form is attached for your use.

ACCESSING THE MEET-ME TELECONFERENCE BRIDGE

If your group is a non-profit organization that can benefit from the use of a Meet-Me Teleconference Bridge for your particular communication needs, fill out the inquiry form below and send to:

Teletraining Institute
P.O. Box 233 Middleton, Wisconsin 53562

CONTACT NAME: _____

DATE: _____ ORGANIZATION: _____

ADDRESS: _____

_____

_____

PHONE: _____

TOPIC OF CONCERN: _____

NUMBER OF ANTICIPATED LOCATIONS: _____

ANTICIPATED DATES OF TELECONFERENCE(S): _____

TIMES OF TELECONFERENCES: _____

BRIDGE RATES: (Including operator)

$150/hour

or negotiable rates on a yearly contract basis (preferred)

Cost and Approach Considerations for a Regional Training Program

Cost/Considerations	CONVENTIONAL[a]	DISTANT LEARNING[b]
Participant Travel & Per Diem[c]	$9400 ($188/participant x 50 part.)	———
Room Rental	$150 ($75/day x 2 days)	———
Cost in Staff Time[d]	$10,350 (50 part. x 3 da. x $69/da.)	$6900 (50 part. x 2 da. x $69)
Trainer's Cost a. Salary[e] b. Per diem	$413 ($225) ($188)	$150
Training Materials	Costs relevant to training program	$200 (additional costs for slides to each site and postage costs)
Consultant/ Guest Presenter[f] a. Fee b. Travel & p.d.	$388 ($200) ($188)	$50
A-V Equipment	As needed for training (i.e. carrousel slide projector)	Carrousel slide projector needed at each site
Rental of Receiving Equipment[g]	———	$400
Telephone Charges[h]	———	$2400 (5 sites x 16 hrs. @$30/hr.)
Use of Local Program Coordinators[i]	———	$850 (2 days x 5 sites @ $85/day)
Use of Meet-Me Bridge	———	$2400 (16 hrs. @ $150/hr.)
TOTAL	$20,701	$13,350

[a] A two-day training program conducted in a location regionally central; participants travel in

[b] Same training content conducted via teleconference in 5 sites in eight two-hour sessions

[c] Computed on average travel and per diem costs in Region X for RRCEP X training

[d] Computed on a monthly average salary for a VRC II @ $1379.mo.; extra day spent in travel

[e] Computed on a monthly average salary for an RRCEP trainer @$1500; extra day spent in travel

[f] For illustrative purposes, assume brought in for a part of one day's presentation

[g] Use of a Darome Convener (four mikes) at each location @ $40/mo./location

[h] Assumes use of commercial lines; WATTS or FTS is approximately 1/3 this rate

[i] Computed on a monthly average salary for a VR Supervisory @$1697

Computed by Susanne Bruyere, 7/31/79

TELECOMMUNICATIONS TRAINING
Session II/Using Telecommunications in Training Today
July 27, 1979

#7 COST BREAKDOWN - 4 SYSTEMS

	10 Point System-5812 Miles		
	Bridge Per Hour	Line Charges/Hour	Total Charges/Hour
Dial-Up *Operator *Direct Dial Confer'n. *Meet-Me Bridge	 $86.67 24.00 200.00	 $193.00 193.00 193.00	 $279.67 217.00 393.00
Permanent Network	No Charges	4.50 per mile per month (Decreases with frequency of use)	At 60 hours per month: 436.00
Narrow-Band	Double above costs for Dial-up except color slow scan	Double except for color slow scan	*POTS 559.34 *Network 872.00
Broad-Band	Two point videoconferencing only. Multi-site 1981 Satellite-SBS		*2 Point Video 330 to 390 *Satellite 3500

#8 CHARACTERISTICS - 4 SYSTEMS

Types of System	# of Locations	Flexible Mtg. Rms.	Set-up Time	Audio Quality	Visual	Motion	Personnel	Low→Hi Cost
*Operator *Meet-Me	25 80	Yes Yes	Set-up time varies Immediate	Varies Varies	No No	No No	Operator User or tech.	Low Low
*Portable station equip *Conference rooms	200+ 200+	Yes No	Immediate Immediate	Excellent Excellent	No No	No No	Technician Technician	Usage dependent High physical
*Dial-up *Dedicated	40 200+	See Sections Above	See Sections Above	See Sections Above	Yes Yes	No No	See Sections Above	Moderate except for color slow scan
*Videoconference satellite, cable, microwave		Yes		Average to Excellent	Yes	Yes	Technician	High

GLOSSARY OF TELECONFERENCING TERMS

Amplified telephone: The general term for a "hands-free" telephone, using a loudspeaker and microphone unit rather than a telephone handset.

Audio teleconferencing: Group voice communication relying on exchanges among more than two participants via voice.

Bandwidth: The distance between the lowest and highest frequencies that can be sent over a given transmission facility. Wider ranges (e.g., about 3 million cycles per second -- the bandwidth of a TV channel) are called "broadband." Video teleconferencing is considered a broadband medium. Narrow ranges (e.g., 3,000 cycles per second -- the bandwidth of telephone voice transmission) are called "narrowband." Audio teleconferencing is narrowband communication. Certain types of graphics and still images can be transmitted over the telephone and other narrowband channels.

Bridge: A term used to describe the linking of three or more lines, usually via telephone circuits as in a conference call.

Broadcast: One-way transmission of information.

Cable television: A transmission system that distributes broadcast television signals, original programs, and other services by means of a coaxial cable. Most cable systems also have the potential for two-way communication.

Closed-circuit microwave: A private system for transmitting television signals, such as a university TV network.

Common carriers: An organization (such as telephone operating companies) that provides communication services to the general public at nondiscriminatory rates, without control of message content.

Computer conferencing: Group communication through a computer. Such "conferences" may involve simultaneous communication or "asynchronous" meetings that allow participants to enter the conference at random times. Computer conferencing systems are normally not complicated to use and should not require special computer expertise. Some systems provide a hard copy of the conference.

*Conference calls: Dial-up, operator-assisted phone calls between more than two individuals or groups.

*Confravision: European video conferencing service. Broadband transmissions of visual images over cable, microwave or satellite.

*Dial-up teleconferencing: Interconnecting telephone lines, either with or without operator assistance over non-permanent network or via conference call.

Terms and definitions without asterisks are based on Johansen, R., McNulty, M. and McNeal, B., Electronic Education: Using Teleconferencing in Postsecondary Organizations, Institute for the Future, Menlo Park, California, August 1978.

Darome Convener: Darome is a brand name; Convener is the name of a popular audio teleconferencing set developed by the company. The Convener has portable speakers and table microphones.

Dedicated system: Special transmission circuits devoted to a specific application. Such "dedicated" systems usually provide higher quality service than using public networks, but they also are more costly unless a high volume of usage is involved.

Electronic Blackboard: A system for sending writing over a telephone line. As the sender writes on a normal-looking chalkboard, the writing appears in the remote location on a television monitor. Interaction is possible when the outlying locations have electronic blackboards as well as monitors.

*Electronic pens (electrowriter): Systems for sending written information over a telephone line. The sender writes on a special pad, and the receiver sees the writing appear on a piece of paper or on a projection screen.

*Electronic transmission: General term referring to electronic transmission of data and mail usually as digital information linked into a central computer.

Facsimile: A telecopying device that sends page copies over telephone lines to a terminal at a remote location. Various speeds of transmission are used to relay the scanned information.

50-A Portable conference telephone: One of the most common audio teleconferencing devices. A specific make of amplified telephone developed by Western Electric and distributed by the Bell System.

Four-wire circuit: A four-wire circuit usually avoids some of the electrical echo problems associated with the normal (i.e., "two-wire") telephone network. A four-wire circuit allows two locations to talk and be heard simultaneously, thereby giving a greater sense of presence.

Interactive media: Telecommunications systems that allow direct exchanges among people via one or more communication channels (e.g., voice, writing or visual). Interactive media describe systems that allow a high degree of interpersonal communication.

*Media-mixes: Hybrid of two or more communication technologies.

Narrowband: see Bandwidth.

*Plato computer system: Interactive computer system manufactured by Control Data Corporation and used primarily for instruction.

*Picturephone Meeting Service: A.T.&T.'s broadband video conferencing service. Full-motion images are transmitted via microwave, cable or satellite.

*QUBE: Two-way, interactive cable TV system in Columbus, Ohio.

*SCA-FM: Subsidiary Communications Authorization: an electronic technique that places the radio signal on the FM spectrum. These signals can only be picked up with special tuners that pick out the SCA from regular FM.

*Satellite conferencing: With the communications technology satellites and experiments being done by Satellite Business Systems, two-way satellite conferencing will be conducted directly from site-to-site, bypassing terrestrial links.

Slow-scan television: System for exchanging still video images, displayed on television monitors. Removing the requirement to provide full moving images means that narrowband transmission channels (often a normal telephone line) can be used for transmission, with a reduction in cost over full video teleconferencing.

Speakerphone: An amplified telephone, allowing "hands-free" usage. Speakerphone is often the shorthand designation for the Western Electric 4-A.

Telecopier: See facsimile.

*Telpak: Arrangement through which a telephone customer can order a group of intercity circuits between specific points and pay a flat fee per mile.

Transmission line: The means by which a signal is sent and received. Transmission "line" is sometimes used to refer to a satellite or microwave link.

Two-wire circuit: A typical telephone transmission circuit. In some applications, a two-wire system is less preferable than a"four-wire" because it requires voice switching to avoid electrical echo and leakage. See "Four-wire."

*Videophone: Either one-way or two-way broadcast image service either over microwave, cable or satellite. This term also refers to the early experiments with video crossing narrowband and broadband technology.

Video teleconferencing: Audio plus full visual conferencing for a group of people. Typically, such systems provide room-to-room linkages, with live television (sometimes in color) and voice communication.

Voice-grade line: The bandwidth used for normal voice transmission (e.g., over a telephone network).

Voice switching: Electrical technique for opening an audio circuit only to the person who is currently speaking. Such a system allows only one person to speak at a time, often without the capability to be interrupted. This is an effective technique for avoiding specific acoustical and electrical problems that are often associated with audio teleconferencing.

GLOSSARY OF TERMS*

Aeronautical Mobile-Satellite Service — A mobile-satellite service in which mobile earth stations are located on board aircraft. Survival craft stations and emergency position indicating radio-beacon stations may also participate in this service.

Aeronautical Radionavigation-Satellite Service — A radionavigation-satellite service in which mobile earth stations are located on board aircraft.

Active Satellite — An earth satellite intended to transmit or retransmit radio-communication signals.

Amateur-Satellite Service — A radiocommunication service using space stations on earth satellites for the same purposes as those of the amateur service.

**Apogee* — The point in the orbit of a satellite that is farthest from the earth.

Broadcasting-Satellite Service — A radiocommunication service in which signals transmitted or retransmitted by space stations are intended for direct reception[1] by the general public.

**Broadcast Satellite* — A high-powered satellite which relays radio waves to a limited geographic area, requiring a small, inexpensive ($200-2,500) earth terminal or antenna attached directly to a television or radio receiver, or requiring no earth terminal or antenna at all.

Community Reception (in the broadcasting-satellite service) — The reception of emissions from a space station in the broadcasting-satellite service by receiving equipment, which in some cases may be complex and have antennas larger than those used for individual reception, and intended for use:

—by a group of the general public at one location; or

—through a distribution system covering a limited area.

Coordination Area — Area around an earth station enclosed by the coordination contour.

Coordination Contour — The line joining the points which are on all azimuths around an earth station at a distance from this station equal to the coordination distance corresponding to each azimuth.

Coordination Distance — Distance from an earth station in a given azimuth within which a terrestrial station sharing the same frequency band may cause or be subject to more than a permissible level of interference.

Deep Space — Space at distances from the earth approximately equal to, or greater than, the distance between the earth and the moon.

**Distribution Satellite* — Medium-powered satellite which relays radio waves to a limited geographic area, requiring a medium-sized and priced ($100,000-500,000) earth station.

**Domestic Satellite* — A satellite which provides communication services primarily to one nation.

Earth Exploration-Satellite Service — A radiocommunication service between earth stations and one or more space stations in which:

—information relating to the characteristics of the earth and its natural phenomena is obtained from instruments on earth satellites;

—similar information is collected from airborne or earth-based platforms;

—such information may be distributed to earth stations within the system concerned;

—platform interrogation may be included.

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*Those terms and definitions *without* asterisks are from the ITU proposed terms and definitions concerning outer space telecommunication from the Final Acts of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.

[1]In the broadcasting-satellite service, the term "direct reception" shall encompass both individual reception and community reception.

Reprinted from Polcyn, K.A., An Educator's Guide to Communication Satellite Technology, Andromeda Books, Washington, D.C., 1975. Distributed by University of Wisconsin-Extension, Center for Interactive Instructional Programs, Madison, Wisconsin.

Earth Station — A station located either on the earth's surface or within the major portion of the earth's atmosphere for communication:

—with one or more space stations; or

—with one or more stations of the same kind by means of one or more passive satellites or other objects in space.

Equivalent Isotropically Radiated Power — The product of the power of an emission as supplied to an antenna and the antenna gain in a given direction relative to an isotropic antenna.

Equivalent Satellite Link Noise Temperature — The noise temperature at the input of the earth station receiver corresponding to the radio-frequency noise power which produces the total observed noise at the output of the satellite link excluding noise due to interference coming from satellite links using other satellites and from terrestrial systems.

Fixed-Satellite Service — A radiocommunication service:

—between earth stations at specified fixed points when one or more satellites are used; in some cases this service includes satellite to satellite links, which may also be effected in the inter-satellite service;

—for connection between one or more stations at specified fixed points and satellites used for a service other than the fixed-satellite service (for example, the mobile-satellite service, broadcasting-satellite service, etc.).

**Front End* — Antenna and associated components, excluding television or radio sets, which are used to receive and translate satellite relayed radio waves.

Geostationary Satellite — A satellite, the circular orbit of which lies in the plane of the earth's equator and which turns about the polar axis of the earth in the same direction and with the same period as those of the earth's rotation. The orbit on which a satellite should be placed to be a geostationary satellite is called the "geostationary satellite orbit."

Geosynchronous Satellite — An earth satellite whose period of revolution is equal to the period of rotation of the earth about its axis.

**Half Circuit* — A two-way communication path suitable for voice exchange between one earth station and a satellite.

Inclination of an Orbit (of an earth satellite) — The angle determined by the plane containing an orbit and the plane of the earth's equator.

Individual reception (in the broadcasting satellite service) — The reception of emissions from a space station in the broadcasting-satellite service by simple domestic installations and in particular those possessing small antennas.

Inter-Satellite Service — A radiocommunication service providing links between artificial earth satellites.

Land Mobile-Satellite Service — A mobile-satellite service in which mobile earth stations are located on land.

Maritime Mobile-Satellite Service — A mobile-satellite service in which mobile earth stations are located on board ships. Survival craft stations and emergency position indicating radio-beacon stations may also participate in this service.

Meteorological-Satellite Service — An earth exploration-satellite service for meteorological purposes.

Mobile-Satellite Service — A radiocommunication service:

—between mobile earth stations and one or more space stations; or between space stations used by this service;

—or between mobile earth stations by means of one or more space stations;

—and if the system so requires, for connection between these space stations and one or more earth stations at specified fixed points.

Multi-Satellite Link — A radio link between a transmitting earth station and a receiving earth station through two or more satellites, without any intermediate earth station. A multi-satellite link comprises one up-path, one or more satellite-to-satellite paths and one down-path.

Orbit — 1. The path, relative to a specified frame of reference, described by the center of mass of a satellite or other object in space, subjected solely to natural forces,

mainly the force of gravity.

2. By extension, the path described by the center of mass of an object in space subjected to natural forces and occasional low-energy corrective forces exerted by a propulsive device in order to achieve and maintain a desired path.

Passive Satellite — An earth satellite intended to transmit radiocommunication signals by reflection.

**Perigee* — The point in the orbit of a satellite that is closest to the earth.

Period of a satellite — The time elapsing between two consecutive passages of a satellite or planet through a characteristic point on its orbit.

**Point-to-Point Satellite* — A relatively low-powered satellite which relays radio waves to a large geographic area requiring large expensive ($2-4 million) earth station.

**Prime Power* — Total electrical power which can be generated in a communication satellite.

Radio Frequency Power — A portion of the prime power which can be used to relay radio signals.

Satellite — A body which revolves around another body of preponderant mass and which has a motion primarily and permanently determined by the force of attraction of that other body.

Satellite Link — A radio link between a transmitting earth station and a receiving earth station through one satellite. A satellite link is comprised of one up-path and one down-path.

Satellite Network — A satellite system or a part of a satellite system, consisting of only one satellite and the cooperating earth stations.

Satellite System — A space system using one or more artificial earth satellites.

Spacecraft — A man-made vehicle which is intended to go beyond the major portion of the earth's atmosphere.

Space Operation Service — A radiocommunication service concerned exclusively with the operation of spacecraft, in particular tracking, telemetry and telecommand. These functions will normally be provided within the service in which the space station is operating.

Space Radiocommunication — Any radiocommunication involving the use of one or more space stations or the use of one or more passive satellites or other objects in space.

Space Research Service — A radiocommunication service in which spacecraft or other objects in space are used for scientific or technological research purposes.

Space System — Any group of cooperating earth and/or space stations employing space radiocommunication for specific purposes.

Standard Frequency-Satellite Service — A radiocommunication service using space stations on earth satellites for the same purposes as those of the standard frequency service.

Terrestrial Radiocommunication — Any radiocommunication other than space radiocommunication or radio astronomy.

Terrestrial Station — A station effecting terrestrial radiocommunication.

Time Signal-Satellite Service — A radiocommunication service using space stations on earth satellites for the same purposes as those of the time signal service.

A SAMPLE TRAINING PROGRAM

VIA TELECONFERENCE

"STRESS, THE ORGANIZATION, AND YOU"

PREPARED BY: SUSANNE M. BRUYERE
SEATTLE UNIVERSITY

DRAFT

Prepared by:
Susanne M. Bruyere, Ph.D.
RRCEP X, Seattle University

Prepared for:
RRCEP X Advisory Board
Projected Training FY1979-80

S T R E S S, T H E O R G A N I Z A T I O N, A N D Y O U (Two-Day Version)

(Delivery Strategy Number 1, done on location (regionally), tying in experts via teleconference)

Time	Content	Process/Materials	Presenter
:30	I. INTRODUCTION	Didactic presentation; transparencies	Bruyere
	A. Importance of the topic		
	1. Impact of stress on the individual		
	2. Impact of stress on organizational effectiveness		
	B. Defining stress - the difference between:		
	1. Stress		
	2. Tension		
	3. Distress		
:45	II. PHYSIOLOGICAL EFFECTS OF STRESS		
	A. How stress effects the body (Selye's theory)	Didactic; Film (15 min.)	Bruyere
	B. Stress and resulting physiological disorders	Didactic; transparencies	Bruyere
	1. Overview	Questions and answers	Anderson
	2. From the physicians' experience: Disorders and treatment	Via teleconference (Edmonds, Wash.)	
	Robert Anderson, M.D.		
1:15	III. IDENTIFYING STRESS IN YOUR LIFE		Bruyere
	A. Stress cues in you	Participants' exercise	
	B. Locating environmental stressors	Didactic	Bruyere
	1. "Schedule of Recent Experiences" (Holmes)	Individual exercise	
	2. Questions and answers		Holmes
	Thomas Holmes, M.D. (Univ. of Washington)	Via teleconference (Seattle)	
:30	IV. COPING WITH STRESS		Bruyere
	A. Traditional approaches: What they are; why they fail	Didactic; Transparencies	
	B. Current approaches: A Functional Model of Man (overview)		

SMB.

Time	Content	Process/materials	Presenter
3:15	V. RELAXATION APPROACHES		
	A. The physiology of relaxation (an overview)	Didactic; transparencies	Anderson
	Medical consultant (Anderson, M.D.)	via teleconference	
	B. Relaxation approaches		
	1. Meditation	Film; discussion	
	2. Progressive Relaxation (Jacobson)	Didactic; transparencies	Bruyere
	3. Biofeedback	Group exercises	
	4. Autogenics	via teleconference	consultants
	5. Visualization (imagery)		
	6. Effects of music		
	7. Massage		
:30	VI. LIFE STYLE CHOICES & STRESS	Didactic; transparencies	Bruyere
	A. Type A and Type B behavior	Group exercise	
	B. Assessing your life style		
1:00	VII. NUTRITION AND EXERCISE		
	A. Assessing your approach to your body	Didactic; transparencies	Bruyere
	B. Basic Nutrition tips	Group Exercise	
	Jeffrey Bland, Ph.D. (bio-chemist)	via teleconference (Tacoma, Wa.)	Bland
	C. Exercise and Its Effects		
1:30	VIII. ORGANIZATIONAL STRESS		
	A. Common organizational stressors	via teleconference	Elias
	Dean Elias (Regional Director, Antioch College West)	(Seattle, Wash.)	
	B. Identifying organizational stressors	Group exercise	Bruyere
	C. Developing a plan for coping with organizational stress		
2:30	IX. PERSONAL APPROACHES FOR DEALING WITH SITUATIONAL STRESS		
	A. The power of positive thinking		Bruyere

Time	Content	Process/Materials	Presentor
	IX. (con't)		
	B. Life and career renewal	Group exercise	Bruyere
	C. Dealing with chronic crises	Film: A Perfectly Normal Day	
	D. Assertion skills		
1:15	X. ADDITIONAL RESOUCES		

Local resource persons will be identified (through the assistance of the state VR training officer) on a wide variety of topics related to stress management (e.g. biofeedback, nutrition, exercise, meditation, wholistic health, etc.). They will be invited to come to either: 1.) make a brief presentation on the nature of and fee for their services, and the clients they serve, or 2.) set up a display table in a large room, where training participants can then take some time to go around to the representatives from each organization and ask questions of them individually, as their own interest determines.

:15 XI. SUMMARY AND EVALUATION

Prepared by:
Susanne M. Bruyere, Ph.D.
RRCEP X, Seattle University

Prepared for:
RRCEP X Advisory Board
Projected Training FY '79-8

STRESS, THE ORGANIZATION, AND YOU

(Eight-module, teleconferenced version)

MODULE I — Introduction and Background*

- Overview
- Typical environmental stressors
- Identifying stress in you

MODULE II — Stress & You

- Stress and resulting physiological disorders
- Treatment approaches
- Assessing personal approaches to stress

MODULE III — Coping with Stress (1)

- Approaches to stress management
- Approaches to relaxation
- Relaxation exercises

MODULE IV — Coping with Stress (2)

- Life style choices and stress
- Ways to minimize stressful lifestyles
- Looking at your lifestyle choices

MODULE V — Dealing with Organizational Stress (1)

- Common organizational stressors
- Causes of organizational stress
- Developing a plan for dealing with organizational stress
- Your major organizational stressors

MODULE VI — Dealing with Organizational Stress (2)

- Dealing with organizational stressors: A team approach
- Dealing with organizational stressors: A personal approach

MODULE VII — Proactively Dealing with Stress (1)

- Personal approaches for dealing with stress
- Life and career renewal
- Assessing life goals

MODULE VIII — PROACTIVELY COPING WITH STRESS (2)

- Assessing your approach to your body
- Nutrition
- Exercise

*An example of delivery approach to be used for each module is attached.

Prepared by:
Susanne M. Bruyere, Ph.D.
RRCEP X, Seattle University

D R A F T

S T R E S S, T H E O R G A N I Z A T I O N, A N D Y O U

Module I - INTRODUCTION & BACKGROUND (An eight-module training program to be delivered via teleconference)

Time	Content	Process/Materials	Presenter
:30	A. Warm-Up (off-air)		Local program coordinator
	1. Welcome		
	(roll-call; welcome; orientation to facilities; introductions, etc.)		
	2. Dissemination of materials (manuals for each participant)		
:30	B. Introduction and Background (on-air)	slides; handout materials	Bruyere
	1. Overview		
	a. Agenda and objectives of the training		
	b. Agenda and objectives of Module I		
	2. Describe the teleconferencing network		
	a. Where sites are located		
	b. Process		
	c. Introduce coordinators at each location (and participants, where numbers are small)		
	3. Importance of the Topic		
	a. Impact of stress on the individual		
	b. Impact of stress on organizational effectiveness		
	4. Defining stress - the difference between stress, tension, and distress		
	C. Identifying Stress in Your Life (on-air)		
:30	1. Typical environmental stressors	slides; handouts via teleconference	Thomas Holmes, M.D. Professor, Psychiatry Univ. of Washington School of Medicine
	a. Research and theory of the "Schedule of Recent Experiences"	Questions & answers	

Time	Content	Process/Materials	Presenter
	2. Self-assessment of environmental stressors	individual participant exercise	
:15	3. Identifying stress cues in you (off-air)	individual participant exercise brief group discussion	local program coordinator
:15	D. Wrap-up (off-air) 1. Summary 2. Overview of next module 3. Evaluation (noting accommodations that might be need to be made in pace, approach, facilities, etc., prior to next session)	slides; handouts	local program coordinator

Bruyere
RRCEP X, Seattle University
March, 1979

STRESS, THE ORGANIZATION, AND YOU

Module II - STRESS & YOU

Time	Content	Process/Materials	Presentor
:30	A. Warm-Up (off-air) 1. Welcome (roll-call, etc.) 2. Review of material covered in Module I 3. Review of major personal stress cues identified at the end of Module I		local program coordinators
:30	B. Stress and Resulting Physiological Disorders (on-air) 1. Overview 2. From the physician's perspective	slides; handouts via teleconference questions & answers	Robert Anderson, M.D. Stress Clinic Edmonds, Washington
:30	C. Treatment approaches (on-air) 1. Physician's approach 2. Availability, cost, efficacy, etc.	via teleconference questions & answers	
:15	D. Assessing personal approaches to stress (off-air) 1. Recognizing physiological signs of stress in yourself 2. How do you respond to these signs?	individual exercise brief group discussion	local program coordinators
:15	E. Wrap-Up (off-air) 1. Summary 2. Preview of Module III		local program coordinators
2:00 hrs.	TOTAL		

Bruyere
RRCEP X, Seattle University
March, 1979

STRESS, THE ORGANIZATION, AND YOU

Module III - COPING WITH STRESS (1)

Time	Content	Process/Materials	Presenter
:30	A. Warm-Up (off-air)		local program coordinator
	1. Welcome		
	2. Review of Module II		
	3. Review of personal approaches to coping with stress identified in Module II		
	4. Overview of Module III		
:30	B. Approaches to stress management (on-air)	slides; handouts	
	1. Overview of approaches	via teleconference	Bruyere
	2. The physiology of relaxation	via teleconference	consultant
:30	C. Approaches to Relaxation (on-air)	slides; handouts	
	1. Meditation	via teleconference	consultant(s)
	2. Autogenics		
	3. Progressive Relaxation		
	4. Use of biofeedback		
:15	D. Relaxation exercises (off-air)	individual and group exercises	local program coordinators
:15	E. Wrap-Up (off-air)		local program coordinators
	1. Sharing of local resources available on approaches to coping with stress		
	2. Summary of Module III		
	3. Preview of Module IV		
	4. Assignment of homework exercise		
2:00 hrs.	TOTAL		

STRESS, THE ORGANIZATION, AND YOU

Module IV - COPING WITH STRESS (2)

Time	Content	Process/Materials	Presenter
:30	A. Warm-Up (off-air)		local program coordinators
	1. Welcome		
	2. Review of Module III; overview of Module IV		
	3. Discussion of experiences in homework exercise		
:10	B. Homework Debriefing (on-air)	via teleconference	consultant
	Response to questions on homework assignment		
:20	C. Life Style Choices & Stress (on-air)		
	1. Type A and Type B Behavior	via teleconference	consultant
	2. Assessing your life style		
:30	D. Ways to minimize stressful life styles (on-air)	via teleconference	Bruyere
	1. Effective time management	slides; handouts	
	2. Appropriate assertive behavior		
:15	E. Looking at your life style choices (off-air)	individual exercise brief group discussion	local program coordinator
:15	F. Wrap-Up		
	1. Local resources		
	2. Review of Module IV		
	3. Preview of Module V		
	4. Homework assignment		
2:00 hrs.	TOTAL		

Bruyere
RRCEP X, Seattle University
March, 1979

STRESS, THE ORGANIZATION, AND YOU

Module V - DEALING WITH ORGANIZATIONAL STRESS (1)

Time	Content	Process/Materials	Presenter
:30	A. Warm-up (off-air) 1. Welcome 2. Review of Module IV 3. Overview of Module V 4. Synthesis of findings in homework assignment (identifying stressors within your organization)		local program coordinators
:15	B. Common Organizational Stressors (on-air)	slides; handouts via teleconference	consultants
:15	C. Causes of Organizational Stress (on-air)		
:30	D. Developing a Plan for Dealing with Organizational Stress (on-air)		
:15	E. Major Stressors Identified by Participants (off-air)	individual exercise brief group discussion	local program coordinators
:15	F. Wrap-Up 1. Summary of Module V 2. Preview of Module VI 3. Homework Assignment		

2:00 hrs. TOTAL

Bruyere
RRCEP X, Seattle University
March, 1979

STRESS, THE ORGANIZATION, AND YOU

Module VI - ORGANIZATIONAL STRESS (2)

Time	Content	Process/Materials	Presenter
:30	A. Warm-Up 1. Welcome 2. Review of Module V; overview of Module VI 3. Discussion of homework assignment		local program coordinators
:30	B. Dealing with Organizational Stressors:(on-air) A Team Approach	via teleconference	consultant
:30	C. Dealing with Organizational Stressors: A Personal Approach (on-air)	via teleconference	consultant
:15	D. Plan Implementation (off-air)	group exercise	local program coordinators
:15	E. Wrap-Up 1. Summary of Module VI 2. Overview of Module VII 3. Homework assignment		
2:00 hrs.	TOTAL		

RRCEP X, Seattle University
March, 1979

Module VII - PROACTIVELY COPING WITH STRESS (1)

Time	Content	Process/Materials	Presenter
:30	A. Warm-Up (off-air) 1. Welcome 2. Review of Module VI; overview of Module VII 3. Review/discussion of homework assignment		local program Coordinators
:30	B. Personal Approaches for Dealing with Stress (on-air) 1. The power of positive thinking 2. Tuning in to you 3. Music, massage, etc.	slides; handouts via teleconference	Bruyere
:30	C. Life and Career Renewal (on-air) 1. The motivation theory 2. How motivation relates to job performance, stress and health 3. How to assess your life and career goals	slides; handouts via teleconference	Bruyere
:15	D. Assessing life goals (off-air)	individual exercise brief group discussion	local program coordinators
:15	E. Wrap-Up (off-air) 1. Summary of Module VII; preview of Module VII 2. Local resources 3. Homework assignment		local program coordinators
2:00	hrs. TOTAL		

Bruyere
RRCEP X, Seattle University
March, 1979

STRESS, THE ORGANIZATION, AND YOU — DRAFT

Module VIII - PROACTIVELY COPING WITH STRESS (2)

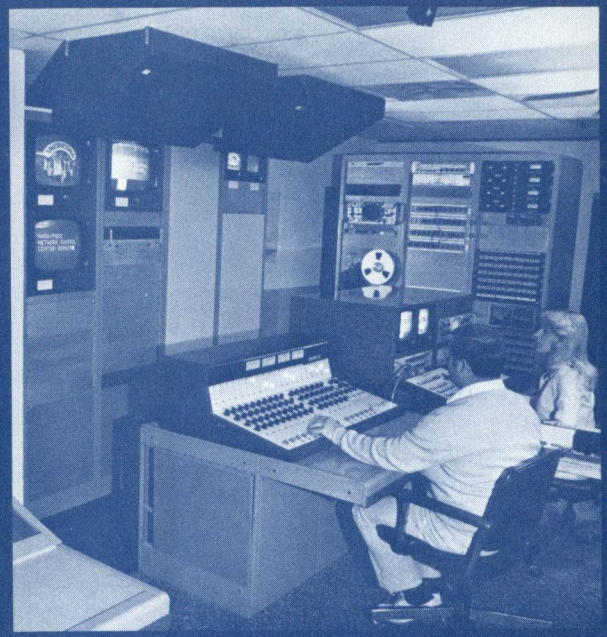
Time	Content	Process/Materials	Presenter
:30	A. Warm-Up (off-air)		local program coordinators
	1. Welcome		
	2. Review of Module VII; overview of Module VIII		
	3. Discussion of Homework assignment		
:20	B. Assessing Your Approach to Your Body (on-air)	slides; handouts via teleconference	consultant (staff, Longevity Institute, Calif.)
	1. What to look at		
	2. Diet and exercise and longevity		
:20	C. Nutrition (on-air)	slides; handouts via teleconference	consultant (Jeffrey Bland; PhD. Biochemist;Tacoma)
	1. Basic nutrition tips		
	2. Hypoglycemia and behavior change		
	3. Setting up a plan for better nutrition		
:20	D. Exercise (on-air)	slides; handouts via teleconference	consultant
	1. How fit are you?		
	2. What can you do?		
	3. Aerobics		
:30	E. Wrap-Up (off-air)	group discussion	local program coordinators
	1. Summary of entire training session		
	2. Listing of local resources		
	3. Where do we go from here? (future training; resources, etc.)		
2:00	hrs. TOTAL		

Satellite Capabilities

Communications satellites provide instant and reliable contact between any two or more points on earth, far beyond the capabilities of terrestrial methods.

The basic characteristics of satellite systems are simple: they consist of an earth station at either end and a satellite in the middle. They are flexible: points can be added or subtracted anywhere in the network by adding or removing an earth station. They are distance-insensitive: any two points are equidistant to the satellite. This brings down the cost of communicating between two distant points, from one point to hundreds or thousands, or from many points to one or more points. Finally, satellite systems offer increased choices to public service organizations in the services that can be made available — including video, audio and facsimile and data transmission services.

Larger, more efficient satellites scheduled for launch in the 1980s will result in smaller, more economical earth stations. This will provide improved communications flexibility and lower cost.



Above: *The Network Coordination Center operated by PSSC in Denver.*

On the cover: *PSSC's Satellite Access Facility in Denver and Morrison, CO, includes this 36-foot earth station. The Denver Center constitutes the country's major concentration of technical expertise and facilities for the development of public service applications of satellite telecommunications.*

For further information about PSSC or the National Satellite Network, write to the Director of Communications at PSSC's headquarters office in Washington, D.C.

Suite 907
1660 L St. N.W.
Washington, D.C. 20036
202-659-2277

Suite 90B
2480 W. 26th St.
Denver, CO 80211
303-458-7273

PUBLIC SERVICE SATELLITE CONSORTIUM

PUBLIC SERVICE SATELLITE CONSORTIUM

PSSC Is

The Public Service Satellite Consortium was founded in 1975 to assist public service organizations to deliver their services more efficiently through use of the new communications technologies, to have a voice at national and international forums and to influence the future development of satellite technology. PSSC is a national, nonprofit organization.

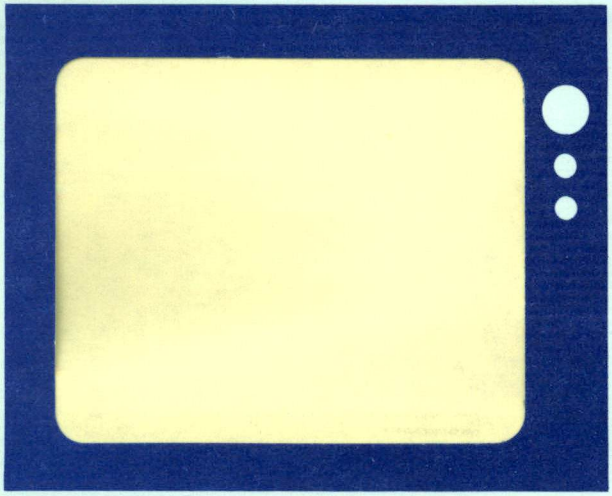
PSSC is an aggregator, arranger and broker. The Consortium is a dependable, single-source service organization which provides consultation, arranges networks for video and audio distribution of programming, performs objective studies of communications problems and proposes workable, cost-effective solutions for member and non-member organizations.

In the 1980s, continued rapid technological change will allow public service organizations to operate more efficiently using telecommunications technology.

As telecommunications technology advances and public service requirements increase, PSSC will continue to grow and change, responding to the needs of public service institutions.

PSSC Provides

- Through the National Satellite Network, coordination and transmission of continuing education and instructional programs for a wide range of groups
- Transmission and distribution of non-broadcast programs on NSN using existing commercial satellite systems
- Health education programs for hospital patients in their rooms via television on the National Satellite Network
- Satellite uplink services through the technical facilities operated by PSSC in Denver and Morrison, Colorado
- Live origination at the television studio facilities at PSSC's Denver Coordination Center
- Uplinking via the Transportable Earth Station (TES) operated by PSSC with the capability to reach satellites in the 4/6 and 12/14 GHz bands, video production equipment, data transmission, and emergency or disaster communications capability
- Video teleconferencing facilities in Washington, D.C.
- Technical support in the design, procurement, installation and maintenance of earth stations and training of earth station site coordinators
- Information services to members and acts as a clearinghouse for information on public service uses of telecommunications
- Telecommunications consultation to member and non-member organizations
- Telecommunications services to rural areas
- Planning and coordinating international satellite transmissions
- Aggregation of public service telecommunications needs so that services can be provided better, or cheaper, or both
- Liaison and coordination with major federal agencies, non-federal public service organizations, communications-related groups and the communications industry
- Participation in national and international regulatory matters to assure representation for the public service community
- The means to move the public service community from the experimental phase of satellite use to operational use of advanced telecommunications systems
- Definition and analysis of public service communications requirements
- Telecommunications studies under contract to NASA and other federal agencies, state governments, public broadcasting, national medical, church and educational bodies and other public service institutions
- Ways to realize maximum economy, reach or efficiency for public service organizations

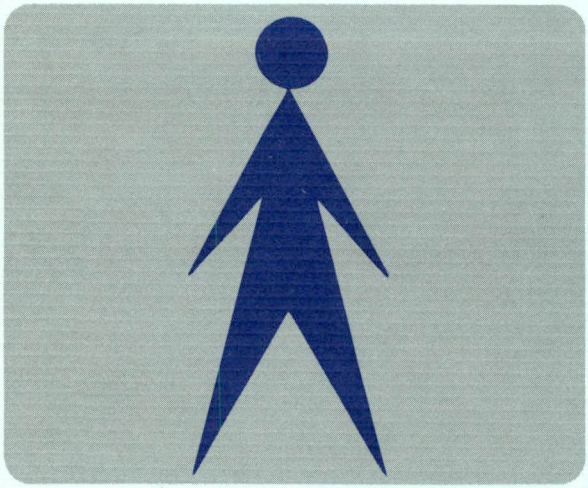


National Satellite Network
Public Service Satellite Consortium

Health Education for Patients

A nationwide satellite network is now providing health education programs on television to patients in their hospital rooms. This low-cost service is a simple and effective way for a hospital to deliver health education to patients.

The Public Service Satellite Consortium, a national non-profit organization with many health and medical group members, is providing the patient education on its National Satellite Network.



Programs are from established program distributors and cover fields such as arthritis, child care, coronary care, dental health, diabetes, eye care, hospital procedures, hypertension, mental health, nutrition, strokes and over-the-counter drugs. The programs have been selected by professionals in the health care field.

For more information about health education for patients, and the National Satellite Network, contact:

Public Service Satellite Consortium
4040 Sorrento Valley Blvd. San Diego, CA 92121
714-452-1140

NATIONAL SATELLITE NETWORK

PUBLIC SERVICE SATELLITE CONSORTIUM

REHAB BRIEF
BRINGING RESEARCH INTO EFFECTIVE FOCUS

The Role of Telecommunications in Vocational Rehabilitation

Vol. I, No. 11 August 31, 1978

Telephone and television telecommunications (TC) advances promise improved services for rehabilitation clients.

In both the education and health care fields, experiments have shown that TC has been successful in providing such services as outreach, client evaluation, counseling, training, therapy, and staff development, all valuable to rehabilitation.

As part of growing Federal government concern that radio, telephone, television, cable TV, and other electronic media to be used for education, health, and other social services, the Rehabilitation Services Administration (RSA) commissioned a series of studies to help put the role of TC into perspective for rehabilitation administrators and practitioners.

A LOOK AT THE RESEARCH

The work was done jointly by teams from Mitre/Metrek Corporation and the Office of Telecommunications, Department of Commerce (DOC). These teams operated with the guidance of an advisory task force made up of a cross section of rehabilitation specialists, including representatives of the Council of State Administrations (CSAVR). They addressed such questions as:

- How could states determine what telecommunications systems are available to deliver rehabilitation services?
- What functions in the rehabilitation process can telecommunications best perform?
- How can state VR agencies use existing telecommunications systems?
- How are state VR agencies making use of such systems currently?
- What kinds of devices (i.e., a teletypewriter to aid a deaf person in using the telephone) are available to help handicapped people use the systems?
- What programming is available and can be shared?
- What costs are involved?

For the several parts of the TC study, the teams investigated different groups and resources. Information sources were national and state VR professionals, rehabilitation facilities, telecommunications manufacturers and users, end instrument manufacturers, independent inventors, software (programming) producers, and handicapped people themselves.

FOCUS ON TELECOMMUNICATIONS SYSTEMS, SOFTWARE, AND DEVICES

Systems

The DOC team conducted the systems survey in 16 sample states. It developed a reporting system that matched VR functions and technologies to determine how state VR agencies could use—and are using—telecommunications.

Classifying VR Functions: Administration—Client Services

The DOC team distinguished between functions of two categories of vocational rehabilitation, administration and client services. Administration includes public information, management information, client records, and staff training. Client services include referral, eligibility determination, counseling and guidance, client training, education, job placement, and followup.

Classifying Telecommunications Systems: Telephone—Television—Radio

The team grouped telecommunications technologies under three headings: telephone, television, and radio.

"Telephone" encompasses all technologies that rely on the use of telephone lines for information transmission. These include conventional telephone use, telephone conferencing, facsimile, teletype, slow scan television, and computer applications.

"Television" is divided into commercial, public, cable, instructional television fixed service (ITFS), and multipoint distribution service.

"Radio" consists of commercial, public, and the Subsidiary Communication Authorization (SCA) of FM subchannels.

Some examples of how each of these technologies has been or could be used by VR practitioners in delivering rehabilitation services follow.

Software

Since telecommunications systems are just tools for delivering software—films, videotapes, slides, audio tapes, computer-aided instruction—the Metrek team undertook a survey of software sources, software quality, and software quantity.

The investigators concluded that developing software on a state-by-state basis is wasteful and results in duplication of efforts. So, concurrent with the survey of holdings, the Metrek team looked for ways these software holdings could be shared among states.

Devices

Since, for some handicapped people, the availability of systems and software means nothing without an additional piece of equipment to help them use the system, Metrek prepared a survey describing these end instruments or devices. Included is information on sizes, weights, costs, and availabilitv

FINDINGS: HOW TELECOMMUNICATIONS SYSTEMS ARE BEING USED

The systems survey reveals that state agencies are not putting telecommunications systems into especially wide use. However, some states are using these systems imaginatively and the DOC report cites many promising applications. A few examples documented in the DOC report are noteworthy:

Telephone

North Carolina has a system called CARE-LINE that uses conventional telephones. Counselors receiving CARE-LINE calls have a computerized information system at their disposal which contains information on VR services. Similar services are available in New Hampshire and Michigan.

Another telephone application is "teledictation." Physicians use a toll-free telephone line connected to an automatic recording device to speed diagnostic reports to VR offices in Illinois, Montana, Michigan, and Nebraska. Such systems reduce the time needed to process diagnostic reports by an estimated 10 to 15 days. They also reduce medical fees because physicians' staffs are relieved of the task of preparing the documents. Ease of operation encourages physicians to participate in teledictation programs.

Television and Telephone

Ohio has a VR application now in the experimental stage. It uses cable TV and microwave to link college classrooms to severely disabled patients in three hospitals. The telephone enables the patient/student to take active part in class discussions. So far, this project has served more than 200 disabled students.

Telephone/Teleconferencing

Teleconferencing is a technique that allows many people in different locations to participate in a meeting via the telephone network. Such additional equipment as microphones and amplifiers are required, however, to make the system work well. Minnesota uses teleconferencing for six functions described earlier—public information, management meetings, referral of cases, eligibility determination, counseling, and job placement. Within RSA, the Chicago and Atlanta Regional Offices use teleconferencing in conjunction with various state agencies.

Public Television

Oklahoma sponsors a 30-minute public TV program twice weekly. Each segment involves introduction and discussion of a different rehabilitation program. Simultaneously, an onscreen interpreter translates the program in sign language for deaf viewers.

Computers

In addition to routine use of computers for client records, data management, and computer-aided instruction, half the states surveyed use them for staff training, job placement, and followup.

The Division of VR at the University of Maryland operates a system that allows blind students to "talk" to a computer. The braille embossing terminal and accompanying tape cassette unit assist the student in taking course notes, schedules, and academic material.

Cable TV

The Ohio Rehabilitation Services Commission has established a program in which video cassettes are produced and distributed in their own district offices and also through the "public access" channels of local cable systems. Among the subjects are an orientation to the State VR process, guidance to eligibility determination, introduction to various State VR facilities, and discussion of the labor market outlook for clients having different kinds of disabilities.

Radio: Subsidiary Communication Authorization (SCA)

SCA involves use of subchannels of FM radio stations. It requires FCC approval to operate, as well as special receivers, costing at least $50, to receive the broadcasts.

Programming for blind persons is a relatively common use of SCA. At least 11 cities have a Radio Talking Book program. Oklahoma City has more than 90 hours a week devoted to programs for blind persons. The Division of Visual Services has distributed more than 1,100 SCA receivers to clients. Talk shows, interviews, and statewide employment opportunities are among the daily programs.

Several states use SCA for other purposes. Ohio, Wisconsin, Michigan, and Pennsylvania use SCA for staff training, counseling, and client training.

WHERE WE STAND WITH SOFTWARE DEVELOPMENT

Software is costly, yet there is almost no software exchange among the states. In fact, there is almost no dialogue among states regarding their software holdings. The software study revealed that such holdings are substantial: VR agencies reported some 580 different titles with 172 of these having been produced by the state agencies themselves. No one has developed a mechanism for software assessment, hence the quality of these 580 titles is difficult to judge.

Since states lack knowledge of available TC software and continue to develop duplicate software, inefficiency in distributing the materials will increase.

TELECOMMUNICATIONS AND VR AGENCIES

In addition to the specific examples mentioned, VR practitioners have used telecommunications technology in other ways:

- Telephone and video help with training and retraining of staff.
- Teleconferencing facilitates sharing technical expertise.
- Slow-scan TV allows medical consultation.
- Computers and television permit disabled clients to be trained at home and even work at home.
- Video tape records case data for counseling management and referral.
- Video tapes aid in evaluating progress from pretreatment through posttreatment.
- Computer conferencing enables deaf persons to communicate with hearing persons.
- Computer conferencing assists professionals in sharing research.
- Instructional television fixed service (ITFS) links consumers with policymakers.
- ITFS aids in continuing education.
- Telephone conferencing helps to determine disability.

Barriers to Use of Telecommunications

What are the major barriers to using telecommunications? The Annenberg School at USC is examining attitudinal, financial, regulatory, technical, and organizational barriers. The study will describe the kinds of changes needed to make use of innovative methods such as telecommunications.

Planning Telecommunications Use

The New York Office of Vocational Rehabilitation in collaboration with New York University did a study for RSA on planning telecommunications use. The project's final report addresses such questions as: Where does a state agency begin planning for use of telecommunications? What information is needed? How does it get what it doesn't have? How does staff get involved? How are resources examined and priorities reordered in light of new opportunities?

How Much Will Telecommunications Cost?

Two related initiatives sponsored by RSA have recently begun. One will examine the relative costs of using certain techniques for staff training. The second will look at costs of providing direct services to clients. Still in their initial stages, these projects will lay the groundwork for a series of demonstrations to be conducted over the next few years. These demonstrations will be designed to provide cost-effectiveness data for use by the VR community.

IMPLICATIONS FOR ACTION

- As a substitute for transportation, TC could enable homebound clients to upgrade skills at home and have access to services previously unavailable at home. One example is classes shown on television.
- Client training could be offered in a wide variety of locations or in the home, when necessary. Video tapes and video cassettes provide new opportunities for clients to learn at any time in convenient settings.
- Data banks and computer centers could enhance job placement opportunities.
- Almost all forms of TC could be used for VR staff training.

- Handicapped persons could work in competitive placement positions in their homes. Many jobs related to data processing could be done from remote work stations.

- Video taped information on a VR program could be disseminated to clients and the public. The tapes could be played repeatedly for any number of individual clients, without tying up counselor time.

- Previously neglected audiences such as homebound individuals could be reached by state VR agencies through TC.

- Through TC rehabilitation, workers and their clients could readily benefit from informational programs directed to them on a regular basis in their home communities. In addition to providing substantial savings in travel costs when contrasted with conventional meetings, TC can bring information to the user in more timely and digestible packets.

- An organization to compile and disseminate software information among states could provide guidance in the application and use of new delivery systems. The diverse sources, uneven quality, high production costs, and limited means for distributing software—all of those factors suggest the need for a central organization for effective and efficient use of TC software.

- An educational campaign should be started by a coordinating organization charged with improving software utilization. The campaign would attempt to enlighten VR administrators and decisionmakers as to the unique benefits of TC technology.

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Harland, R.P. and Adams, L.H. (Eds.) *Telecommunications for vocational rehabilitation: Systems survey*. Washington, D.C.: Office of Telecommunications, U.S. Dept. of Commerce, September 1977.

Mitre Corporation. *Telecommunications for vocational rehabilitation, Vol. VI. Executive Summary*. Mitre Technical Report 7420, McLean, VA: METREK Division, MITRE Corp., 1977.

Copies of the BRIEF are available from UF-RRI.

Prepared by Rehabilitation Research Institute • College of Health Related Professions

University of Florida • Gainesville, Florida 32610

Bridging the distance

an instructional guide to teleconferencing

BRIDGING
THE DISTANCE

An Instructional Guide To Teleconferencing

by Mavis Monson
Instructional Communications Systems
University of Wisconsin—Extension

This manual was prepared by Mavis Monson.
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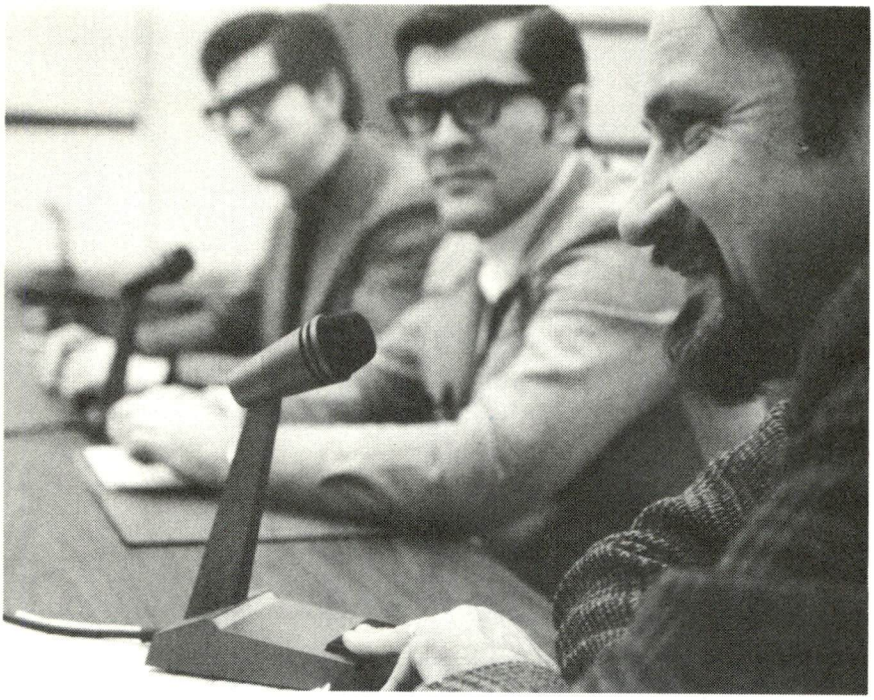


Introduction

This manual is for you, whether you are new to the medium of teleconferencing or experienced in using an interactive system for communication. As an instructor, moderator, or program coordinator, one of your goals is to give participants the best possible program. This manual is designed to help you accomplish this goal. In it you will find techniques on how to better plan, present, and evaluate your programs. It presents the four basic steps to successful teleconference planning.

This manual has been written in response to requests from users of the University of Wisconsin—Extension Educational Telephone Network (ETN) for more information about the "how to's" of better programming. It is based on a study in two areas: research and practice. The research includes related areas of adult education, communications, learning, and listening, in addition to teleconferencing. Programmers who have presented and evaluated scores of programs

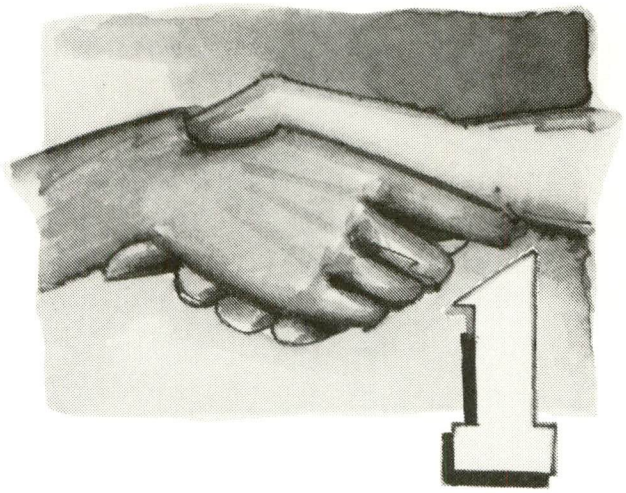
during the past 12 years of ETN operation were interviewed. The successful techniques they developed and implemented were compared with the theoretical data to identify relationships between research and practice. The study resulted in a number of suggestions to maximize the effectiveness of program design and the satisfaction of participants in the teleconferencing experience.

The manual looks at the characteristics of interactive (two-way) teleconferencing. It presents techniques which can be applied on a practical basis to programming. A suggested method of program evaluation is also included.

In an effort to simplify the material, and because it has been written for program coordinators, moderators, and instructors, the term *programmer* is used to identify anyone who may fill one of these three roles in a teleconferencing program.

Four Steps To Successful Interactive Teleconferencing

Let's suppose that you have just been asked to provide some programming using a teleconferencing network. Where do you begin? What are some easy techniques that you can incorporate into that first program to make it more effective? Start off with some of the techniques suggested under the four design components on the next few pages. These design components have been identified as important ingredients in using an interactive teleconferencing system. All of the suggested techniques may not be directly applicable to your individual situation, but they may trigger other possibilities which might be adapted to your program.



Humanizing

What is humanizing and why plan for it?

Humanizing is the process of creating an atmosphere which focuses on the importance of the individual and overcomes distance by generating group rapport. It's important to add humanizing to your list of planning considerations because many participants may be all alone at their locations, may never have used teleconferencing equipment before and may be expecting something quite different from the teleconferencing experience. Humanizing techniques let individuals know that, although separated from you by great distances, their needs are important.

Humanizing Techniques

Send A Welcome Letter

Let participants know they are important to the success of the program by sending them a welcome letter before the first teleconference. Include program goals, suggestions for preparing for the first session (such as a question or problem to think about), and some information about yourself (biographical sketch, photocopied picture).

Make A Master Roster

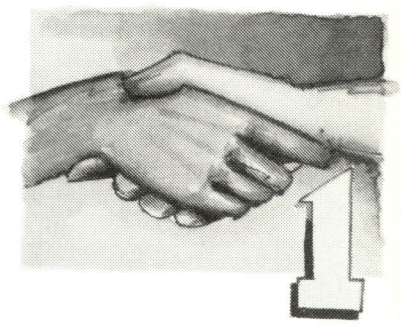
The more you know about the individuals in your group, the better you'll communicate. Use information on preregistration lists to make up a master roster of participants at each location with a line or two of related information about them. Use this roster to focus discussion on the needs and interests of the individuals participating.

Use Of Names

Always call participants by name. Use your roster list. When an individual asks a question, note the name so you can use it again in your response. People like to be recognized by name; it's especially important in teleconferencing.

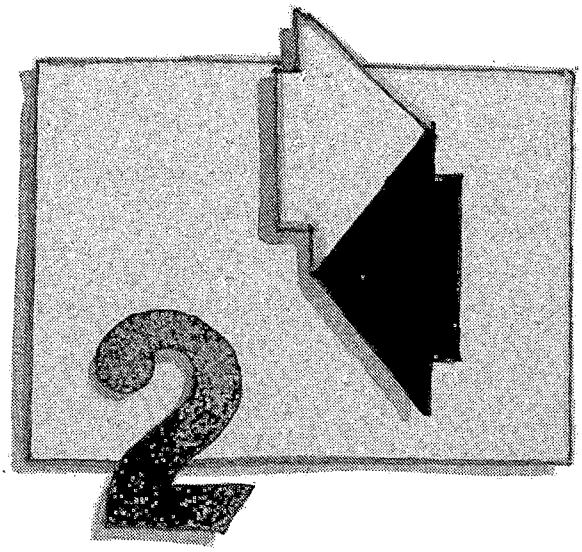
Let Your Personality Come Through

Be yourself. It's important to come across the way you do in a face-to-face situation even though microphones are used for communicating. Try to form a mental picture of what it's like to be at one of the locations and talk directly to individuals rather than to an "audience out there."



Open With An "Informal Roll Call"

To create an informal, friendly atmosphere and to give participants a chance to become accustomed to using the equipment, ask for a few responses from selected locations. A few exchanges such as, "How's the weather?" or "How many are there with you today?" let individuals overcome any hesitancy in using the microphones.



Participation

What is participation and why plan for it?

Participation in teleconferencing might be defined as the process of getting beyond the technology by providing opportunities for the spontaneous interaction between participants. As communicators, we also want our audience to interact with the information being presented. That's why it's important to encourage involvement in the communication process and it's important to plan time for those opportunities. One of the strengths of teleconferencing is its capability for two-way communication, and providing participation opportunities helps individuals maintain interest and commitment to the program.

Ways To Get Participation

Warm Up Your Audience

Enthusiasm and encouragement by the programmer is vital to getting participation. Help individuals feel comfortable about sharing their experiences. Participants may need more encouragement than in a face-to-face setting, so your role as programmer is important.

Plant Some Questions

Before the program, call a few specific participants and ask them to be ready with a comment or question if the discussion should lag. You can use registration information to identify individuals who would be willing to assume this role. Planted questions can help stimulate a chain reaction among group members.

Use Questions As A Tool

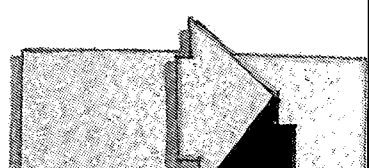
Use a list of highlight questions which summarize the main ideas for each session. Send these to participants before the program. Use this list to kick off discussion by asking group members to pick out a question they would like to talk about in greater depth.

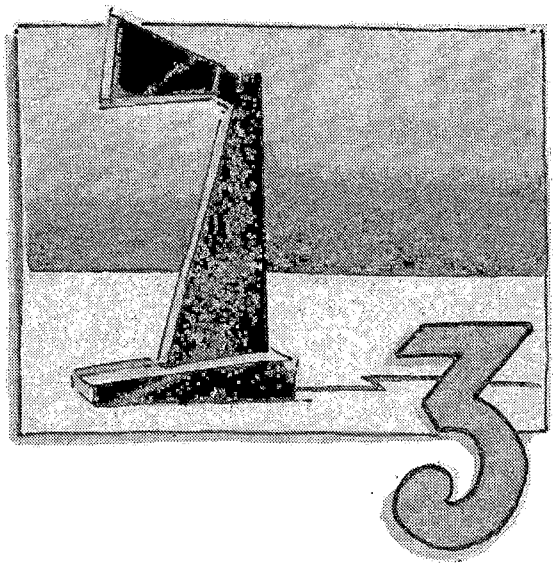
Use Interactive Formats

Use formats which encourage group members to participate. Almost all techniques used in adult education (case study, interview, panel discussion, role playing) can be used successfully in teleconferencing. For example, a series of short case studies can be presented by individuals at the beginning of the program, with discussion following the case studies.

Get Specific Groups Involved

Ask a group at one of the locations to be responsible for the answer to a specific question to be presented at the next session. This responsibility encourages participants to sit down and talk with one another after program time. The technique also fosters cooperation—and there is a built-in leadoff for the next program's discussion.





Message Style

What is message style and why plan for it?

Message style is presenting what is to be said in such a way that it will be received, understood and remembered. In teleconferencing, where participants are receiving the message by listening, it's important to think about the things we know about listening that may help to improve the communications process. Certainly there are some factors about listening yet to be discovered, but there are some guidelines about presenting aural messages which can make presentations via teleconferencing more effective and enjoyable.

Planning Message Style

Preview Your Message

Give a preview of what you are going to say in the form of a short, general overview. Giving individuals an idea in advance of the various parts of a message and how it will be organized (from general ideas to specific examples or vice-versa) helps them in their own understanding and remembering processes.

Use Variety

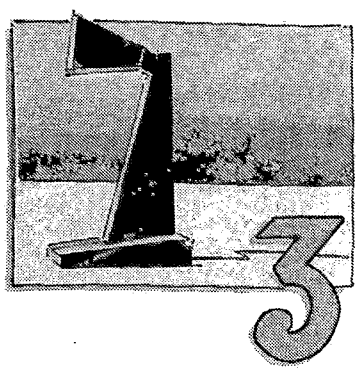
Plan for short segments. Variety keeps interest levels high and this leads to more active listening. Keep your program fast-paced, providing short segments of concentrated listening (10-15 minutes) alternated with other activities. These activities might range from a simple question-and-answer to the use of a buzz group (adaptation of the six-minute—six-people discussion technique) at each location.

Repeat and Summarize Main Points

Use repetition and summary to help individuals remember important points. Repeat new words, concepts, or phrases at least three times during an hour program. New words can be spelled on-the-air to aid audience understanding or a printed word list can be added to the packet of materials sent to individuals.

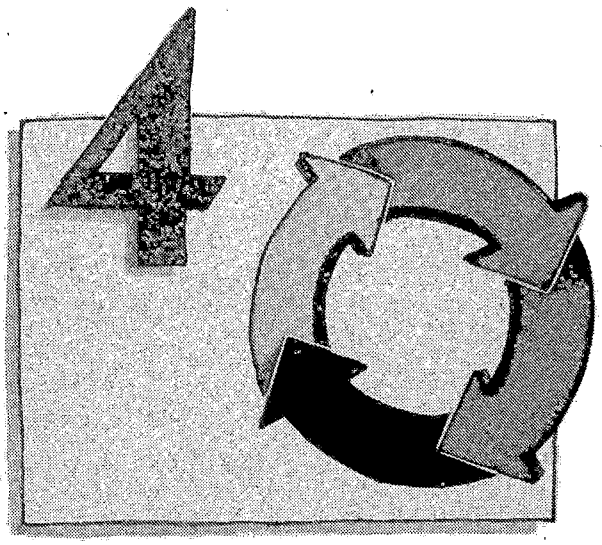
Provide Print Backup

Use print materials to back up your message—an outline, some illustrative brochures, or even a detailed workbook. Print reinforces what we hear and is a permanent record for review purposes.



Send A Summary Letter

The most important summary is at the end of the program. If time runs out, a short summary letter could be used to tie together some of the important points brought out during a panel discussion or interview.



Feedback

What is feedback and why plan for it?

Feedback is the process of getting information about the message which helps you and the participants complete the communications loop. It helps in correcting misunderstandings and filling in omissions. Feedback can also be used in planning future programs. It's important to consider how you will get feedback because teleconferencing settings give you verbal cues only. With group members physically separated from you, you'll want to find ways to get feedback during program time as well as off-the-air.

Ways To Get Feedback

Ask For Feedback

The most basic technique for getting feedback is simply to ask for it during the program. Check on your pacing and on the quality of the reception at the locations. Ask the group if there are questions about the material you are discussing. Because individuals new to teleconferencing may be shy about giving feedback, preassign it, calling several people in advance of the program.

Use On-The-Spot Application Of Information

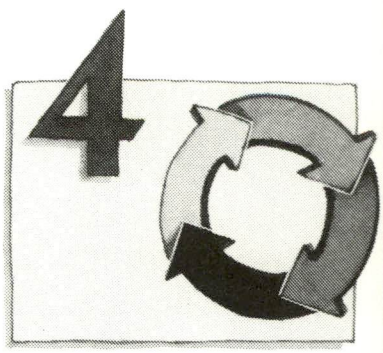
Find out if the material being presented is relevant to participants' situations. Pause several times during the presentation to ask for individual feedback. Ask one or two participants to briefly comment on the value of the information to him or her. Would the person use it? If so, how? Application-of-information feedback stimulates others to think creatively.

Use Group Questions

Instead of evaluating participants individually, use a weekly question which is discussed and answered after program time by groups at locations. A group working to develop a cooperative best answer stimulates rapport and helps give individuals more in-depth understanding. Have group members sign their names to the answer (allowing for a minority opinion) and mail it to you for evaluation before the next program.

Use Written Forms Of Feedback

Use written methods to determine whether your program is meeting its objectives. A postcard questionnaire or a preaddressed mailer with space for comments can be included with print materials sent out before the program.



Listen To Tapes

Teleconferences tend to be concentrated periods of listening and interaction. Many times, programmers miss an important ingredient in the program because there just wasn't time to stand back and be an observer. Listening to the recorded program can be a valuable feedback tool.

a closer look at

Humanizing

As we participate in any venture—educational, recreational, social—we have certain individual needs. These include the need to be considered as unique, to see that personal goals are met, to realize certain expectations concerning our experience. This is the case whether we are participating in a face-to-face setting or via teleconferencing.

In teleconferencing we use a term which describes those actions that lead individuals to feel that their uniqueness is being considered. We call it *humanizing*. Humanizing also involves the creating of an atmosphere in which the distance separating the participants is seemingly overcome because of a one-group rapport.

"Getting-to-know someone" process

An important part of humanizing is the getting-to-know-someone process. One of the goals of humanizing in teleconferencing is to increase the knowledge participants have of you and of each other as individuals. The result is that participants feel more comfortable about making sure their needs are being met. They're more willing to share concerns about the course via an off-the-air phone call, more willing to suggest a change in the series via a feedback form, and more willing to participate during the program by making comments.

There is a direct link between humanizing and participation. Individuals react positively to efforts to reach them with humanizing techniques.

In fact, as you might suspect, there is a direct link between humanizing and participation. Examples of this are found in many studies of teleconferencing. Individuals react positively to efforts to reach them

with humanizing techniques. For example, personal visits made by programmers to meet with participants generated enthusiasm which carried over into program time. There was an increase in the number of questions and comments made during the succeeding program—a greater willingness to share after one of these visits.

Humanizing is important when we talk about the "satisfaction quotient," that is, how well people like teleconferencing.

Just how important is this facet of humanizing? It may or may not *directly* affect communication effectiveness but it's very important when we talk about the "satisfaction quotient," that is, how well people like to communicate using this medium. However, an added benefit of humanizing is that in gaining information about the members of your group you influence the effectiveness of your communications with them. Teleconferencing groups are generally diverse; the more you know about them, the better you can reach them. Knowing more about your group will help you set more realistic program objectives, allow you to choose examples that are relevant, and help you in approaching the presentation style (pacing, vocabulary).

Expectation setting

Expectation setting is another important part of humanizing. Our initial reaction to an unfamiliar situation is to compare it with something we've already experienced. Most people immediately compare teleconferencing with face-to-face settings. Rather than comparing these two ways of communicating, a more realistic approach is to focus on what teleconferencing *is* rather than on what it is not. You as a programmer can help orient your group as to what to expect from teleconferencing—focusing on some of the positive qualities of this medium. For example, it has an informal, approachable quality which lends itself to a more conversational presentation rather than a more formal lecture.

Teleconferencing is interactive—in contrast to other media, it allows immediate interchange between individuals. This human interaction is important in communications.

It's interactive. In contrast to other media, it allows immediate interchange between individuals. This human interaction is important in communication. For example, adults using one-way media in instructional settings say they miss the feedback and reassuring comments

Individuals new to teleconferencing generally follow the lead of the programmer. That is why your ongoing encouragement and enthusiasm are such important factors.

from their instructor and the misery-sharing and mutual learning with their peers. Teleconferencing can provide this immediate interaction.

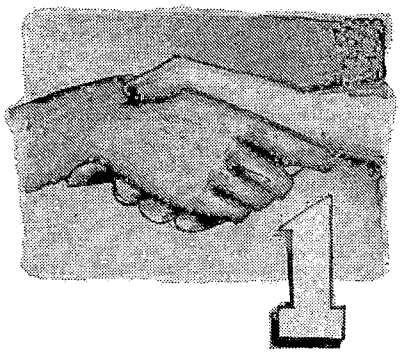
Its very anonymity can be an asset—this quality increases the willingness of some individuals to participate. Being physically separated allows some group members to feel more relaxed—they do not have to conform to others as they might in a face-to-face setting. Some individuals find they can concentrate more readily—certain types of distractions are not present.

Another one of the pluses is that the sheer diversity of the groups that can be linked by teleconferencing stimulates more interesting discussion. It can join people from great distances with "presence"—giving people the feeling they are in the same room even though they are miles away from each other.

These are some of the positive qualities of teleconferencing. However, individuals who are using it for the first time may have very different initial expectations. Studies show that people's views of what teleconferencing is and what it can realistically do are important in forming positive attitudes towards it. Some of the qualities just mentioned may not be apparent to group members until you emphasize them.

Role of programmer

That is why your role in expectation setting is so important. Individuals new to teleconferencing generally follow the lead of the programmer. You can do much in that first introduction to the medium to help align the group's expectations with realities. Your ongoing encouragement and enthusiasm are important factors in realizing the positive aspects of teleconferencing.



interactive techniques for

Humanizing

In the first section, a number of ways to humanize the experience for teleconferencing groups were described. In addition to those mentioned, several other ways to humanize are suggested below.

Call On Commonalities

Individuals participating in teleconferences typically are diverse in background, education, and experiences. Goals may be diverse also. How can a programmer reach this broad range of individuals and generate a group feeling? Fortunately we know from group dynamics theory that as individuals become aware of how their goals fit in with group goals, they become committed to the group and rapport results.

To develop this awareness takes skill on the part of the programmer. One of the ways is to identify certain commonalities—shared experiences which can become the basis of a common goal or point of discussion among group members. The master roster is the best way to identify possible commonalities among the participants. Several group members may have shared the same or a similar experience even though they are at different locations. Ask these individuals to relate to the group their way of solving a particular problem—stress that even sharing a not-so-successful solution is "okay."

"Let's say we're talking about apprenticeship and I know from my roster that there are 5 or 6 people out there who work with an apprentice or have experience in this area. I'll ask them, 'What do you think about this?—you're engaged in this activity.'"

—Education programmer

"The best thing is to try to get to locations within the first few weeks if you can. I try to cluster every 3, 4, or 5 weeks. I run the broadcast from that location and will stay an extra 2 hours or so talking with individuals."

—Education programmer

Set Up A Cluster Circuit

What is clustering? It's simply choosing one of the locations on the network as an origination point and asking all those participants within driving distance to meet with you there for that particular program in the series. One of the bonuses of teleconferencing is the capability of originating a program from any location on the network, and because we know that teleconferencing "works best" when individuals know something about one another—a strong recommendation exists to meet with groups at a local site.

Participants like it; programmers like it. Personal rapport is built and it's an opportunity to gain feedback that could not be gotten in any other way. It's also a good chance to counsel with individuals who have specific concerns or who might just want to know you better—so if you're planning on using this technique, try to spend a couple of hours before or after your program to meet with group members.

How do you set up a cluster? Most programmers sit down with a map of the area their program reaches. They pick out certain locations as the cluster sites—these are sites centrally located to the other locations. Many programmers set up an itinerary of the cluster locations which they plan to visit during the series. This "cluster circuit" may be announced during the first program or sent to participants in advance. Members have the option of attending the program at their own home bases or attending the session at the cluster site.

A nice addition to carry with you to the cluster location is a headset microphone, especially if you are used to working under hands-free studio conditions. It will allow you to focus your attention on your presentation and the group's interaction. What if you forget the microphone? A book placed on the top of the microphone press bar will give you an "open line" during program time.

questions often asked about

Humanizing

I have large audiences in my teleconferences which are held only twice a year—what humanizing techniques can I use?

With large audiences, it's just not possible to call everyone on a first-name basis or get to know individual interests except in a very broad way. But don't forget the simple ways to humanize—the way you introduce a program by communicating your concern that each individual have a chance to have his or her needs met. Provide a mechanism for this: Give your phone number and phone-in office hours, or provide a postcard or prepaid mailer. Stress your interest in receiving these requests.

Even before the program, you can help individuals identify with you as an individual. Include a picture of yourself with a short biographical sketch, either on the promotional brochure or in a short "welcome" letter.

As you are giving the program, think about the ways you can reach individuals. Use examples which relate to other areas the program reaches—not just local ones. Ask some participants from other locations to contribute to the program content.

Should I have a few participants in the studio with me for eye contact while I do my program?

This question has no one answer. Some programmers like the stimulation that a group provides. Other programmers like to be alone in the studio—in this way they can concentrate on all of the group members. They think that having a group with them tends to make them forget about the participants at other locations.

If you do choose the on-site group option, a few "do's" may prove helpful.

- Remind your face-to-face group to use the microphones so their comments and questions will go out over the network.
- Make sure your instructions and references are tailored to a teleconferencing setting—with more detailed directions being provided.
- Treat all comments and questions alike.

Doesn't humanizing take up valuable air time?

A balance must be struck between making individuals feel comfortable with the system—generating rapport between you and other group members—and in presenting the program material. All programs will benefit from some portion of time spent in making individuals feel that they are an important part of the program.

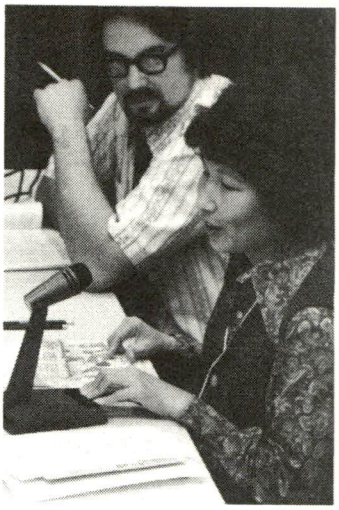
However, the amount of getting-to-know-one-another and other humanizing will depend a great deal on the size of the group and the objectives of the teleconference. In a class on article writing, for example, where group members' psychological support of one another's efforts is an important part of the growth process, humanizing time is well spent.

Humanizing in teleconferencing

- is directly related to satisfaction
- influences the effectiveness of communications
- is part of the getting-to-know-someone process
- is important in expectation setting
- focuses on the importance of each individual

a closer look at

Participation



Participation—what is it? How important is it in teleconferencing? How can you get participation in programs? Questions like these are often asked by programmers. As defined in teleconferencing terms, participation is the process which involves getting beyond the technology to allow natural interaction to take place. We want that interaction because we know it's important in the learning/communications process.

Participation and learning

A quick glance at any research journal, whether it be in the field of communications, adult education, or educational psychology underscores the importance of participation. Research in listening and learning reemphasizes the point that active participation by an individual is central to success. The use of participation is probably one of the most consistently found and strongly supported guidelines coming from the research in these areas.

Importance of group interaction

When we look at group dynamics, we again find active participation central. Group interaction stimulates solutions to problems, encourages constructive criticism of solutions, and strengthens the commitment of a group to carry out the decision made. Creativity is heightened. Group problem solving may take longer than that of an individual working in isolation, but the results show more creative approaches and solutions.

If we are concerned with actively changing attitudes, we again identify the need for participation. Research has shown that active discussion by a group is a more highly successful method of changing an individual's opinion than listening to a lecture. Thus, individuals are more likely to change their behavior when they interact with their peers.

The use of participation is probably one of the most consistently found and strongly supported guidelines in the research.

Building in participation formats as a part of the program is a way to help assure that interaction will take place.

Teleconferencing studies parallel the results of those made in other disciplines. Those findings affirm what previous studies uncovered: the chance to actively participate in the learning/communications process is central to success.

Guidelines for participation

As we begin to think more about participation in teleconferencing, it's important to remember two guidelines: (1) participation opportunities and strategies should be carefully planned in advance of program time, and (2) both kinds of participation (group members interacting with each other and individuals interacting with the program material) should be planned for.

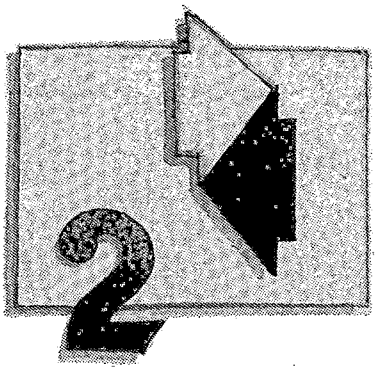
Planning for participation is important because it doesn't always "just happen" in teleconferencing. Studies of teleconferencing suggest that there is an automatic training over time in which group members consciously and unconsciously adapt their ways of communicating as they use an interactive system. However, some individuals adapt more quickly to a new situation; others may need more encouragement to do so. Building in participation formats as a part of the program and asking some individuals to be responsible for taking the lead are ways to help assure that interaction will take place.

The second guideline in planning participation is to remember that there are two kinds of participation. Most of us think of participation as the kind in which we *see* an individual or group engaged in an activity of some sort: asking a question, making a comment, jotting down notes. The activity we see gives us confidence that the person is in the process of hearing and remembering what is being communicated.

The participation that we don't observe may be as or more important in the communications process as the participation we can observe.

However, the participation that we don't observe may be as or more important in the communications process. Such things as active listening (anticipatory alertness) and mental work in thinking about a problem are important participation processes.

Because we don't directly observe these processes we tend to forget about them and their importance. By skillfully using questions, both written and oral, and by guiding group members in some mental exercises, you can stimulate this internal participation which is so critical in listening and learning.



interactive techniques for

Participation

This section presents a number of ways to get participation in a teleconference. The techniques are important in shifting attitudes, generating new thinking, facilitating problem solving and stimulating creativity, as well as providing opportunities for group members to play a role in presenting some of the actual program material.

Individual Participation

If you have only one or two individuals at each location, use some of the following techniques to stimulate member participation.

- **Question-And-Answer Periods**
- **Case Studies**
- **Brainstorming**
- **Reactor Panel**
- **Role Playing**
- **Interview***
- **Panel Discussion***

*Described under Message Style section

Group Participation

The following techniques can be used in programs where there are several individuals at one location.

- **Group-To-Group Discussion**
- **Pre- And Post-Activities**
- **Buzz Group**
- **Group Work Session**

Group-To-Group Discussion

This format gives participants at different locations a change of pace by giving them the chance to be the center of the discussion. It gives you, as the programmer, the opportunity to step back and monitor the participation. Get group-to-group discussion going by asking participants at one location to question participants at another location of their choice. You can do this spontaneously during program time, or you might assign the questioner role to a location during the prior session, so participants will be ready with questions. At program time, give that location the go-ahead and allow the participants to begin the discussion by calling on any location they wish to answer their questions.

Pre- And Post-Activities

These activities are useful in getting discussion going at locations. Is one of your goals to help individuals apply what they learned to their own situation? Use a post-activity. For example, after a program on burn care, a nursing clientele group might discuss the material presented during the program and apply it to their own hospital situation.

Sensitive issues which some groups might find difficult to discuss on the air may be handled as a pre- or post-activity. Clergy groups have

successfully used this method to deal with a wide range of issues, meeting an hour before and an hour after the teleconference presentation. An example is the program on conflict management. Participants brought personal case studies. Local leaders (pastors and chaplains especially trained for this role) lead the group discussion at the locations.

A less structured off-the-air activity may be generated by a programmer by asking participants at a specific location to come up with the answer to an assigned question by the next program time.

"I like to get groups discussing among themselves at each of the sites. One way I do this is to ask that one group be ready to respond to a question the following week. I know that after we go off-the-air, everyone will sit down and talk about what answer they'll give next time."

—Education programmer

Buzz Groups

Buzz groups at locations can be used off-the-air when the topic to be discussed is best done in small groups. These small groups formed from a larger one provide the most opportunity for everyone to participate.

Many times called the 6-6 method, buzz groups usually consist of 6 people who discuss a topic for 6 minutes off-the-air at their locations. A later report-back is held on the network. The 6-6 technique is useful following a panel discussion or other presentation to draw out opinions of group members.

In using buzz groups, use the following suggestions:

- Remember to keep the task simple: *Develop one question, make two suggestions, agree on one disadvantage.*
- Give specific time limits (minimum 6 minutes, maximum 10 minutes).
- Make instructions clear and simple, using plenty of repetition.
- Have each group select a leader.
- State exactly what time groups will report back on the network.
- Have topics or questions for buzz groups typed and mailed in advance, if possible, so that each group has written instructions of the group's objectives.

"For my program on wood finishing, I send a packet to every location containing everything needed to learn about staining and finishing wood: linseed oil, paint thinner, penetrating stain, mixing tools, wood, even cloths to apply the stains and finishes."

—4-H Leaders programmer

Group Work Session

This format is used to best advantage in demonstrating manual skills and developing abilities by actually working on a project under the direction of a teleconferencing programmer. Careful planning of these sessions is important so that group leaders at locations can help individuals during the session.

Packets with the necessary materials can be mailed directly to individuals or to a location, with some hard-to-mail items being supplied by participants. Directions on how to proceed are given over-the-air by the programmer, with local guidance provided by on-location leaders.

Individual Participation

Question-And-Answer Periods

"I always provide some way—postcards perhaps—to allow for unanswered questions. I call it 'respect for my audience.' I know they came to the program because they had a question they wanted answered—and I want to be able to get that answer to them in some way."

—Beekeeping programmer

Don't overlook the question-and-answer period as a valuable way to get participation. You may have to adjust the way you handle these periods, depending on the size of the group. With small numbers (under 50) you can encourage group members to simply come on the network by identifying themselves and giving their questions.

With many locations represented you may wish to ask certain geographic areas to respond at one time. Ask for questions from the northeast area, for example. If an individual group at one location has large numbers, questions may be written out, collected and given to a group leader at that location.

When large numbers of people participate in a teleconference, time may run out before all questions have been asked. It's important to provide a vehicle that allows individuals to get answers to their questions. Provide this opportunity by having postcards available at the locations or suggest that participants contact you during certain phone-in office hours the following day.

Case Studies

Case studies can help group members uncover the problems and issues found in a particular situation being discussed. Case studies are detailed reports describing an event or a situation that a group can analyze and discuss. If you choose to use written case studies, a copy should be sent to each participant in advance of the program so that the cases can be read and digested.

An alternative which works well in a teleconference is to have individuals give oral case studies. Phone several participants before the program and ask them to present short case studies (5 to 10 minutes). As a programmer, you can help the group keep the details of the case in mind by summarizing the main points before opening up the discussion. Since case studies tend to bring out strong opinions, they are a good way to generate participation by the group members.

"I consider the use of case studies as a 'pump-priming' activity. I wanted people to interact and we had a very diverse mixture of people—people who don't normally interact in their job situations. So why should I expect them to interact in a teleconference? I wanted that interaction—so I used case studies."

—Social work programmer

Brainstorming

Are you leading a meeting in which you need to generate a maximum number of ideas in a minimum of time? Adapt the brainstorming technique to teleconferencing.

Carefully set up the ground rules so that individuals know how to participate. After introducing the topic and procedures, use the open-mike technique, encouraging everyone to spontaneously participate.

You, as programmer, may need to manage the traffic flow. Be sensitive to attempts to enter the idea exchange. If large numbers of ideas come in at one time, you may have to ask for repeats. Allow silent periods for thinking and creativity, but start up the flow of ideas by reviewing some of those already given. Participants at locations may wish to make their own lists of ideas already given to use as a stimulus for further thinking, but after the program transcribe the ideas from the program tape and furnish a copy to each group member. Set aside a future program for the evaluation of the ideas presented.

"I would suggest calling people in advance and asking them to be responsible for reacting. You could say on-the-air, 'Fond du Lac, Merrill and Sheboygan—I want you as groups to serve as reactor panels.' But that's not quite as successful. You'll have some locations that will not reply. Having an individual responsible works—they know that they are responsible for that portion of the program."

—Communications programmer

Reactor Panel

How do you "get the ball rolling" after a presentation? Use a reactor panel. It's been found in teleconferencing that participation by a few members of the group starts a chain reaction. The reactor panel is made up of a few members who take on the responsibility of reacting to a presentation.

Use the registration list to telephone two or three persons before the program and ask them to be ready to react. They can be at the same or different locations. Deciding on the reactor panel's objective will depend on the program:

- Will the panel be used to stimulate discussion by leading off with questions or thought-provoking ideas following a guest speaker?
- Will the panel serve as an audience representative to interact with an outside speaker when the group is too large for individual questions?

Success depends in part on reactor panel members and the programmer agreeing on the objectives and procedures before the actual program.

Role Playing

How do you make discussion more realistic? Get groups to thinking about how theory is translated into day-to-day behavior? Give adults a chance to try out new ways of acting in a "mistake-free" setting? Role playing helps participants think about and practice human-relations skills under circumstances that approximate real life. Rather than just talking about something, role playing is learning by doing-observing-analyzing.

How do you adapt role playing to teleconferencing? The following ways have been successfully used by programmers.

- *Role playing by group members; analysis by rest of group:* Preassign roles by calling several individuals before the program. Participants generally like to accept this responsibility—they say the anonymity of teleconferencing makes them feel more free to react realistically. Try to limit the number of voices to four at the maximum, so the audience can identify the individuals. (Give the members of the audience a chance to familiarize themselves with these voices by asking each role player to give a short introduction of the role he or she will be playing before beginning.)

  Prepare the group by suggesting things to watch for as the role playing begins. Careful analyzing of what has happened is as important as the role playing itself; analyzing helps the group pull out important issues involved.

- *Prerecorded vignettes of role playing; analysis by group:* The second method of role playing which works well in teleconferencing is to use prerecorded segments. These provide more control in terms of time and of issues brought out. This type of role playing, although not "live," can still be as provocative and can lead to deep involvement in the issues by the audience in the analysis phase.

"We prerecorded four events that agency workers might run into in their day-to-day activities and taped them right on the scene so there were realistic background noises, etc. Each segment was about 5 minutes long and was followed up by an assignment for the next week—What would you have done in that situation?"

—Social work programmer

questions often asked about

Participation

How do you handle silences (pauses) in a program?
One of the first things to remember is not to overreact to a silent period. One of the tendencies of a new programmer or guest speaker is to jump in too soon, without giving the audience time to respond. Not every moment of air-time needs to be filled—participants need time to phrase questions and develop answers.

Use a watch that has a second hand. Wait about 15 seconds before asking again for a response or going on with your presentation. Let your group know that you're allowing this time for responses.

If you would like to get further response and there is none, try these techniques:

- Rephrase your question. This may clarify any misunderstandings and gives a few more moments for participants to phrase an answer.
- Use directive techniques. Call on an individual from the roster (phrasing your question so that an individual has the option of not responding without losing face); or use a commonality of the group to stimulate a comment.

What's a jumping-off question?
A jumping-off question is one that pertains directly to the topic just being discussed and develops as a natural follow-up to it. It's useful to get discussion going.

How can I get participation in that last 5 minutes of the program—when everyone's aware that time is running short?
Use a list of highlight questions. Run down the list and ask participants if they can answer all the questions based on the material presented during the program. If not, discuss one of the questions in further detail.

What are the most important things to remember about participation?

It's important to remember that in most cases, participation will take more careful planning in a teleconferencing situation; that planning is done in advance of program time; and that participation is more directive: people are asked to be responsible for initiating the participation.

Participation in teleconferencing

- increases learning
- can be an activity we see or mental work in thinking about something
- influences opinion change
- affects creativity
- is central to an interactive system

a closer look at

Message Style

All of us have had vast experience as communicators—in the roles of listeners as well as speakers—but we seldom take the time to analyze how these messages have been designed. For example, why do we remember and understand some messages better than others? Message style as a design component concerns the way we present what we want to communicate to others so that the information will be received, understood, and remembered. In teleconferencing, it's especially important that we design messages for the ear as much as possible, taking into consideration guidelines from listening theory.

Listener attention

Basic to our understanding of listening is the rate at which information is processed as compared to the rate at which it is received. The average person speaks at rates of about 125 to 150 words per minute. The brain can easily process words at speeds of 300 words or more per minute. Thus as listeners, we can assimilate the message twice as fast as it can be spoken. Most of us use this extra time to let our minds wander to other thoughts. Persons trained in good listening habits counteract this tendency by using techniques such as formulating mental questions about the subject being discussed or anticipating what might be said next. However, groups we speak to are not likely to have had this listening training. Thus we might realistically acknowledge that we need to find ways to hold and to regain the attention of our listeners.

Basic to our understanding of listening is the rate at which information is processed as compared to the rate at which it is received.

Intuitively we know what the research tells us about listener attention—an interesting speaker will be more likely to get his or her message across. High interest levels result in high levels of learning and remembering. One of the ways to keep interest levels high is to

provide variety: variety in terms of speakers' voices, variety in terms of the way the material is presented, i.e., in ways other than straight lecture.

One way to keep interest levels high is to provide variety—in terms of voices and in terms of the format in which the material is presented.

Listener retention

In helping the participants to remember our message we might also consider what educational theorists call "short-term retention," or the amount of information that can be remembered in the short run. Contrary to what we might think, as the amount of material presented increases in a given time period, the amount remembered decreases. This is probably because some items to be remembered "interfere" with others if a great many are presented in too short a time. What guideline can we use in deciding how much information to present? This, of course, depends a great deal on the subject matter we are presenting, but one rule of thumb suggests that not more than 3 major concepts be presented in a half hour. This allows time to present those major ideas along with plenty of amplifying material.

Listener fatigue

Another aspect of listening theory which relates to the way we design our messages is what is called "listener fatigue." After a long period of uninterrupted, concentrated listening, people say they are tired. This fatigue is probably more psychological than physical—a feeling of restlessness due to lagging interest rather than to actual tiredness—because studies show that giving participants a "listening break" by involving them in some other type of activity will have a positive effect.

Short segment format

As we look at the factors about listening mentioned so far, we can see that they all point to presenting the information in short segments. Let's review why this is so: (1) listeners don't listen very long—short attention spans result from differences in the rate at which we

As we look at the factors affecting listening, we can see that the short segment format is an important part of designing for the ear.

think and the rate at which the information is given by a speaker, (2) listeners hear and remember more of a message if their interest levels remain high—suggesting that variety in the presentation is desirable, (3) listeners may develop so-called listener fatigue if long, uninterrupted periods of concentrated listening are used, and (4) listeners have a limited amount of information they can remember in the short term—suggesting that short "learning bits" may help in processing and storing information. Thus, the short segment format is an important part of designing a teleconference for the ear.

Organization and planning

What else do we know about listening? For example, how important is the way the message is organized? Is a point-by-point presentation better received and remembered? Contrary to what we might suppose, there is no conclusive evidence that this type of organization is necessary.* Thus, within a single presentation, no studies substantiate the idea that a logical presentation is better than a disorganized one, especially if the individual is a "good explainer"—one having the ability to make concepts clear.

Does that mean that planning isn't important? Not at all. If listeners perceive the important points that are to be remembered, their retention of these ideas will increase dramatically. Drawing their attention to these main ideas by simple techniques such as saying, "This is important" or "I want you to remember this" will help individuals in their own information processing. Another way of assisting participants is to present a preview of what is to come in the form of an advance organizer—a general overview giving what is going to be covered and the form in which it will be presented.

If listeners perceive the important points to be remembered, their retention of these ideas increases dramatically.

Repetition can also help to emphasize those main ideas that you wish participants to remember, and repetition is especially important in a

*The exception to this is that in learning a series of concepts that form a hierarchy, we may need to have certain points presented in a logical sequence in order to build upon the information.

teleconferencing setting. Listeners may be momentarily distracted at one of the locations by a door opening or a noise coming in through an open window. They may be unable to grasp the entire phrase the first time they hear it. They don't have the opportunity to go back and refer to that missed portion. Thus, repetition increases the chances that your audience will hear and remember what you want them to know.

Print as a complement

It's not suprising that the perfect complement to a teleconference is some type of printed materials. Outlines, word lists, supplementary articles, bibliographies, and graphics (charts, tables, and drawings) not only help support the audio message by providing a second way to get the message across but serve as a permanent record and reviewing device. Print eliminates time spent note-taking—time which might be more profitably spent in listening and thinking. Print's value as a review device is unquestioned. Because of the usefulness of printed materials, the time spent in their careful development will pay off in maximizing the success of any teleconference.

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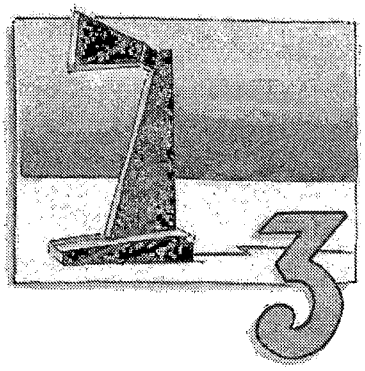


interactive techniques for

Message Style

Lecture

One of the formats you'll probably choose most often is the lecture, which is popular because it is a very efficient way of presenting factual information. But it can also be, whether face-to-face or via teleconferencing, a very uninteresting way to get information. Dynamic, interesting presentations are the goal of any speaker. However, one of the tendencies for lecturers over a teleconferencing system is to begin the program enthusiastically but eventually trail off sentences or begin to speak in a monotone. To overcome these tendencies and to create more effective lectures, try some of the techniques below.

Maintaining your enthusiasm

- "Interrupt" yourself to change your pitch and volume. Use reminders to do this, for example, on your outline or written script, leave out certain figures or dates or circle some items in red as a signal to yourself to change your voice level and inflection.
- Speak to individuals, not an audience. Mentally picture participants at each location. Speak to them as individuals, not as a group.

- Encourage feedback to generate your own enthusiasm for what you are saying. Mark spots on your outline where you feel a natural question might arise in the minds of your listeners.

- Do use a lead-up to the question. Saying "Any questions?" generally won't bring a response. Provide a natural progression, a jumping-off point for the question.

Maintaining participant enthusiasm

- Stimulate individuals to interact with what you are presenting. Use questions for this. Ask them to anticipate:

  "What factors do you think were responsible for this situation?"

  Ask them to compare and contrast:

  "As I am presenting this next section, think about whether what I am saying makes sense in light of what you already know."

- Get individuals to interact with the print materials you have mailed out. Color code or number sections to make it easier for individuals to locate materials during the program. Ask them to look at a chart, read a list of considerations, react to a statement in an article.

- Vary the pacing of the program. Use faster pacing when reviewing, slower pacing when covering new material.

- Use shorter periods of lecturing intermixed with group feedback. A 10 to 15 minute period is ideal; 20 to 25 minutes is the maximum for continuous speaking by one individual.

- Be realistic about the amount of material to be covered. A good rule of thumb is to present three major ideas in a 30-minute period. Use plenty of amplifying examples.

- Use mental imagery as much as possible. Use examples which help participants picture the point you are trying to make.

"I try to plant seeds at the beginning—that part of the reason we're together on a statewide network is to be able to share ideas, share experiences. As the series goes on, more and more people begin to feel comfortable in contributing."

—Nursing programmer

- Combine your lecture with other techniques. Use a prerecorded vignette or interview; have a guest present part of the material; plan a participant report; call on a panel.

- Above all, relax and enjoy yourself. If you are having fun and are enthusiastic about what you are saying, your group members will be enthusiastic also.

Panel Discussion

A good alternative to presenting the information yourself is to use a panel discussion composed of resource people. This format is especially good in situations where complex or controversial issues are being explored. The advantage in teleconferencing is that not all the panel members need to be with you at the program origination point. They can be brought into the network from various points—home, office (or even, as in a very unusual case—from an airport phone booth).

Panels, simply because they might present very diverse opinions, need the guiding hand of the programmer to help focus the discussion, bring out important points, and provide an overall summary. Here are some "do's" that may prove helpful:

"Panel members don't have to be with you at the program origination point—we patched panel members in from different locations. In fact, one was home eating his lunch, one was in her office, another attended the teleconference with other participants at one of the locations."

—Social work programmer

- Limit a panel to four people for voice recognition by the audience.

- Phone prospective members in advance to test out how well they might come across in a teleconferencing mode.

- Provide panel members with advance information about the audience they will be talking with and a few techniques for using teleconferencing.

- Provide participants with some material to read or some questions to think about prior to the teleconference so that the panel doesn't come on "cold."

- Provide a final summary, either at the end of the program or via a summary letter.

Interview

Another way to vary your presentation is to use an interview format. The interview is ideal for teleconferencing. It adds informality and spontaneity, and helps to keep the pace of the program moving. Not only is the interview an excellent audio technique, but like the panel discussion, it allows the programmer to bring in resource people who might otherwise not be available to the group.

Conducting an interview is quite easy and expensive. For example, a phone call to the guest could be made to office or home. Audience members would be invited to interact with this resouce person after you begin the interview. Or, as an option, a short prerecorded presentation by your guest could be used to kick off a question-and-answer period during which the guest would be "on line" for discussion with the group. Some suggestions for conducting interviews:

- Remind the person being interviewed that short, concise answers are best. Many times, persons inexperienced in using teleconferencing make their replies more lengthy than they ordinarily would face to face. You can help to keep the interview moving and to the point.

- As for a panel discussion, prepare the guest with some background material about your audience, main objectives of the interview, perhaps even a course outline. A sample cassette of a previous program is helpful to guests.

- Prepare your audience to interact with the speaker. Warm them up before the interview by introducing the topic to be discussed. Give them background information about the guest. Ask them to prepare questions in advance.

- Help to make the interview meaningful by making frequent summaries, transitions, and clarifying points and by tying the presentation together.

"An interview of 20 minutes plugged into a program can be very meaningful. I ask participants to send me a list of questions they'd like to have me ask. I use perhaps 6 or 8 selected questions that seem to be very important, with the guest live and on-line. Then we just open up the network so that the participants can talk with the resource person."

—Education programmer

"By going to artists wherever they are via teleconferencing, they can be persuaded to participate in an adult education venture like this—they don't have to lose travel time."

—Music programmer

A Special Kind Of Interview—Celebrity Expertise

One of the most successful ways of introducing individuals to teleconferencing is to give them the opportunity to "meet" celebrities in a specialty field. Because teleconferencing can reach these celebrities without travel on their part, opportunities to include them in programs have been widened. People known nationally and internationally in the fields of medicine, theology, music, and photography, to list just a few examples, have been part of teleconferences.

To assure the success of this special kind of interview, planning is important. Follow the guidelines suggested for the interview format. In addition, remember that although gifted individuals may feel comfortable in their own creative activity, they may not be as comfortable in describing their skill or in teaching it to a group. One programmer opens the program with his guest by discussing a common interest, thereby putting the guest at ease before moving on to his or her presentation.

questions often asked about

Message Style

I know that print back-up material is important, but I use a lot of spontaneous programming—panel discussion, interviews, etc. I don't always know in advance what points will be made. How can I use print?

This is a perfect opportunity to use a summary letter. Pick out the main points brought out in the panel discussion or interview and jot them down in the form of a personal letter to your group members. Your approach might be, *"Here are some of the things I got out of last week's session...."* These letters can be inexpensively duplicated and then personally signed by you.

What about slides or other visuals—are they really necessary?
In some program areas—art, photography, and medicine being examples—a color presentation of visual material may be critical to understanding. In other programs, overhead transparencies of graphs and charts may be indispensable. But in a great number of programs, experience indicates that many slides or overhead graphics are not really essential.

A good idea is to incorporate necessary graphics into the printed materials by using inexpensive photocopying services. It's not only cheaper and easier to do this, but the participants then have a permanent copy for reference. (Note: remember to check copyright guidelines when reproducing printed materials.)

What is a topic outline and how can it be used?
A topic outline, as used in teleconferencing terms, is similar to the outlines used by many speakers (a skeleton profile of the material to be presented) with one exception—the major and minor points are *numbered* so that easy reference can be made to them.

Each participant receives a topic outline before the program. By using the numbers as a reference point, both you and the group members can quickly find any given point under discussion. For example, in section three of the outline you might find under the major heading of "3.00," the minor points, "3.01," "3.02," etc. You refer to these points as you go along. If a question is raised, an individual can easily say, *"Back under point #2.01, would you please explain further...."*

A good teleconference technique, the topic outline is generally typed with lots of white space so that group members can jot down points, references, questions, etc., as they participate in the program.

What about the use of humor in teleconferencing?
Since teleconferencing lends itself to a natural, relaxed delivery style, many times a situation will come up in the program where laughter among group members occurs spontaneously. A deliberate attempt to use humor, however, should be handled carefully. Much subtle humor depends upon nonverbal cues which are taken for granted. With the absence of these cues, many participants may take seriously a comment made in jest.

Message Style in teleconferencing

- we think faster than we listen
- concentrated listening should be presented in shorter "bits"
- variety helps maintain interest
- repetition is important
- previews help in learning and remembering
- printed materials complement audio

a closer look at

Feedback

Feedback is an essential ingredient in the communications process, theorists tell us. A dictionary might define feedback as the return to the point of origin of evaluative or corrective information about an action or process. But so central is this return loop to any communication process that it's seldom consciously thought about. For example, when we interact with a group in a face-to-face setting, subtle feedback in the form of nonverbal cues is constantly helping us gain information about how the message is being received. Yawns or bored expressions are forms of negative feedback which stimulate us to change what we are saying or how we are saying it; erect postures and looks of interest are forms of positive feedback which reinforce what we are doing and saying.

Thus, nonverbal cues form a part of the corrective information that we call feedback. This kind of information is not present in teleconferencing, but feedback can take many forms other than nonverbal. Feedback as a design component in teleconferencing centers around the building-in of mechanisms which can help to complete that communications loop between you and the participants.

Importance of feedback

How important is feedback in teleconferencing? It is an essential ingredient, just as in any other communications process. It helps improve the effectiveness of what we are saying—clarifying misunderstandings and pinpointing omissions. It's a motivating factor—we gain enthusiasm as we interact with the group members. It can lead to a change in our course of action—if the feedback is negative, or reinforce what we are doing—if the feedback is positive. It can help improve future programming.

So central is feedback to any communications process that it's seldom consciously thought about.

Feedback can help us become more effective communicators because it answers such questions as, Is what I am saying interesting or bor-

Feedback helps us eliminate the tendency to "overtalk"—to continue an explanation longer than necessary.

ing? Does everyone understand what I am saying? Did I leave out any important details? Feedback then becomes a stimulus to help us decide on our action, that is, whether to continue in the way we have been or to take corrective measures. Feedback thus helps us to eliminate the tendency to "overtalk"—to continue an explanation longer than necessary because we don't know if our audience received our message or not.

The easiest way to incorporate this kind of feedback in a teleconference is to plan for verbal feedback from the group. After each natural division in the material you can ask questions: Was the message too fast? too complex? clearly explained? Planning for this type of structured feedback is generally the most successful in a teleconference, but there are alternatives. You could use a less structured type by suggesting that members of the group interrupt at any time. If you use this method, remember to be sensitive to attempts by group members to interrupt. Your choice depends a great deal on your delivery style, the content, and the type of group participating—for example, some groups new to teleconferencing may be hesitant about giving feedback and you might wish to ask several individuals in advance of the program to provide it for you.

Feedback as a motivating factor

Feedback also serves as a motivating factor for a teleconference speaker. The reactions that we receive from individuals as we speak help us to maintain our enthusiasm. That's why it's important to reach out to the group members by using the two-way capability of the network. You might choose to have a number of individuals with you as you give the program to get direct feedback. You'll want to remember if you choose this option to promote the feeling that every participant in the teleconference—whether that individual is sitting right next to you or is joining you from a location hundreds of miles away—is important to the success of the program.

Feedback serves as a motivating factor for a speaker—the reactions received from individuals help to maintain enthusiasm.

Feedback is not only important to you but to all the individuals participating. Whether the teleconference's objective is to provide

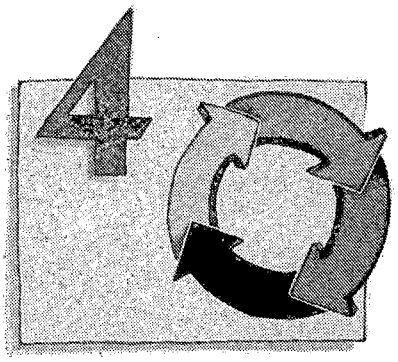
education to a group of students or centers around decision making in an administrative meeting, people want and need to know "how they are doing." Providing both verbal and written channels to communicate this information to them is invaluable not only for corrective action, but also for motivation.

Self-feedback can be an excellent tool to improve next week's or next year's programs. Many programmers use the previous program tape to do some self-diagnosing. What were the strengths and weaknesses of that program? What might be changed in time for the next session? Were opportunities provided for participation? Did individuals take advantage of those opportunities? Did my message come across with enthusiasm? with a natural, spontaneous delivery? This type of self-feedback can be as important as that which we get from program participants.

Feedback during entire program process

Up to this point, feedback has been discussed in terms of the implementation of a specific program. In teleconferencing it's important to gain feedback during each stage of the process: during planning, implementation, and evaluation. One avenue of gaining feedback during the planning stage is to use program-planning committees. During the evaluation stage, the use of local leader critiques, held on the network, can be a valuable source of information. These sources of feedback are important ingredients of the total picture of a teleconference.

In teleconferencing, it's important to gain feedback during each stage of the process: planning, implementing, and evaluating.



interactive techniques for

Feedback

The first section of this manual described briefly a number of techniques which might be used for feedback in teleconferencing. Asking for feedback, written forms of feedback, on-the-spot application of information, group questions, and listening to tapes were mentioned. This section discusses a written form of feedback (the message mailer), using question-and-answer periods skillfully, and participant reports.

Question-And-Answer Periods

"We are very protective about allowing enough time for the question-and-answer periods because we think they are so valuable. We feel that this is where a lot of the learning really takes place."

—Medical programmer

Question-and-answer periods have been described in the section on "Participation." Another mention is warranted here because this is one of the times during a program in which you get valuable feedback information from your group members about how well the message is coming across. Also, these periods provide an opportunity for you to get immediate, corrective feedback to individuals.

Rather than thinking of this type of format as a question-and-answer *period,* it might be better to integrate it into the program. Feedback can be going on during the entire presentation, rather than only during a formalized time period. By asking for an occasional question (or asking one yourself) as you go along, you break up the listening, stimulate thinking, and motivate yourself by getting audience feedback.

Message Mailers

The message mailer encourages participants to communicate their feedback to you. By providing this form as a part of a set of printed materials, you are conveying the unspoken message that you are sincerely interested in obtaining feedback from the individuals in your group.

A message mailer can be very simply designed. It can be of any size and shape. (Note: you may wish to check current post office guidelines for size regulations.) Its basic ingredients are:

- Provision for comments and questions
- Space for name and address of participant
- Preaddressed to you
- Postage prepaid (optional)

The message mailer's exact form is open to creativity. It's been called by such titles as "ETN-O-GRAM" or "OPEN LINE." It can be color coded so that each mailer corresponds to a section in the print materials dealing with a particular topic. If you have a series of five programs, you can easily identify a yellow form returned to you, for example, as dealing with a particular program in the series.

Participant Report

Just as in a face-to-face situation, you can assign individual participants a report or a project. The difference comes in how you use these reports in teleconferencing. You could have each individual give a short report on-the-air, letting others give feedback.

An individual might be assigned, for example, a 5-minute report on how he or she is handling a current problem based on information given during a previous teleconference session.

"I've asked students to read a number of books or articles of their own choosing and then give a brief reaction on-the-air to the one they found most stimulating. The rest of the group then gave them feedback."

—Education programmer

questions often asked about

Feedback

As a new programmer, what's the most important feedback technique to learn for teleconferencing?

Give verbal acknowledgment whenever a comment is made by a group member and ask them to do the same. For example, a simple, "Yes, I see," or "Fine" (or whatever phrase is appropriate), is feedback in its most simple form, but it's important because it tells the participants that the message was received. In the absence of nonverbal cues such as the nod of your head, these short phrases help to guide the flow of the communication process. Correspondingly, remind yourself that when you give a response to a question not to "overtalk." As we are explaining a point, we may give too much information because we're not sure if the individual received our message. Ask for verbal feedback. Give a basic explanation, pause, ask "Does this answer your question, or shall I go on?"

What's a simple written form that might be used for feedback for a single program?

Use a "feedback form" that asks for very basic information and can be filled out in about 5 minutes by the participants. Questions might be as follows:

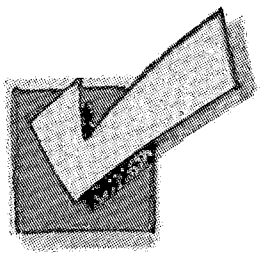
1. What is your overall reaction to this session? Circle one number.

1	2	3	4	5	6	7	8	9	10
extremely unfavorable								extremely favorable	

2. What do you think were the strengths and weaknesses in this session?
3. How would you suggest the next session be improved?
4. Other comments, suggestions.

Feedback in teleconferencing

- is important in communicating, learning, motivating
- is important to plan for
- can be verbal or written
- can come from ourselves or others
- should be part of the planning, implementing and evaluating stages



Teleconference Checklist

Optimum Program Conditions:

Optimum program conditions include advance preparation of participants by sending them a packet of materials containing:

- "welcome-to-the-program" letter
- biographical sketch and picture of the speaker/instructor
- instructions on how to operate the equipment
- topic outline or agenda
- objectives of the teleconference
- selected background reading materials
- highlight questions or summary of major points to be covered

Optimum conditions also include a local facilitating leader at each site to make sure that physical facilities are provided which are conducive to teleconferencing, to welcome participants and to help them feel comfortable in using the equipment.

General Preparation:

As a general rule, teleconferences should be better planned and organized than in a face-to-face setting. Planning pays off in greater efficiency and satisfaction. The Teleconference Checklist which follows summarizes the four design steps for planning—before, during, and after a teleconference.

Before The Program:

- ☐ Send out welcome letter with biographical sketch and picture.
- ☐ Make up roster list from preregistrations (for classes).
  Make up and send out "roster information" to group members (for meetings).
- ☐ Lay out a "cluster circuit" for program origination from other locations.
- ☐ Plan some personal visits to participants which dovetail with other travel commitments.

Humanizing

- ☐ Design your participation strategies.
- ☐ Call several people in advance to ask for "planted questions."
- ☐ Set up a reactor panel to get discussion ball rolling.
- ☐ Build participation into printed materials: a list of points or questions to react to, a pre- or post-activity assignment.
- ☐ Ask for an individual case study or report by arranging ahead.
- ☐ Plan any group participation formats—buzz group, role playing.

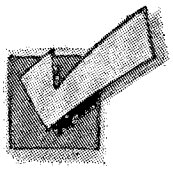
Participation

- ☐ Decide how you'll cover the material—lecture, discussion, visual presentation.
- ☐ Decide on how much you'll present—a rule of thumb is 3 major ideas in 30 minutes.
- ☐ Plan for variety and short segments. Include an interview, panel discussion or question-and-answer period.
- ☐ Prepare printed materials and visuals with enough lead time to send either to individuals or group leaders.

Message Style

- ☐ Design any written feedback materials—message mailers or feedback forms. Include in advance packets.
- ☐ Decide if you'll do a more formal evaluation (PEC) and begin planning for this.

Feedback



During The Program:

Humanizing

- ☐ Open the program with an "informal roll call." Welcome group members.
- ☐ Help individuals feel comfortable with teleconferencing equipment.
- ☐ Introduce yourself (and other presenters) informally.
- ☐ Use a natural delivery style; let your personality "come through."
- ☐ Mentally picture and talk to individuals—not to an audience.
- ☐ Ask individuals to identify themselves when they speak; use their names in your responses.
- ☐ Stress meeting individual needs; give a number for phone-in office hours.

Participation

- ☐ Plant seeds at the beginning that this is an opportunity to share ideas.
- ☐ Use interactive techniques (case study, role play, etc.) to get participation.
- ☐ Use questions as a participation tool:
  - *•jumping-off questions*
  - *•highlight questions*
  - *•planted questions*
  - *•directive questions (using roster)*
  - *•rephrased questions*
- ☐ Ask a group from another location to lead the discussion at times.
- ☐ Divide large groups into buzz groups for discussion purposes.

Message Style

- ☐ Use short segments (10-15 minutes). Change activity or voices.
- ☐ Vary pacing. Slower: new or difficult concepts; faster: review and less complex material.
- ☐ Preview-present-review. (The old rule still works: *"Tell them you're going to tell them, tell them, tell them you've told them."*)
- ☐ Use printed materials as you go along—get participants to interact with them in some way. (Color-coding or numerical-coding makes this easier to do.)
- ☐ If you use visuals (overhead transparencies or slides) make instructions clear as to which visual is to be projected.

Feedback

- ☐ Be sure to ask for verbal feedback frequently.
- ☐ You may wish to set "ground rules" for how you want feedback. (Should participants interrupt or will you ask at times for feedback?)
- ☐ At the end of the program, use a short "Feedback Form" to get a reading on that program's strengths and weaknesses.

After The Program:

☐ Be receptive to any requests expressed during the program—try to adapt future programs to meet them if possible.

☐ Follow up on any questions that weren't answered during the program with a phone call or personal note.

☐ Include individuals as much as possible in planning for future programs—ask them to send you suggestions or phone you.

☐ Keep communication lines open; try to meet with groups or individuals if your travel itinerary permits.

☐ Arrange for groups to meet face-to-face at some time for a half-day conference.

Humanizing

☐ Use a post-activity. Have groups apply what was presented during the program by discussing it at their own locations.

☐ Assign an ongoing project to be done by each individual with a report-back on-the-air at the end of the series.

☐ Ask for individual follow-up in time for the next program, for example, *develop a solution to the problem presented today.* Use a few participants' report as the next program's lead-off.

Participation

☐ Reinforce the major ideas by asking individuals to give themselves a "self-test" by using the list of highlight questions—can they now answer all of the questions on the list?

☐ Use follow-up printed materials for both instructional and meeting teleconferences:

☐ For instructional teleconferences: Send a summary letter to repeat and emphasize major points. This is especially important after a panel discussion.

☐ For meetings: Send a memorandum to list major decisions and/or suggestions made during the program.

Message Style

☐ Phone a number of the group leaders from various locations to ask for their impressions of the program.

☐ Listen to the program tape to spot strengths and weaknesses:

- Were individuals made to feel welcome and comfortable with the equipment?
- Were opportunities provided for participation—did individuals take advantage of those opportunities?
- Was the message easy to understand, interestingly presented? what about pacing? variety?

Feedback

questions often asked about

Leading Teleconference Meetings

Meetings held via teleconferencing are efficient and effective. Research shows that teleconferences are effective for information exchange, seeking and giving opinions, problem solving, and generating ideas. Teleconference meetings are generally shorter than face-to-face meetings because of the efficient, business-like manner in which decisions are made. Central to effectively managing meetings are the four design components—humanizing, participation, message style, and feedback. This section focuses on several components unique to a meeting—"rastering," confrontation, and voting.

What is "rastering" and why is it important?

Rastering refers to the development of a base of knowledge about the individuals participating in a teleconference—their communication habits and voice intonations, organizational roles and duties, and personalities—which helps us to understand how the words or responses of individuals are to be interpreted. There are many ways to develop a more complete raster—this personal information about group members—if the individuals have never met before. A good procedure is to have a face-to-face meeting before the first teleconference. Other ways are to send conferees in advance of the meeting descriptions of individuals who will be participating and to have individuals introduce themselves at the beginning of the teleconference with some short biographical information.

People want and need to know with whom they will be meeting and as much as possible about the roles and backgrounds of other conferees.

In any case, a list of participants, organizational roles, and locations from which they will be participating is an essential ingredient of any teleconference—people want and need to know with whom they will be meeting and as much as possible about the roles and backgrounds of other conferees. This list should be mailed in advance to each participant.

What kinds of meetings are best held by teleconferencing?

Teleconferences work best for (1) giving and receiving information, (2) asking questions, (3) exchanging ideas, (4) problem solving, and (5) generating ideas. They are not as strong in situations involving

persuasion or bargaining—where sensitive, subtle negotiations involving nonverbal cues may play an important role. Teleconferences can play an important role in these situations as the mechanism for initial information giving as well as for disseminating the decision made. In this case, teleconferencing is used in tandem with face-to-face meetings.

Teleconference meetings are most effective for exchanging information, giving and seeking opinions, making decisions, and generating ideas.

In a teleconference meeting, if there is a confrontation between two individuals, what's the best way to handle it?

Give the individuals a chance to "save face" by suggesting they wait to talk to each other by phone after the teleconference. Many times they will be willing to compromise something in private that they might not compromise otherwise.

In some types of meetings, it's important that everyone actively participate—what technique will assure this?

One way to see that everyone does participate is to monitor the participation. As each individual makes a comment or asks a question, put a check mark next to his or her name on the roster. Then, towards the end of the meeting, you can quickly see the names of individuals who have not yet participated spontaneously. Call on those individuals who have not yet made a contribution.

How important is print back-up material?

One of the most critical factors in the success of a teleconference meeting is the use of advance and follow-up printed materials. An agenda of the meeting, a roster list of participants, and the objectives of the teleconference, along with any other background information, should be sent in advance to all participants.

One of the most critical factors in the success of a teleconference meeting is the use of advance and follow-up printed materials.

A follow-up memo should be sent after the teleconference to reinforce important points of information. It's especially important to repeat

any major decisions that were made—somehow people need a reminder as to what was actually decided and what future actions need to be taken. The memo can also report the results of any votes that have been taken.

What are some of the ways that a vote can be taken?
With many of the teleconferencing systems available, the technology will allow for a voice vote. Simply asking everyone who votes aye (or nay) to press and speak into his or her mikes will work well if the vote is not a close decision.

A mail-in vote can be facilitated by using a simple, standard scale form which can be used in a variety of ways.

MULTIPURPOSE RATING SCALES

	1	2	3	4	5
A.	☐	☐	☐	☐	☐
B.	☐	☐	☐	☐	☐
C.	☐	☐	☐	☐	☐
D.	☐	☐	☐	☐	☐
E.	☐	☐	☐	☐	☐
F.	☐	☐	☐	☐	☐
G.	☐	☐	☐	☐	☐

For example, a simple yes or no vote on any issue can be obtained by the chairperson asking individuals to check the 1 column if the vote is yes and the 2 column if the vote is no.

If a more quantified rating about a particular issue is desired, participants could use the 1 through 5 columns to vote on a particular issue. For example, in voting on the advisability of adopting an administrative guideline, participants might register their opinions by checking the appropriate columns:

1—extremely unfavorable
2—unfavorable
3—neutral
4—favorable
5—extremely favorable

Meetings in teleconferencing

- are used for information exchange, seeking and giving opinions, problem solving, and generating ideas
- depend on individuals having "raster" information
- are maximized by the use of print back-up materials
- should incorporate the 4 basic steps of teleconferencing in their design

a way to evaluate teleconferences:

Program Evaluation Checklist

After planning and implementing a teleconference, it's important to gather information on how well the program objectives were met. Because teleconferencing is a unique medium for instruction and communications, any evaluation device should be specifically designed to measure the interrelationships of many factors. The Program Evaluation Checklist (PEC) is such a device. This instrument provides information about the strengths and weaknesses of individual programs with an eye to planning future sessions. It looks at six major program areas: content, lecturer, materials, organization, physical facilities, and technical quality. Because the PEC is designed within a flexible framework, it can be adapted to each individual program. This section describes how the PEC came to be and how it works.

Development Of The Program Evaluation Checklist

Programmers in teleconferencing have always sought to gather information about how well their programs were meeting the original objectives. Because teleconferencing is such a unique medium in which many factors influence successful programming outcomes, a search was made for an evaluation device which would measure these interrelationships in a structured way.

Because teleconferencing is a unique medium for instruction and communications, any evaluation device should be specifically designed to measure the interrelationships of many factors.

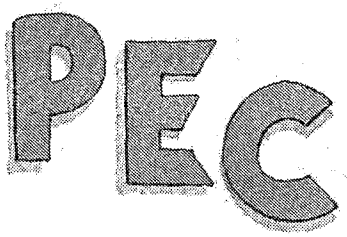
The primary aspects of a teleconference were determined to include:

- Lecturer's behavior - the way the message is delivered by the programmer or guest speaker
- Program Aide's behavior - the performance of the persons who serve as facilitators at the remote locations
- Environment - the arrangement of physical facilities, seating, lighting, etc., at remote locations
- Technical components - the functioning of the technology
- Program materials - the use of support materials including audiovisuals and printed materials
- Program process - the involvement of the participants in the presentation and discussion of the program content
- Program influence - the impact of the program on the participants

Initially, participants were asked to write their impressions of the program by filling in questionnaires consisting of open-ended questions. However, because of the differences in writing ability of individuals as well as their patience in writing down their reactions, the results were very uneven.

The "bank of questions"

It was then that the idea of developing a "bank of questions" was born. The bank would consist of a large number of questions (or statements) relating to various facets of the teleconference, from which a programmer might draw in order to construct an evaluation instrument uniquely suited to his or her program. The bank of statements was developed by researchers in communications and education. Items were developed relating to various aspects of a teleconference: physical facilities, technical quality, lecturer's behavior, etc.



During the development process, each item was pretested. This was done to increase the validity (Does the item measure what it is supposed to measure?) and reliability (Does it over time and under many different conditions continue to perform evenly?). The end product—the PROGRAM EVALUATION CHECKLIST (PEC) is an evaluation tool that allows for flexibility while retaining the structure necessary to place confidence in the results.

Using The Program Evaluation Checklist

In evaluating an individual program, the PEC works in this manner. You decide which items in the bank of statements are most applicable to your program. Generally at least five items are used for each aspect of the teleconference (such as technical quality) in order to gain a good "reading" on that subgroup. Sample questions under technical quality might be:

- *"The reception at my location was satisfactory."*
- *"The programmer's voice was clear and distinct as it came over the network."*
- *"The teleconferencing equipment was easy to operate."*

The final PEC instrument will be about 30 items in length, with statements about the content, lecturer, materials, organization, physical facilities, and the technical quality. These statements are then rated on a numerical scale by program participants to determine how closely the statement matches the actual teleconferencing experience.

The Program Evaluation Checklist (PEC) allows for flexibility while retaining the structure necessary to place confidence in the results.

All of the ratings are computerized so that a very accurate reading (not only of each item but of the overall program) is obtained. For example, each statement is analyzed to obtain the mean score and the standard deviation. An even more valuable statistic is the reliability score which is given for each subgrouping. Using both the individual item scores and the overall subgroup scores enables you to see the interrelationships between the various aspects of the program. For example, a low rating in the program materials section may affect the

scores in the content subgroup; a high rating in the technical quality section may affect the scores in the physical facilities subgroup.

The PEC consists of statements about the content, lecturer, materials, organization, physical facilities, and technical quality.

Sample Subscores - Computer Printout

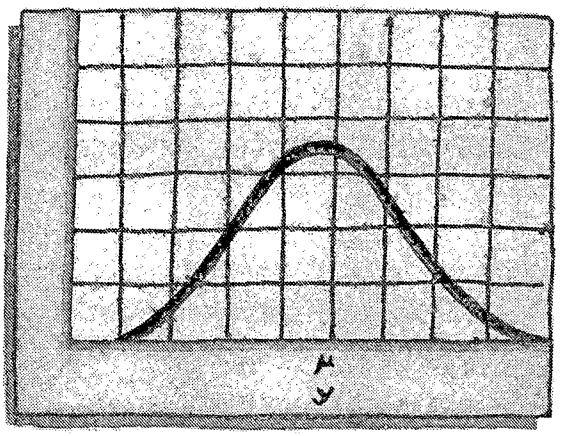
Category	No. of items	% of response	Mean	Standard deviation	Reliability
Technical Quality	5	0.98	8.89	1.90	0.90
Organization	5	0.98	8.14	2.37	0.80
Lecturer	5	0.97	8.14	2.37	0.70
Content	9	0.95	7.15	2.78	0.82
Physical Facilities	4	0.97	7.84	2.18	0.84
Materials	4	0.98	7.43	2.55	0.77
Overall	32	0.97	7.87	2.47	0.93

Demographic information

In interpreting the results of the PEC, you may also wish to look at the demographic information on participants. Questions included in the PEC gather such information as educational background, professional experience, present occupational position, major areas of responsibility, motivation for attendance, age, and sex. The demographic section gives you an "audience profile" which assists in interpreting the data.

Value Of The PEC

The PEC is a way to determine the strengths and weaknesses of current programs, so that improvements can be made in future program design. The evaluation results are primarily used to judge program effectiveness. But some side benefits occur. One is that the very process of analyzing the evaluation may stimulate the reshaping of some of the overall goals and values in the educational/communications process. The PEC also provides one more channel of communications between you and the participants. It is a concrete sign that you are interested in what the individuals have to say about a program.



what the research says:

Effectiveness Of Teleconferencing

Increasing the effectiveness of individual teleconferences has been the focus of this guide—ways to make programs more satisfying and more effective. Techniques such as these are a small part of the larger picture concerning the *overall effectiveness* of teleconferencing. This section presents a look at what we know in answer to the question, Is teleconferencing effective?

Research in teleconferencing is ongoing. The field is new—only a little over a decade old. But in ten years time we have documentation from both ends of the spectrum: research done under laboratory conditions as well as day-to-day application in the field where the final proof lies. Surveying these results, the answer to the question, Is teleconferencing really effective? is a resounding yes, not only for teaching-learning between remote classrooms but for idea exchange and decision making in meetings held over distance.

Studies In Educational Settings

A number of studies across various content areas have measured the cognitive gains of classes taught via teleconferencing. In all cases, teleconferencing was as effective as face-to-face instruction. A few research studies are summarized below.

Mathematics

In Texas, a study in the use of telelecture for retraining elementary school mathematics teachers was made. Pre- and post-tests of achievement, mathematical ability, and attitude inventory were given to individuals taught via telelecture and to individuals taught in a conventional face-to-face setting. There was a significantly greater mean change in content mastery for the telelecture group than for the conventionally taught group.

Hebrew

Studies of adult classes in reading and writing Hebrew were made. The classes were taught simultaneously to two groups in Michigan via teleconferencing and to a control group in Chicago. Each group numbered 20 students. Scores on a midterm and on an oral reading test indicated no significant difference between performance of the three groups.

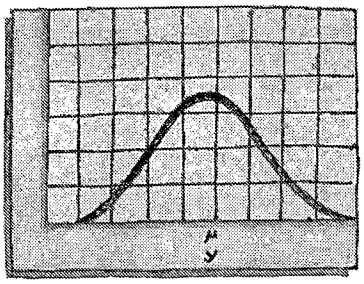
Money Management

Evaluations were made of county extension homemakers' groups in Kansas. The groups were enrolled in a short course on money management. Pre- and post-tests given to the 34 taught by traditional face-to-face lecture and the 37 who were instructed by telephone showed no significant difference in the amount of learning that took place.

Graduate and Undergraduate Credit Courses

A study of the Telenetwork at the University of Kansas was made which involved six lecture-format courses. They were given over the Telenetwork as well as on-campus. Subject matter varied as suggested by the course titles: *State and Local Government, The Junior College, Consumer Issues, Adult Basic and GED Education,* and *Occupation Experience Supervision.* Various measures were made of the Telenetwork classes in comparison with the on-campus classes. Telenetwork instruction and face-to-face instruction were equally effective when criteria were measured from the instructor's frame of reference. When success was measured from the student's frame of reference, there was no difference, with the exception of one class where higher ratings were provided by students who experienced the telelecture method of instruction.

When success was measured from the student's frame of reference, there was no difference, except in one class which rated telelectures higher than face-to-face classroom instruction.



Psychology

Three classes in introductory psychology at the University of Missouri—St. Louis were compared, using telelecture and on-campus instruction. The method used for the study involved a 64-member control group receiving an on-campus lecture, another group of 63, also on campus, receiving a live lecture which was simultaneously transmitted to a third group of 22 in a remote classroom. Tests of all three groups showed no difference.

Mining, Engineering, Modern Mathematics

College classes at West Virginia University, Morgantown, were compared with extension classes taught via telelecture and electrowriter in mining, engineering, and modern mathematics. The analysis of the two groups showed that achievement by extension classes taught via teleconferencing was equal to or significantly greater than that of the students in the on-campus classes.

Studies In Meeting Environments

In-service Training Meetings

A study was made of the use of the University of Wisconsin—Extension Educational Telephone Network (ETN) for in-service training meetings of county extension agents. Agents were randomly assigned to three groups: a control group, a face-to-face group, and a group taught via ETN. Post-tests showed no significant differences in the mean scores of the face-to-face group and the teleconferencing (ETN) group. When these means were compared with the control which received no training, they were significantly higher.

Almost all participants substituted teleconferencing for at least 50% of their face-to-face meetings and over one third substituted teleconferencing for 80% or more.

Management Meetings In Banking

Union Trust Company, a large Connecticut bank, field-tested teleconferencing over a six-month period in 1973, using a stereophonic system with facsimile capability. Twenty-one senior management personnel participated. Almost all users of the system reported that teleconference meetings were as effective as the face-to-face meetings that the teleconferences replaced. This evaluation was reported in questionnaires during the field test and supported by the findings that the teleconferences were generally 30 to 35 percent shorter than the prior face-to-face meetings. In addition, almost all participants in the teleconference test substituted use of the system for at least 50 percent of their face-to-face meetings and over one third substituted teleconferencing for 80 percent or more of their face-to-face meetings.

Characteristics Of Teleconference Meetings

In 1976, researchers associated with Johns Hopkins University conducted an extensive review of the research in teleconferencing, especially as applied to meeting environments. The studies were done both in the laboratory and in the field. The studies paralleled one another, with results identifying areas where teleconferencing was found satisfactory in communication tasks. Those areas were (1) giving or receiving information, (2) asking questions, (3) exchanging opinions, (4) problem solving, and (5) generating ideas. Areas in which teleconferencing was found to be not as strong were in sensitive bargaining and getting to know someone.

The answer to the question, Is teleconferencing effective? is a resounding yes, not only for teaching-learning but for idea exchange and decision making.

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*These references pertain to "Effectiveness of Teleconferencing" section only. A complete bibliography on teleconferencing may be obtained by contacting the author.

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University of Wisconsin—Extension
INSTRUCTIONAL COMMUNICATIONS SYSTEMS
975 Observatory Drive
Madison, Wisconsin 53706

Telecommunications & Rehabilitation

A Teleconference

PARTICIPANT HANDBOOK

THE USE OF TELECOMMUNICATIONS TECHNOLOGY IN THE TRAINING OF REHABILITATION PERSONNEL

PROJECT DIRECTOR: Susanne M. Bruyere, PhD
Seattle University

Supported by a grant from:

Rehabilitation Services Adminstration (OHD-HEW)
National Short Term Training Grant
#45-P-81397/0-01
FY 1978-79

Telecommunications & Rehabilitation

A Teleconference

This Handbook was compiled in May,1979 by

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WELCOME!

Welcome as a participant in the teleconferencing series: "The Use of Telecommunications Technology in the Training of Rehabilitation Personnel". We appreciate your interest in learning more about training via telecommunications media, and we look forward to sharing our experiences with you. We hope you will share your expertise with us and the rest of the group as we meet together.

To participate in the program, simply press the bar at the base of the microphone and speak. Your comment or question will be heard by all of the people participating in the teleconference.

This teleconference is designed to provide information about telecommunications in general, teleconferencing as a specific delivery system, and teletechniques (design components) particularly suited to telecommunications. This meeting is also designed to provide hands-on experience with the teleconferencing medium. Please take advantage of this opportunity to "try out" this medium if you're a newcomer, or "practice" if you're a veteran teleconference participant.

A map showing the locations of all the groups participating in this teleconference follows the agenda for the first session.

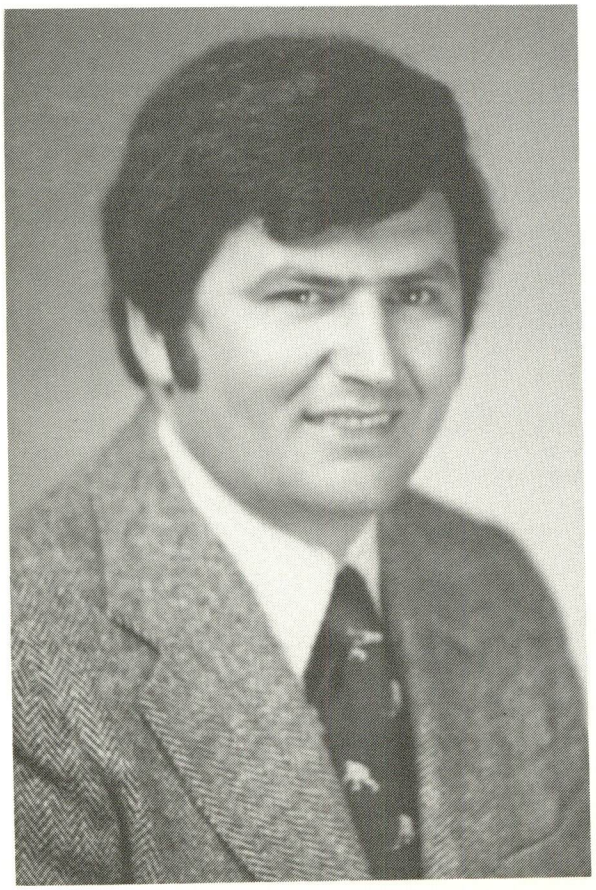
We're looking forward to meeting all of you during the teleconference!

Susanne Bruyere

Lorne Parker

Susanne M. Bruyere

Susanne M. Bruyere is currently the director of the national short term training grant from the Rehabilitation Services Administration on "The Use of Telecommunications Technology in the Training of Rehabilitation Personnel." For the past four years she has been a trainer and resource specialist for the Region X Rehabilitation Continuing Education Program, and an assistant professor in the Department of Rehabilitation at Seattle University. Dr. Bruyere has a masters degree in Rehabilitation Counseling from the University of Southern California and masters degrees in Adult Education and Public Administration from Seattle University. She earned her doctoral degree in 1975 in Rehabilitation Counseling Psychology from the University of Wisconsin-Madison.



Lorne A. Parker

Lorne A. Parker is the director of Instructional Communications Systems, University of Wisconsin-Extension. Receiving a Ph.D. degree from the University of Wisconsin in 1972, Parker did his research in mass communications and adult education with specific focus on compressed speech.

A member of the University of Wisconsin faculty for the past ten years, Dr. Parker was instrumental in the development of new communications systems designed to bring education to the home communities of the state. At present, he heads three statewide educational delivery systems. Dr. Parker is also director of The Center For Interactive Instructional Programs, University of Wisconsin-Extension.

AGENDA

SESSION DATE: JULY 20,19/9

START: 12 NOON,CST

END: 4PM, CST

TITLE: TELECOMMUNICATIONS & REHABILITATION:AN OVERVIEW

MODERATORS: Susanne Bruyere and Lorne Parker

SPEAKERS: Lita Colligan, Ruth Katz, Paul Bowerman, John Boor

Agenda Item	Person/Format	Approx. Time	Notes
A. Preparation (off-air)	Local Coordinators/Print Materials	30 min.	
B. Technology Overview (on-air)	Bruyere/	45 min.	
1. Background of this training	Slides		
2. The Meet-Me Teleconferencing System that we're using	Handbook		
3. Introductions around the nation			
4. Overview of objectives for the teleconference			
5. Introduction to Session I			
6. New Technology & Teleconferencing: An Overview	Slides		
C. Past, present, and projected efforts in rehabilitation using telecommunications		60 min.	
1. RSA & Telecommunications: An Overview	Lita Colligan/Handbook		
2. Rehabilitation Staff Training	Ruth Katz/Handbook		
3. Rehabilitation Services: Consumers & Telecommunications	Paul Bowerman/Handbook		
4. Satellite Use in Continuing Education	John Boor/Handbook		
B R E A K		15 min.	
D. Telecommunications Systems and Applications	Parker/Slides	40 min.	
1. Systems			
2. Applications			
3. Costs			
E. Summary & Preparation for Session II	Bruyere	5 min.	
F. Wrap-up (off-air)	Local Coordinators	45 min.	
1. Discussion of Session I			
2. Plan formulation of a group list of applications to be presented at Session II			
3. FeedbackForm			

Common Difficulties Trainers of Rehabilitation Personnel Must Deal With

I. Preparation of Training

A. Doing an adequate initial needs assessment (time and money often limit the extent of input which we can get)

B. Coordinating regional training activities to avoid schedule conflicts and duplication of training efforts

C. Maintaining ongoing communication with rehabilitation organizational administration at state, regional and national levels to stay aware of training priorities, funding levels, procedural changes, etc.

D. Attending major conferences, training meetings, etc.; (can be useful for gathering training resources) often prohibited due to cost, time and distance involved

E. Becoming and staying apprised of resources (presented materials, software, etc.) which currently exist and are in the process of development to eliminate duplication of efforts, share curriculum outlines, etc.

F. Location and securing specialists in particular topics to address a particular training group (can be a problem in identification and cost)

G. Accessing printed materials for course reference, in a timely manner

H. Alerting all potential interested trainees of the training

I. Designing a training program that will meet the needs of a broad cross-section of potential trainees with varying levels of training and experience

II. Delivery of Training

A. Reaching trainees dispersed over a large geographic area

B. Minimizing "down-time" for training (travel can add on even more time off the job when there is a need to travel to a central location)

C. Providing sufficient number of training programs annually to meet the certification maintenance requirements of rehabilitation counselors

D. Providing training when there are small numbers of trainees (e.g. those with specialty caseloads)

III. Training Follow-up

A. Conducting an effective evaluation of training

B. Assessing on the job performance changes resulting from training

C. Providing trainees, subsequent to training, with ongoing information on therapeutic approaches as they emerge

WHAT IS MEET-ME?

Meet-Me is a two-way audio system that links groups of people in many distant locations. It has these features.

1. Meet-Me uses regular telephone lines to reach people.

2. Participants in a Meet-Me program simply dial a pre-determined number at a designated time and the Meet-Me bridge links all callers together.

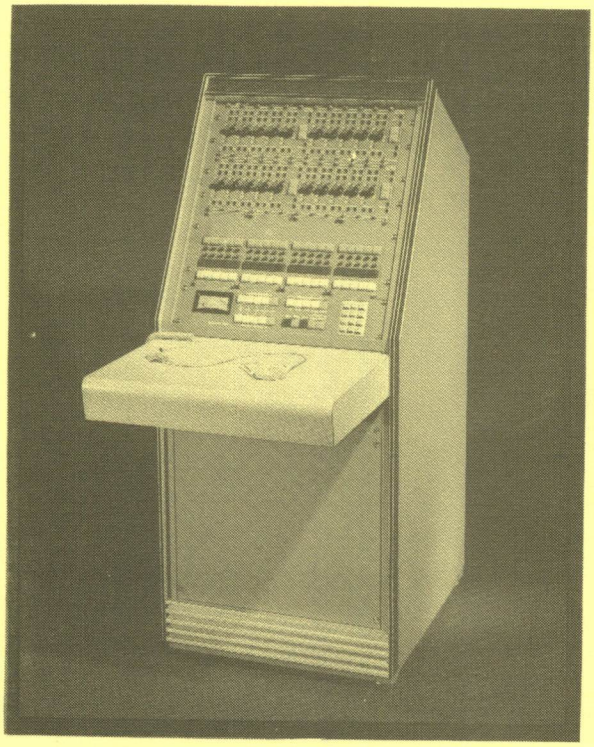
3. Meet-Me can connect up to 20 individual sites.

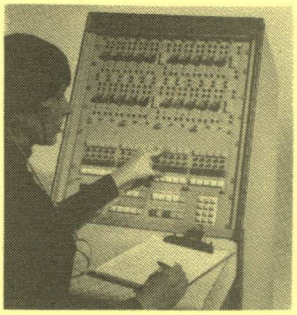
4. A portable conference speaker and microphone at each Meet-Me location allows a group of people at that site to participate in the teleconference program.

5. Anyone in the group can make comments or ask questions by simply activating the microphone and speaking. Whatever is said can be heard at all locations.

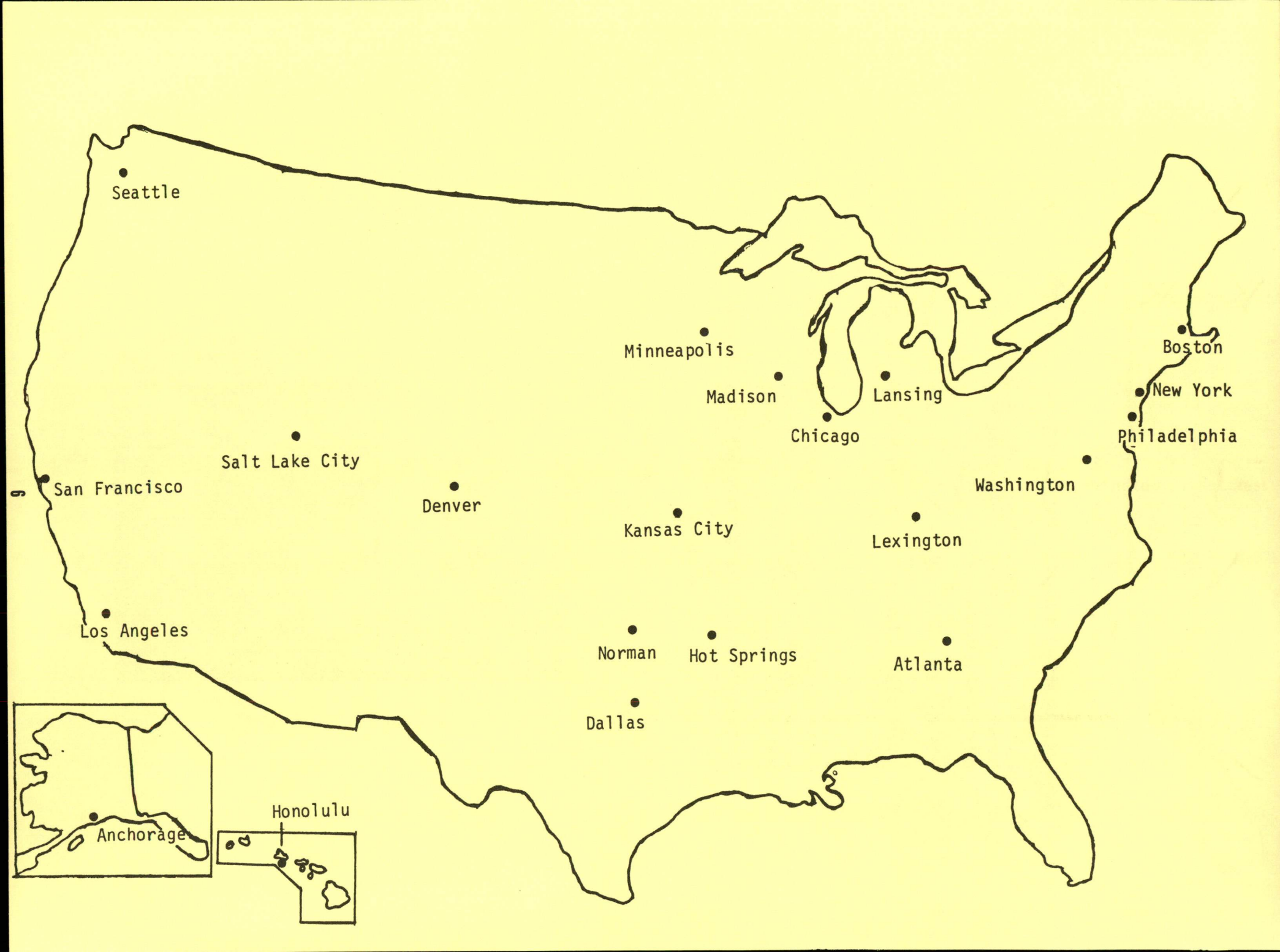
6. The Meet-Me bridge is located in Madison, Wisconsin, at Old Radio Hall, headquarters for the Center for Interactive Instructional Programs and Instructional Communications Systems.

7. A Meet-Me engineer monitors the teleconference program to control the audio quality and assist with any reception or transmission problems.





Meet-Me Bridge


Seattle
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Washington
Denver
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Los Angeles
Norman
Hot Springs
Atlanta
Dallas
Anchorage
Honolulu

Lita Colligan

Lita Colligan has been the coordinator of telecommunication's Policy, Planning And Research for the Rehabilitation Services Administration in DHEW for the past four years. She developed long range planning strategies for a research agenda which would examine the feasibility of using a variety of telecommunications systems to improve the delivery of health, education and social services to the handicapped. Mrs. Colligan has served as a technical consultant to state rehabilitation agencies, and worked closely with other government agencies involved in similar activities. Prior to this, Mrs. Colligan coordinated research activities in planning strategies in the telecommunications area for the elderly, the poor, minorities and other vulnerable populations under the social and rehabilitation service.

Telecommunications... What it is Not

- Information processing
- Video tape
- Teletypewriter
- TV spots
- Multi-media
- Data processing
- Communications
- Software

- futuristic
- de-personalizing
- too expensive
- too complicated
- never works
- eliminates jobs (mine)
- inconvenient
- solution looking for problems
-
-
-

Telecommunications...
What it is –

An electronic system or network-through which:

- information is disseminated
- communications takes place

Television

Telephone

Radio

- Communications Satellites
- Microwave Networks

Radio is for listening to music

or providing education or training to the blind

Telephone is for talking to friends

or bringing professionals and consumers together

Television is for entertainment

or providing training to homebound mothers / handicapped

Satellites are for going to the moon

or linking Native Americans from Alaska to Florida

Telecommunications Activities

- Tele - lecture
- Tele - diagnosis
- Tele - teaching
- Tele - medicine
- Tele - meeting
- Tele - conferencing
- Tele - work
- Tele - training
- Tele - counseling

Telecommunications... cross-cutting tool for... Agency Planners

- Program Planning
- Service Delivery
- Training
- Research and Demonstrations
- Policy
- Administration / Mgmt.
- Public Affairs
- Advocacy

. . . cross-cutting tool for Program Planners RSA - for example

- Severely Disabled
- Staff Training
- Homebound
- Services for Blind and Deaf
- Job Placement and Referral
- Independent Living
- Affirmative Action
- Facilities Programs
- Consumer Involvement
  - Reg'l Continuing Ed. Programs
  - Research & Training Centers
  - Rehabilitation Engineering Centers

. . . cross-cutting tool for Social Service Professionals

- Social Workers
- Counselors
- Health Care Professionals
- Educators
- Researchers
- Trainers
- Service Providers
- Administrators

. . . cross-cutting tool to reach Vulnerable Populations

- Children
- Youth
- Families
- Handicapped
- Minorities
- Migrants
- Rural Populations
- Welfare Poor
- Elderly

Teleconferencing Extends Your Options

You Can . . .

- go to any meeting any place
- bring in anyone at anytime
- deliver message to everyone at same time
- get immediate feed back on important issues

This will . . .

- improve communications
- increase travel options
- involve more people
- reach new people
- extend manpower
- reduce costs

IS - immediately do-able

Telecommunications Networks Serve People in all geographic areas

LOCAL

- Cable TV links Senior Citizens Centers to City Council & Community in Reading, Pa.

STATE

- Handicapped Consumers meet with State Agency Policy Makers via statewide ETV systems in Oklahoma

REGIONAL

- Hospitals in New England share continuing medical eduation & training via microwave

RURAL

- School children receive education via Communications Satellite in Appalachia & Alaska

URBAN

- Computers/Telephones provide centralized recorder keeping

NATIONAL

- Telephone provide communications links from everywhere

Telecommunications Where do we go from here

- Develop objectives within each agency that will include the use of telecommunications in each program area
- Use some training funds for educating Staff/Regional/States
- Send staff to view demonstrations first hand
- Send program staff to Telecommunications Conferences
- Get involved in planning the HEW Workshop now

Use it - starting now !

MINNESOTA EXISTING AND PLANNED VR APPLICATIONS

TELECOMMUNICATIONS SYSTEMS / VOCATIONAL REHABILITATION FUNCTIONS		ADMINISTRATION				CLIENT SERVICES				
		PUBLIC INFORMATION	MANAGEMENT INFORMATION & ACTIVITIES	CLIENT RECORDS	STAFF TRAINING	REFERRAL	ELIGIBILITY DETERMINATION	COUNSELING AND GUIDANCE	TRAINING EDUCATION & RESTORATION	JOB PLACEMENT AND FOLLOW UP
TELEPHONE	CONVENTIONAL	X	X	X	X	X	X	X	X	X
	CONFERENCING	X	X			X	X	X		X
	FACSIMILE									
	TELETYPE	X	X	X		X	X	X	X	X
	SLOW-SCAN TV									
	COMPUTER APPLICATION		X	X		X	X	X	X	X
TELEVISION	COMMERCIAL	X				X				
	PUBLIC									
	CATV	X								
	ITFS									
	MDS									
RADIO	COMMERCIAL	X				X				P
	PUBLIC									
	SCA-FM									

X = EXISTING APPLICATIONS P = PLANNED APPLICATIONS

Telecommunications for Vocational Rehabilitation

VOLUME VI
Executive Summary

The MITRE Corporation/METREK Division
McLean, Virginia

MITRE Technical Report 7420

September 1977

Grant Number 22-P-57905/3
Sponsor Rehabilitation Services Administration
Office of Human Development
Department of Health, Education & Welfare
Project 1850

Approved for public release; distribution unlimited

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MITRE Department
and Project Approval: John J. O'Neill

ABSTRACT

This volume is a capsule summary of the work accomplished, the findings, and the conclusions and recommendations of the Telecommunications For Vocational Rehabilitation study.

This report is one of several products resulting from a project performed by METREK, a division of The MITRE Corporation, for the Rehabilitation Services Administration of the United States Department of Health, Education and Welfare. The project is part of a larger effort aimed at helping state rehabilitation agencies realize the potential benefits of telecommunications technology in delivering and administering vocational rehabilitation (VR) services.

The reports produced by the project are:

- Telecommunications for Vocational Rehabilitation: Software Sharing Alternatives -- MTR 7420, Vol. I
- Telecommunications for Vocational Rehabilitation: Accessing Systems -- MTR 7420, Vol. II
- Telecommunications for Vocational Rehabilitation: End-Instrument Survey -- MTR 7420, Vol. III
- Telecommunications for Vocational Rehabilitation: Software Survey -- MTR 7420, Vol. IV
- Telecommunications for Vocational Rehabilitation: Software Catalog -- MTR 7420, Vol. V
- Telecommunications for Vocational Rehabilitation: Executive Summary -- MTR 7420, Vol. VI

In a related project, a companion report entitled

- Telecommunications for Vocational Rehabilitation -- A Survey of Available Telecommunications Systems

has been prepared by the Office of Telecommunications, U.S. Department of Commerce.

This project could not have been completed without generous contributions of time, effort and information by many people. We are indebted to all the personnel in the VR community who took the time to respond to our inquiries. Acknowledgement is due also to those who provided valuable information regarding the operation of organizations similar to the one under study. Particularly helpful were Mr. Alex Sareyan of the Mental Health Materials Center in New York City, Mr. Donald G. Weiss of ICD Rehabilitation and Research Center

also in New York, Mrs. Carrier Lee Roghgeb of the National Clearinghouse for Mental Health Information in Bethesda, Maryland, and Dr. Samual C. Ashcroft, Mr. Victor Fuchs and Mr. Carol Oldsen of the National Center on Educational Media and Materials for the Handicapped in Columbus, Ohio. Dr. Donald Galvin, Director of the Vocational Rehabilitation Service in Michigan, and Mr. Gary Cartwright, Director of the Division of Rehabilitation Services in Nebraska, and their staffs provided valuable insight into the VR process. Without it the project would have been seriously hindered.

We are specially grateful to Ms. Lita Colligan, the organizer of this and related telecommunications projects funded by the Rehabilitation Services Administration. It is her foresight that is reflected in the various volumes of this report.

WHY THE STUDY?

The delivery of vocational rehabilitation (VR) services nationwide is a major concern of the Rehabilitation Services Administration (RSA). Consequently, RSA is constantly seeking ways of improving or enhancing the delivery of such services. This study is an outgrowth of that interest.

The study focused on three complementary areas of investigation: telecommunications systems; software programming; and organizational possibilities.

From the observation that telecommunications systems are being used effectively by organizations and agencies delivering services similar to VR, it was theorized that this modern technology might be applied equally as well to VR. So, under the auspices of RSA, the Office of Telecommunications, Department of Commerce, and the METREK Division of The MITRE Corporation undertook a series of studies to validate this theory.

Some telecommunications systems -- radio, telephone, television, telegraph -- are familiar to us all. Others, less commonplace, are also being used to deliver information -- software programming -- to a widely dispersed audience. Just how effective these systems might be in the VR environment was one of the chief interests of this study. Which brings us to the next facet of the study: the software programming "delivered" by telecommunications. Since telecommunications systems are the mechanism for delivering programming, it naturally followed that the source, availability, amount, and quality of VR-related software should also be investigated, along with the means for its distribution among the states.

And, because software is expensive, the feasibility of an organization to assist the states in software management was also examined.

These three complementary studies were all aimed at finding a means of assisting state agencies to deliver more or better VR services despite increasing case loads and decreasing budgets.

Like most studies, this one consisted of data collection, analysis and reporting. Information was gathered from national and state VR professionals, from VR facilities, from telecommunications manufacturers and users, from end-instrument manufacturers, from independent inventors and scientists, from software producers, and from the handicapped themselves. Anyone who might offer some insight into VR community problems, telecommunications capabilities, and software availability was a candidate for questioning.

To collect the information necessary for a comprehensive analysis, the study team, composed of Department of Commerce and METREK personnel, was divided up into specialized units. The Department of Commerce team looked into the telecommunications systems currently employed by VR agencies in 16 representative states and identified those rehabilitation functions most appropriate for telecommunications delivery. The METREK team surveyed the telecommunications industry to ascertain what kinds of telecommunications systems are currently available in the marketplace and the means by which state VR agencies could access these systems. In addition, a complementary survey was conducted by METREK to identify available end-instruments and special devices for assisting the handicapped to use telecommunications equipment.

Since telecommunications systems are only "tools" for delivering programming software -- films, videotapes, slides, audiotapes, etc. -- a survey of software sources, software quality, and software quantity was also undertaken by the METREK team. This resulted in an unexpected bonus -- a comprehensive catalog of state software holdings nationwide.

And, in concert with the above, the METREK team investigated software sharing alternatives to assist the states in improving the quality and quantity of their software. Since software development on a state-by-state basis might prove to be inefficient and costly, RSA asked METREK to explore alternative ways states agencies might pool their resources to share, develop and distribute software pro-

gramming. METREK examined the types of organizations that might best meet future needs of states and, at the same time, reduce costly overlap of software production.

The Advisory Task Force

This study owes much of its success to the enthusiastic contributions and comments from VR professionals across the country, and particularly to an Advisory Task Force (ATF) selected early in the project. This Task Force, composed of renowned VR professionals, provided crucial counsel and guidance throughout the study. Such guidance is essential in any state-of-the-art study because it is all too easy to wander afield seeking information which may prove to be irrelevant. The following chronology illustrates the close cooperation between the ATF and the METREK study team.

At the first ATF meeting in McLean, Virginia, in January 1976, a formal progress report and preliminary findings were presented to the Advisory Task Force. Subsequent efforts reflected their recommendations and concerns.

At the second ATF conference this sequence was repeated, as well as at the third conference. Each time, the ATF offered recommendations and guidance valuable to the conduct of the study. An interesting sidelight to the third ATF conference was that no one attended. Instead it was held by means of telecommunications -- a telephone conference hookup -- which allowed all "attendees" to participate without the burden of travel time and expense.

In addition to comments from the Task Force, comments were solicited from the Council of State Administrators of Vocational Rehabilitation (CSAVR).

Twice the study team presented its findings at CSAVR conferences, once in San Francisco in September, 1975 and again in Washington, D.C.

in September 1976. Feedback here was also beneficial to the conduct of the study.

It was expected, of course, that professionals would be willing to contribute to our efforts; what was unexpected was the amount of enthusiasm and encouragement. This support lent much impetus to the effort.

The product of this effort, as stated earlier, is a seven-volume report entitled Telecommunications for Vocational Rehabilitation, each volume corresponding to the work done by one of the special study teams.

- o Systems Survey prepared by the Department of Commerce, Office of Telecommunications
- o Software Sharing Alternatives prepared by the METREK Division of The MITRE Corporation (along with those listed below)
- o Accessing Systems
- o A Catalog of Telecommunications End-Instruments for the Handicapped
- o Software Survey
- o Software Catalog
- o Executive Summary

An annotated list of these documents and instructions for obtaining them are located at the end of this report.

What these reports in essence say is that telecommunications systems do, indeed, seem to be a viable means of distributing client and staff services, and that the technology, proven in other applications, appears to be readily transferable to the VR environment. Further, that the plentiful amount of software available for distribution by telecommunications systems and devices could be more efficiently and economically produced and distributed if some organizational mechanism were provided. Consequently, the structure of such an organization was investigated and identified.

The contents of these reports reflect not only the thinking of the project team and the Advisory Task Force, but hundreds of VR professionals who were interviewed as well.

As such, the reports constitute a state-of-the-art study of telecommunications systems and software holdings as related to vocational rehabilitation.

Telecommunications Survey

The telecommunications findings are documented in three reports: the Systems Survey, prepared by the Office of Telecommunications, and Accessing Systems and End-Instrument Survey prepared by METREK.

The Department of Commerce survey revealed that, in general, rehabilitation agencies are not taking full advantage of the telecommunications systems they already have. To be sure, there are cases where state agencies are making imaginative use of telecommunications. For example, in Michigan and Nebraska a teledictation system speeds the process of disability determination. A toll-free telephone number connected to a recording device is available to physicians around the clock, seven days a week, to phone in their medical evaluations. This has reduced processing time by 10 to 15 days. An unexpected benefit has been that some physicians are charging less for their evaluations because their own staffs do not prepare the reports. In addition, some physicians who previously had refused to examine VR clients are now willing to do so.

Telephone conferencing, a service which allows meetings to be held by phone, is being used in many areas. To cite two, Wisconsin and Minnesota make conference calls between state and district offices to discuss administrative matters. Similar calls have been made between RSA regional offices and state regional offices. The obvious advantage is that telephone conferencing is an inexpensive substitute for traveling to meetings.

But, the above examples are more the exception than the rule. Overall, the states are not exploring what may be an efficient and cost-effective tool for the distribution of VR services.

Dovetailing with the Department of Commerce survey was the METREK survey of existing telecommunications systems. Where the Department of Commerce survey looked at what is in use among VR agencies, the

METREK survey looked at what is available for use within the state-of-the-art. Along with this summary of the technology, the METREK survey also examined current and future VR telecommunications applications. Of equal importance, the source of telecommunications systems and services and how to access them were compiled. This information is presented in detail in Accessing Systems. What the survey revealed was that there is, indeed, a multiplicity of media and service offerings available to VR agencies, but because of the large number and the variety of ways of accessing them, the process becomes complex and cumbersome for those unfamiliar with it. Although the METREK report provides source information, there is a pointed need for an individual or organization to collect, sift, and disseminate information relative to telecommunications technology in lieu of each state doing it separately.

Technology also plays another role in the delivery of client services. It is one problem to get the information to the client's location, it is another problem to enable a handicapped person to gain access to it. Hence, the METREK survey of available end-instruments to aid the handicapped. The catalog produced as a result of this survey lists 61 communication end-instruments useful to the handicapped and their sources. Through these end-instruments -- special devices -- the handicapped can benefit from telecommunications, oftimes in the convenience and comfort of their own homes. For example, Mary Jones 11, attends school each day with dozens of other children and studies the conventional subjects of math, reading, and penmanship. This is a commonplace experience for most children, but not for Mary. She is deaf and emotionally disturbed. But, through the medium of interactive (two-way) television in her home -- a system serving over a hundred other children in her area -- Mary has improved in school. Her teachers attribute much of her improved performance to her home TV study. Although her name is fictitious, Mary's situation is real, and is only one of many examples that could be cited.

In general, telecommunications seem to have the potential to affect cost, accessibility, and the quality of a state's rehabilitation program. Savings are reflected in dollars and staff and client time. Accessbility is enhanced in that services can be made available to more clients, or clients will wait less time for those services. And quality, although less quantifiable, may be upgraded. For example, a video tape in place of aural or printed material may prove in some instances to be a better teaching tool than other less dynamic media.

Certainly telecommunications are no panacea for the problems facing the handicapped nor the problems of bringing VR services to the homebound and others. What they offer, however, is what appears to be another format for cost-effective delivery of some VR services.

Software Survey

The first thing revealed in the software study was what state VR agencies have known all along: software is expensive. Yet, there is no software exchange among the states and, in fact, there is almost no dialogue among state agencies concerning each state's software holdings, resulting in duplication and inefficiency in software distribution. Add to this that, aside from word-of-mouth comments, there is no mechanism for software assessment, hence its quality is, in a word, uneven, despite the overwhelming amount available. All of the above are compelling reasons for some sort of vehicle to amass and disseminate software information among the states.

In the Software Survey, the VR agencies reported 580 different titles recorded on videotype, film, filmstrips, slides, etc. Of those reported, 520 contained information valuable to this study. Some 348 were listed in nationally available catalogs; 172 were classified as "fugitive" titles, meaning those produced by state agencies for internal use only, therefore, are unknown or unavailable outside the originating state.

In summarizing the weighty statistics which are amply covered in the Software Survey, it bears noting that in the 50 states, about half

the agencies report holding less that ten titles; two states, Alabama and Utah, reported over a hundred each. Clearly there is substantial room for improvement. Further, all titles reported originated from 177 different sources, another suggestion that someone or something is needed to collect and compile this information in behalf of the states.

Of the sources, however, 25% originated in the VR community, exceeded only by commercial sources at 32%, indicating that VR is not lax in the production of software. But, of all available software, only 17% is client oriented while a whopping 49% is aimed at counselors and 38% at facility staff. This imbalance deserves examination, especially where telecommunications are aimed at delivering training or services to clients.

What the software survey showed was that there is, indeed, plenty of software available, as evidenced by the Software Catalog. Although much of the existing software is skewed toward VR staff personnel, this is remediable, in part by the application of telecommunications to software delivery and in part by organizing software products and distribution.

Based on the software survey and discussions with VR personnel, it is evident that there is a need and a desire for some sort of organization to compile and disseminate software information among the states, to provide guidance in the application and use of new delivery systems, and in general provide software counseling. This is particularly true not only because of the multiplicity of sources, but also because of software's uneven quality, high production costs, and limited distribution mechanism.

There is no question that by eliminating or at least reducing duplication of effort, improving software quality, encouraging the application of technology to software delivery, and improving information sharing among the states, more services and benefits can be

wrung from available funds. Can a special-purpose national organization do all this?

Why organize? Quite simply, to save money and, in the case of VR, to improve or maintain current levels of service despite lean budgets.

But the question remains, could a national organization indeed save money and, equally as important, would the money saved exceed the operating cost of the organization?

These questions cannot be answered with certainty by a "paper" study such as this, but the study suggested three compelling reasons why such an organization could be effective:

- The cost-effective application of telecommunications for software delivery in other fields analogous to VR.
- Current fragmented production and distribution of software in VR is inefficient and costly, therefore, there are certainly benefits to be accrued from organizing.
- There has been, until now, a general unawareness in the VR community about available software and telecommunications delivery systems, their effectiveness, and cost. Consequently, no innovative and potentially economical approaches to software delivery have been mounted in recent years.

Of course, once you decide to have an organization, you have to consider what kind it is going to be, who can belong, who will run it, and how will it be supported? These were the same questions asked by the project team.

To determine what kind of organization would be appropriate, the METREK team looked at what kinds of organizations there are. In other words, what are the options? They collected data concerning the structure and services offered by other organizations, they culled the literature on organizational design and effectiveness, and they interviewed members and officers of existing software organizations. This is documented in detail in Software Sharing Alternatives.

The results of these analyses were presented to the Advisory Task Force and from this coordinated effort the type of organization and the types of service to be provided were identified, as described below.

The consensus among the members of the METREK team and the Advisory Task Force was that pivotal to any organizational structure was the ability of that organization to sustain itself. Hence, only those attributes which would contribute to that ability were selected from all of the organizational characteristics surveyed. The results: analyses indicate that the organization should be composed of members affiliated with vocational rehabilitation in some way -- VR agencies, VR facilities, and other VR-related activities.

Moreover, the organization should be incorporated for the sole purpose of supporting VR software services with a charter flexible enough to allow the organization to pursue a variety of revenue sources.

In addition, it should be a <u>new</u> organization unaffiliated with government. New organizations, paradoxically, are more flexible and less expensive to run than established ones, and government operated organizations do not, as a rule, attract the broad memberships necessary for self-sustainment.

The above, obviously, is a generalized description of the kind of structural framework the organization should have. The structural details should be determined by representatives from all elements of the VR community.

As mentioned earlier, the METREK staff and the Advisory Task Force also identified a preliminary list of specific services to be provided by this organization:

- Technology Applications Information - to inform the VR community of the development and availability of new technology such as telecommunications and computer-assisted programming and to act as a "technical interpreter" to the community.

- o Software Information Distribution - to inform the VR community of available software and what is applicable to VR.

- o Software Quality Assessment - consisting of software review by staff members, software experts, and users with subsequent evaluation and recommendations.

- o Software Distribution - to provide a software distribution mechanism to serve the VR community.

- o Software Production Coordination - to reduce overlapping production efforts and software duplication among the states.

- o Software Production - a low-level production effort by the organization itself.

Despite the extensive coordination among the VR community, the Advisory Task Force, and the METREK team, it is felt that there is still a need for an exchange of ideas. To accomplish this, the results of this study will be presented at a Telecommunications for Vocational Rehabilitation Conference to be held in Madison, Wisconsin, September 25-28, 1977. At this time, about 150 rehabilitation professionals representing the diverse interests and concerns of the handicapped will have an opportunity to discuss, debate, and refine the recommendations made in this study.

CONCLUSIONS AND RECOMMENDATIONS

The general conclusion is that because of the fragmented approach to software production and distribution and the lack of understanding of the benefits to be derived from the application of telecommunications technology to the VR environment, an organization that would assimilate all available information on both areas and translate and distribute it throughout statewide VR agencies would indeed be beneficial to the community -- technology consulting, so to speak.

Included in the responsibilities of this organization would be an educational campaign to enlighten VR administrators and decision makers to the potential benefits to be gained from exploiting existing telecommunications technology. Further, this organization should encourage and support state agencies in the conduct of their own surveys to determine their particular telecommunications needs and opportunities.

Concomitant with the above should be a campaign to inform state agencies what is available on the software market and to encourage and develop a means for interstate communication among VR agencies so that the community in fact becomes a community, sharing knowledge, resources, and information.

To do this, RSA should initiate as soon as possible a comprehensive series of coordinated research, analysis, demonstration, and evaluation projects aimed at quantifying the actual cost and effectiveness of telecommunications and software as they apply to vocational rehabilitation. One group of these projects might address client training, emphasizing homebound and rural clients; another group of projects might address staff training.

In addition, RSA should fund an organization to develop and establish software services over a four-year trial period. Four years are needed to allow the organization to better tailor the

services to the VR community's needs, to develop a broad base of support, and to allow the community itself time to assess the costs versus the benefits of the services.

It is recommeded that this organization be implemented in two phases, spanning the four years. Phase I would be aimed at developing a marketable set of services in a limited geographic area -- say four to six states -- for an approximate two-year period. The first year would be start-up: a staff recruited, facilities arranged, equipment and supplies procured, policies and procedures established, brochures distributed announcing the birth of the organization and the services to be rendered during the ensuing years -- software information, quality assessment by experts, production needs assessment, and other attendent functions.

In Phase II, services should be offered nationwide and the national market tested for two years. During this time, the organization should endeavor to become self-sustaining through the service fees, membership dues, and a combination of revenue types and sources to be determined upon design of the organization.

Phase III would take the form of a Research Utilization Conference where the information and results compiled to date would be shared with the entire community nationwide. If the results indicate, and the software sharing concept seems acceptable to the state agencies, plans could be formulated for the implementation of a full-scale, nationwide organization.

In this way, by testing the waters locally and then expanding when the probability of success can be estimated, the risks are decreased, organizational flexibility is maintained, and RSA can be sure of making optimum use of state and national resources.

The following seven volume set of documents may be obtained by writing or telephoning your request to:

Ms. Lita Colligan
Coordinator, Telecommunications Policy Planning & Research
Rehabilitation Services Administration
Office of Human Development
Department of Health, Education and Welfare
330 C Street, S.W. -- Room 3431, Mary E. Switzer Building
Washington, D.C. 20201
Telephone: 202/245-0515

Telecommunications for Vocational Rehabilitation: Systems Survey, U.S. Department of Commerce, Office of Telecommunications.

This survey documents the current and planned use of telecommunications systems by the vocational rehabilitation agencies in 16 states. It also discusses new ways these systems might be applied to VR activities.

Telecommunications for Vocational Rehabilitation: Software Sharing Alternatives, The MITRE Corporation, METREK Division, MTR-7420, Vol. I

This document addresses the software sharing organizational alternatives. That is, the desirability and necessity of such an organization, its structure, the services to be provided, and its potential for self sustainment. The conclusions and recommendations presented in this report are based upon the findings, conclusions, and recommendations contained in the other reports. In other words, it is a summary document. Hence, for an accurate picture of the foundations for the conclusions drawn in this volume, the other volumes should be read, particularly the Department of Commerce Report and MITRE Volumes I, II and IV.

Telecommunications for Vocational Rehabilitation: Accessing Systems, The MITRE Corporation, METREK Division, MTR-7420, Vol. II

This report, written specifically for non-technical readers, describes a variety of existing telecommunications systems, presents examples of how these systems are being or could be used, tells how to find out which systems are in place and where, which are accessible

to the VR community, and estimates the typical costs of using such systems.

Telecommunications for Vocational Rehabilitation: End-Instrument Survey, The MITRE Corporation, METREK Division, MTR-7420, Vol III

This catalog classifies, describes, and characterizes 61 communications end-instruments that are useful to the handicapped. End-instruments are those devices which allow interaction between a user and a telecommunications link. The classification of these devices in this catalog is based upon the stimulus used: sight, sound, tactile sense, physical motion. Included in this catalog are the names and addresses of instrument researchers and manufacturers.

Telecommunications for Vocational Rehabilitation: Software Survey, The MITRE Corporation, METREK Division, MTR-7420, Vol. IV

This report documents the findings of a national survey of state VR agencies' software holdings. These holdings include such media as audiotape, motion picture films, filmstrips, slides, and videotape.

Responses from 46 general rehabilitation agencies and 16 agencies for the blind were analyzed in terms of their holdings, sources of software, the acquisition process, content, and usage. The report concludes with seven recommendations for promoting greater software utilization within the rehabilitation community.

Telecommunications for Vocational Rehabilitation: Software Catalog, The MITRE Corporation, METREK Division, MTR-7420, Vol. V

This report is companion to Volume IV, above, in that it catalogs the "fugitive" software reported by state rehabilitation agencies and rehabilitation research and training centers in response to a national survey. Fugitive titles are those that, to the best of the author's knowledge, are not listed in a widely available catalog.

This catalog lists an abundance of titles indexed by target audience, subject, and media. In addition, sources of relevant audiovisuals and software are described briefly.

Telecommunications for Vocational Rehabilitation: Executive Summary, The MITRE Corporation, METREK Division, MTR-7420, Vol. VI

A capsule summary of the work accomplished during this study, the findings, and conclusions and recommendations.

ACKNOWLEDGEMENTS

With gratitude we acknowledge the contribution of the Advisory Task Force whose advice and encouragement guided and inspired us throughout the life of this project. Advisory Task Force members were:

Dr. Edward C. Baumheier, Denver Research Institute

Dr. Stuart Cooney, California Instructional Television Consortium

Dr. Gordon Cummings, California Department of Rehabilitation

Dr. Fred Fay, Tufts Medical Rehabilitation R&T Center

Mr. Dewitt John, Denver Research Institute

Mr. Adrian Levy, New York State Vocational Rehabilitation Commission

Ms. Archie Lewis, Ohio Rehabilitation Services Commission

Dr. Herbert Liebowitz, Rehabilitation Services Administration

Dr. Joseph B. Moriarty, West Virginia Vocational Rehabilitation R&T Center

Mr. Richard P. Oestreich, Ohio Rehabilitation Services Commission

Ms. Elizabeth Pan, Vocational Rehabilitation Consultant

Mr. Edward Roberts, California Department of Rehabilitation

Mr. Louis Wagar, Florida Bureau of Blind Services

Mr. Joseph H. Wigginis, Virginia Commission for the Visually Handicapped

The organizations visited included:

- Central Office of the Educational Resource Information Clearinghouse (ERIC) at the National Institute of Education
- National Audiovisual Center
- National Clearinghouse for Mental Health Information
- National Clearinghouse for Drug Abuse Information
- National Clearinghouse for Alcohol Information
- National Center on Education Media and Materials for the Handicapped
- National Technical Institute for the Deaf
- Great Plains National Television Library
- Mental Health Materials Center.

Other organizations contributing information were:

- National Information Center for Educational Media (part of ERIC)
- National Technical Information Services
- Public Service Satellite Consortium
- Instructional Television Cooperative
- Educational Products Information Exchange
- Alabama Rehabilitation Media Service
- National Clearinghouse for Training Materials
- Continuing Education Program for Rehabilitation: Region 2
- Special Office for Materials Distribution (part of Bureau of Education for the Handicapped Network)
- American Foundation for the Blind
- Recording for the Blind
- National Rehabilitation Association
- Association of Rehabilitation Facilities
- National Rehabilitation Training Institute

Ruth Katz

Dr. Ruth M. Katz is Senior Research Scientist, Social Systems Research and Evaluation Division, Denver Research Institute (University of Denver). She is also a University Associate in Gerontology. Among her research interests are the uses of telecommunication for service delivery, evaluation of public programs, and the management of information resources. Dr. Katz is active in professional associations including the American Library Association, American Educational Research Association, Women's Institute for Freedom of the Press and American Society for Information Science. She serves on the Boards of Directors of the Public Service Satellite Consortium and of Big Sisters of Colorado, Inc. Dr. Katz recieved her Masters and Doctoral degrees from Rutgers University.

DRAFT

STAFF TRAINING VIA TELECOMMUNICATIONS: ANALYSIS OF NEEDS AND DELIVERY ALTERNATIVES

FINAL REPORT - EXECUTIVE SUMMARY

Grant No. 12-P-59157/8-01

-Prepared for-

Department of Health, Education, and Welfare
Office of Human Development Services

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June 1979

Introduction

In October 1977, the Denver Research Institute (DRI) received a grant from the Rehabilitation Services Administration (RSA) to investigate the potential and cost-effectiveness of delivering vocational rehabilitation (VR) state agency staff training via telecommunication, and to prepare test and evaluation plans for those telecommunication alternatives having the greatest potential for use in staff training. The study was initiated in an attempt to develop methods to enhance the effectiveness of and participation in state agency staff training.

As part of their responsibility for receiving federal rehabilitation funds, state vocational rehabilitation agencies are required to provide ongoing training for all levels of state agency staffs. Several circumstances combine to make fulfillment of this requirement difficult using present training delivery methods. State agency funds for training and for personnel to do the training are limited in relation to the number and diversity of VR workers requiring training. In addition to the various levels of employees (i.e., counselors, clerical workers, administrators), there are differing requirements for specific or specialized information relevant to case work and most states have some employees isolated by geographic location or severe weather conditions.

Telecommunication has the potential to overcome these constraints by having the ability to cost effectively reach a greater number of trainees compared with traditional methods, to fulfill the specialized information needs of practitioners in a more efficient and individualized way, and to overcome geographic or weather barriers. The purpose of this study, then, was to identify the unmet training needs of state agency staffs, the courseware, and other training materials presently being used in training as well as that needed in the future, and the potential of telecommunication to deliver training to meet VR's overall training needs. In addition, a media package was to be developed highlighting the present and potential uses of telecommunications in VR.

This Executive Summary presents an overview of the project's organizational and research activities and highlights the outcome of the 18-month research effort. Volume I of this report presents the analysis of training needs data and costs obtained from extensive surveys sent to training officers and all levels of state agency staffs at state agencies in eleven states, to all Regional Rehabilitation Continuing Education Programs (RRCEP), and to all Rehabilitation Research and Training Centers (R&T Centers). Our conclusions and recommendations concerning staff training needs, as well as the tabulated survey results, are included in Volume I.

Volume II contains three sections. Section I presents the results of the telecommunication-related tasks of the research, the recommended telecommunication methods for use in delivering VR staff training, and a discussion of the costs and cost-effectiveness of VR staff training delivery via telecommunication. In addition, test and evaluation plans for the most promising alternatives are included in this section. Section II details state and federal factors affecting the development of public sector telecommunication applications. Much of the research and writing for this section was performed by the Council of State Governments under the direction of John Dinsmore. Section III summarizes the media-related activities of the project and details the content of the audiovisual productions, which include two slide/sound shows and a color videotape derived from the basic script.

The benefits realized by the completion of this project exceed what is contained in these reports. Through continuous dialogue with VR practitioners across the country, extensive visits in two case study states (Oklahoma and Minnesota) and discussions with agencies and other groups interested in the use of telecommunication, a great deal of information concerning the applications and uses of telecommunication has been disseminated. The media products produced during the course of the work will be used by the Seattle RRCEP as part of a national short-term training program to train trainers on the use of

telecommunication and in a workshop for DHEW planners and managers about social services delivery systems using telecommunications. These media products discuss the existing and potential uses of telecommunication in VR and are directed primarily toward administrators. They provide concise telecommunication introductory materials for those administrators comtemplating the use of telecommunication in their agencies.

The real benefits of this research, however, will come from the efforts of those interested in the use of telecommunication who will use these results in developing programs or policies which will further the use of telecommunication in VR.

Highlights of the Project

Prior to official start-up of the project, numerous contacts were made with persons in the vocational rehabilitation field and related disciplines. These contacts provided a valuable source of information and direction. The initial tasks of the project involved calling upon these experts for consultation on finalizing membership on the Advisory Committee and on the best mix of states to participate in the training needs survey.

The Advisory Committee consisted of 21 persons, comprising vocational rehabilitation, training, counselor education, and telecommunication specialists. In forming the Committee, input was sought from the RSA project officer, regional office staffs, CSAVR, NRA, as well as other VR and training specialists. The Committee had representation from Regional Rehabilitation Continuing Education Programs, Rehabilitation Research and Training Centers, CSAVR, regional administrators, state agencies, counselor education, telecommunication, and counseling. A list of the members of the Project Advisory Committee may be found at the end of this summary.

The Committee met once in person in Denver in the fourth month of the project, participated in two telephone teleconferences, and were

often polled by telephone on issues of importance to the project. The ideas, advice, and direction provided by the Advisory Committee were invaluable to our research.

Selection of the survey states was based on geographic distribution, rural/urban mix, the vocational rehabilitation administrative arrangements (vocational rehabilitation and blind agency combined, blind agency alone, etc.), and the degree of existing telecommunication use. Two states of the 11 survey states were chosen for extensive study. These two pilot states were Minnesota and Oklahoma. The remaining survey states included Maine, West Virginia, Texas, Mississippi, Ohio, Washington, Michigan, Nevada, and Utah. Survey questionnaires were also sent to all RRCEP's and RTC's, although there was no prior agreement with these groups to participate in the project. The design and implementation of the surveys are discussed below.

As originally conceived, the project work was divided into 11 tasks. Of these 11 tasks, nine were responsive to the stated grant objectives, while the other two, the legislative task and the media task, were included because it was believed they would enhance the usefulness of the project and increase the effectiveness of the dissemination of project results. As the project work proceeded, the project team concluded that several of the 11 tasks were closely related and that these should be consolidated. As a result, the original 11 tasks were restated as five separate tasks for this report. Task 1 included the intensive case study of the pilot states, the survey of training needs and present training delivery methods, and the survey data analysis. Task 2 involved an analysis of the human and organizational factors affecting telecommunication use and a review of needed and available software. Task 3 included the identification of potential telecommunications alternatives and their costs, an analysis of their cost-effectiveness relative to traditional delivery methods, and preparation of test and evaluation plans for the most promising alternatives. Task 4 involved the identification of state and federal government factors affecting

the development of public sector telecommunication alternatives. Task 5 included the development and production of the media package. The restatement of tasks is reflected in the format of the report.

Survey of training and training needs. In order to identify potential telecommunication alternatives and to assess their cost-effectiveness for VR staff training, a network of VR state agencies was developed as a primary source of information on present training and training delivery methods. The two intensive study states were visited shortly after the project began. At least four local VR offices and the central administration were visited in both states to get an initial assessment of the different kinds of work, information needs, and training environments in which field staff and administrators operate. During our visits, informal meetings were held with all levels of staff, including administrators, secretaries, counselors, counselor's aides, vocational evaluators, and RRCEP and R&T Center staffs.

Following our visits to the intensive study states, we were able to construct three draft questionnaires (one for VR staff, one for State Training Officers, and one for RRCEP and R&T Center programs) pertinent to the VR work and training environment. The draft questionnaires were then reviewed by the project Advisory Committee and a CSAVR representative after which the content and format were finalized.

The survey questions were primarily open-ended. Despite the perils of using this kind of question, we believed this was necessary to obtain the diversity and quality of information desired. We had found in the pilot states that most VR staff and administrators were not familiar with telecommunication and that training needs or problems were potentially far ranging. Thus, we constructed the questionnaires so that the respondents could cite their preferences, needs, and problems concerning training without being confined by telecommunication jargon and standardized training categories. We were not as concerned with statistical validity as with obtaining the honest perceptions of VR personnel about the real and ideal VR training environment.

Liaison had been established through at least one person in each survey state. In some cases, the liaison person was the State Training Officer and in some cases we dealt directly with the state VR or Blind Agency administrator. In all cases, the staff questionnaires were mailed to state agency personnel, who distributed them so that the state's geographic areas and all levels of staff were represented. Staff questionnaires were distributed to at least 10 percent of each state's field staff and overall, we realized a 51 percent return rate (980 questionnaires send, 500 returned). Each returned questionnaire was handled individually; then, responses were categorized by state.

A questionnaire was also sent to each state agency Training Officer in the survey state network. This questionnaire sought information on the present training available within the state and from regional sources, the cost of training per trainee, present training delivery methods, and the probable future directions of training in the state. Also requested were details about the states' available audiovisual equipment and any present use of telecommunication in training.

The third questionnaire was sent to directors or chiefs of training at all of the RRCEP's and R&T Centers to obtain information on training and training resources available to the states from these programs, as well as details of any present use of telecommunication in training. This part of the survey data is the least satisfactory because only 9 of 31 questionnaires were returned.

(Brief discussion of training needs survey results)

An example of each questionnaire may be found in Volume I, Appendix A. Detailed results of these questionnaires may be found in Volume I, Appendices B-D.

Analysis of telecommunication alternatives. In addition to the results of the training surveys, pertinent VR literature was used to determine the potential telecommunication alternatives best suited for VR staff training. For example, the Arkansas R&T Center, in a 1975 study titled Participation by Vocational Rehabilitation Personnel in Rehabilitation Training, found that:

- There is a need for increased communications among agencies and training resources;
- There is a tremendous range in the types of training programs being conducted, which led to the assumption that considerable thought and effort are being devoted to the preparation of different training programs to accomplish similar objectives; and
- It appears both feasible and cost-effective to seek more standardization in rehabilitation training.

The situation has not changed dramatically since 1975 and these specific training problems still exist. These problems increase the potential of telecommunication to be cost-effective in VR staff training delivery.

Another study, performed at the Center for Communications Policy Research, involved a national mail survey of state rehabilitation administrators, counselors, and facility directors in order to elicit their attitudes toward telecommunication. Part of this survey contained short scenarios describing an organizational need, and respondents were asked to indicate their most and least preferred technological solutions. The staff training scenario put the respondent in the position of being responsible for providing a two-hour in-service training program to all of the professional staff in their agency. Face-to-face training sessions were not feasible as more people needed to be reached than time constraints would allow if "in person" sessions were held. The administrators were then given five alternatives to in person sessions including teleconference, broadcast television, broadcast radio, closed circuit television, and videotape. The administrators overwhelmingly preferred closed-circuit television, with the teleconference and videotape running close seconds.

These and other information sources* were used, in conjunction with the surveys, to identify the telecommunication alternatives with the potential for satisfying the staff training needs and administrative preferences in vocational rehabilitation.

(Brief discussion of TC alternatives chosen and cost-effectiveness factors)

(will be about three pages)

The analysis of the telecommunications alternatives as well as a discussion of their cost effectiveness may be found in Volume II, Section I of this report.

State and federal factors affecting the use of telecommunication. This task was undertaken to provide a brief overview of contemporary telecommunication issues and challenges, of the complex relationships among telecommunication users, providers, and regulators, and of the impact of these relationships upon state governments. A special attempt was made to determine whether or not there might be legislation at the state level which could either facilitate or interfere with the development of public sector telecommunication applications, especially when multistate and multiagency arrangements might be necessary. It was determined that both kinds of legislation exist, in varying patterns, in the 12 states under consideration. These 12 states include the 11 states included in the DRI/RSA research project, plus Alaska, which was included because of their innovative use of public telecommunications applications.

Four specific areas were examined to identify existing state legislation and regulations and are detailed for each of the 12 states.

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*Other sources included the USC study, Research to Assess the Barriers to Effective Utilization of Telecommunications in State Vocational Rehabilitation Agencies, the National Clearinghouse of Rehabilitation Training Materials, the Journal of Rehabilitation Administration, American Rehabilitation, and the Informer, among others.

These areas are:

1. State administrative telecommunications management
2. State authority for public/educational braodcasting
3. State regulation of cable television
4. State regulation of telephone service

The results of this investigation reflect the varying patterns of involvement from state to state. However, one overall conclusion that might be drawn is that any agency seeking to develop public sector telecommunication applications, whether for a single-state or multi-state program, must examine carefully not only the extensive body of federal communications law and regulations, but also the patchwork quilt pattern of state law and regulation, all of which is currently in a state of flux.

In addition to investigation of state legislation and regulation regarding telecommunication, a review of recent telecommunication activities in both the federal and private sectors was undertaken. Several of these activities will have significant impact on the development of both public and private sector telecommunication applications and are highlighted below.

A federal reorganization initiative in early 1978 resulted in the creation of a new communications policy agency, the National Telecommunications and Information Agency (NTIA), within the Department of Commerce. The NTIA has both policy and research responsibilities and is strongly focused on analyzing the potential impacts of new technologies and networking configurations. These user-oriented interests are the prime responsibility of NTIA's applications division, and represent growing federal concern for providing communications users with improved levels of service, and with alternative service systems at realistic prices.

Closely related to the NTIA reorganization is a congressional initiative to undertake a major rewrite of the Communications Act of 1934. The Communications Act is outdated not only in the technological sense (it does not deal effectively with the substantial technological

changes which have occurred since 1934), but also in that it does not allow for a central communications policy mechanism, which is urgently needed at present. The overall intent of the rewrite is to eliminate the outdated communications regulatory structure so that the U.S. may move quickly into a new era of communications growth and development based on more effective use of the emerging technologies. The bill proposes a major deregulation of the communications industry coupled with an effort to stimulate competition and innovation. If passed, the rewrite would result in major changes in the availability of communications services to both the private and public sectors.

A related bill, the Public Broadcasting Financing Act of 1978, was signed into law in November 1978. This legislation increased public accountability of the public broadcasting system, maintained advance funding for public television and radio, and realigned several roles within the public broadcasting environment. Of significance in this act is the authorization of a public telecommunications facilities program, which will provide planning and construction funds for increasing both broadcast and limited broadcast services to the public, especially in areas not presently receiving public broadcast service.

In January 1979, the Carnegie Commission on the Future of Public Broadcasting issued its final report, entitled A Public Trust, which recommends a major reorganization of public television and radio and an increase in funding from its 1977 level of $482 million to around $1.2 billion by 1985. This privately funded report is intended to provide a focal point for federal planning of future directions for national public broadcasting. Central to the Commission's report is the establishment of a Public Telecommunications Trust, to replace the Corporation for Public Broadcasting. This new trust, a private, non-profit entity to be generated by federal law, would serve as the major planning agency for public broadcasting. Federal funding support by 1985 would be $630 million, with an additional $570 million to be derived from business, foundations, state and local governments, and private contributions.

Another development affecting telecommunications use is a recently established federal entity, the Interagency Committee on Satellite Communications Applications. This committee is studying user needs, systems requirements, procurement problems, and operations/management considerations in order to plan for effective use of satellite communications. The research and development activities fostered by this committee may ultimately result in providing new and improved communications services not only to the selected federal agencies represented on the committee, but also to other user communities, both public and private.

Recent activities in two states, Virginia and North Carolina, reflect growing concern and needs in state government telecommunications. In 1972, the Virginia General Assembly created the Virginia Public Telecommunications Council (VPTC) to manage and coordinate the Commonwealth's investments in, and uses of, telecommunications services. This legislative action created the only agency among the 50 state governments with comprehensive responsibility for state telecommunications, and represents a highly significant development in this area. Virginia also established a Telecommunications Study Commission whose responsibilities include evaluating the use and effectiveness of public telecommunications services, and the mechanisms for allocating funds for these services and facilities; making recommendations as to the most cost-effective use of public telecommunications in the Commonwealth and as to the proper location for the administration of state programs related to public telecommunications, and advising the VPTC as to any revisions or modifications of the Master Plan for Telecommunications related to facilities, services, or programs. The Commission is required to report its findings and recommendations by December 1, 1979. These findings, when released, may include significant information concerning the feasibility of a comprehensive state telecommunications agency.

In early 1978, the North Carolina Department of Administration undertook a privately funded, comprehensive study of the current status of public telecommunications in North Carolina. A 23-member Task Force

on Telecommunications was created to evaluate new developments in telecommunications and to recommend legislative and administrative changes. The Task Force organized itself into four areas, focusing on emerging technologies, facilities, laws and regulations, and services. This initiative ranks with Virginia's in being of great significance to state governments vis-a-vis their recognition of the need to undertake comprehensive studies of the impact of telecommunications on state agencies.

Overall, state problems in dealing with telecommunications issues and problems center on a lack of effective mechanisms to facilitate improved intergovernmental cooperation, coordination, and information sharing. Because many telecommunications problems facing state governments, whether they be policy-oriented, managerial, fiscal, organizational, or technological, are larger problems than any state can solve alone, states need to know more about what other states are doing in telecommunications and need to work together in order to solve problems which they share in common.

The fast-paced development of communications networks by the private sector should help to facilitate increased use of and cooperation in telecommunications among states. The development of these networks has resulted in the introduction of an amazing variety of communication products and services aimed at capturing a share of the expanding market for data, voice, video, and facsimile transmission capabilities. Based upon innovative applications of existing and emerging technologies, these new products and services offer communications users unprecedented opportunities for access to improved equipment, more effective transmission methods, and decreases in prices and unit costs of operation.

Video production. In DRI's original proposal, a small amount of money was budgeted to develop a 15 minute slide/sound show describing the project, introducting telecommunication concepts, and highlighting the results of the project. Prior to initiating this task, a teleconference was held with Advisory Committee member in order to obtain a consensus on the appropriate audiences, content, and format for the media production.

During the teleconference, committee members determined that the most important audiences are state VR administrators and policy makers, with state central office staffs and training officers as the secondary audience. It was also decided that a slide/sound show format that could subsequently be transferred to videotape by adding the necessary transitions and music would be the most efficient and useable format for the media products.

In terms of content, the Committee decided that a general introduction to telecommunication with examples of applications that are meaningful to VR administrators and staff would be more useful than the proposed content of primarily highlighting the project and its results.

With encouragement from the RSA program officer, the Committee also recommended obtaining additional funding in order to produce a better quality program than possible with existing funding. A proposal amendment requesting additional funding was prepared, approved by the Advisory Committee, and submitted to RSA. One of the three program and budget options in the amendment was agreed to by RSA, enabling the production of two sound/slide shows and a videotape.

Following the amendment approval, a Content Committee of four persons comprising media and VR training specialists was formed. This committee gave direction to the specific content and types of telecommunication examples appropriate for the intended audience. A list of the Content Committee members may be found at the end of this summary.

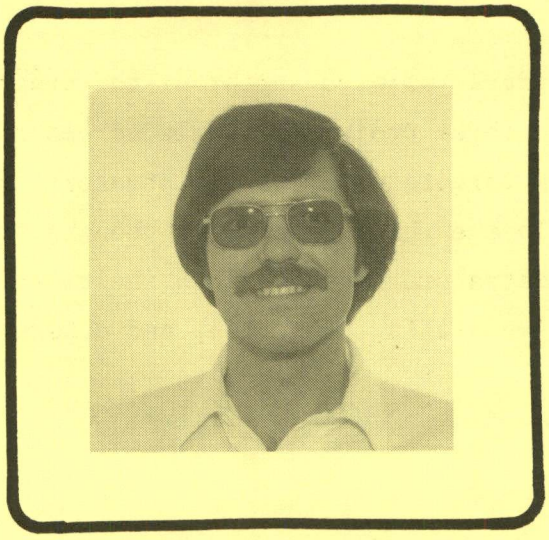
Following our meetings with the Content Committee, a draft content outline followed by a preliminary audio script were sent to and approved by the Advisory Committee.

The final media products include a sound/slide presentation in a single tray/single screen configuration; a sound/slide presentation in a three projector dissolve/single screen configuration; a videotape program that is a specially modified version of the three projector presentation; and support materials in the form of an audio cassette

of program soundtrack, printed script of the program, and related information. The three projector/single screen sound slide show and the videotape are targeted at VR administrators, policy makers, and legislators; while the third program is thought to be especially useful for VR administrators to use within their states with advisory boards, legislative staffs, VR staffs, and others.

One hundred copies of each volume of the Final Report and masters/copies of the audiovisual programs have been delivered to the Rehabilitation Services Administration. Contact: Lita Colligan, RSA, HEW South Building, Washington, D.C. 20201

A limited number of copies of the executive summary are available at the Denver Research Institute. Contact: Dr. Ruth M. Katz, Denver Research Institute, University of Denver, Denver, Colorado 80208



Paul Bowerman

Paul Bowerman is Technical Director for Policy Consultations. He is responsible for managing the Rehabilitative and Visual Services Consumer Involvement Project. Other responsibilities involve statewide planning and 504 coordination. He received his B.A. in Psychology and his M.Ed. in Counseling Psychology from Central State University, Edmond, Oklahoma. Prior to his current assignments he was employed as a State Psychologist for the Department of Institutions, Social and Rehabilitative Services.

PRESENTATION OUTLINE

"Telecommunications for Concerned Citizen Involvement"

I. Conceptualization of the Model

II. Need for integrating telecommunications aspects

III. Developmentalization Phase

IV. Identification of problems

V. Current Status

TELE COMMUNICATIONS

FOR CONCERNED CITIZEN INVOLVEMENT

A PLAN:

Several copies of this Monograph are available at each teleconference location. For more copies, contact:

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MONOGRAPH 1

John L. Boor

John L. Boor is Associate Director, Communications, for the WAMI Program at the University of Washington. His 43 years in communications include long assignments in programming, production, engineering and management in both radio and television. His speeches and articles have identified him as a staunch supporter of the use of television in education, and a critic of public television. He is the inventor of the first method of high speed density measurement of motion picture film, the frame line generator and several lesser known items. He has often served as a classroom teacher and consultant to schools, universities, government agencies and private firms. He is the owner and manager of EON, a small electronics manufacturing firm.

WAMI PROGRAM

REGIONAL MEDICAL EDUCATION. • WASHINGTON/ALASKA/MONTANA/IDAHO

COMMUNICATIONS SUPPORT FOR DECENTRALIZED EDUCATION IN WASHINGTON, ALASKA, MONTANA AND IDAHO

By M. Roy Schwarz, M.D. & Marion H. Johnson
University of Washington School of Medicine*

"I invite all nations to participate in a communications satellite system, in the interest of world peace and closer brotherhood of the world."

John F. Kennedy, 24 July 1961 (1)

Canada's response to President Kennedy's invitation was not only extrememly generous but unique among nations. Americans were offered the opportunity of sharing equally with Canadians in the use of the Hermes Communications Satellite, built by the Canadian Department of Communications and launched into orbit at the Kennedy Space Center in January of 1976 by the American National Aeronautics and Space Administration.

Appropriate and official gratitude has been relayed through the correct channels from the American government. It is the purpose of this presentation to express the appreciation of the University of Washington School of Medicine and to report how Hermes is being used to find solutions for some of the health education and health care problems which exist in the Northwestern states of Washington, Alaska, Montana and Idaho. This area, designated the WAMI territory, represents 22% of the land mass in the United States and cotains approximately 6 million people. Two-thirds of the physicians and other health professionals live in only three areas: the Pudget Sound region of Washington, the Anchorage area of Alaska, and the Treasure Valley of Idaho. The remaining one-third practice and live in towns and rural communities which stretch across five time zones; some are further apart than New York and Los Angeles.

Within this area there is only one medical school at the University of Washington in Seattle. Contributing to the maldistribution of health care personnel and facilities is a widely varying and limited tax base. Much of the land is mountainous, inaccessible, unproductive, or owned by the federal government. In the past fifteen years the local and regional attempts by state and federal agencies to find solutions to some of the health problems have proved self-limiting and at times conflicting.

In 1970-1971 the medical administration at Washington decided to try a new approach. Throughout the year, faculty and administrators, local citizens and private physicians from communities in Washington, Alaska, Montana and Idaho, conducted a series of meetings to define health education and health care problems in the Pacific Northwest and Alaska. As a result, the WAMI Program, named after the participating states, was organized and proposed as a solution.

The Health Problems in the WAMI States

The WAMI Program was designed to meet 5 major health problems in the Pacific Northwest and Alaska. Included among these are:

1. Admission to Medical School:

   Beginning in the late 1960's a progressively greater number of students have applied for admission to medical school. This increase was especially alarming for states without medical schools, since preferential access to state supported schools was reserved for residents from the predominantly rural WAMI states was doubly punitive.

2. Lack of Primary Care Physicians:

   The WAMI territory, like many other areas in the United States, has too few family physicians, primary care

*Presented to the Hermes Satellite Symposium of the Royal Society of Canada, Ottawa, Canada, November 29-December 1, 1977.

pediatricians. This deficiency was especially severe in the more rural areas of the WAMI states where the average age of physicians was beyond fifty.

3. Maldistribution of Physicians:

   The physicians in the WAMI states are not distributed in proportion to the population. The majority are located in urban centers, leaving large, sparsely populated areas with too few health professionals.

4. Access to Continuing Medical Education:

   Physicians in isolated communities have restricted access to continuing medical education. Research-related improvements in patient care often were slow in reaching bedside physicians in rural areas.

5. Scarcity of Tertiary Health Care Resources:

   Highly specialized tertiary health care facilities are not well developed nor are existing ones evenly distributed. The University of Washington Health Science Center has a number of research and treatment resources including a Neonatology Center, a Burn and Trauma Center, an Epilepsy Center, and a Child Development and Retardation Center, to name only a few. Since these "Centers" are unique in the region, a way to provide region-wide access to the care available in Seattle was needed.

The WAMI states do not now have nor will in the forseeable future have the fiscal resources to build and to maintain additional medical schools. It was recognized from the out-set that proposed solutions to existing problems could not require capital expenditures for construction of new facilities.

To initiate the first and "experimental stage" of the Program, risk capital was provided by the Commonwealth Fund of New York. The Department of Health, Education and Welfare granted additional monies to expand the program into 4 state universities and 15 rural communities for a specified period. Long term operation would depend on the approval of 4 State Boards of Higher Education and on appropriations from each of the state legislatures. Educational monies had never before crossed state lines. To achieve this, significant and tangible progress toward solving the health care needs of each state would have to be demonstrated.

To survive, the WAMI Program and all its extensions also would have to be recognized and accredited as an integral part of the University of Washington School of Medicine by the Joint Council of Accreditation of the American Association of Amercian Medical Colleges.

The program which started at the University of Alaska in 1971 is currently operating in 4 universities and 15 communities.

WAMI - A Two Phases Program

In the University Phase of the WAMI Program, the four Universities which do not have medical schools provide the first year of medical school curriculum to medical students. This has expanded the entering class size of from 102 to 175, with 10, 20 and 20 positions in the entering class being reserved for Alaska, Montana and Idaho, respectively. In the 1977-78 academic year, 73 of the 175 students are receiving the first year of training at Washington State University, at the University of Alaska, Montana State University and the University of Idaho. To date (Table I) a total of 335 students have participated in this Phase of the WAMI Program.

Courses are planned conjointly by faculty from the five universities so that a "single, region-wide course" is taught at 5 locations. Medical faculty from Seattle travel to the universities to cover those portions of the courses for which local faculty resources are inadequate.

To monitor the academic quality of the Program and to determine whether students are learning in the required way, a continuous and extensive evaluation program is conducted by the Office of Research in Medical Education. To this date, no statistically significant differences have been observed in the performances of students who participated in the University Phase of the WAMI Program and those who received the first year of medical school in Seattle.

As part of the Medicine, Health and Society course or the "rural health course," students take field trips to rural communities to acquaint themselves with the health problems of such communities and to observe health professionals at work. In addition, all students are required to spend at least one half day per week with a rural preceptor who is practicing in the vicinity of the University. In these ways, attempts are made to influence the students toward practicing primary care in rural settings. After the first year all students return to the University of Washington campus in Seattle for the second year of the curricu-

TABLE I

Number of WAMI Students in the University Phase of the WAMI Program

Year	Univ. of Alaska	Univ. of Idaho	Washington State Univ.	Montana State Univ.	Yearly Total	Sub-Total
1971-72	9				9	9
1972-73	10	9	10	0	29	38
1973-74	10	10	10	10	40	78
1974-75	12	10	10	10	42	120
1975-76	12	19	20	20	71	191
1976-77	11	20	20	20	71	262
1977-78	13	20	20	20	73	335

lum and for the initial clerkshops in the third year.

Students then have the opportunity of participating in the second or Community Phase of the WAMI Program. In this phase, students spend 6 weeks in Community Clinical Units working with private physicians in fifteen predominantly rural communities in the four states. Medical residents are expected to stay for 6 months. These experiences, in the disciplines of Family Medicine, Internal Medicine, Pediatrics, Psychiatry and Obstetrics and Gynecology, are designed to provide the participant with an understanding of how the community is structured and functions, what roles a physician must play in such a community and what diagnostic and treatment skills and knowledge are required to deliver high quality health services in these areas. It is hoped that with such exposure larger numbers of physicians will be attracted to careers in primary care in underserved areas.

At least once every six weeks, medical faculty from the Health Science Center in Seattle visit each Unit, review the progress of the students and residents, act as consultants to the practicing physicians and provide formal continuing medical education to all health professionals in the area. In this way, the educational and patient care resources that exist in Seattle are made available to the faculty and patients of the "Community Clinical Units" as well as other health professionals who practice in the area.

Four times per year, community clinical faculty are required to come to the medical school for updating, continuing education and administrative purposes. They hold clinical appointments on the Washington faculty.

In the seven years since the Community Phase was initiated, a total of 540 students and 136 residents participated in this phase of the WAMI Program. An additional 140 students and 40 residents will participate in the 1977-78 academic year (Table II).

Outcomes of the WAMI Program

The outcomes of the WAMI Program in relationship to the "Health Problems" of the region are as follows:

1. Admission to Medical School:

   Since the advent of the WAMI Program, the number of students admitted to the University of Washington School of Medicine has increased by 76.5%. Included have been increases of 900%, 663%, 467%, and 53% for Alaska, Montana, Idaho and Washington, respectively (Table III). Since on comparative measures of academic performance, including internal and external examinations, the students who have participated in the University Phase of the WAMI Program are indistinguishable from their colleagues who began their studies in Seattle, it is concluded

TABLE II

Number of Students and Residents in Community Phase of WAMI Program, 1970-1977.

Discipline	Number Students	Number Residents
Family Medicine	296	38
Internal Medicine	37	50
Pediatrics	95	39
Obstetrics/Gynecology	87	2
Psychiatry	25	7
	540	136

TABLE III

GOAL I. Increase the Number of Students Admitted to the University of Washington School of Medicine from the WAMI States

RESULTS: ADMISSIONS DATA BEFORE AND AFTER ADVENT OF THE WAMI PROGRAM

STATE	# admitted pre-WAMI E64-E70	# admitted post-WAMI E71-E76	Average # in class 1965-70	1971-77	% change
Washington	487	745	69.6	106.4	+53%
Alaska	5	50	.7	7.1	+900%
Montana	11	84	1.57	12.00	+663%
Idaho	15	85	2.14	12.14	+467%
Other States	68	61	9.71	8.71	-10%
TOTAL CLASS	579	1022	82.71	146.00	+76.5%

that Goal I has been accomplished without jeopardizing the quality of the education.

2. Primary Care Physicians:

Since the WAMI Program had its origin, there has been a 100% increase in the number of students per class choosing careers in primary care (Table IV). Included in this category are family physicians, primary care internists and primary care pediatricians. This choice is expressed at the end of the second year of the curriculum when the students choose a "pathway" for career development. It appears, therefore, that an increase in the number of primary care physicians and as such, Goal II is being accomplished.

3. Maldistribution of Physicians:

Only 70 residents who participated in the WAMI Program during their residency training have completed their training and have established practices. Hence, it may be premature to draw firm conclusions as to the ultimate impact of the program on the practice location of physicians.

In spite of this, it is encouraging that 33% of the graduates or twenty-three physicians are practicing in towns of less than 10,000 population (Table V). Of even greater interest is the fact that residents who participated in the WAMI Program are about 2.5 times as likely to practice in small towns as those who did not participate (33% vs. 13.7%). In fairness, it must be admitted that this distribution undoubtedly reflects the combined impact of the clinical departments involved, and the influences of the National Health Service Corps.

4. Access to Continuing Medical Education:

In the 1976-77 academic year, 200 medical faculty visited University and Community Phase sites. They reviewed the academic progress of the students and/or residents, acted as consultants to the local physicians and presented formal continuing education programs. A total of 2,979 health professionals were able to attend continuing education sessions within their home communities without being dislocated from their patients. Community physicians also returned to the medical school for 6 to 12 week preceptorships working with professors of their choice in programs tailored to meet individual interests and requirements.

5. Health Care Resources:

Although not as quantifiable as course registration or class attendance, but of significant value, has been the increase in professional communication and association between community physicians and medical faculty, particularly those directing the research and treatment centers. A rapidly increasing utilization of the facilities by patients throughout the 4 states reflects a growing knowledge and confidence on the part of the referring physicians. The rapid growth of MEDCON, a 24-hour free telephone consultation in all fields of medicine to physicians in the 4 states, is further evidence that the resources of the Health Sciences Center are beginning to be available to physicians and their patients in all corners of the WAMI territory.

Communication Challenges

The single greatest challenge in establishing the WAMI Program and now the most serious problem of maintenance and expansion relates to communication. Faculty, health professionals, state legislators, university administrators and staff, all exerted tremendous effort, giving intense personal dedication often to the exclusion of other responsibilities, to establish the WAMI Program. These maximum efforts cannot be expected forever. Programs must be integrated into existing administrative structures and routine standard operating procedures established.

Seven years experience with the WAMI Program has revealed five communication requirements which must be satisfied if regional education is to succeed:

1. Faculties and educational facilities located at widely separated locations must be shared.

2. The quality of the educational experience at multiple universities and community training sites must be continuously coordinated and supervised.

3. Student performance must be evaluated.

4. A strong, cohesive administration to address the political, fiscal and

TABLE IV

GOAL II: Increase the Number of Primary Care Physicians Being Trained

RESULTS: NUMBER OF MEDICAL STUDENTS CHOOSING PRIMARY CARE CAREER EXPERIENCE

Year	Family Medicine Pathway	Clin. Specialist Pathway	Total No. 1° Care	% Change
E70	38	26	64	100%+
E75	88	42	130	

TABLE V

GOAL III: Redress Geographic Maldistribution of Physicians

RESULTS: PRACTICE LOCATION OF NON-WAMI/WAMI RESIDENTS*

Town Size	Non-WAMI Residents		WAMI Residents	
	#	%	#	%
100,000+	137	49.7	25	35
10,000 to 100,000	72	27.1	19	28
1,000 to 10,000	38	13.7	23	33
Other	26	9.5	3	4
	275	100%	70	100%

*Included residents in Family Medicine, Pediatrics, Internal Medicine and Obstetrics and Gynecology.

academic problems which attend cooperative efforts must be created and maintained.

5. Key decision makers within state and federal governments and local communities must be informed of the needs and achievements of shared regional education and an on-going basis. (2)

Each of these objectives involves a transfer of information among people who are often widely separated. Coordinating programs over a large area is an almost overwhelming task for which the University of Washington has had to seek new techniques and perspectives. From 22,000 miles up, a communication satellite gives quite a different view of Northwest distances. The region appears smaller and the relay of information across it more manageable. In 1974, WAMI began experimenting with such a relay station in space, the Applications Technology Satellite. Experiments in administration, curriculum and patient care were conducted, utilizing the full-duplex, color video capability of ATS-6 to communicate with medical students at the University of Alaska, and half-duplex, black and white video to communicate with clinical students at a Family Medicine Community Clinical Training Unit in a remote mountain area.

University faculty and administrators reported that satellite conferences facilitated the decision process. Admissions interviews could be successfully conducted via satellite if adequate discussion time were programmed. Students mastered selected segments of the basic science curriculum presented via satellite as well as those receiving instruction in the traditional classroom.

Clinical faculty reacted positively and few differences were noted between on site and satellite communication. The satellite was clearly preferable to the telephone but for most purposes the face-to-face communication had distinct advantages over the half duplex black and white telecommunication system. Dermatology consultations conducted on satellite were successful. Amplificiation of the image and frequency of follow-up contacts were viewed as advantageous. (3)

The experience on ATS-6 demonstrated the acceptance of interactive satellite communication as a useful educational tool, but the experimental protocol involved only the first three communication requirements of regional education. It did not provide enough data to enable investigators to evaluate precisely which configuration of the satellite information system could best serve WAMI's goals.

CTS Experiments

When the Canadian government offered American institutions an opportunity to experiment on the Hermes Satellite, plans were made to expand, intensify and extend certain aspects of the communication experiments started on ATS-6. Five experiments addressing the communication requirements of regional education were funded by the Health Resources Administration. (4) The projected 140 transmissions, which began in August of 1977, utilize the earth terminals constructed by the National Library of Medicine at Seattle, Washington, Fairbanks, Alaska, and Bozeman, Montana, as permanent sites; 6 Community Clinical Training sites were temporary broadcast locations and utilized NASA's Portable Earth Terminal.

Regional Faculty Sharing

An expanded Faculty Sharing experiment enables Seattle medical and basic science faculty to teach part of the first year curriculum to students at the University of Alaska and Montana State University. In addition to presenting enrichment hours in clinical correlations in Endocrinology and Pathology, an entire elective course, Physiological Basis of Nutrition, is being presented by satellite. Evaluations of the satellite student performance will be compared with that of students at the University of Idaho, Washington State University and the University of Washington, who are receiving the same material in the traditional classroom.

Admissions & Minority Recruitment

The admissions component of an Admissions and Minority Recruitment experiment is comparing medical school applicant interviews conducted via satellite with those conducted in person. If satellite interaction can reveal a student's suitability for a medical career as reliably as the usual discussions, then the inconvenience and expense of flying admission committee members over great distances several times a year can be saved.

Although the University endorses the concept and conducts Affirmative Action Programs, inadequate undergraduate preparation is still a crippling handicap for most black, chicano and Native American students interested in health careers. The minority recruitment aspect of this experiment is using the satellite to reach out to high school and college students and their parents to acquaint them

with the best way to prepare for health science careers. Six videotapes entitled "You Can Do It-We Can Help," "A Successful Student - How Parents Can Help," "Academic Advising-The Key to Minority Success," "Minority Counseling, A Friend In Need," "Women in Medicine," and "Professional Admissions, Step-by-Step," along with the instructional brochures, flyers and posters, are distributed in high schools and colleges. Students professing interest regardless of where they live in the WAMI states are bused to the earth terminal sites to discuss their problems with minority faculty members who presented the information on videotape. Thus, the satellite is providing young minority students with an opportunity to know and be known by health science professionals within a training institution who can provide encouragement and serve as role models.

Consultation Process

The relicensure and recertification for some 8,000 physicians in the WAMI territory threatens to impose massive continuing medical education burdens on the region's only medical school. Two experiments involving physicians in private practice in Bozeman, Montana, and Fairbanks, Alaska, and medical specialists in Seattle, attempt to evaluate the role of technology in educating the rural physician. A Consultation Process Experiment will enable both groups to share grand rounds and to consult as patient care requires. A remote studio has been established, via microwave from KUAC-ETV at the University of Alaska, in the Fairbanks Hospital to facilitate the presentation of patients to specialists from Seattle medical centers.

Independent Learning Program

An Independent Learning Program will evaluate a variety of methods of providing continuing education to isolated physicians without dislocating them from their patients. Physicians isolated in rural communities and National Health Service Corps sites will study independent learning materials mailed to them on video and audio cassettes, slides and films; reprints and text books are also included. Their reactions and best performances will be compared with participants at the permanent earth terminal sites who have received the same materials via satellite interaction with medical faculty preceptors.

Legislative Process

The fifth experiment addresses the inadequacy of communication among the elements of state government, medical education institutions, health professionals and health care consumers. A four-state governor delegate conference was held via satellite to prioritize areas of mutual concern which can be addressed in later satellite interchanges. A legislative hearing will be held via satellite to see if the flow of information regarding the problems and progress of regional education can be improved. The plans also call for providing more consumer testimony via satellite in hearings on proposed health care legislations or regulations which directly affect the public.

The ATS-6 data and experiences to date on CTS clearly indicate that the technology has great potential benefits for medicine. At the very least it means that faculty, scarce teaching resources and patients can now be shared over a wide geographic area. Space is no longer a limitation. Classrooms must no longer have four walls. Students, regardless of where they live, can have a better opportunity to develop according to their individual abilities. They can have better access to more teachers in more fields in more institutions. Audio visual technology, which enables quick recording, storage and retrieval, is already changing the way medicine is taught. Students are required to read texts, current literature, as well as view video cassettes pertinent to the topic. Time spent with faculty or preceptors is devoted to discussion and patient examination, which provides more reinforcement than was available in the traditional methods.

Satellite communication has enormous implications for future manpower training. Dermatologists in one medical center have diagnosed and treated skin lesions successfully with patients and have supervised care given by psychologists, psychiatric social workers and nurses hundreds of miles apart. How many psychiatrists should be trained as compared to practitioners in the allied disciplines? In the Alaska bush experimenters have seen that even in emergencies, village health aids with satellite supervision can save lives as well as provide routine health maintenance care. Should more paraprofessionals be trained and taught communication techniques?

Although the data to date clearly indicates the technology has advantages for medicine, implementing live satellite communication within and among medical institutions and medical communities poses some very real challenges. Technology may be far more advanced and better developed than the ability to use it. Most university A-V facilities and personnel are equipped for videotaping, filming, or projecting electronic images in a closed circuit configuration. The use of international satel-

lites introduces urgencies and adjacencies of live network broadcasting. As greater demands are made on equipment, preventative maintenance has to be stepped up, new technicians employed. Often additional facilities will be required. New skills are required of personnel to indoctrinate and to support faculties and administrators who are learning to accommodate a new dimension in teaching and patient care. Programs to accomplish additional training are required and should not be overlooked. Administrators must be aware of these needs and budget accordingly. The hazard of neglecting this area could be reflected in an eventual discounting of the technology as being too expensive, too much trouble or not suitable for institutional use.

Another area of responsibility which is seldom described in grant proposals but ought to be an obligation of the few who are privileged to experiment with satellite communication relates to the public information. To understand and to appreciate the very great improvements satellite technology makes possible in medical education and patient care, health care personnel and consumers require and deserve careful indoctrination and an opportunity to experience its applicability. Techniques of successful information and application programs should be shared among experimenters as fully as possible. Communication satellites and orbital positions will be reserved for health and social services only if the public thoroughly understands the benefits and makes their requirements known. Without a doubt the communication satellite is the public's best dividend from the billions of tax dollars invested in the space program. The creation of an informed constituency able to require these benefits for health, education and social welfare uses may well be the greatest challenge experimenters face and the ultimate measure of the success of our mutual endeavors.

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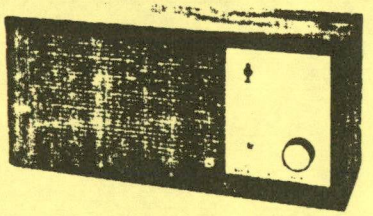

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How to Keep in Touch With Your Health

SENIOR SUMMARY

FEBRUARY-MARCH 1979 VOL. 5 NO. 1

By MIMI MORFELD & CHRISTINE VALENTINE

For New Yorkers, getting access to up-to-date health information can be as easy as turning on the radio. A weekly 30-minute radio program, *In Touch With Your Health,* is broadcast every Thursday evening at 10 p.m. on WFUV (90.7 FM). *In Touch With Your Health* is a lively interview program that features medical doctors, nurses, health-care educators—and also patients, consumers of health-care services whose experiences we can all learn from.

During the 1970's, a major change has occurred in the way Americans think about health. We are paying more attention to good nutrition, asking more questions about the medicines we take, and doing more about physical fitness. In short, we're taking more responsbility for our own health. We are beginning to recognize that, to maintain our well-being, we must be the active partners of the professionals who care for us.

But to embrace this responsibility intelligently and confidently, we need current information about health care and health services. Providing such information for New Yorkers is the goal of *In Touch With Your Health,* not through statistics or lectures or browbeating messages of danger, but through thoughtful and entertaining conversations among adults.

Self-help information is often part of these conversations, as are consumer tips. Given today's health-care costs and their impact on senior citizens, learning to be a wise consumer of health services has benefits for their budgets as well as for their well-being.

The subjects of cataracts, diabetes, nutrition, fire safety, and quackery have all been covered in depth on *In Touch With Your Health.* A program devoted to how to choose a doctor featured a physician's detailed advice for becoming a good consumer. In two separate interviews, Dr. Anita S. Curran, the Deputy Commissioner for District Health Services of New York City's Department of Health outlined the services provided by the city at neighborhood locations.

Listeners have also heard how Bonnie Prudden's dedication to physical fitness has kept her agile and eager for each day's activities. Dr. Eleanor E. Faye, Medical Director of the New York Lighthouse, discussed low-vision aids and services, and how they are bringing new visual horizons to people who fear they are losing their sight.

Kenneth Pommerenck of ICD Rehabilitation and Research Center has told about the Center for Developmental Aging—a Center that not only believes what is commonly known as senility to be a treatable condition, but proves it.

In the next few months, programs on plants as medicine, on local air pollution and how it affects our health, and on the controversy over brand-name versus generic prescription drugs will be broadcast. The guests on all these programs are handpicked for their expertise and for their interest in sharing their insights with the public.

In Touch With Your Health is designed for everyone who enjoys learning about what's new in the health field, whether it's in the realm of traditional medicine or an alternate form of therapy. However, the programs are designed by the producers and co-hosts of the series, Mimi Morfeld and Christine Valentine, with two special groups in mind: seniors, and the visually and physically handicapped.

Senior citizens and the handicapped often share a feeling of being left out of society's mainstream. Health information and tips on physical fitness are frequently delivered in such a way as to make them seem the exclusive preserve of the young and able. *In Touch With Your Health* broadcasts a different message—that optimal health is for each individual. And that each person, regardless of age or impairments, can work toward this goal.

The health-care practitioners and the laypersons who participate in these half-hour conversations agree that the way to good health should not be a secret. Like the producers, they volunteer their time to share what they know with you.

If you want to learn more about how to reach your personal, optimal well-being, listen to *In Touch With Your Health* every Thursday at 10 p.m. by tuning in 90.7 FM on your radio dial.

About In-Touch Networks

The nonprofit, noncommercial **In Touch Networks** is New York's only radio information service for the handicapped. **In Touch** offers closed-circuit programming of a wide range, including the series *In Touch With Your Health.*

Beginning at 6 a.m., **In Touch** subscribers hear the daily newspapers. Through the day and well into the night, the latest best sellers, stock market reports, the week's magazines, and job listings are read by volunteers as part of the closed-circuit programming.

Subscribers listen to a special receiver that tunes into **In Touch.** Half of the subscribers are elderly, and a great many are blind or have visual impairments.

To receive more information about the service, write to **In Touch,** 322 West 48th Street, New York, N.Y. 10036, or call 586-5588.

Ed. Note: After you've listened to a few programs, you might have suggestions for future interviews and topics. Readers of ***Senior Summary*** *are specially invited to send their ideas to Mimi Morfeld and Christine Valentine, Producers,* ***In Touch With Your Health,*** *and authors of this article, c/o The New York Junior League, 130 East 80th Street, New York, N.Y. 10021. We thank them for their contribution to the paper and hope you will let them hear your views.*

City News

NEW YORK, SUNDAY AUGUST 20, 1978

Keep Blind in Touch With the City's News

By PHILLIP O'BRIEN

One group of New Yorkers — the thousands of blind and physically handicapped — was particularly pleased last week with the premiere of City News and the return of a daily newspaper with in-depth reporting of news and sports as well as entertaining features.

They and other New Yorkers were glad once again to find out about sales, radio, television and theater listings, employment opportunities and business and consumer news.

But, as before the newspaper strike, for its duration and after, the blind and handicapped have to learn this needed information mostly through the In Touch Network, a nonprofit, noncommercial radio service.

Every weekday between 6 a.m. and 8 p.m. and on Sundays from noon until 4 p.m. volunteer readers bring the latest news and pertinent information to 459 subscribers from the modestly equipped In Touch studio at 322 W. 48th St.

In Touch broadcasts on a side band or subcarrier frequency of radio station WKCR-FM. A special receiver is needed to pick up the broadcasts, much the same way that restaurants, shopping malls and offices receive piped-in music.

Under normal circumstances, In Touch broadcasts several hours of news read from the three major dailies, the Wall Street Journal and several popular magazines.

Interspersed are announcements of community events, interviews with officials of service organizations for the blind and handicapped, readings of comics, horoscopes, recipes, household hints and current best-selling books.

Earlier last week, however, the volunteer readers were forced to rely on out-of-town newspapers to provide reports on national and international news events. It was virtually impossible to inform listeners what were the best supermarket buys, which stores were having clothing sales, or even what were the latest local political developments.

"I didn't know what was going on. It was the same feeling of being left out as we had before In Touch got started," said Mrs. Ellen Logue, who along with her blind husband, Andy, are regular listeners from their Brooklyn apartment.

Daniel Ginsberg, a guadriplegic social worker for the city's Office for the Handicapped, said the imported papers did keep him abreast of current events. "But I still didn't get any of the information I need."

"A week without local newspapers caused many people to feel left out about what was going on around them," said Jasha M. Levi, executive director of In Touch.

"And," he added, "we hope that that sobering experience has made it somewhat easier for those with sight to empathize with the sightless, who never are able to read a newspaper, magazine or book."

Levi said that although In Touch reaches hundreds of listeners there are about 100,000 New Yorkers who need the service.

"The problem in reaching all of them is the cost for the special receiver. Each one costs about $60 and if a person can't afford that we give it to him for free," he said.

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ACCESS - Dr. Lilly Bruck, Consumer Advocate, Host

Wendesdays, 9-9:30 a.m., WKCR 89.9 FM, simulcast on Closed Circuit Subcarrier

NOVEMBER 1978

"Access to Voting"

Libby Hayman, V.P. League of Women Voters, Dir. of Voter Services

"Food Safety--Is there anything left to eat?"

Elaine Rose, Consumer Education Specialist, Cornell University, WCBS Consumer News Reporter

"Supermarket Shopping Skills"

Jules Rose, President, Sloan's Supermarkets, Inc.

"Stretching Your Shopping $"

Allan Thurgood, Executive Director, Baychester Consumer Coop. Soc.

"What to look for on Food, Drugs and Cosmetic Labels"

Clarence Waltrous, Director of Compliance Branch, FDA

DECEMBER 1978

"'tis the Season--to shop with care"

Barbara Opotowsky, Esq., President, Better Business Bureau

"Today's Market Place is no Place to be on Your Own"

Warren Braren, Associate Director, Consumers Union

"Who's that knocking at your Door--a Sales Person?"

Stuart Byer, Manager of Government Relations
Irene Williamson, Director, Consumer Affirs, Avon Products

"How and Where to complain-successfully!"

Ethel Gottlieb, Administrator Consumer Complaints, New York State Consumer Protection Board

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JANUARY 1979

WHO PAYS THE PIPER? CREDIT -- BLESSING AND CURSE

"Important Laws protecting the Credit Consumer"

Salvatore Sangiorgi, Associate Regional Director, FTC
(Parts I and II)

"Drowning in Debts? Counseling can help."

Gerard Lareau, Director, Consumer Credit Counseling Service.

"How to find your Way through the Maze of Banking Services"

Linda S. Zambelli, Assistant V.P., Irving Trust Company

"Investing is not only for the Rich"

Joseph Steiniger, Account Executive, Merrill Lynch

FEBRUARY 1979

"How to stay warm without going broke"

Grace Richardson, Director Consumer Affairs Consolidated Edison Co.
Bob Kelly, Inspector, Department of Consumer Affairs, City of New York

"Earning Money at Home"

Kathy Matthews, Author of On Your Own, 99 Alternatives to a 9-5 Job; Random House Publishers

"Buying by Mail"

Susie Kasper, Director of Communications, Direct Mail Marketing

"Fixing your Home without getting into a Fix"

Harold Goodman, Director of Home Improvements, Dept. of Cons. Aff.

MARCH 1979

THE DEPT. OF CONSUMER AFFAIRS OF THE CITY OF NEW YORK, TEN YEARS OF LEADERSHIP IN CONSUMER PROTECTION

Former Commissioner Bess Myerson (1969)
Former Commissioner Betty Furness (1973)
Former Comissioner Elinor Guggenheimr (1974)
The Hon. Bruce C. Ratner, Commissioner (1978)

APRIL 1979

PROMINENT PERSONALITIES AND PERTINENT TOPICS

"Consumerism Revisited"

The Hon. Henry J. Stern, Councilman at Large, Manhattan

"Affirmative Action in Action"

Bernard Posner, Executive Director, President's Committee on Employment of the Handicapped

"Access to the Courts"

The Hon. Jacob D. Fuchsberg, Judge of the Court of Appeals, State of New York

"Computer Invasion of Privacy"

Professor David Linowes, Socio-Economist, University of Pittsburg

MAY 1979

ACCESS TO THE LAW FOR THE CONSUMER

This May/June Series is produced in cooperation with the New York County Lawyers Association, Committee on Consumer Affairs

"Contracts--What Everybody should know about them"

Robert Egan, Esq., Chairman Consumer Affairs Committee

"How to find a Lawyer"

Gerald Mann, Esq., Director of Law Services, Municipal Employees Legal Service Corporation

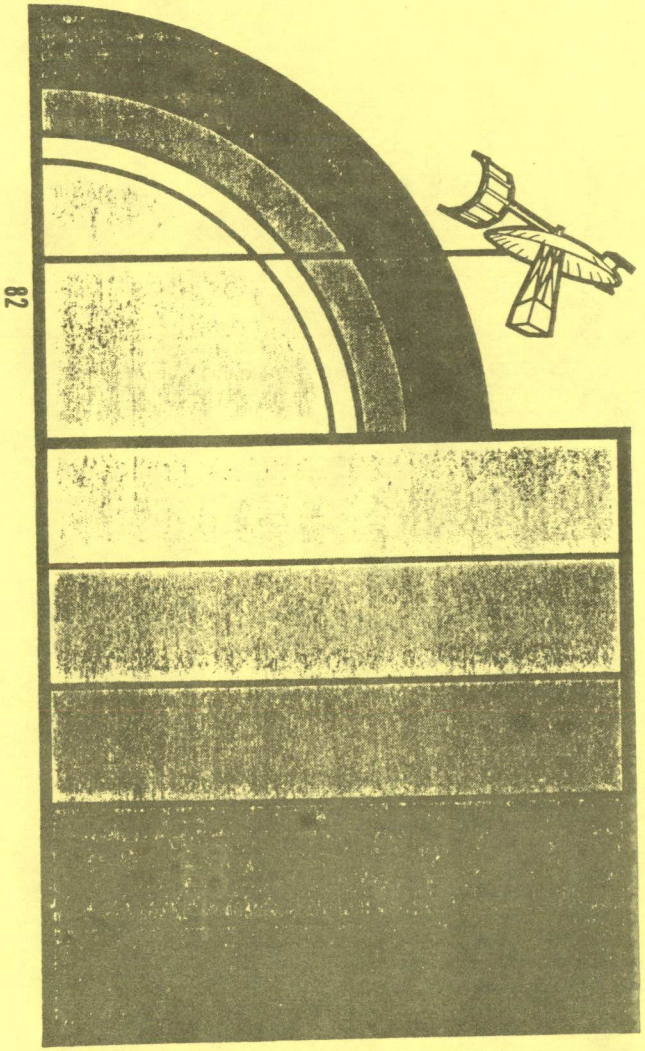
"Landlord-Tenant Relationships"

Joan Beranbaum, Esq., Senior Attorney, Municipal Employees Legal Service Corporation
(Parts I and II)

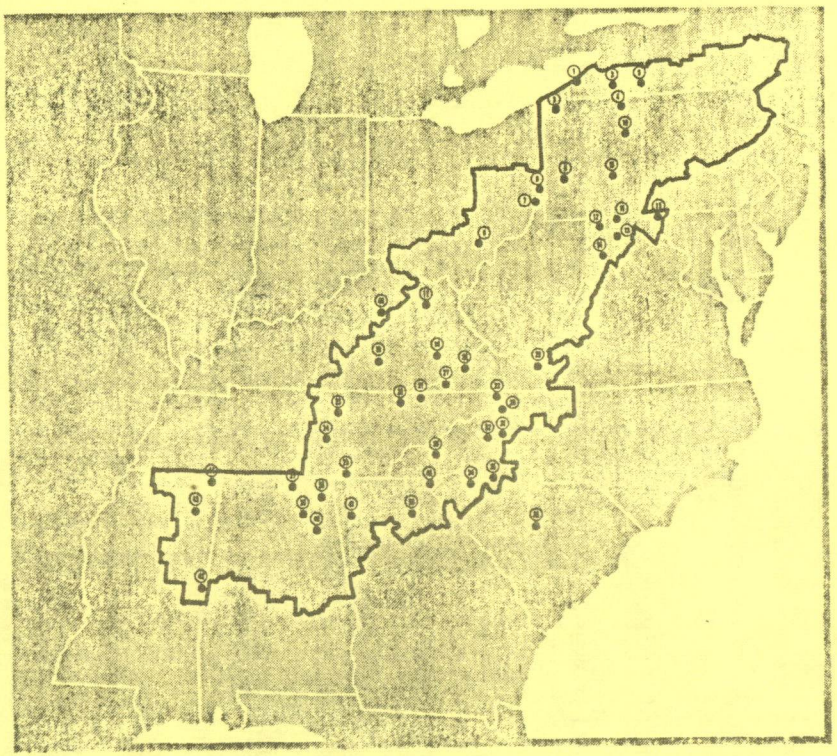
"Plain Talk about Insurance--Life, Health, Property"

Harvey Cigelbaum, Esq., Chief Executive Officer, Urban Community Insurance Company, and Amalgamated Life Insurance Company
(Parts I and II)

Appalachian Education Satellite Program



AESP Site Locations



1. Chautauqua Board of Cooperative Educational Services (BOCES) Fredonia, NY
2. Cataraugus County BOCES Communications Center, Olean, NY
3. North-West Tri-County Intermediate Unit, Edinboro, PA
4. Seneca Highlands Intermediate Unit 9, Smethport, PA
5. State University of New York Agriculture and Technical College, Alfred, NY
6. Bethany College, Bethany, WV
7. Ohio County Public School, Wheeling, WV
8. WQED Television, Pittsburgh, PA
9. Southeast Ohio Regional Service Agency, Athens, OH
10. Pennsylvania State University, University Park, PA
11. Western Maryland Vocational Resource Center, Cumberland, MD
12. Garrett Community College, McHenry, MD
13. Hampshire County High School, Romney, WV
14. Petersburg High School, Petersburg, WV
15. Board of Education, Washington Co., Hagerstown, MD
16. Admiral Perry Vocational Technical School, Ebensburg, PA
17. Morehead State University, Morehead, KY
18. Kentucky Valley Education Cooperative, Hazard, KY
19. Somerset Community College, Somerset, KY
20. Clinch-Powell Educational Cooperative, Lafollette, TN
21. Clinch-Powell Educational Cooperative, Tazewell, TN
22. Upper Tennessee Educational Cooperative, Johnson City, TN
23. Tennessee Technological University, Cookeville, TN
24. Tennessee Technological University—Extension, McMinnville, TN
25. University of Tennessee at Chattanooga, Chattanooga, TN
26. Diversified Educational Cooperative, Norton, VA
27. Diversified Educational Cooperative, Stickleyville, VA
28. Appalachian State University, Boone, NC
29. New River Community College, Dublin, VA
30. Southwestern Technical Institute, Sylva, NC
31. Western Piedmont Community College, Morganton, NC
32. McDowell Technical Institute, Marion, NC
33. Gainesville Junior College, Gainesville, GA
34. South Carolina Appalachian Council of Governments, Greenville, SC
35. Spartanburg General Hospital, Spartanburg, SC
36. South Carolina ETV, Columbia, SC
37. Top of Alabama Regional Educational Service Agency (TARESA) Huntsville, AL
38. Northeast Alabama Junior College (TARESA), Rainsville, AL
39. Marshall County Technical Schoo (TARESA), Guntersville, AL
40. Gadsden State Junior College Gadsden, AL
41. Floyd Junior College, Rome, GA
42. East Mississippi Junior College Scooba, MS
43. Itawamba Junior College, Tupelo MS
44. Northeast Mississippi Junio College, Booneville, MS
45. Foxfire, Inc., Rabun Gap, GA
46. AESP Satellite Uplink Station, Lexington, KY

PROGRAM OFFERINGS

The Appalachian Education Satellite Program (AESP) is a community-based telecommunications network offering a program of continuing education and public services to residents of Appalachia.

Because of its grassroots approach and its unique management structure, AESP remains sensitive to the needs of specific groups. These groups include professionals in education, medical and health services, business and industry, human services and government as well as the lay public.

Depending on the topic and the needs of the audience to be served, programs may take the form of formal course offerings, workshops, seminars and public service programs. Credit options may include graduate and undergraduate credit, continuing education units, certification or inservice credit and/or audit.

Courses

The instructional design of courses offered via the AESP network involves televised instruction, on-site group work, and home and field-based study. The common thread which ties these elements together is a comprehensive set of instructional or "ancillary" materials.

Classes are conducted on-site by course monitors who act as facilitators of learning. During an organizational meeting, students register, purchase course materials, complete a pretest and receive an orientation to AESP and to the course.

In a typical class session, students view an hour-long televised program and participate in two-hours of on-site activities. The ancillary materials guide the class through two hours of group and individual activities and prescribe at-home and field-based follow up assignments.

Televised seminars are conducted four times during each course and provide the primary means of interaction with the instructor. In addition, seminars afford students the opportunity to question visiting experts and practitioners.

Participants in AESP courses receive credit from among 30 institutions of higher education in the 13 Appalachian states.

Workshops/Seminars

Workshops are ceu, inservice or non-credit offerings and may involve as many as three, two-hour sessions to complete. Workshops have been developed on a variety of topics ranging from child abuse to home winterization to cardiopulmonary resuscitation techniques.

The format for workshops may include on-site activities prior to, during and/or following the broadcast. The video program is usually 90 minutes in length and features a panel of guest experts in a seminar format. The first half of the program is devoted to didactic presentation with filmed highlights or demonstrations, and the remainder is devoted to viewers' questions. Each participant receives a set of written materials which augment the program.

For additional information about AESP, call 1-800-354-9583.

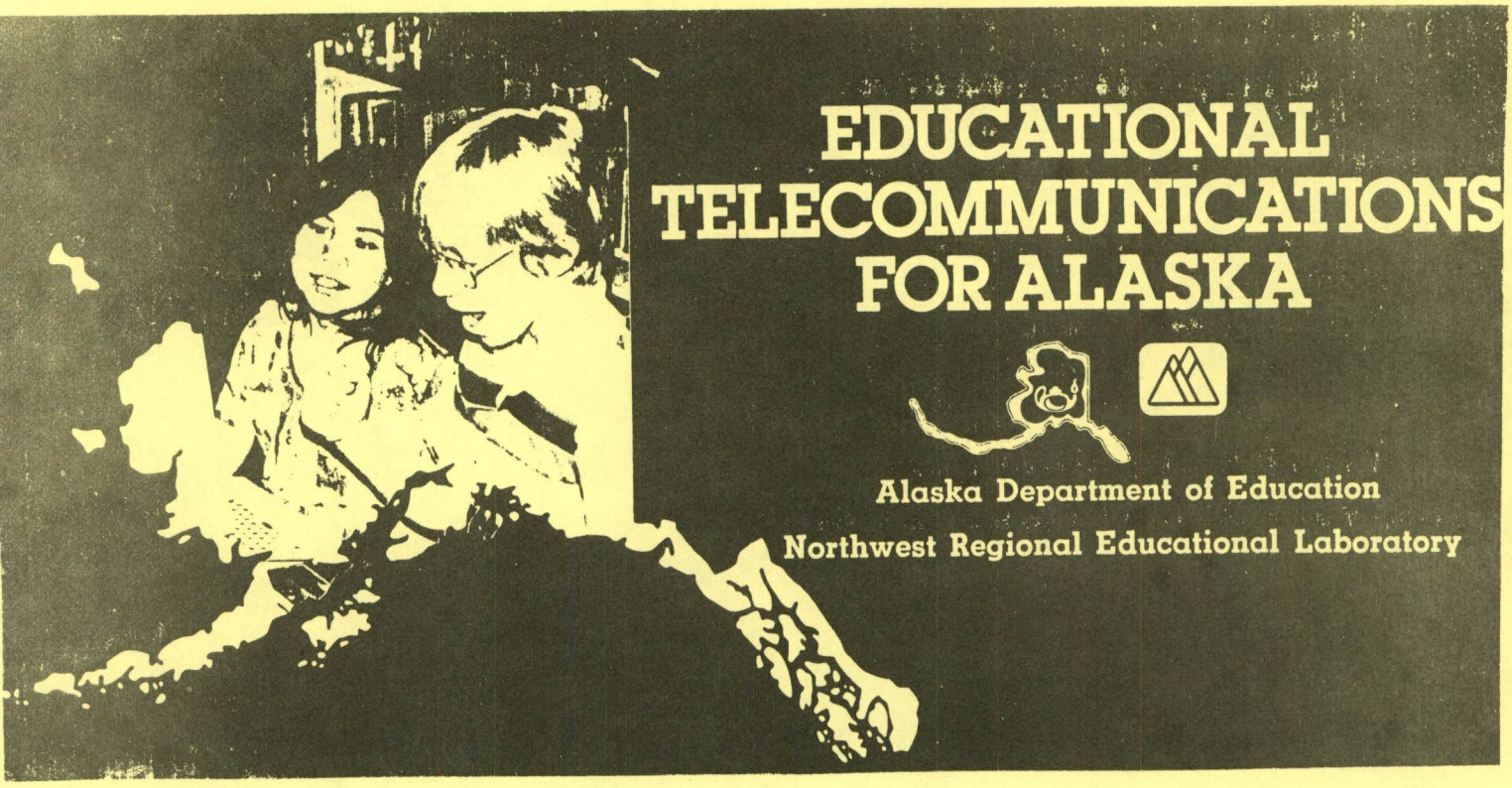
AESP WORKSHOP DELIVERIES

November 1, 1977 – October 31, 1978

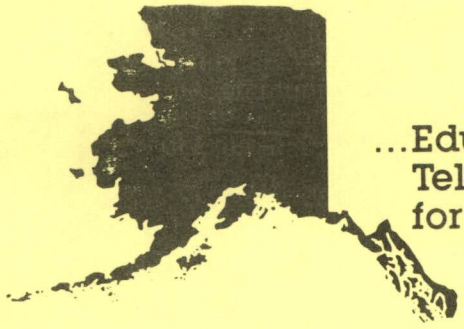
Title	Date	Target Audience Served					
		Education	Medical & Health	Business & Industry	Human Resources	Govern-ment	Other
Two-part Workshop on Home Winterization	Nov. 7 & Nov. 14	x		x			General Audience
• Workshop on Financial Resources, Credit Needs and Job Creation in Appalachia	Nov. 11			x		x	
• Coverage of the National Association of Social Workers Annual Symposium in San Diego: "Drug Abuse in Rural Areas" and "Community Mental Health Services in Rural Areas"	Nov. 21		x		x		
Perspectives on Effective Parenting: a Two-part Workshop on P.E.T.	Nov. 28 & Dec. 5	x			x		General Audience
Arts and the Aging	Jan. 25	x			x		
Resource Conservation and Management: a Series of Four Workshops for Educational Administrators	Feb. 2, April 13, June 7 & Oct. 11	x				x	
Workshop on the University of Cincinnati's External Master's Degree Program in Community Health Planning/Administration	March 6		x				
Developing a Positive Self-Concept: a Two-part Series Which Traces Self-Concept Development From Infancy Through Adulthood	March 13 & March 20	x	x		x		General Audience
AESP Advisory Teleconference	March 27	x	x	x	x	x	AESP Advisory Members

Title	Date	Education	Medical & Health	Business & Industry	Human Resources	Govern-ment	Other
Teacher Values and Discipline: a Two-part Series Dealing with Problems of Discipline and Defiance	April 17 & April 24	x			x		
The New Copyright Law: Issues and Answers	May 8	x					
The Language of Caring: a Two-part Workshop on Improving Communications Skills for Hospital Personnel	May 23 & May 25		x		x		
AESP Site Training Workshop	June 5						AESP Field Personnel
Coverage of the American Nurses Association Annual Convention in Hawaii: Workshop on Patient Education	June 12		x				
Propane Danger: Evacuate or Attack	June 26		x	x		x	
Small Farm Marketing	July 31			x			
Rape Crisis Services in Rural Communities	Aug. 28		x		x	x	
Emergency Vehicle Rescue	Sept. 11		x			x	
How to Develop a RIF Program (Reading is Fundamental)	Sept. 18	x		x			General Audience
How to Develop Your Own Successful Business: a Series of Three Workshops Sponsored by the Small Business Administration	Oct. 16, Oct. 23 & Oct. 30			x			General Audience

* These workshops included portions of national conferences, supplemented by interaction between conference presenters and AESP participants.



Alaska Telecommunications Program
526 Main Street
Juneau, Alaska 99801



...Educational Telecommunications for Alaska

COMMUNICATIONS AND INSTRUCTION WILL BE CARRIED VIA SATELLITE TO ALASKA SCHOOLS

The Alaska Department of Education has developed a five-year plan for implementing educational uses of telecommunications throughout the state. The project—called Educational Telecommunications for Alaska—will include design, testing and delivering, via RCA's Alascom satellite, such applications as:

- Delivering Mail by Electronic Means
- Using the Computer to Help Schools—from the Student to the School Board
- Using Phone Lines and Radio for Presentation of Instruction
- Creating Access to Educational Resources Nationwide

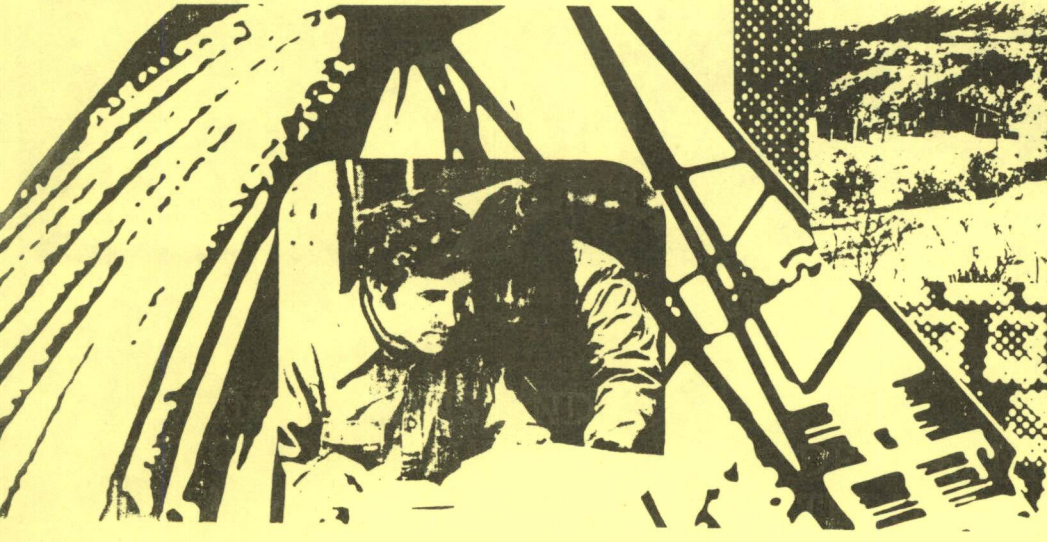
Satellite systems offer unique potential for simplifying communications in Alaska and helping alleviate educational problems. In many areas, high mountains make telephone wires impractical and severely hinder even radio and television service. Satellite communication overcomes virtually all physical barriers.

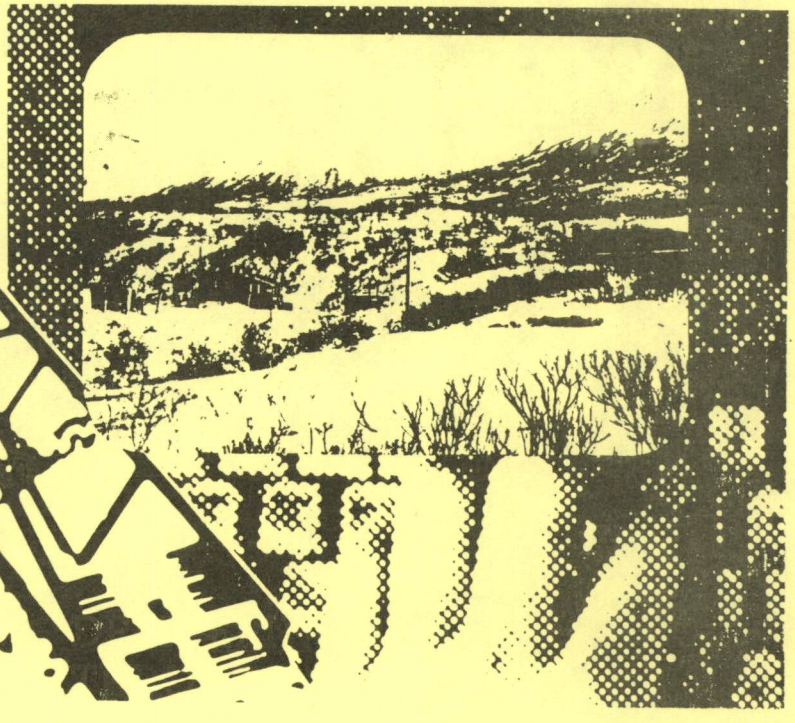
The Department of Education has contracted with the Northwest Regional Educational Laboratory to design and install the telecommunications system. Funding is provided through a grant from the National Institute of Education.

DELIVERING MAIL THROUGH ELECTRONIC MEANS

The first year's efforts in the telecommunications project will focus in part on establishing a system for delivering, storing and receiving mail by computer. This electronic "mail drop" will enable school district personnel to communicate daily with the State Department of Education, other school districts, and regional resource centers. The system overcomes the problems of slow mail turnaround and time-consuming telephoning.

Using the mail drop, a teacher can discuss instructional problems simultaneously with several other teachers anywhere in the state without leaving the school. The director of a regional resource center wanting feedback from participating districts on the agenda for the next meeting may enter the agenda into the mail drop. The agenda will be automatically stored in each district's mailbox. Upon receipt of the message, the recipient may send an immediate response, also utilizing the mail drop.





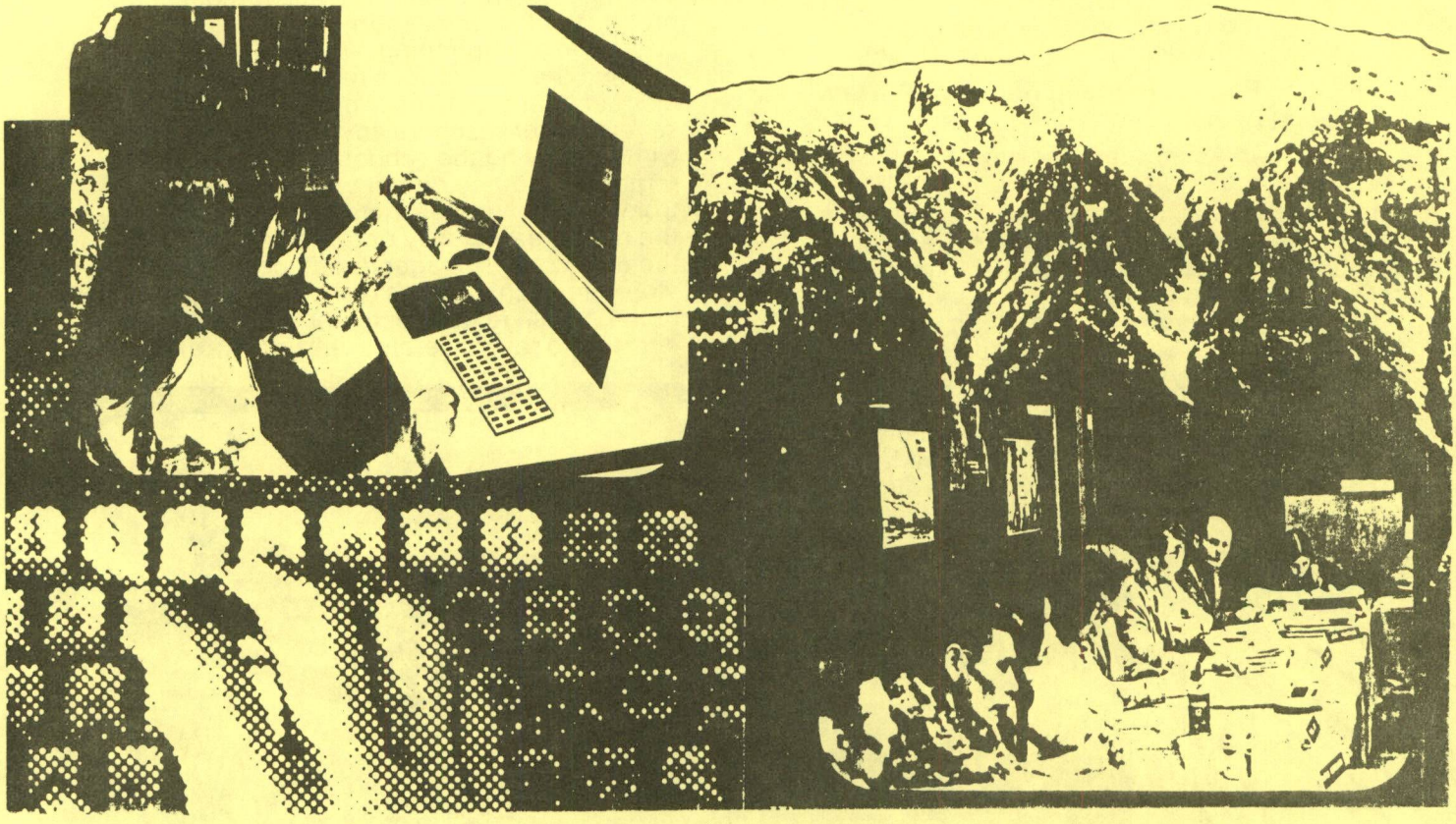
USING THE COMPUTER TO HELP SCHOOLS—FROM THE STUDENT TO THE SCHOOL BOARD

It has long been recognized that the computer can be of great value to the teacher and student in the support of instruction. This support may take the form of providing direct instruction to students; giving students intensive practice and drill; keeping accurate, safely guarded student records; assisting the teacher in diagnosing student learning problems; and relieving the teacher of many non-instructional burdens.

Modern-day school management demands that every district—large or small—meet sophisticated reporting and accounting requirements. This can be especially cumbersome for the smaller Alaska school district. Use of communications devices and computer technology can make this reporting process simpler, faster and more efficient.

USING PHONE LINES AND RADIO IN INSTRUCTION

Radio and telephone offer the student a variety of new learning opportunities. Use of these devices in instruction gives students living anywhere in Alaska the opportunity to take a special course. With radio or telephone, students can communicate with each other statewide—in a formal seminar or an informal exchange. In those subjects where it is difficult to find a teacher, instruction can be provided to any student, either through the mail drop or by two-way radio. One-way radio is ideally suited to those areas where the content is enriched through the active imagination of the listener.

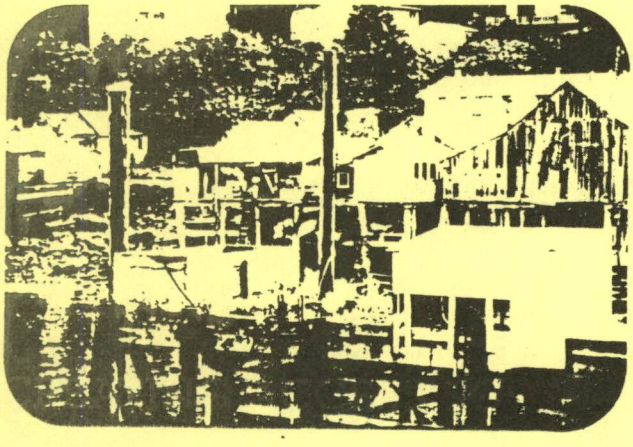


CREATING ACCESS TO EDUCATIONAL RESOURCES NATIONWIDE

Alaska schools have always experienced difficulty in obtaining important instructional materials when those materials were not available within school district boundaries. Frequent mail and transportation delays prevent timely arrival of needed materials. The educational telecommunications system will not only provide timely delivery of needed information, but will quickly identify appropriate instructional resources. In addition to materials obtainable through regional resource centers and the Department of Education, teachers will have access to nationwide collections of materials through a large instructional resource center in California which will be linked to the communications network.

DESIGNED FOR THE USER

Educational Telecommunications for Alaska is designed with the user in mind. Throughout the project, guidance will be sought from educators, students and community people in making the best use of telecommunications in education. While many approaches will be explored, only those uses which a school district can legitimately expect to afford will be recommended for continuation beyond the project.



EQUAL EDUCATIONAL OPPORTUNITY FOR ALASKA STUDENTS

Educational Telecommunications for Alaska is aimed at providing equality of educational opportunity for all Alaska students. By making instructional materials available rapidly and economically, telecommunications can benefit students throughout Alaska—regardless of geographic location, size of school, or individual instructional need.

FOR MORE INFORMATION...

To find out more about Educational Telecommunications for Alaska and how it will influence the future of education in Alaska, contact:

Director
Alaska Telecommunications Program
Northwest Regional Educational Laboratory
526 Main Street
Juneau, Alaska 99801

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›PUBLICATIONS‹

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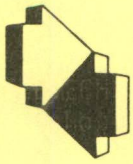

Center for Interactive Instructional Programs

University of Wisconsin—Extension

TELCOMS TEACHING & TRAINING NEWSLETTER--Quarterly report covering the latest happenings in the use of audio teleconferencing and satellite/cable technology in the U.S., Canada and other countries. $25 per year.

TECHNICAL DESIGN FOR AUDIO TELECONFERENCING--Book of essays by technicians, engineers and manufacturers who discuss the technical aspects of teleconferencing-from the basic components of a simple system to complex audio-visual devices for expanded uses of telephone lines. $15.

A DESIGN FOR INTERACTIVE AUDIO--Source book covering instructional design, administration and technical aspects of teleconferencing. Includes an annotated bibliography of over 180 articles. $10.

BRIDGING THE DISTANCE: AN INSTRUCTIONAL GUIDE TO TELECONFERENCING--Book explaining the best ways to present a teleconferencing program-the how-to's of teleconferencing. $6.

TELETECHNIQUES--Booklet to supplement a workshop on instructional design for teleconferencing. Information on design components, evaluation, student materials, etc. $5.

STATUS OF THE TELEPHONE IN EDUCATION - LEARNING PACKAGE--Collection of taped presentations and a book of papers given at the 1976 international conference on the Telephone in Education. Basic and advanced information contributed by experts in all phases of teleconferencing. Package - $50; book only - $15.

THE TELEPHONE IN EDUCATION II - RESOURCE PACKAGE--Tapes and papers presented at the 1977 Telephone in Education Workshop. Experienced teleconference users report on instructional design, administration and the technical aspects of teleconferencing. Package - $45; book only - $15.

REPORT ON UNIVERSITY APPLICATION OF SATELLITE/CABLE TECHNOLOGY - LEARNING PACKAGE--Taped highlights from the 1975 Satellite/Cable Conference, a 150-page report of conference papers, and Dr. K.A. Polcyn's EDUCATOR'S GUIDE TO COMMUNICATION SATELLITE TECHNOLOGY. Package - $40; proceedings - $10.

DIAL ACCESS: A WAY TO SPREAD YOUR MESSAGE--A compilation of 32 articles which include information on a variety of dial access systems and address specific issues such as programming, promotion, evaluation, and community involvement. $15.

The publications noted above are available from:

The Center for Interactive Instructional Programs
University of Wisconsin-Extension
Old Radio Hall
975 Observatory Drive
Madison, WI 53706

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Feedback on today's session:

For each question, circle the number that best describes your opinion:

1. On the whole, how would you rate this session?

Poor 1 2 3 4 5 6 7 Excellent

2. The relevance of the content of the session to your work--its potential usefulness.

Very limited 1 2 3 4 5 6 7 Of high value

3. The newness of the topic or material to you.

Not New 1 2 3 4 5 6 7 Very New

4. The effectiveness of the presenter(s) in getting the ideas across.

Limited 1 2 3 4 5 6 7 Very effective

5. Of the times you wanted to make a comment or ask a question , the reason you did not was because:

1. I couldn't break in when I wanted to.
2. There wasn't time to phrase my question.
3. Someone else said it.
4. I felt my question was too specific to my own needs--not of interest to the group.

Comments, questions, concerns:

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B U S I N E S S R E P L Y M A I L

First Class Permit No. 33, Madison, WI

UNIVERSITY OF WISCONSIN-EXTENSION
432 North Lake Street
Madison, Wisconsin 53706

AGENDA

SESSION DATE: JULY 27, 1979

START: 12 NOON, CST

END: 4PM. CTS

TITLE: Using Telecommunications in Training Today

MODERATORS: Susanne Bruyere and Lorne Parker

SPEAKERS: same as above

Agenda Item	Person/Format	Approx. Time	Notes
A. Preparation (off-air) 1. Review applications generated by group 2. Discuss any questions which the group would like to bring up after sign on 3. Discuss any experience since last session	Local Coordinators	30 min.	
B. Introduction and Overview 1. Informal Roll Call 2. Summary of content from Session I 3. Overview if Session II 4. Response to questions	Bruyere	30 min.	
C. Using Telecommunications in Training Today 1. The telephone as a delivery system 2. Equipment: capabilities & costs	Parker/Slides & Handbook	30 min.	
D. Background on Teleconferencing 1. Teleconferencing Today 2. Definition of Teleconferencing Terms 3. The state of the art in teleconferencing	Parker/Slides & Handbook	15 min.	
E. Effectiveness & Student Satisfaction 1. Research studies on effectiveness 2. Studies on student satisfaction 3. Added value of teleconferencing	Parker/Slides & Handbook	15 min.	
B R E A K		15 min.	

Agenda Item	Person/Format	Approx. Time	Notes
F. Getting Started in Teleconferencing	Parker/Slides & Handbook	15 min.	
1. Three basic components of any system:			
a. Station equipment			
b. Transmission equipment			
c. Control center			
2. Examples of station equipment			
3. Transmission Systems 2-wire vs. 4-wire			
4. Switching- types of mikes			
G. How Do I Set Up A System?	Parker/Handbook	15 min.	
1. Who do I call?			
2. What are the optimum technical requirements?			
3. How much will it cost?			
H. Case Studies		45- min.	
1. Introduction	Parker		
2. Subgroups break off into mini-nets	Regional Coordinators		
3. When discussion is finished, subgroups will sign-off the mini-nets			
I. Summary & Preparation for Session III	Local Coordinators (off-air)	15-30 min.	
1. Review agenda for Session III			
2. Assignment for next session			

TREND → NEED

- DECREASE/TRADITIONAL PROGRAMS → BUDGETARY RESTRICTIONS
- INFLATIONARY PRESSURES → COST EFFECTIVENESS
- CONTINUING EDUCATION FOR PROFESSIONALS → NEW PROGRAMS
- REMOTE AREA OUTREACH → ALTERNATE DELIVERY SYSTEMS
- CHANGING NEEDS/LIFE STYLES → NEW and FLEXIBLE METHODS

TELEPHONE AS A DELIVERY SYSTEM IS:

- INTERACTIVE
- ECONOMICAL
- EFFECTIVE
- EASY-ACCESS TECHNOLOGY
- HERE-AND-NOW TECHNOLOGY
- FLEXIBLE IN TIME/SPACE FRAMES
- IMMEDIATE and INTIMATE

ICS - Instructional Communications Systems (ICS) as part of the Educational Communications Division of the University of Wisconsin-Extension is responsible for the administration, operation and educational program development of ETN, SEEN, ATN and Meet-Me systems as well as coordination of the Dial Access Systems.

ETN - The Educational Telephone Network (ETN) is a two-way instructional communications system which transmits programming via private telephone lines to 200 locations throughout the state of Wisconsin.

SEEN - The Statewide Extension Educational Network (SEEN) is a complete communications system offering visual as well as two-way audio communications. SEEN uses an electrowriter which serves as an electronic blackboard, transmitting line diagrams, formulae and graphs to 23 locations in the state of Wisconsin.

ATN - The Administrative Teleconference Network (ATN) links 27 UW System campuses using the leased lines of the SEEN system for purposes of administrative meetings and coordinating functions.

MEET-ME BRIDGE - The Meet-Me bridge is a sophisticated teleconferencing device which links groups of individuals simply and quickly using regular dial-up telephone lines. Meet-Me bridging allows individuals at any location to participate in a teleconference by dialing a predetermined telephone number at the designated program time. Callers are automatically linked together.

DIAL ACCESS - Dial Access and Dial-A-Tape systems are unique telecommunications learning aids which allow users to receive capsuled instruction 24 hours a day by dialing an audio tape library number.

TWO-WIRE CONFERENCING - Two wire teleconferencing uses the available public telephone lines as a transmission system for its interconnects. Meet-Me is an example of a two-wire system.

FOUR-WIRE DEDICATED CONFERENCING - A four-wire network uses leased (dedicated) telephone lines thereby forming a "private system." A four-wire system of dedicated lines allows stricter control over transmission system parameters that affect the quality of signals on the system. ETN is an example of a four-wire system.

PROGRAMMER - A programmer is any individual who is responsible for coordinating, moderating or instructing a program given over ETN or SEEN.

LPA - The Local Program Administrator (LPA) is a member of the University of Wisconsin-Extension community-based faculty who as part of his or her responsibilities as a 4-H agent, agricultural agent, etc., has been designated to coordinate, promote and administrate programs transmitted by the ETN-SEEN systems at the local community level.

CIIP - The Center for Interactive Instructional Programs (CIIP) was established by the University of Wisconsin-Extension in 1977. The Center provides workshops, publications and other training materials to individuals and groups interested in developing, implementing and evaluating teleconferencing systems.

INTRODUCTION TO TELECONFERENCING

Dr. Lorne A. Parker, Director
Marcia A. Baird, Assistant Director
Dennis A. Gilbertson, Technical Director

Instructional Communications Systems
University of Wisconsin-Extension

INTRODUCTION

Today's academic communities are being faced with ever changing issues that usually revolve around enrollment, funding, inflation, and general management of their particular institutions. For example, national statistics tell us that enrollments in higher education are currently stabilizing and are forecasted to slowly decrease in many institutions during the 1980's.

Furthermore, the Carnegie Commission on Higher Education, which was established in 1967 by the Carnegie Foundation for the Advancement of Teaching predicts that the 1990's will be a period of only slow growth for enrollment. Obviously this has become a major concern for higher education administrators because enrollment is the primary basis for funding. It determines government funding for the public institution sector and direct funding to the private sector in the form of tuition.

Inflation and its impact on funding and operating expenses is also a major concern within these academic communities. It has drastically raised their operating costs without correspondingly increasing their incomes. For example, from 1972 to 1974, inflation consumed two-thirds of a 29 per cent increase in the educational funds as appropriated in 46 states and when considering that fact, the forecasted inflation rates will probably continue to outstretch state funding for education.

Problems like these are being countered by many institutions through the creation and implementation of unique problem solving strategies such as competitive recruitment programs, reciprocal cooperative programs that provide for interinstitutional access to libraries, language labs, medical information and computer utilization. However, a new challenge is beginning to emerge.

Current demands on institutions of higher learning call for immediate and well planned alterations in the traditional methods and ideas for extending the facilities of these schools to remote areas.

Among the problems of providing off-campus instruction is the number of hours spent by instructors traveling from the resident campus to off-campus classes. Often an instructor will spend more time on the highway than in the classroom. Thus, coupled with limited numbers of offerings to distant students is also a restraint on implementing educational opportunities to students and adults in their home communities.

The changing needs and lifestyles of society are forcing educational institutions to seek new and flexible means of instruction against a background of budgetary stringencies.

Such searches are leading a number of institutions to discover the educational potential of the telephone. Although this invention is over 100 years old, it remains the basic instrument of the new communications technology and is supported by a highly developed intrastructure worldwide.

In its first century educators practically ignored the telephone as a teaching medium, but this is changing fast. After many small scale experiments in the sixties a second generation of educational telephone networks is now springing up in North America and Europe.

Although the telephone is no longer a startling innovation in communications, it has been only in the past few years that several technological advances have made it one of the more flexible means of instruction in distant learning education. The telephone is a way of helping those unable or unwilling to participate in traditional learning activities by bringing resource people not ordinarily available right into their community.

Teleteaching can be done in various ways and in various combinations including telelectures, teleconferences and telewriting.

Telelectures transmit and amplify for a group of students in one or several locations someone lecturing at another location. Teleconferences include two-way conversations between the instructor and students. Telewriting permits the transmission of written materials as well as voices between two or more geographical points.

Teleteaching can be done with very simple and inexpensive setups, or may take the form of telelecture or teleconferencing networks involving a central broadcast facility connected to a series of amplified telephones at a number of sites where students are located. At the broadcast location there may be broadcast microphones, taping equipment and teaching aide facilities, as well as audiovisual equipment such as slide projectors at the learning locations.

From the limited number of studies connected with the use of the telephone in distant learning, there is evidence that it is an effective means of learning and that students react favorably to the telephone as a teaching medium.

The telephone is currently being used in a number of ways for undergraduate and graduate courses, refresher courses, extension programming and continuing professional education:

- The University of Missouri, Columbia, teleconferencing system offers credit courses in the College of Education and the Medical School. The network is also

used for some noncredit programs and for administrative conferences.

- The University of Minnesota, St. Paul, uses the network for Agricultural Extension Service educational programs in such areas as horticulture, home economics, 4-H youth, and agriculture.

- At the University of Maine, Portland-Gorham, the Bureau of Continuing Education for Nursing offers courses to about 1,200 RN's and LPN's each semester.

DEFINITION OF TERMS

Since many terms used in studies to describe telephone teaching are not uniform, here are a few definitions:

Teleconferencing is the generic term covering distant two-way telephone discussion between two or more groups.

Conference calls are the type of teleconferencing in which ordinary telephone lines are linked together by a telephone operator or a connecting device. Participants could be using amplified telephones at each location or a regular telephone.

Telelecture can best be described as a prearranged telephone call from the classroom to a resource person providing students the opportunity to ask questions and to make comments. Responses are amplified through special telephone equipment for the entire classroom. Microphones and speakers may be placed in appropriate locations in the room, making it possible for all participants to more conveniently interact.

A dedicated system is a teleconferencing network in which permanently installed lines are leased from the telephone company 24 hours a day. All listening centers on a dedicated system are permanent and are wired to operate like a giant party line.

Telewriting has become synonymous with Victor Comptometer Company's electrowriter system and more recently the Talos writing systems. Telewriting is a term coined for a system that allows the transmission of drawings and graphic materials from one location to another. The graphic equipment has the ability to transmit and receive electronically written images with the use of electronic writing equipment and receivers. The image transmitted from the sending location is projected on a screen using an overhead projector at the various receiving locations. Telewriting is usually used as a supplement to teleconferencing.

The electronic blackboard system has recently been developed by Bell Telephone Laboratories and will be offered as a standard AT&T product by July 1977. To transmit normal classroom blackboard graphics or drawings, the instructor simply uses standard chalk on a regular 4' x 8' electronically sensitive standard surfaced blackboard. The handwriting motions are electronically converted and transmitted over a standard telephone line to the receiving end which can be across town or across the country. The signals are then reconverted and displayed on a television screen. The two-way interactive audio is transmitted on another telephone line and both systems can be recorded on a standard stereo tape recorder so the audio and graphics material can be played back at different class meetings at various times and locations.

WHAT IS TELECONFERENCING?

Teleconferencing is the means of joining two or more groups in different locations through a telephone system. Voice amplifiers, speakers and microphones allow remote locations to talk with the instructor and each other.

In a teleconference, phone lines transmit a speaker's voice to communities miles away. There, his words are amplified using special telephone equipment and any participant can respond if appropriate. For instance, an instructor located anywhere in the country can give a lecture simultaneously to several groups of students in different places. The instructor's voice is amplified in each classroom, and the students communicate with the teacher and other students through a microphone.

Teleconferencing can accommodate large groups located at a few different places, or small groups, even individuals, at a multitude of locations. Take, for example, a university with campuses scattered throughout the state. Equip the school with a full teleconference system. On Monday morning, administrators at each campus, no matter how far away, can meet with the central campus via teleconference. Midmorning, faculties can hold monthly meetings over the same system. Later in the day a course in fourth semester Greek could be taught from the main campus, where the only Greek professor is located, to two outlying campuses and four community colleges. That evening, an extension course in real estate law could be brought to a number of outlying community "classrooms."

Frequently it is advisable to prepare and disseminate handouts, charts, slides or other graphics to enhance the teaching-learning process.

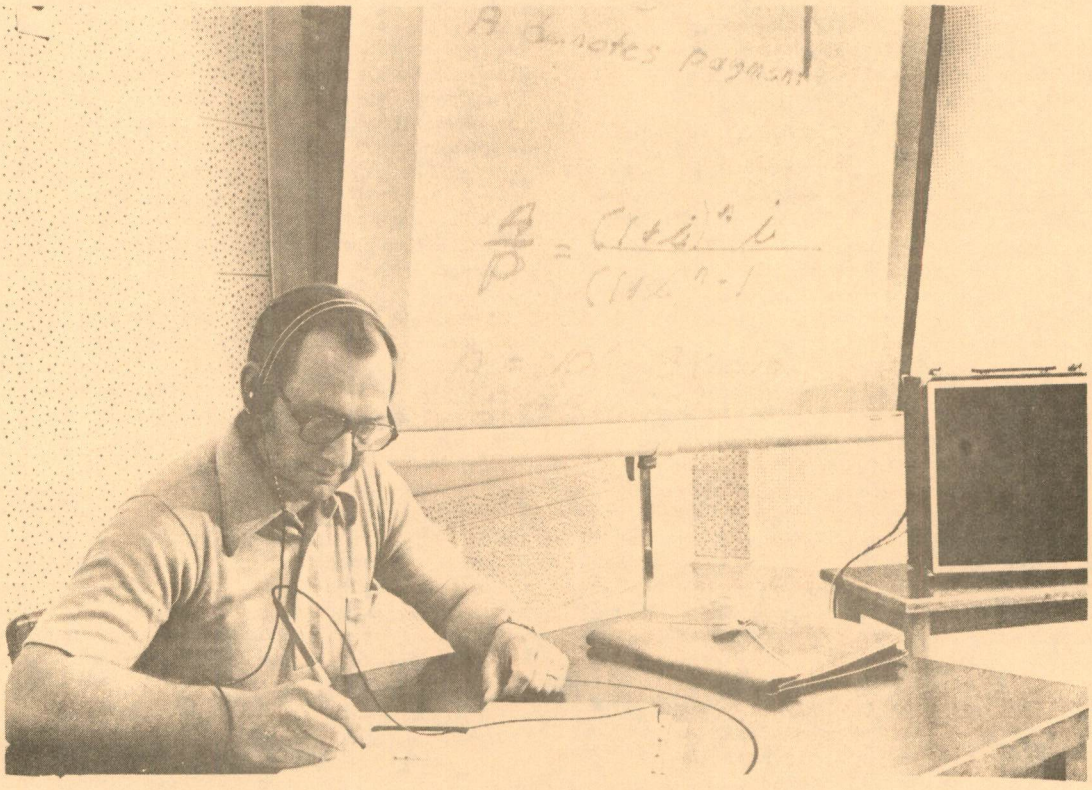
A typical use of teleconferencing has been to conduct meetings between a number of people who need to discuss matters concerning their work. On rare occasions, these conferences take on major proportions. Nurses at the University of Quebec recently held a successful meeting with 1,754 participants in eight locations across the province.

Teleconferencing systems are used for many different educational and administrative uses including a variety of specialized programs in medicine, art, music and engineering. Existing systems range from a few sites interconnected by a telephone operator, to complex setups with 200 or more locations integrated with slides, real-time graphics, computers and video tapes.

Types of Educational Teleconferencing

There are basically two types of telephone-based educational delivery systems; the conference call system and the dedicated system.

Nurses regularly use the University of Wisconsin-Extension dedicated teleconferencing network for in-service education. All 200 stations on the system are wired to operate like a party line.



Telewriting is a supplement to teleconferencing, allowing the transmission of drawings and graphic materials from one location to another. The image transmitted from the sending location is projected on a screen at various receiving locations.

The Conference Call System

Conference calls, normally made on an operator controlled system, simultaneously link together ordinary telephone lines at a number of locations. These calls are scheduled in advance with an operator who dials all the participants and connects them to what is known as a conference bridge. This is simply an electronic device at the telephone company's central office which allows calls to be joined together.

The conference call system has two major benefits over a dedicated system: (1) flexibility of program and location needs,(2) costs--only pay for time used.

Remember, we are still talking about amplified telephone equipment and microphones at each one of the stations on the conference call. Thus, large numbers of people would be able to hear the speaker and talk with others via the microphones.

The Army's Use of Conference Calls for Education

The U.S. Army uses the dial conference capacity of AUTOVON, the Automatic Voice Network, to conduct training from Army schools to reserves throughout the United States. In one such training program, the Army established a dial-up network connecting seven reserve units. In this way, 50 students at different locations participated in a radio teletype procedures course presented from Fort Gordon, Georgia.

Dedicated System

Unlike conference calls, which employ regular telephone service, a dedicated system uses permanently installed facilities leased from the telephone company on a 24-hour-a-day basis. Since the listening centers are permanent, all the points on the system are wired to operate like a "party line."

The University of Wisconsin's Use of a Dedicated System for Education

The University of Wisconsin-Extension has the largest telephone-based instruction system in the country. A brief explanation of this system will serve as an illustration of this type of teleconferencing.

Wisconsin's Educational Telephone Network (ETN) was developed by the University of Wisconsin-Extension in 1965 as a means of expanding educational opportunities at a minimal cost to state residents. ETN is a private four-wire telephone network that takes the form of a huge party line with a number of people on the same line.

The ETN system was initiated to help doctors throughout the state of Wisconsin keep up with medical advances. From the original postgraduate medical update, ETN has expanded not only the number of listening locations, but in the diversification of its programs. Presentations range from the medical courses to pharmacy, English, law, social work, home economics, library science, education, nursing, physics, agriculture and engineering. In addition, 4-H programs, Extension faculty conferences and weekly departmental staff meetings are carried via this system.

Programs are essentially noncredit continuing education for professional adults in the state.

COMMONALITIES OF SUCCESSFUL SYSTEMS

We have explained and described the two modes of teleconferencing, the conference call and dedicated system. Now it seems worthwhile to examine several telephone systems operating today.

Wisconsin	Ohio
Florida	Oklahoma
Los Angeles	Open University
Kansas	University of Quebec
Illinois	U.S. Army

Projects presented here are growing and successful, in part, because of several factors they share. A look at what they have in common may benefit others considering teleconferencing systems.

Institutional Commitment

Although they come in all sizes, each institution described here believes the telephone is an important tool of instruction and supports it accordingly. For more than a decade, for example, the University of Wisconsin-Extension, has supported its Educational Telephone Network (ETN) as a prized and integral part of statewide outreach. It is one of a handful of communications systems used to implement the Wisconsin Idea in education . . . the idea that the boundaries of the campus are the boundaries of the state.

Types of Programs and Teaching Styles

Successful telephone-based instruction programs consist of more than merely placing a microphone in a traditional face-to-face classroom situation and sending the spoken material out over telephone lines. Instructors who have successfully developed telephone-based courses employ a number of teaching strategies designed specifically for this largely interactive audio medium. Such strategies include short 12 to 15 minute learning segments, interviewing people at different locations, reactor panels, local buzz groups, feedback assignments, site-to-site discussions, and relating questions to student occupations.

Meeting Student and Teacher Needs

Teleconferencing as an alternative educational method prospers in areas where it meets very real, pragmatic professional and economic needs. The lawyer who continually needs to keep abreast of changes in the law in order to maintain his license; the doctor whose constant need to continue his education is juxtaposed against his need to stay near the community he serves; the librarian who has 150 miles and a harsh winter climate separating her and the nearest degree granting campus . . . and the instructors who, because of professional commitments and the sheer logistics of limited time and economics, cannot serve a statewide clientele in traditional face-to-face methods.

Technical Flexibility

Teleconferencing systems need to be flexible. Within the limits of individual systems, whether using the conference call mode or dedicated networks, the system must be adaptable to varying numbers of stations. Equipment must be standardized, easy to operate and suitable for different audience sizes at individual locations. Those systems which have achieved a near maximum level of sophistication, without sacrificing flexibility or standardization are the most successful.

TELECONFERENCING TODAY

The following examples of teleconferencing represent current activity in the field.

Wisconsin

The University of Wisconsin-Extension Educational Telephone Network (ETN) is currently the largest, most sophisticated telephone-based educational delivery system in the United States.

It started in 1965 with 18 listening sites around the state. The listeners might hear the lecture quite clearly one minute, then hear nothing but static the next.

While it was up to the telephone company to work out the technical bugs, it was up to the ETN staff headquartered in Madison and the UW-Extension faculty to work out the program details.

The first program was a seminar for physicians, a group that needed classes in order to learn the latest medical knowledge, but couldn't afford the time to travel far from their patients.

This first class was a hit, and ETN was on its way. The next year three new health programs were scheduled, and the decision was made to start programs for other professionals.

Lawyers, for instance, attended ETN noon lectures while they ate their sack lunches. Over the years, they have had one of the highest turnouts of any groups--about 500 per program.

Soon programs were offered for the general public as well as professionals. These programs included law for the layman, a course on venereal disease, a discussion of the effect of TV violence on children, and another on how to be a better homemaker. Most classes are noncredit, although some credit courses are offered each semester.

In recent years, ETN classes have even been offered in photography and music. In Photo Fundamentals, for example, students mailed their class assignments to their instructor who critiqued and returned them.

Music was harder to adapt to the system, since it requires a higher level of sound quality than a lecture. The test came in the spring of 1973 with a forum for piano teachers. Artists from as far away as Texas and New York performed--via the telephone lines--and listeners were surprised at the almost concert hall quality of the sounds. Teachers demanded an encore and the program has been repeated the last three years.

Today, as the Wisconsin ETN celebrates its eleventh anniversary, there are over 100 UW-Extension courses offered each year to more than 30,000 students. A map identifying ETN community locations within each Wisconsin county is on the following page. Each of the 200 individual locations is equipped with Darome Edu-Com speakers and four microphones connected to a standard telephone facility.

SEEN--A new dimension was added to the ETN idea in 1969, when images could be transmitted along with the telephone lecture. In fact, an additional system was designed and called SEEN, or the Statewide Extension Education Network. With SEEN, the images appear on a screen at the listening site at the same time that the lecturer draws them on an electrowriter. SEEN has made it possible for UWEX faculty to teach calculus, for example, because they can now send out instant equations and formulas. So far, 23 cities have the capability to receive SEEN programs. SEEN locations use Darome Edu-Com units for audio transmission and reception and Victor electrowriter units.

Florida's ETN

For several years the College of Pharmacy has been interested in initiating an educational telephone network in Florida. A foreign graduate pharmacist's program presented the opportunity to develop the network.

In 1973 the Florida legislature mandated that foreign professionals residing in Florida be provided one year of continuing education to prepare them to take the Florida state licensing exam for their profession. The law also specified that the continuing education could be provided in their native tongue at the request of at least 15 students.

The University of Florida School of Pharmacy, Gainesville, was chosen as the agency to provide the necessary education for pharmacists. At the time the act was passed, over 600 graduates of foreign pharmacy schools were living in Florida, mostly Spanish speaking Cuban exiles. They requested that the course be offered in Spanish.

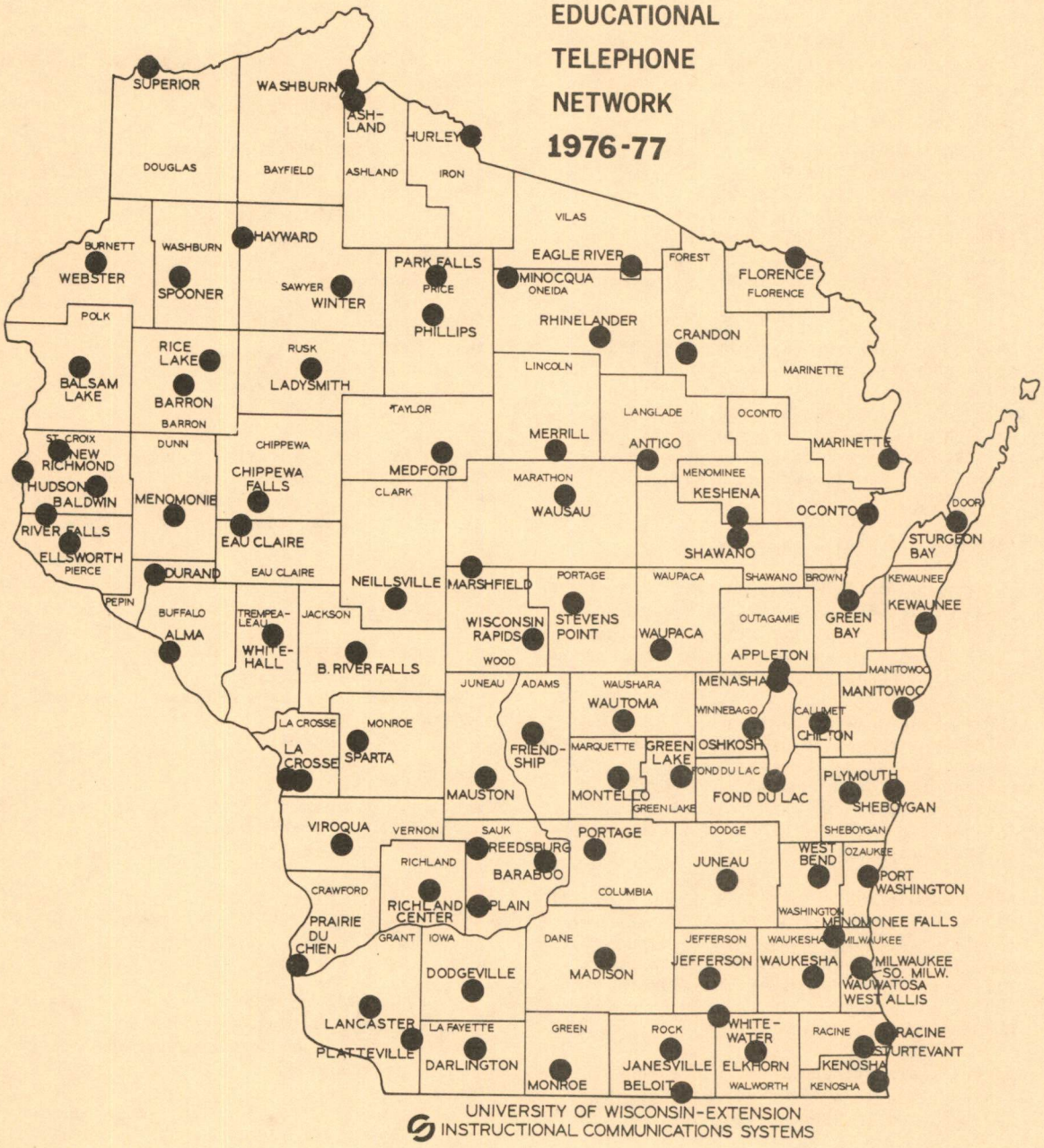
Curriculum development of the proposed courses took place in 1974-75, and methods were established for interfacing an English speaking faculty with a Spanish speaking student group. By the end of 1976 the first one year course was to be completed.

A standard Bell System multi-point dedicated voice grade facility was installed by Southern Bell Telephone Company and Darome Edu-Com station equipment was used because of the multiple stations requirement and the provision for synchronized slide projector capability.

Listening posts were established in Orlando, West Palm Beach, Tampa, Miami, Hollywood and Jacksonville.

Plans are also underway to utilize the network for other mandated continuing education requirements. The College of Education is investigating the potential of ETN for credit courses.

Control of the University Florida system is within the Division of Continuing Education.



UNIVERSITY OF WISCONSIN-EXTENSION
INSTRUCTIONAL COMMUNICATIONS SYSTEMS

Los Angeles Dial-A-Class

The dial-a-class concept has been around for a long time but with recent developments in technology it has been perfected to an effective educational communications channel. The Belmont Community Adult School, Los Angeles, has been using this system to teach over 500 adult students receiving classroom instruction via the telephone in 25 subjects throughout their district.

The dial-a-class program allows the school district to provide continuing education to anyone who desires to learn. The program started a few years ago to provide students classes of their choice in their homes, in convalescent homes, while in hospitals or any place where they have access to a telephone.

No additional equipment is needed at the listening end unless a headset type receiver or speaker is desired for the system. Teachers contact the classes from a central telephone instructional center. The teacher dials the student's telephone number using a dial card and students are immediately piped into the class. The system has the capability of connecting 18 locations.

At the present time Belmont Community Adult School system students can earn high school credits and take classes on a noncredit basis. Classes offered include United States history, California history, English as a second language, world literature, music masters appreciation, conversational Spanish, mathematics review and conversational English.

Here's how the dial-a-class works:

1. The teacher calls each student to the telephone class with an automatic dialer, quickly and accurately. The teacher may use a speaker phone or operator type headset: both allow hands-free convenience.

2. The student answers the ring of their home telephone, specially provided by the school, and are connected into the teacher's console on a conference hook-up. As a regular classroom, they can chat together while waiting for the rest of the class to arrive on the telephone.

3. After each student is connected, the teacher places his or her card into a special slot on the card dialer console. The student's name is visible and a lamp by each slot flickers when he speaks. The teacher can see at all times who is talking or making noises.

4. As the class proceeds, all students hear the teacher's questions and all hear the answer given by the student called upon.

Features of the dial-a-class are:

1. A teacher can operate the push-button console.

2. A teacher can isolate any student's line to speak with him or her in private.

3. Students can be separated from hearing each other, while the instructor hears and talks with them all.

4. The class can be divided with some students participating in discussion while others work alone on an assignment.

5. Up to nine students can be transferred to another teacher in another location.

6. Recorded teaching materials can be presented over the system.

Kansas

The Regents' Continuing Education Network, installed in 1970, links classrooms in 26 Kansas communities by private four-wire telephone lines. Six Kansas colleges sponsor and develop network credit and noncredit courses. Participating schools include Fort Hays State College, Kansas State College of Pittsburg, Emporia Kansas State College, Kansas State University, Wichita State University and the University of Kansas.

In addition to the above campuses, telephone network classrooms are also located in such places as community junior colleges, vocational-technical schools, grade schools and adult education centers. Each classroom uses a Western Electric 50-A Portable Conference Telephone to participate in the programs.

The Kansas network operates approximately 40 hours each week and involves three types of programs: credit programs, such as Education of Exceptional Children, Problems in Business Administration and Basic Nutrition; noncredit continuing education programs; and in-service training programs contracted by small businesses.

Illinois TeleNet

Illinois TeleNet, Urbana, Illinois, is a 48 station dedicated telephone network of three subsystems which can be used independently or joined together.

One network is a dedicated four-wire system connecting each of eight regional Extension offices, the Extension directors office and two other administrative offices. This network is used for management of state Extension service.

A second network connects all of the offices in Extension region one in the northwest corner of the state and the regional director's office for regional and intercounty communication meetings.

Finally, a 31 station network links other county Extension offices throughout the state for intercounty communication, agent updates and general public programming.

During 1975-76, 640 instructional hours of programming were offered to an estimated 33,869 persons. TeleNet programs have included a tax course, a workshop on how to make visuals, home landscaping, severe weather, legislative updates, interior design and consumer education.

Equipment used for TeleNet is the Western Electric 50-A Portable Conference Telephone. Currently the Western Electric 50A-1, an improved model of the 50-A, and a unit made by Darome, Inc., are being tested on the network. Counties without dedicated TeleNet

installations can also be connected to a program via a standard telephone facility and a Portable Conference Telephone.

Illinois is exploring the feasibility of every county office having its own TeleNet unit.

Ohio OMEN (Ohio Medical Education Network)

OMEN, Columbus, Ohio, is a two-way audio network linking 95 hospitals in seven states and Canada. It bills itself as the "largest two-way physician's network in North America" and is currently in its 15th year of operation.

Each week the network features discussions between hospital staff physicians and medical school faculty. The discussions link community physicians at hospitals in Ohio, Kentucky, Indiana, Illinois, West Virginia, Pennsylvania, Michigan and Ontario with faculty members at four medical schools: Case Western Reserve University at Cleveland, University of Cincinnati, Medical College of Ohio at Toledo and Ohio State University College of Medicine, Columbus.

During 1975-76, 20,500 people registered in the 125 programs offered. The network is used about 140 hours each year.

To participate in OMEN, each hospital needs two telephones. A regular telephone is used to call in questions and comments to Columbus during the programs. A second telephone receives the program. The receiving line is hooked to network-specified amplifier and loudspeaker equipment at each hospital.

Oklahoma Regional Medical Program

The Oklahoma Regional Medical Program, Oklahoma City, is a dedicated network linking more than 90 hospitals. Among the locations are hospitals in Oklahoma, six in Kansas, and one in Texas. The teleconference network is headquartered within the University of Oklahoma Health Sciences Center.

About 25 courses are offered on a regular basis to supplement hospital in-service education programs. The network is particularly aimed at serving the continuing education needs of doctors and allied health professionals in rural areas.

The Oklahoma program uses standard Bell System dedicated facilities and Darome Edu-Com units for station equipment.

The Open University-London, England

In 1973, this English correspondence institution, which has an enrollment of some 58,000 students, began experimenting with teaching by telephone. While the correspondence unit remains the heart of the Open University, radio, television, face-to-face tutoring and educational counseling at the system's 260 study centers enrich the program. Experiments in teleconferencing have arisen largely because of problems faced by the widely scattered student population and their difficulties in attending the study centers.

In 1975, some 171 students participated in teleconferencing through the Open University. These students formed 25 different groups which studied a variety of courses in math, science, technology and the arts. Individuals were contacted by telephone at their homes and met for about an hour every two weeks. This program was quite successful and experiments are now underway with loudspeaking telephone equipment at the study centers to ascertain the viability of group tutoring and teaching.

University of Quebec

The University of Quebec has used teleconferences as a routine administrative tool for several years. Founded in 1969, the University of Quebec enrolled 30,000 students in 1974-75. Its 20 campuses, centers and research institutes are found in eight cities over an 800 mile area. Thus, the installation of a teleconferencing system helped administrators reduce travel among the various institutions. The University is currently renting about 20 Western Electric Portable Conference Telephone units.

For University of Quebec administrators, the average teleconference involves seven people and lasts about an hour and fifteen minutes. In a two year period, over 25 university committees, involving some 150 people, used this system.

United States Army

In 1975, the United States Army experimented with teleconferencing for in-service reserve training. Using the dial conference capacity of the Army's existing Automatic Voice Network, AUTOVON, a seven-point conference call network was established.

The pilot program linked approximately 50 reserves studying a radio teletype procedures course with instructors from Fort Gordon, Georgia.

Each location was equipped with a Darome two-wire Convener which provided two-way communication between sites, and featured the capacity for remote control of a Kodak carousel.

The Army currently is using teleconferencing to teach medical subjects, officer career courses and helicopter maintenance.

PERSPECTIVE: A BRIEF HISTORY

We have examined educational telephone systems of today, but let us know take a look back to the beginning and see how teleconferencing developed.

Experiments in the use of the telephone for all levels of education, from elementary to graduate, have been going on for nearly three decades. The following brief highlights of where teleconferencing has been will give insight into its future possibilities.

One of the earliest uses of the telephone for education was in 1939, when it was employed to meet the needs of homebound and hospitalized students in Iowa. Within two years, more than 1,000 students were receiving class lectures through intercom equipment in their homes and hospital rooms, at the same time the lessons were being taught to classroom students. All were able to talk with their teachers and fellow students.

Teleconferencing at the college level began in

1947, at the College of Dentistry of the University of Illinois Chicago Medical Campus. Dentists in Scranton, Pennsylvania, took part along with dentists in the Chicago campus classroom.

Of the many pilot amplified telephone programs initiated in the 1950's, the most extensive was that of Stephens College, Columbia, Missouri. Begun in 1958, it was first used for in-service training of science faculty at several colleges. Later, several area colleges and universities employed the system for faculty and facility sharing. Also, through this teleconferencing system, such speakers as Sen. Robert Taft and Harold Stassen were brought to the campus.

In 1960 the University of Omaha began a telelecture program, reaching audiences of up to 500. Later they joined with the University of Colorado in a "Share the Professor" telelecture plan to exchange undergraduate credit classes three times each week.

Wisconsin's Educational Telephone Network (ETN), which has been described earlier, began five years after Omaha's first program.

In 1966, the University of West Virginia started their telelecture program for in-service training to isolated Appalachian school administrators.

Until that year, remote lectures could not be supplemented with the creation of written material as in the classroom. Cornell University's College of Engineering, however, combined telephone and television technologies to teach a course in physical metallurgy to research specialists located 55 miles away in Pennsylvania. The system transmitted both the oral lecture and handwritten materials over telephone lines.

Electrowriters have proven to be an important accessory to teleconferencing. Victor Comptometer Company, Chicago, Illinois, generally is credited with the development and marketing of electrowriters. Wisconsin and West Virginia are just two of the states using this equipment today.

Other telephone networks continued to spring up throughout the Midwest and West during the latter half of the 1960's. Networks in Illinois, Missouri, Kansas, Oregon, Nevada, Wyoming and Minnesota were formed.

The Canadian Department of Indian Affairs also began teleconferencing for administrative purposes in 1972.

LOOKING AHEAD - ELECTRONIC BLACKBOARD

A telewriting feature recently developed by Bell Telephone Laboratories is a system that transmits blackboard writing over ordinary telephone lines for display on a television screen at distant locations.

The electronic blackboard is far less costly than closed circuit television, the only comparable system transmitting both audio and visual information instantaneously. The new device uses ordinary telephone lines and does not require professionally trained technicians to operate.

The University of Illinois,being the trial University, has used the electronic blackboard to successfully conduct remote engineering classes from its campus in Champaign-Urbana to off-campus locations in Freeport, Rock Island, Peoria and Rockford. The system has recently been approved to be introduced into the Bell System as a standard product offering for utilization throughout the United States.

To transmit hardwriting or other graphics, the instructor simply writes on a standard 4' x 8' blackboard which is electronically sensitized such that with normal chalk, remote receivers can view them via standard video monitors on a "real-time" basis.

The interactive audio portion of the lecture is carried over a second telephone line, via a portable conference telephone already offered in many forms by the Bell System.

An interactive teleconferencing system with real-time graphics will increase the capability of remote education and both technical and administrative conferencing. Since the system transmits in real time, classes can be conducted live; however the system is designed to enable an entire lecture including both the interactive audio and graphics to be recorded on a standard stereo tape recorder for subsequent retrieval. For example, if students or conferees are unable to attend the original lecture or conference, they can come to the remote location and replay the tape at their convenience. In this instance, the system replays both the audio and graphics.

THE ECONOMICS OF TELECONFERENCING: AN ILLUSTRATION

Interest in the development of cost per student contact hour of instruction in both face-to-face and media situations has risen to new levels during the past decade. Concern for increased accountability is a dominant theme in a time of economic retrenchment.

The purpose here will be to explore one example of the economics of dedicated facility interactive audio systems, audio graphic systems and video systems as compared to face-to-face instruction.

The base systems cost data used here is from a study conducted by Ted Augustine, former AT&T Marketing Supervisor-Education, on cost comparisons of tying three compuses of Pace University (Manhatten, Westchester, White Plains) and, the Long Island Technical Institute, New York, together via audio-graphic and video systems. Each system will be examined separately.

Base data used in this study includes instructor salary, student contact hours, equipment and facilities.

Instructor Salary

Computations here are based on an annual instructor salary of $18,700. A full teaching load consists of three 3 credit courses each semester.

$18,700 ÷ 6 courses/yr = $3,116.66 salary for one course.

Student Contact Hours (SCH)

SCH = number of students x total course hours

For example, a 15 week course that meets three hours each week with 20 enrollees = 15 x 3 x 20 = 900 SCH.

Equipment, Facilities, and Personnel

For telephone-based systems, equipment and facilities include control studio for bridging, tape inserts, tape cueing, prerecorded programs, volume control, etc. Also included are program director, classroom studio, terminal equipment and remote classroom with telephone access jacks.

Number of Students

Computations are based on a class size of 20 students for face-to-face instruction. Teleconferencing stations at the four campuses are also assumed here to attract 20 students each or a total of 80 students.

EXAMPLE 1 -- FACE -TO-FACE

Face-to-Face
-3 credit course to 20 students

Student Contact Hours (SCH)
-20 students x 3 Hrs/Wk x 15 Wks = 900 SCH

Cost
-Salary for one 3 credit course = $3,116.66

Cost Per Student Contact Hour
-$3,116.66 ÷ 900 = $3.46/SCH

EXAMPLE 2 -- AUDIO

Audio to four campuses
-3 credit course to 80 students

Student Contact Hours (SCH)
-80 students x 3 Hrs/Wk x 15 Wks = 3600 SCH

Cost
-System cost of $1,250/Mo
-$312.50 Wk ÷ 3 Hrs/Wk = $104.17/Hr
-45 Hr Course x $104.17 = $4,687.49
-Salary for one 3 credit course = $3,116.66
-$3,116.66 + $4,687.49 = $7,804.15

Cost Per Student Contact Hour
-$7,804.15 ÷ 3600 = $2.16/SCH

EXAMPLE 3 - AUDIO GRAPHIC

Audio Graphic to four campuses
-3 credit course to 80 students

Student Contact Hours (SCH)
-80 students x 3 Hrs/Wk x 15 Wks = 3600 SCH

Cost
-System cost of $3,200
-$800/Wk ÷ 3 Hrs/Wk = $267.00
-45 Hr Course x $2.67/Hr = $12,015
-Salary for one 3 credit course = $3,116.66
-$3,116.66 + $12,015 = $15,131.66

Cost Per Student Contact Hour
-$15,131.66 ÷ 3600 = $4.20/SCH

EXAMPLE 4 -- VIDEO

Video to four campuses
-3 credit course to 80 students

Student Contact Hours
-80 students x 3 Hrs/Wk x 15 Wks = 3600 SCH

Cost
-System Cost of $24,000/Mo
-$6000/Wk ÷ 3 Hrs/Wk = $2,000.00
-45 Hr Course x $2,000/Hr = $90,000
-Salary for one 3 credit course = $3,116.66
-$3,166.66 + $90,000 = $93,116.66

Cost Per Student Contact Hour
-$93,116.66 ÷ 3600 = $25.86/SCH

However, if we begin adding classes onto any of the three technological distribution systems, since our basic costs are fixed, the price per student contact hour decreases quite rapidly.

For example, the hourly cost for an audio system used 3 hours each week is $104.17 an hour, or $2.16 per student contact hour for the example previously cited.

Increase system use to two 3 credit courses each week or 6 hours of system use and the cost per student contact hour decreases significantly. The cost breakdown when offering two courses on the audio system would be:

AUDIO

Audio to four campuses
-3 credit course to 80 students
-another 3 credit course to 80 students

Student Contact Hours (SCH)
-80 students x 3 Hrs/Wk x 15 Wks = 3600 SCH
-80 students x 3 Hrs/Wk x 15 Wks = 3600 SCH

Cost
-System cost of $1,250/Mo
-$312.50/Wk ÷ 6 Hrs/Wk = $52.08/Hr
-90 Hrs programming x $52.08 = $4,687.49
-Salary for two 3 credit courses = $6,233.32
-$6,232.32 + $4,687.49 = $10,920.81

Cost Per Student Contact Hour
-$10,920.81 ÷ 7200 = $1.51/SCH

RESEARCH SHOWS SUCCESS

Evaluation of telephone-based instruction has been carried out with varying levels of scientific methodology. Some of the studies have compared telephone use with that of other media; others have not. Some were interviews with participants, other involved extensive statistical evaluations.

Following is a brief review of research projects in teleconferencing. It should not be considered a comparative or exhaustive analysis. Overall the studies indicate that telephone-based instruction is as effective as face-to-face instruction.

Nunley[1] (1965) studied the effects of telelecture in retraining two groups of elementary school mathe-

matics teachers. Pre and post tests of achievement, mathematical ability and attitude inventory were given to both the telelecture group and those in the conventional face-to-face situation. There was a significantly greater mean change in content mastery for the telelecture group than for the conventionally taught group. This difference, however, could not be accounted for by variances in ability, teaching attitudes or personal background.

Edelman[2] (1967) studied adult classes in reading and writing Hebrew. Two Hebrew classes were taught simultaneously to telelecture groups in Grand Rapids and East Lansing, Michigan, and to a live control group in Chicago. Each of the experimental groups was originally made up of a minimum of 20 students. A similar control group originally had 40 students. An analysis of scores on a midterm and on an oral reading test indicated no significant differences between performances of the three groups. The presence or absence of the instructor from the classroom did not affect the performance on any of the criteria.

Blackwood and Trent[3] (1968) evaluated 71 students enrolled in a short course on money management. All were members of county Extension Homemakers units in Reno County, Kansas. Pre and post tests were given simultaneously to both groups--the 34 who were taught in the traditional face-to-face method, and the 37 students who were instructed by telephone. Results showed no significant differences in the amount of learning which took place when the educational information was presented to the adult audience through face-to-face or remote teaching techniques and the personal and situational factors; age, level of education, time of day, attitude.

Boswell, et al.,[4] (1968) studied distance teaching involving three classes of an introductory psychology course at the University of Missouri-St. Louis. The 64 member control group received an on-campus lecture. A second group of 63, also on campus, received a live lecture which was simultaneously transmitted to the third group of 22 in a remote classroom. Pre test results indicated no significant differences in content knowledge among the groups and the post test also showed no differences among the groups after training.

Puzzuoli[5] (1970) studied the applicability of teaching university extension classes by telelecture and electrowriter. At West Virginia University, Morgantown, courses in mining, engineering and modern mathematics were given to college classes (control group) and also, using telelecture and electrowriter, to extension classes in a remote location (experimental group). Comparative analysis of the achievement of the two groups showed that achievement by extension classes was equal to, or significantly greater than, that of students in the on-campus classes. Analysis of extension student questionnaire responses supported the thesis that success in telelecture teaching is greater when the professor limits continuous lecturing to 20-25 minutes, provides printed material, uses audiovisual techniques as a supplement, makes a number of personal visits (two or three) to the class and bases the class on problem solving techniques.

From the research connected with the use of the telephone, other studies of interest on many types of subject matter include: graduate courses, Hartje[6]; undergraduate credit, Hoyt and Frye[7], and Zimmerman[8]; teacher education extension courses, Pellett[9]; formalized adult instruction at their place of business with the instructor rotating his appearances among the location, Gold[10]; and art education to small schools in four western states receiving simultaneous instruction from a central source with the aid of overhead transparencies, Jesser and Clarke.[11]

In summary, the studies indicated that the telephone-based instruction compares favorably with face-to-face classes. Consequently, the telephone is a useful educational communications tool capable of being used for effective educational experiences.

TELECONFERENCING HUMANIZING AND TEACHING STRATEGIES

In the century since Alexander Graham Bell put together the first telephone in Branford Ontario Canada, his invention has undergone vast technical development and is now connected to the world's most reliable and sophisticated nationwide network. Although the telephone has been an effective personal communications device, it has been long overlooked as an effective medium for education. The use of the telephone for education has been limited during the past 20 years in favor of more glamourous media. Thus it remains a virtually untapped natural resource for education.

The major thrust here will be to discuss some of the effective humanizing and teaching techniques that are built into the design of telephone-based instruction programs that can be integrated into many teleconference programs.

Program and Administrative Considerations

Let's examine the three most common limitations of teleconferencing.[12]

1. Making A Listening Group A "Group"

When 165 people are dispersed throughout a state at some 10-20 different locations, for example, it's difficult to make the listening group a "group" and not just a collection of strangers. However, the instructor can create a cohesive group feeling and group rapport by:

a. Always calling participants by name and responding to their questions or comments by name.

b. Travelling to teleconference locations to originate programs.

c. Sending out a half sheet of paper on which participants are invited to share information with or ask additional questions of the instructor if program time happens to run out.

These are simply techniques to let participants all around the state know that no matter how many miles separate them, two-way communications channels are always open.

2. Discussion Doesn't Just Happen

Adults like to get actively involved in the learning process. That desire for two-way communication, between participants and instructors and among participants, is the basic benefit of telephone-based

instruction as a viable, cost-effective medium. However, no matter how many adults want that opportunity and no matter how easy it is technically, some instructors may have to work at getting teleconference discussions started. There are a few basic reasons why participants may be reluctant to interact at first; they may feel they're infringing on precious program time, other people's time or their question or comment may not be worded correctly. On the other hand, adults frequently are more inclined to ask questions on a telephone system than in a normal classroom situation.

This interactive discussion can easily be initiated by the instructor by:

a. Asking participants to fill out an identification card so the instructor can use this information to help lead adults into discussion and to draw upon their personal experiences.

b. Asking a teleconference group at one site to work together preparing an answer to a specific question for the next week's session thus building in discussion for the next program.

c. Preparing participants for the teleconference learning experience so they're comfortable with it. That preparation may be in the form of a welcome letter before the series begins, explaining the teleconference equipment, how they'll use it and also how the course and its materials will benefit them.

3. People Don't Listen Very Long

It's hard work concentrating on a solitary audio message for very long. For adults, that "very long" is not much more than 12 or 15 minutes.

Because our brains can process information at a greater rate of speed than most people talk, pure sound requires a greater concentration from the learner. If the audio material isn't very challenging to the listener; if it doesn't change pace with a new topic, or a change of voice or an anecdote every 15 minutes or less, then it probably won't hold his or her interest. Minds will start wandering, looking for something more interesting and more challenging. Message retention drops.

There are a variety of techniques to improve remote interactive programming interest in order to stop student mind-drift. Teleconference instructors, for example, have found telephone-based instruction offers them considerable programming flexibility if they consciously address the liveliness of their message. For example, almost anything that catches and holds the positive attention of participants is worth doing. Although some of these techniques have been incorporated in adult education programs for years, there are unique adaptations which have proven especially successful with telephone-based remote education:

a. Substituting a panel discussion with varied voices and ideas in place of a single lecturer.

b. Guest lecturers brought into sparsely populated and remote communities via teleconferencing enable the students to exchange ideas, and ask questions in an across-the-table fashion.

c. Using case studies at each teleconference location for on-site discussion and analysis, followed by enegetic dissection by the entire class.

In summary, the limitations surrounding a non-visual, interactive, remote learning environment can be overcome. There are scores of techniques to humanize the teleconference learning experience, to stimulate statewide discussion and to make the programs lively and interesting.[13]

The questions of "How do I personalize this kind of learning experience for my students?" and "How do I get discussion going?" are among the first concerns expressed by new teleconference programmers and instructors. Although some of these techniques will be described, instructors are only limited by their individual imagination and creativity.

Learning in a remote environment may, at first, seem impersonal to some, but instructors can use several techniques to make the experience highly personal.

Personalizing the Experience for Students

Send Participants A Welcome Letter

Once a participant has registered, instructors should send a "welcome aboard" letter before the first class session. In the letter, the instructor would explain the teleconference system and course objectives. A first assignment can also be made in this letter to get participants involved right away.

Include a Picture of the Instructor/Guest Instructors

Participants are curious about their instructors and each other. Many lecturers have included a picture of themselves and brief bibliography either in the course brochure or in the handout materials for the first program. Occasionally teleconference programs that involve selected sites have asked participants to send a slide of themselves or the group at their site so it can be duplicated and included as part of a program session. In a program devoted to individual or group reporting, the combination of a person's voice with his or her picture can be an effective personalizing experience for all learners.

Distribute a Class Roster to All Participants

Just as participants like to know something about their instructors, they also want to know about each other. One way this can be accomplished is by use of a class roster. On the roster, participants can be separated by location, and included with their names could be a brief description of their educational and/or professional experiences, address and telephone number.

Call on People by Name

Most people like to be recognized by their name. When participants ask questions or make comments, they frequently do so by first identifying themselves and their location. This helps both the instructor and teleconference participants identify a name with a voice. Referring to someone's professional experience, for example, is another way to personalize the

Many instructors visit different teleconference learning locations during a program series to personalize the experience for students.

In addition to undergraduate, graduate and continuing education, teleconferencing is a routine administrative tool for many institutions. Here a dedicated system links campus and community-based faculty for program planning purposes.

teleconference learning environment.

Assign Reports

Participant reporting has many values, as evidenced by its inclusion in the format technique section and the discussion techniques. It is also an excellent way to personalize the teleconference experience for learners as they feel confident drawing upon their own experiences.

Establish Additional Communications Channels

One University of Wisconsin instructor regularly used an "Q and A-O-Gram" technique. This half sheet of paper was an invitation to students to make comments or ask questions that may not have fit into a regular program's question and answer period. Other instructors continually urge participants to write or call them if they have questions after a teleconference.

Visit Teleconference Sites

Many instructors try to visit as many different teleconference locations as they can during a program series. At this time, instructors should try to stay for an hour or two after the teleconference to further get to know their audience.

Schedule Face-to-Face Group Conferences

Instructors can also arrange one day face-to-face conferences in the middle or at the conclusion of their teleconference program series. For ease in student traveling, these conferences can be split among geographical areas, for example, or held in conjunction with other professional conferences. This conference allows participants to meet each other and to take part in a variety of learning activities that may not be able to be accomplished during teleconference sessions.

Let Personality Come Through

Finally in a telephone-based, remote learning environment, it's important for instructors and participants to let their personalities come through the system. Participants can and should hear the emotional attitude in each other's voice and know, for example, whether or not a person is enthusiastic and sincere by the way they come across on the speakers. When people smile, for example, their voice reflects it. If instructors are sitting alone in an office or studio, for example, they may feel their gestures and expressions are ridiculuous, but they're definitely not. Any animation that makes the message more vital is actually more important in a teleconference program than in the classroom.

Stimulating Statewide Discussion

Stimulating interaction on a telephone-based educational delivery system can be a challenge for instructors. Instead of instant discussion during a question and answer period, instructors may sometimes find themselves greeted with dead silence. To insure teleconference programs are truly interactive, instructors must seek opportunities which encourage participants to actively participate rather than listen passively. Here are a few of the techniques used:

Plant Questions

Planting questions among participants is one technique to get discussion started. Instructors have primed a few enrollees in their programs before a series begins to enter in with questions if discussion lags or is slow to start. Also, moderators try to have several questions handy themselves and feel comfortable asking them.

Assign Feedback

Programmers can create situations to generate questions and discussion. Frequently this is done with handouts that accompany the program. An instructor, for example, may ask two or three teleconference locations to be ready to react during the next program to several specified questions.

Relate Questions to Participant's Occupation

By having the names and occupations of participants in front of them during a program, instructors can design discussion around this information. These facts can easily be obtained from the course registration blank or from participant identification cards completed at the first teleconference program.

If an instructor happens to be talking about apprenticeship, for example, and he knows from his list that there are five to six people in his teleconference class who either work with an apprentice or who are associated with an apprenticeable occupation, then he can direct his question to some of those people. In addition to stimulating discussion, this technique also helps personalize the learning experience.

Initiate Group Projects/Weekly Quizzes

Group projects or weekly quizzes completed by each site can be used to stimulate both on-site and network discussion. Both will permit learners to actively participate in a face-to-face manner and will also keep the program content relevant and practical. Some instructors find a weekly quiz at the beginning of class is an excellent stimulant for discussion on a teleconferencing system.

Group to Group Discussions

Not all questions and comments need to be channeled through the teleconference instructor or moderator. Participants at one location, for example, can talk directly to or question students at one or more other distant locations. Group projects are one way to create situations where participants share discussion among themselves. After hearing or reading a group project report from one location, another group could be assigned the task of evaluating the report on the network or further questioning them. Other sites around the state may join in this discussion and the moderator/instructor can step back and join in the discussion as a fellow participant.

Schedule Oral Assignments

Short reports of five to ten minutes can easily be incorporated in program formats. In addition to stimulating interest among participants, this technique is helpful for triggering comments or reactions.

Teaching Techniques

The two most important elements of a successful program are: (1) content and (2) method of presentation.

Although instructors have incorporated a variety of teaching techniques into their programs for years, these approaches must be adapted to fit the needs of telephone teaching.

These formats include:

Lecture/Question and Answer

The lecture and question and answer format is a popular teleconference format. Doctors, nurses and attorneys, for example, are accustomed to learning this way, and they're a clientele group who like programs in this format. It's also an efficient method. Large numbers of facts, new information or review material can be presented in a short period of time.

Via teleconference systems, however, it's not just a lecture. The lecture is reinforced by supplementing oral material with written. Prior to a program, participants are sent skeleton outlines on which they can easily follow and take notes during the lecture. Significant visual materials should also be incorporated into handouts. A list of study questions, bibliographies, additional reading sources, and perhaps brochures, mimeographs, overheads or slides are among other forms of visual material that may be used by teleconference instructors to complement and reinforce their audio presentations.

Sufficient question and answer time is required to insure two-way communication. Teleconference participants need the opportunity to clarify speaker ideas, support or dispute material, or carry the discussion into personally relevant areas.

Celebrity Expertise

Well-known local, national or international authorities are available as teleconference guests. Guests of this caliber not only attract participants to the program, but they also are rich teaching and learning resources and, of course, interest-holders. Guests can easily and inexpensively be connected to teleconference networks via long distance telephone lines. Main presentations may be given live during the actual program, or prerecorded. In the later case, guests can be connected live for the question and answer period. All speakers should be provided with an audience profile. Speakers should also include skeleton outlines or other handout material to reinforce their audio presentation.

Participant Reports

The peer teaching concept is a teaching technique effectively incorporated into teleconference programming. Here students share their experiences as they relate to the subject being discussed with other teleconference students and consequently assume part of the teaching responsibility.

Interview

Interviews of 15 to 20 minutes in length are meaningful segments of teleconference programs. An instructor can either choose a resource person to interview or ask for class participation in the selection process. During the program, the instructor interviews the guest with five to eight questions that participants have sent him. Following that segment, discussion is opened to all remote locations.

Interview formats can also be successful if a particular guest doesn't have time to tailor his or her ideas to meet the needs of a specific audience, or if the guest is not fully aware of audience background or previous teleconference program content. The course moderator/instructor in this case could act as an interviewer, asking the speaker questions to help him or her respond in a relevant manner.

Panel Discussion

If the topic is complex or controversial, panel discussion can create lively, informative teleconference programs. Panelists may be located anywhere in the state or the country. In addition to the topic at hand, the variety of voices helps hold listener attention. Panels should include not more than four members, however, as participants need to be able to distinguish panelists' voices. And, as with any panel discussion, a moderator is essential for keeping the topic in focus. Again, bibliographies and any other appropriate written materials should be sent to the students prior to the program.

Reactor Panels

Program communication, particularly clarification of important points and ideas, can be improved through the use of reactor panels. Members of the panel would be the initial reactors to a teleconference speaker's presentation, guest lecturer, interview or panel discussion, representing the entire audience. To be successful, the speaker, reactor panel members and moderator should agree on program objectives and procedures before the actual program.

When large teleconference enrollments and limited program question and answer time are a problem, reactor panels can be an efficient means of covering common questions that may be on many participant's minds. Once these basic questions are covered by the reactor panel, the network could be opened up for questioning by all participants. This technique is also successful to stimulate discussion.

Role Playing, Skits

Small group skits or playlets can stimulate audience thinking and teleconference discussion. For example, one program for social workers and foster parents frequently uses short vignettes, for example, to realistically portray foster parents feelings. Dramatic talent isn't required. Participants can prerecord skits prior to the actual program or peform them live during the program. On teleconferences, it's best to stick to structured role playing, where the

script and performance are carefully planned out prior to the presentation. A suitable introduction and discussion following the skit are needed to insure the intended objective was met.

Buzz Groups

Teleconference participants frequently split into location buzz groups during programs. For example water supply operators from numerous communities used approximately 20 to 30 minutes of their two hour programs for local discussions. After the program's main presentation, groups "broke off" from the network to discuss how their location situation related to the day's topic. This buzz group format gave participants an opportunity to actively participate in the program and also helped keep the program content relevant and practical. A group leader at each location served as a resource person to answer questions, thus alleviating the need to use limited program time for some participant questions. Buzz sessions can also be used to formulate group questions, brainstorm a problem or develop a case study presentation or solution.

Case Study

Students learn by working on real problems. Case study examples are one way to bring discussions down to earth and to stimulate both on-site and network discussion. For example, a group of clergymen enrolled in the program Parish and Personal Conflict: Disaster or Opportunity were encouraged to bring in written case studies of conflict situations in which they were currently or had recently been involved. This data then became the agenda for site group consideration. Spokesmen at each site represented their group and reported on how their group analyzed the problem.

Group Work Sessions

Many programmers structure their sessions to include times of activity as well as listening and discussion. An agricultural engineer who frequently works with 4-H woodworking leaders via teleconference does just that when he presents technical kinds of materials. In a wood identification program, the first half of the program laid the basic background information to the topic; the second half was devoted to actual wood identification by participants at each site.

A wood identification key and many samples of wood had been sent to each site. The program instructor would work with the teleconference group by saying, "Okay, pick up the piece of wood marked number one. Now let's look at it and tie it into the key. Does it have this characteristic, does it have that characteristic?" After working down the key for practice, he'd ask participants to take a second sample and trace it down the key. When participants at a site felt they had it identified, then they'd come on the network and try to get some agreement from others at other sites.

Brainstorming

Brainstorming is a simple concept for getting the most creative energy out of a group discussion. Teleconference committee meetings often follow this format. Here the purpose is to collect a large number of ideas, and brainstorming sessions on the network have ranged from collecting ideas about heritage programs to ideas for a weekend conference for forest owners.

After the program rules are explained, moderators simply open up the network for ideas. The quantity of ideas is more important here than the quality. Freewheeling should be invited. Editing and synthesis can always be accomplished after the session. Follow-up teleconference sessions can also be scheduled to appraise and further evaluate edited ideas.

Pre-Teleconference Warmup Sessions/
Post-Teleconference Sessions

One method used successfully by several teleconference clientele groups is a warmup session prior to the actual program. By assembling groups at sites an hour before the teleconference, participants can work together on group projects, case studies, discuss outside reading material, and so on in small face-to-face situations. Often these groups find this presession to be valuable warmup for getting into the topic. Then, when it's time for the program to begin, they are eager to share their ideas, thoughts and comments with other participants and the instructor.

On-site discussion can also be scheduled for the hour following the session. Participants at each location use this time for such things as group projects, brainstorming, etc.

Summary

Teleconferencing is only a means to an end. Initial psychological barriers to teaching via a telephone-based educational delivery system will probably be more difficult for instructors to overcome than the real ones. However, once these limitations are understood and dealt with, the many capabilities and potentials of telephone-based remote learning will become evident.[14]

Evaluation Process for the University of Wisconsin's Educational Telephone Network (ETN) Programs

In order to determine if the appropriate educational techniques were designed into programs transmitted via Wisconsin's ETN, an evaluation system called the Program Evaluation Checklist (PEC) was developed. Its purpose is to study the relationship between the telephone system of communications and the educational objectives of a program. Specifically, it is concerned with tailoring educational materials for delivery to multiple remote listening stations via a telephone-based system.

The development of this evaluation system required a cooperative effort between content specialists and communication education specialists. This joint effort lead to an agreement concerning a number of variables common to the concerns, interests and objectives of both disciplines.

The PEC consists of a list of statements which defines specific aspects of program content, organization, methods of presentation, materials, lecturer and technical aspects. The participants, representative of an entire ETN class, are asked to evaluate each state-

ment and determine how well it describes the program. For example, in evaluating the program lecturer, one question asks, "The program lecturer/moderator encouraged participants to take an active part in the program." Ratings are made on a numerical scale of 0 to 9. Demographic questions are also included in evaluations to obtain profiles of ETN students.

At the completion of the evaluation process for selected ETN programs, an extensive report is completed and is reviewed with individual instructors. Evaluation materials are strictly confidential between the Instructional Communications Systems staff and the instructor. The paramount purpose of this evaluation process is to determine program strengths and weaknesses and to assist and enhance the selection and utilization of appropriate educational techniques for future ETN programs.[15]

THE TECHNICAL COMPONENTS OF TELECONFERENCING SYSTEMS

A successful teleconferencing system whether made up of two or 200 locations includes three basic components. These are: (1) the terminal or station equipment, (2) the interconnecting transmission system, (3) the network control center. Many variables influence the design of a teleconferencing system. Included are the number of locations; the geographic area covered by the interconnect system; the network configuration, whether the system is a four-wire multi-point dedicated network or a two-wire plain old telephone service (POTS) dial-up network, and the network's intended use, whether designed for corporate committee meetings or statewide outreach education. No two systems will likely be duplicate in design, but several ingredients and operational capabilities are common to successful teleconferencing systems.

Common Technical Ingredients

A teleconferencing system should be able to connect participants at widely scattered regional, statewide or national locations.

The system should provide a communication environment that duplicates [as closely as possible] the single site discussion group.

Terminal or station equipment at locations should provide even sound distribution for up to 200 people and allow easy participation.

The system should be manageable, allowing location and equipment additions and changes to meet user's changing needs.

A network or system control center should be maintained to supervise the network's technical operation and provide a program origination point.

The transmission system should provide clear, intelligible communication between all points on the network.

The system should be able to connect groups anywhere in the world via the regular telephone service.

Methods should be developed to quickly recognize and clear any technical problems interferring with service.

Designs and associated equipment should feature the latest technology and be reliable and serviceable.

All terminal equipment, station location interfaces and installation procedures should be standardized throughout the system.

With these general operational capabilities in mind the three basic components of a teleconferencing system will be described in greater detail.

Terminal or Station Equipment

The following criteria are requirements for successful teleconferencing terminal equipment:

1. The equipment must have four microphones to cover up to 12 people at each location. Microphones must have sufficient cord length for easy reach by participants. Approximately 20 feet of microphone cord can meet varying room and equipment placement conditions.

2. Up-to-date technology must be used in microphone selection. A high quality cardioid microphone will minimize room, acoustical feedback and noise pickup.

3. The speakers must exhibit a high degree of intelligibility to cover up to 200 people at each location.

4. The equipment must produce uniform volume throughout locations, independent of room acoustics. Additional plug-in column speakers should be available for very large or irregularly shaped rooms.

5. A push-to-activate switch should be on each microphone. This switch should be spring loaded so that the microphone is deactivated when the switch is released. This switch does not control the microphone in the classic push-to-talk sense. Experience has shown that participants have difficulty coordinating their hand in a push-to-talk and release-to-listen function. Therefore, voice operated attenuators should be provided in both the receive and transmit signal paths in the station equipment. These voice operated attenuators serve two functions; first, they eliminate potential feedback loops between stations and, second, they allow participants to communicate over the system without the restriction of the classic push-to-talk function.

When a participant depresses the push-to-activate bar, this activates his particular microphone but does not cut off the speaker. At this point the system is in a voice activation mode. The voice activation mode allows fast switching of receive and transmit paths and provides maximum interaction over the system.

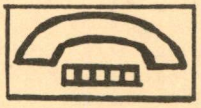
In contrast, when there are more than 10 locations on a system the presence of 40 microphones all "open" at once causes noise pickup from chair rattling, coughing, paper shuffling and so forth that makes the network unusable. Unfortunately, unlike the human ear, the microphone cannot distinguish between voice and other room noises. In such a system, normal room activity causes the microphone switch to trip. The speaker will cut in and out as the switch operates and information will be lost.

A combination of a push-to-activate switch on each microphone and the voice activated switching mode is a successful compromise for interaction capability

COMPONENTS OF A TELECONFERENCING SYSTEM:

- **STATION EQUIPMENT**

HANDSET (2 WIRE)



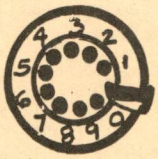
VS. "LOUDSPEAKER TELEPHONES" (2 OR 4 WIRE)

- **TRANSMISSION SYSTEM**

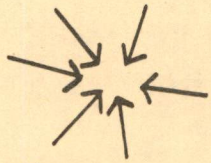
2 WIRE VS. 4 WIRE

- **CONTROL CENTER**

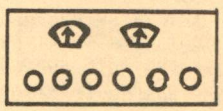
"OPERATOR-ASSISTED" CONFERENCE CALL



"DIAL-UP" CONFERENCE BRIDGE



"MEET ME" CONFERENCE BRIDGE



TECHNICIAN-CONTROLLED CONSOLE

on a teleconferencing system. The push-to-activate switch eliminates the accumulated room noise problem and the voice activated directional switch eliminates participants dealing with the classic push-to-talk function.

6. Side tone should be built in the equipment to assist in proper microphone operation. A local public address feature is an example. Its level is set in relation to the incoming program level so participants receive proper side tone level when speaking in a normal voice four to six inches from the microphone. Side tone can be used as a public address feature when the equipment is not used for network programs.

7. The equipment should be designed with standardized interface elements that are uniform with telephone company regulations. The equipment should use the latest technology to provide long term reliability.

8. The terminal equipment should include a local test feature so participants can verify that the equipment is operating properly. A loop back test feature performs this function. Combined with a total system troubleshooting plan, this feature streamlines fault detection and repair. For example, if a location with trouble uses the loop back test feature to verify that the station equipment is operating properly, it eliminates a repairman traveling to the site to check the equipment. The result in time and dollar savings is significant.

9. The terminal equipment should be able to add microphones. An outboarded mixer with microphones that plug into the standard station equipment provides this feature. Mixers can provide additional microphones for locations with large numbers of participants.

The University of Wisconsin uses station equipment designed and manufactured by Darome, Inc., Harvard, Illinois, for its 200 point dedicated network. The equipment has been highly accepted by ETN students and has proved extremely reliable for over three years.

Teleconferencing Transmission Systems

Two general types of teleconferencing transmission systems are in use today. These are a POTS two-wire dial-up network similar to an operator assisted conference call,and a multi-point four-wire dedicated network of leased telephone company facilities. In general a dedicated multi-point conferencing system will utilize the POTS two-wire capability to extend its coverage points to resource people anywhere there is a telephone.

Plain Old Telephone Service (P.O.T.S.) Two-Wire Conferencing System

The two-wire teleconferencing system uses the available public telephone network as a transmission system for its interconnects. Each selected station is dialed individually and connected through a bridging arrangement before the program. Many such conferences are regularly conducted with 10 or less locations using available telephone company conferencing facilities.

A two-wire system must meet three critical requirements to provide successful teleconferences. These are uniform terminal or station equipment, effective bridging for even sound distribution and uniform signal levels at all locations, and efficient controlling functions that allow rapid set-up, location selection and troubleshooting.

A successful two-wire bridging arrangement must also have the capability to connect up to 30 two-wire telephone lines together. The use of up to 30 point two-wire dial-up conferences is a resource just now being developed. Research and development efforts are being conducted in both Bell Telephone Laboratories and in the private sector to provide an efficient and effective multi-point two-wire conferencing capability.

Multi-point Four-Wire Dedicated Teleconferencing System

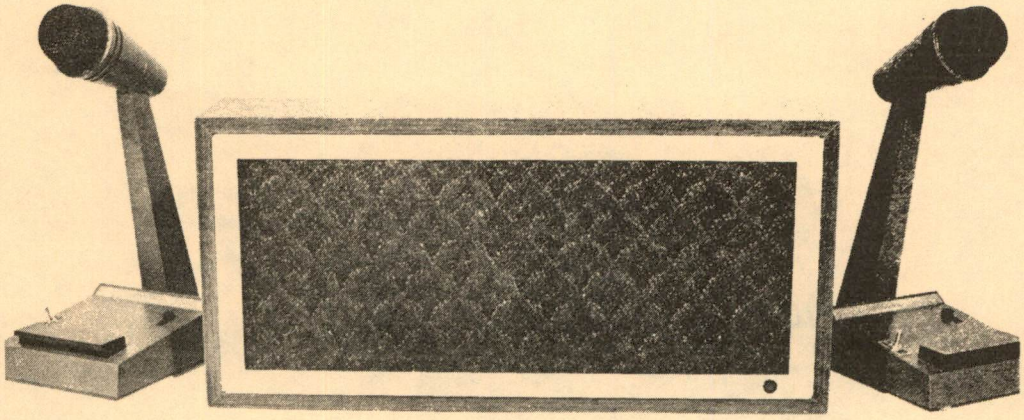
A multi-point private line network utilizes existing telephone facilities to interconnect its many locations. A four-wire system of dedicated lines allows stricter control over transmission system parameters that affect the quality of signals on the system. Fine tuning techniques on such a system results in a transmission quality far exceeding that from a two-wire conference system. The main reasons for this improved transmission quality are stricter control over signal band pass, signal levels and signal to noise ratio. Transmission systems engineers for the Wisconsin Telephone Company have developed criteria for establishing a successful private line multi-point teleconferencing system. For greater detail refer to Braun, Gilbertson and Hansen, 1976.[16]

The basic building block of a four-wire multi-point private line network is a four-wire, six-way bridge. Using this in combination with existing telephone transmission facilities a network of any size can be designed. These bridges can be located regionally; thus a network can be formed in a regional building block fashion. The practical size limit for any region of a multi-point private line telephone network is 20 stations because of noise created by the multiple facilities and circuit terminations.

The University of Wisconsin's 200 station teleconference network operates with satisfactory noise levels because it is a combination of 10 noise-isolated regions. Each region serves approximately 20 stations. The regions are isolated by using voice gated amplifiers at the master combining bridge, located at the central control point. This regional arrangement limits noise experienced at any station to that generated by facilities and terminations within the region.

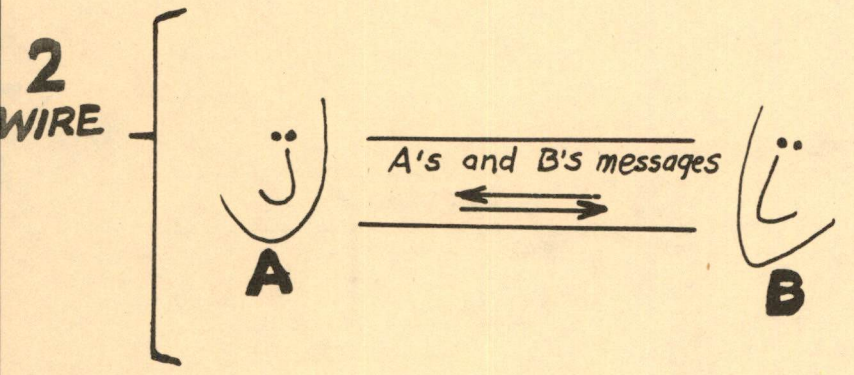
Most of the techniques used to construct a multi-point private line four-wire teleconference system are standard operating procedures within the telephone industry. Equipment is available from several manufacturers and suppliers of standard telephone industry equipment.

An important ingredient in a successful private line telephone network is the ability to connect stations on the public telephone network to the four-wire system. This involves interfacing a two-wire dial-up teleconferencing system with the usually large private line network. The University of Wisconsin system can connect up to six POTS lines to its 200 point network. These lines connect resources who cannot be at network location to the statewide audience.

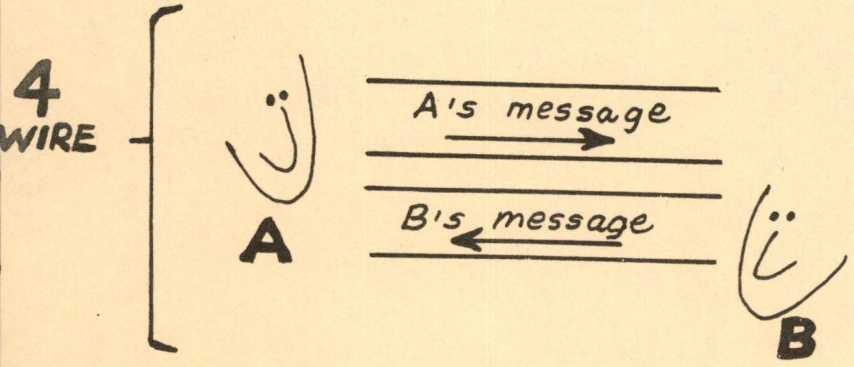


TELECONFERENCING STATION EQUIPMENT

2 WIRE VS. 4 WIRE TRANSMISSION



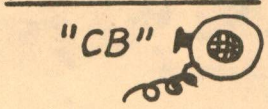
- A "BASIC" CIRCUIT CONSISTS OF A PAIR OF WIRES.
- MESSAGES ARE "MIXED" — CHANCE FOR FEEDBACK ON "RETURN LOOP."

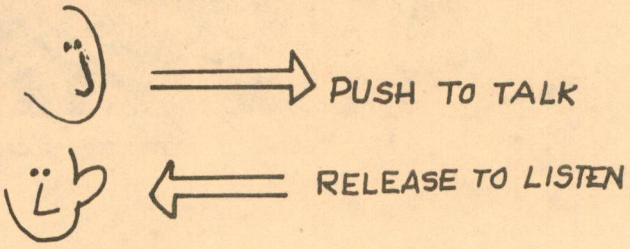


- EACH MESSAGE CARRIED ON ITS OWN PAIR OF WIRES.
- MESSAGES ARE "ISOLATED" FROM EACH OTHER — NO CHANCE FOR FEEDBACK.

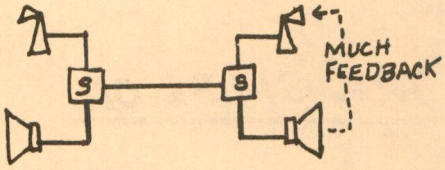
TYPE OF SWITCH – CHARACTERISTICS

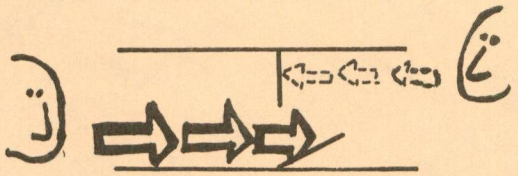
MECHANICAL "CB"





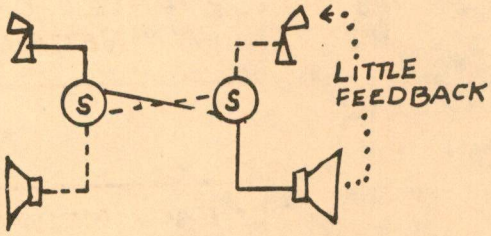
VOICE-ACTIVATED HARD SWITCH "2 WIRE"

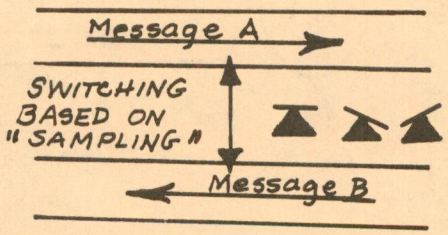




LOUDEST VOICE GETS THROUGH – "ALL-OR-NOTHING"

VOICE-ACTIVATED SOFT SWITCH "4 WIRE"





DEPENDING ON WHICH PAIR OF WIRES HAS LOUDEST MESSAGE, OTHER PAIR WILL BE "SOFTENED" BUT NOT COMPLETELY CUT OFF.

Some other keys to the successful development of the University of Wisconsin's private line system include:

1. Limiting amplifiers are used to equalize signal levels between the private line network and the public telephone network (POTS).

2. The network line up levels are optimized for best signal to noise ratio.

3. A master bridge combines the regional networks.

4. The regional control circuits utilize voice gated amplifiers to isolate region noise levels.

5. Standard bridging configurations and equipment minimize design and maintenance practices.

6. All station terminations are standardized, passive and hard-wired using a reliable four-prong jack.

7. Telephone company personnel receive uniform station installation instructions to insure standardized location installations.

8. Uniform testing instructions, one trouble reporting center, and special loop back test features in the portable station equipment facilitate speedy and effective trouble detection and repair.

The exact makeup of any conferencing transmission system depends on many variables, including the available telephone facilities within a particular region. The specific network design should not be constrained by available telephone industry hardware or other standard operating practices. The design and implementation of any system should be sensitive to user requirements, although these requirements are not always met easily. History has shown that highly successful teleconferencing endeavors occur where users and telephone industry personnel work as a team to provide the best service possible.

Teleconference Network Control Center

The control center provides technical supervision and control of the teleconferencing network. It also facilitates network programs.

Any teleconferencing effort more ambitious than an occasional four to five party operator assisted conference call requires an identified control center. This network control center may simply feature standard station equipment with a telephone to report troubles. It may include a tape recorder to record programs. The control center may also be as complex as the one used at the University of Wisconsin where outreach programming runs 16 hours a day, six days a week.

Regardless of the size of the telephone conference control center, four major functions are involved in complete operational control of the system.

Program Control

The control center operator uses a console to control audio sources such as tape recordings and microphones that are used as part of the program. For example, the operator loads any insert tapes on the tape machines and plays them on cue from the instructor. The operator also maintains control over program signals and records the program for future reference. During the program the instructor does not have to cope with the hardware. Using the control center equipment, all technical aspects are handled by the operator.

Telephone Network Control

The telephone conferencing network may be totally dial-up, dedicated, or a combination. The dial-up network uses regular two-wire telephone service connected via a special bridge arrangement. Prior to program time, an operator uses controls that may be similar to a call director and automatic dialer to quickly establish the teleconference network. The network of dedicated lines used in a multipoint private line service, can be arranged as programs and enrollments dictate. Participating locations can be selected for total system programming or regional networks can be established and programmed simultaneously. Dial-up bridging capability can extend coverage of a dedicated network to anywhere in the world via the public telephone service. Complete control of the entire network is maintained in the network control center. The particular control arrangement depends on the design and makeup of the transmission system.

Studio Sound System Control

This provides an important monitoring function for the network control center. Sound distribution is provided to three key areas: in the studios so the instructor can hear the response from the network, in the control room so the operator can monitor all audio channels, and to administrative offices so center staff can listen to programs. General building paging with emergency override to all areas is often included in a large comprehensive network control center.

Network Failure Detection

Effectively detecting and resolving system failures is a key to the success of any teleconferencing network. At the University of Wisconsin system failures occur as few as one or two times a day or up to as many as 10 to 15 times in a 16 hour programming day. Three to five system failures is the daily average. It is important, therefore, that a control center operator isolate and identify these problems quickly. Adequate controls and testing features are consequently integral to the control center. If the network control center operator can isolate problems in the equipment or the telephone services before calling in the trouble to the telephone company, the problem can be solved quicker and easier. Not only can this operator isolate the difficulty, but with experience he can identify the more specific problem, whether its station equipment, transmission line, carrier system, or some other characteristic problem. Given the ability to quickly isolate a region the operator can bypass the problem area and continue to operate the remaining parts of the network. Adequately equipped and manned with trained technical personnel, the control center can minimize network downtime and program interruption caused by system failures.

It is important to recognize that both the customer and the telephone company benefit by providing as many troubleshooting and problem solving controls and

features as possible in a network control center. These features help the control center operator minimize the effect of system failures on ongoing programs. A secondary benefit is that this wide range of trouble detection features allows the operator to do most of the troubleshooting--saving the telephone company time and repair costs.

Control center operations at the University of Wisconsin illustrate this process. This network is a good model because it has grown from a few stations to 200. Consider the 10-15 station teleconference networks currently being planned or implemented. As their usage and locations increase, the need for controlling the technical operations will also increase. Eventually, these networks may become as large and their control centers as complex as the one described here.

The University of Wisconsin control complex provides operational control of the 200 point network. Within the complex are studios from which instructors originate their programs and a control room which is manned by a trained technician who handles all equipment and technical adjustments during each program.

The instructor who originates programs at the control center has to cope with minimum technology. During his presentation he need only speak into a microphone controlled by a technician. He hears comments or questions from the network through studio loudspeakers.

The operator uses studio and control room equipment to guarantee a smooth trouble free program. Because he runs all technical aspects of the program, the instructor is free to concentrate on his presentation. The operator's role can be illustrated by describing the steps involved in setting up and operating a typical program.

Before a program, the operator refers to a daily schedule and program format book similar to a radio broadcast continuity sheet which outlines technical operational requirements. He arranges the studio with enough microphones and chairs for participants and sets up a slide projector and screen if needed. Insert tapes are loaded on tape machines and another tape machine is set to record the program.

When the instructor arrives the operator greets him and reviews the program format to check any changes. If a resource is to be connected to the network via telephone, the operator places the call, gets the party on the line, and when ready, connects him to the dedicated network. A program introduction on cartridge tape is played. Studio microphones are switched on and the instructor begins.

During the program the operator plays any tape inserts on cue from the instructor. If a problem develops with the control room equipment, he quickly transfers to a backup unit. If he hears trouble on the network, such as noise, he uses controls to isolate the offending region and reports it to the telephone company test board. All efforts are made to minimize the effect on the program. Thus the operator helps to isolate and correct the problem. Most of the time problems do not occur, however, and the operator continues to monitor the program. This is a simplified view of what occurs in a large teleconferencing network.

The scope and complexity of the control center is dependent upon network size, the clientele being served and programming demands. The large University of Wisconsin network operates as a service agency providing statewide teleconference capability to diversified clientele. The nature and content of the programs being offered by these groups is equally diversified. The program support requirements, system capabilities and control versatility necessary to meet the changing demands of programmers increases the features and complexity of the control center. Characteristically in large systems no one special interest group can support a network the size of the one at the University of Wisconsin. Many beginning networks are motivated to serve single interest groups but are forced to diversify and set up the system as a service agency to spread the operational costs over a large user group.

In the last several years the number of smaller networks has increased. Generally these networks tie two to twenty meeting or conference rooms together in companies, banks and federal agencies. The size of these networks is established initially and locations added usually on a temporary or dial-up basis. These small teleconference or corporate meeting networks may require only a minimal control center. This mini control center would be operated by a user or participant in the meeting rather than a trained technician. However, the same types of functions outlined earlier are required here.

To illustrate this let us describe how these functions relate to a minimal control center.

Program Control

May consist of a cassette machine that can be cued up to present prerecorded programs for inserts. Another cassette machine records the entire program. Copies of this tape can be made and distributed to the participants as meeting notes.

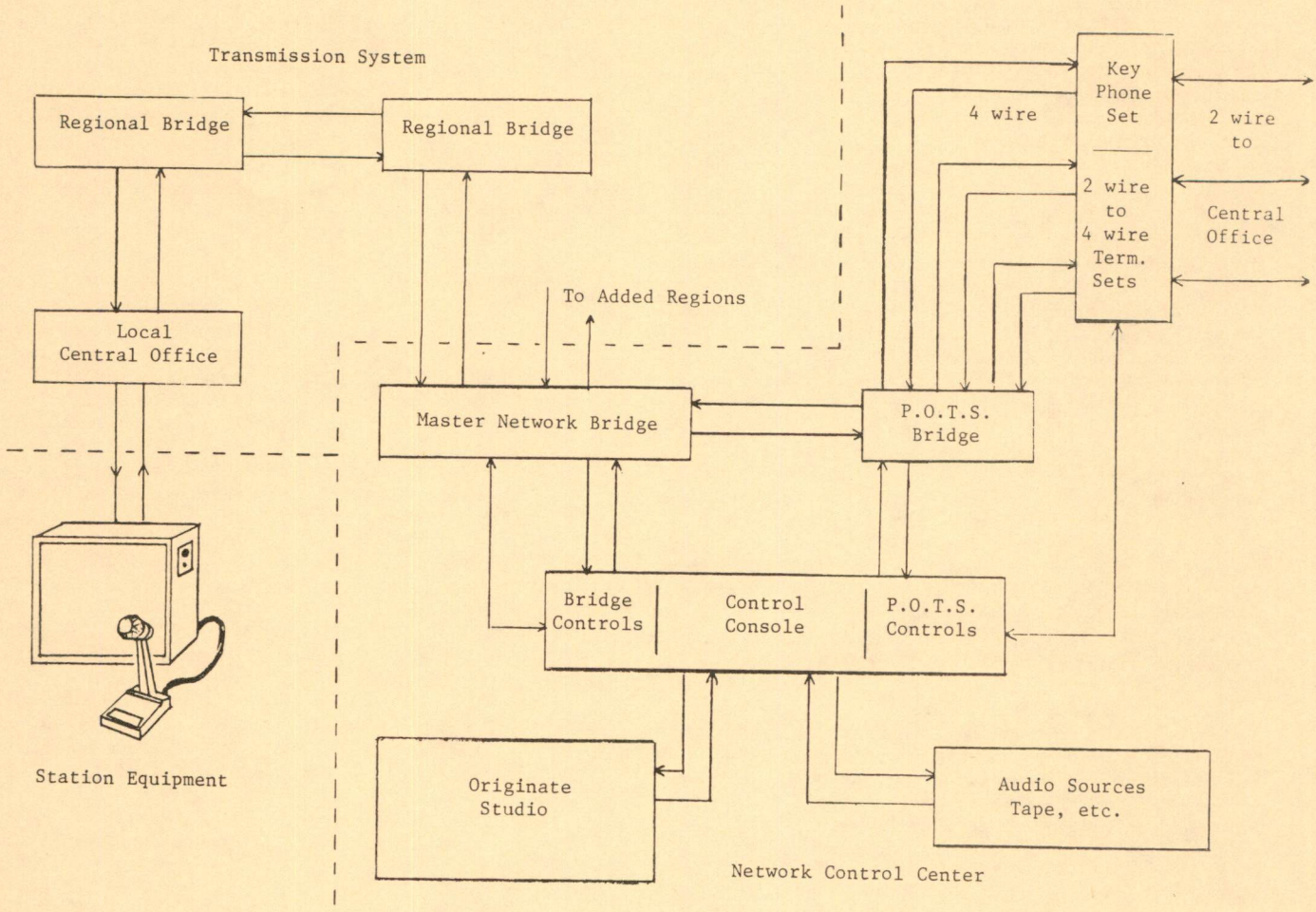
Telephone Network Control

Consists of a telephone with the telephone lines assigned for use on the teleconferencing bridge. The operator can be the user of the network and can simply place the call or calls required to complete the telephone network for the conference. This portion of the control center would resemble a call director. After the calls are completed the operator ties these lines into the conference bridge using appropriate controls on the call director panel.

Network Failure Detection

The control center will have an additional telephone number reserved for trouble calls from participants. This trouble number allows participants to reach the control center operator to describe their problem when they may not be receiving the program or be able to transmit on the network. These simplified control center functions are displayed in a nontechnical manner so that the operator of the teleconferencing system can also be a participant.

There is a tendency for networks that have met with initial success to grow. Sometimes this growth is based strictly on the need for program material. Many technical and operational problems may be tolerated because of these needs. Some midwest networks are large, for example, but are almost unmanageable from a technical standpoint. These networks do not have a control center and are generally operated by the customers without any trained technical support. Consequently, when a problem occurs on these networks, the



Components of a Teleconferencing System

NETWORK CONTROL CENTER

telephone company is contacted to isolate it. Generally, this disrupts programs and causes significant downtime of the network. It is costly for both the telephone company and for the customer who normally charges students for the course. Many of these network problems could be resolved with a control center that provides the features described for the Wisconsin system.

A teleconferencing network should start with a control center that will grow with it. Rapid growth and changing demands of network users require a high degree of versatility in the control center equipment. As more features are added, operational complexity increases. These functions are best handled by a trained electronics technician. So along with a well equipped control center, provision should be made for a technical staff qualified to operate and maintain it.

A control center equipped to meet the needs of a large network, such as the one at the University of Wisconsin, must provide more than functional control of the network. It also requires studios and a control room. Much of the equipment is there to augment or improve the instructor's presentations. Certain peripheral support equipment will be required, including tape duplicating and processing equipment, recording studio capability and repair shop support.

The heart of a teleconferencing network control center is the master control console. It is designed to provide a flexible and efficient means for performing the controlling functions of a network. The master control console switches and controls the output amplitude of various audio sources such as tape machines, turntables, studio microphones and telephone network feeds. The ability to mix, distribute, switch and control these audio sources is provided to assign each to its proper destination. Monitoring for program and audition is provided along with testing features and monitoring capabilities. Both four-wire and two-wire bridging modules with associated controls are included to connect regular telephone lines to the teleconferencing network. This master control console also provides audio production and recording capability to the network control center.

In summary, a teleconferencing network benefits greatly by having a control center. Some of these benefits are:

1. The instructor can concentrate on his presentation because he has a minimum of technology to cope with.

2. Maximum use can be made of available telephone circuits.

3. Troubles are recognized, isolated, and repaired quickly, resulting in less network downtime and minimum program interruption.

4. Technical aspects of the teleconference network, effectively controlled and supervised, contribute to the evaluation of a program's success.

ADVANTAGES OF TELECONFERENCING

Research on the use of the telephone in education indicates the telephone is a highly effective delivery technique in communicating educational materials to students throughout a large geographical area. Research also indicates there has been no significant difference between the performance of students with the presence or absence of an instructor from the classroom in teaching via a telephone-based system.

Having examined this and other aspects of telephone-based educational delivery, it seems fair to ask just what are its advantages for students, for instructors, educational planners, or for that matter, educational institutions:

For Students:

1. Teleconferencing provides truly continuing education enabling participants to receive limited amounts of information frequently in their home community. In this way, students can assimilate new information into their daily activities, unlike some of the more traditional forms of continuing education in which students receive massive doses of information once or twice a year.

2. Teleconferencing can meet the needs of students in remote locations. Some professionals have indicated they would not have settled in smaller communities if continuing education via a teleconferencing system had not been available.

3. Comparison studies indicate that students learn as much or more in teleconference situations as in other modes of learning.

4. Teleconferencing allows personalized communication between the student and the instructor and between students at a variety of locations.

5. Through teleconferencing, students can take advantage of quality education at reasonable costs, but are not required to travel great distances or spend large amounts of time away from family or occupational responsibilities.

For Instructors:

1. Teleconferencing allows a sharing of faculty resources. This faculty sharing allows schools to offer more complete educational programs and also allows outstanding teachers to reach students across broad geographical areas. For example, in a specific community college system, one professor taught 12 to 14 students in statics each semester. The other institutions in the system could not afford to offer statics as part of their curriculum. Through teleconferencing, one instructor now offers the course to all 14 campuses in the system. These classes would not normally have been available to students at other campuses.

2. There is great economy in both time and money for faculty. For example, they are not required to travel great distances or spend large amounts of time away from their primary teaching responsibilities.

3. Teleconferencing systems offer flexibility in program planning and scheduling. Systems can accommodate prerecorded tape materials, as well as live lecturers.

4. Teleconferencing systems provide multiple access points which allow instructors flexibility in program origination.

For Educational Administrators:

1. Teleconferencing systems enable institutions to reach entirely new audiences which have previously been neglected. For example, in one state a hospital program was offered to more than 400 housekeepers and 300 food service workers. Prior to this offering, there were few continuing education programs for these personnel. Even if there had been, it is doubtful whether the hospital would have released them from responsibilities and paid their expenses to travel to the courses.

2. Teleconferencing enables an institution to respond quickly and efficiently to the specialized educational needs of groups scattered throughout geographical areas.

3. Teleconferencing enables institutions to offer classes simultaneously to a limited number of remote locations. In other modes of instruction, this offer to few students at a location would not be feasible.

4. Teleconferencing allows institutions to share costs and faculty resources.

5. Teleconferencing systems may be used for administrative purposes when not used for instructional purposes.

6. Teleconferencing systems can be integrated into other types of instructional systems such as multimedia systems, computer assisted instruction and programmed instructional systems.

7. Teleconferencing is frequently less expensive per student contact hour, compared to other instructional media, e.g., remote face-to-face, video, CRI.

8. Teleconferencing has a primary advantage over most other instructional media in that it permits two-way instantaneous interaction between instructor and student and among students.

9. The public relations aspects of teleconferencing are significant. The programs presented via teleconferencing are tangible evidence that an institution is vitally concerned with the day-to-day problems of professionals and consumers, as opposed to the more esoteric research which may eventually filter down to the local level.

For Educational Institutions:

1. Teleconferencing can increase enrollments.

2. Teleconferencing can be responsive to the "needs of society."

3. Teleconferencing can bring quality education to rural areas with sparse population.

4. Teleconferencing can bring quality education to the underprivileged in core cities.

5. Teleconferencing can enhance the image of an institution through committee "branches."

For the most part, the use of the telephone for education has been virtually overlooked for the more glamourous media, e.g., video. The telephone remains virtually an untapped natural resource for education.

FOOTNOTES

[1]Bobby Gene Nunley, "A Study of the Effectiveness of Telelecture in the Retraining of Elementary Teachers in Mathematics" (unpublished Ph.D. dissertation, University of Texas, 1965) as recorded in Dissertation Abstracts, Vol. 26, N. 5, (Ann Arbor, Michigan: University Microfilms, Inc., 1965), p. 3165.

[2]Lily Edelman, "Teaching Adults Via Tele-Lecture and Electrowriter," Adult Leadership, October, 1968, pp. 163-64 and 189.

[3]Helen Blackwood and Curtis Trent, A Comparison of the Effectiveness of Face-to-Face and Remote Teaching in Communicating Educational Information to Adults, (Manhatten: Kansas State University Cooperative Extension Service, 1968). ERIC ED 028-324.

[4]John J. Boswell, Donald W. Mocker and William C. Hamlin, "Telelecture: An Experiment in Remote Teaching," Adult Leadership, March, 1968, pp. 321-38.

[5]David A. Puzzuoli, "A Study of Teaching University Extension Classes by Tele-lecture" (Morgantown: West Virginia University, 1970). ERIC ED 042-961.

[6]George N. Hartje, "Utilizing Telelecture in Teaching," International Journal of Instructional Media, Spring, 1974, pp. 219-26. ERIC ED 075-049.

[7]Donald P. Hoyt and David W. Frye, The Effectiveness of Telecommunication as an Educational Delivery System, (Manhatten: Kansas State University, School of Education, June 1972). ERIC ED 070-318.

[8]Harry P. Zimmerman, "Evaluation Inference Applied to Programming On An Educational Telephone Network--A Beginning" (paper presented at the Adult Education Research Conference, Minneapolis, Minnesota, February, 1970). ERIC ED 036-763.

[9]Vernon L. Pellett, "The Comparative Effectiveness of the Educational Telephone Network and Face-to-Face Lectures for University Extension In-Service Training" (unpublished Ph.D. dissertation, University of Wisconsin-Madison, 1970).

[10]Ben Gold, A Plan for Development of an Educational Telephone Network (ETN) to Extend Access to Educational Programs, (Los Angeles Community Colleges, Division of Educational Planning and Development, Office of Instructional Development, Los Angeles, California, October, 1973). ERIC ED 085-057

[11]David L. Jesser and Michael J. Clarke, Art By Telephone, (Carson City, Nevada: Western States Small Schools Project, 1966). ERIC ED 025-369.

[12]Lorne A. Parker, "Teleconferencing As An Educational Medium: A Ten Year Perspective from the University of Wisconsin Extension," in The Status of the Telephone in Education (2nd Annual International

Communications Conference), ed. by Lorne A. Parker and Betsy Riccomini (Madison: University of Wisconsin Extension, May, 1976), pp. 1-26.

[13]Marcia A. Baird, "Designing Teleconference Programs: Some Clues from the Wisconsin Experience," in The Status of the Telephone in Education (2nd Annual International Communications Conference), ed. by Lorne A. Parker and Betsy Riccomini (Madison: University of Wisconsin Extension, May, 1976), pp. 41-50.

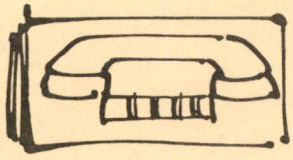
[14]John S. Daniel and Ben Turok, "Teaching by Telephone: A Two-Way Communication Mode in Distance Education" (paper presented at 10th International Conference, International Council on Correspondence Education, London, England, May, 1975).

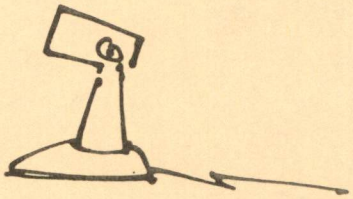
[15]Harry Zimmerman, Hamilton McCubbin and Lorne A. Parker, "Program Evaluation Checklist (PEC)," University of Wisconsin Extension, Educational Communications, Madison, Wisconsin, 1968. (Mimeographed.)

[16]Daryl Braun, Dennis Gilbertson and Henry C. Hansen, "ETN: A Technical System," in The Status of the Telephone in Education (2nd Annual International Communications Conference), ed. by Lorne A. Parker and Betsy Riccomini (Madison: University of Wisconsin Extension, May, 1976), pp. 51-74.

3 COMPONENTS OF A TELECONFERENCING SYSTEM :

STATION EQUIPMENT





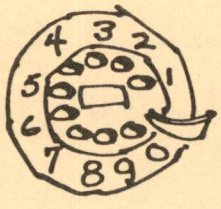
HANDSET (2 Wire) vs. "LOUDSPEAKER TELEPHONES" (2 or 4 Wire)

TRANSMISSION SYSTEM

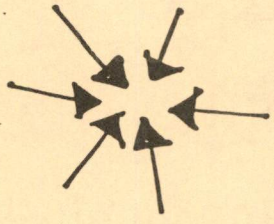
2 Wire	vs.	4 Wire
_____		_____
_____		_____
		_____
		_____

CONTROL CENTER

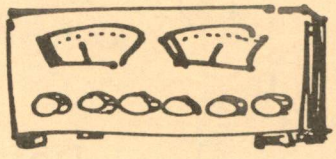
"Operator-assisted" Conference Call



"Dial-up" Conference Bridge



"Meet Me" Conference Bridge

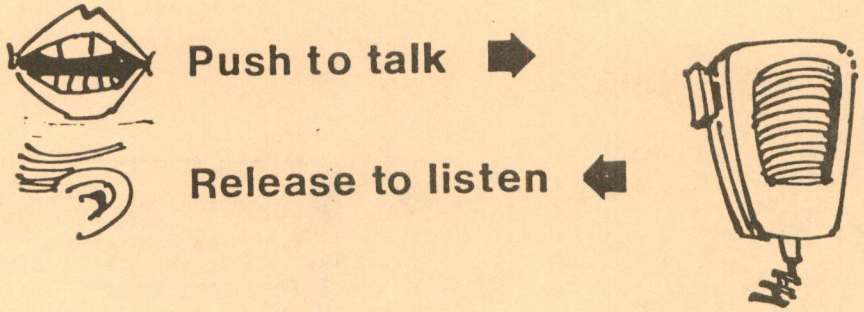


Technician-controlled console

TYPE OF SWITCH -- CHARACTERISTICS

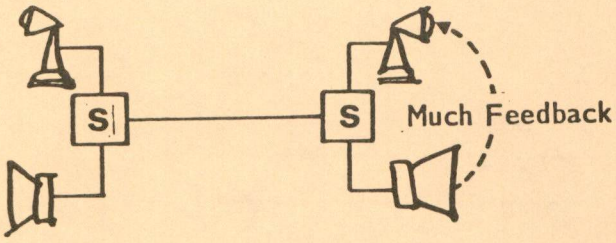
MECHANICAL

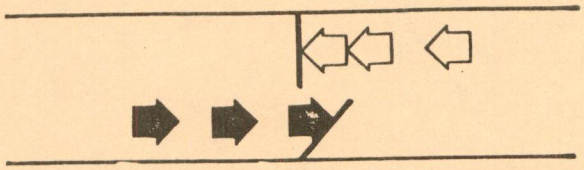
"CB"



VOICE-ACTIVATED HARD SWITCH

"2 wire"

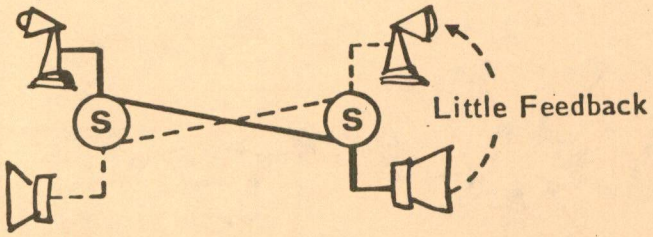


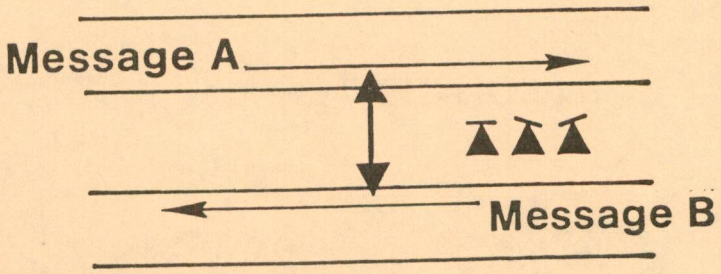


Loudest voice gets through
"All-or-Nothing"

VOICE-ACTIVATED SOFT SWITCH

"4 wire"





Switching based on "sampling"

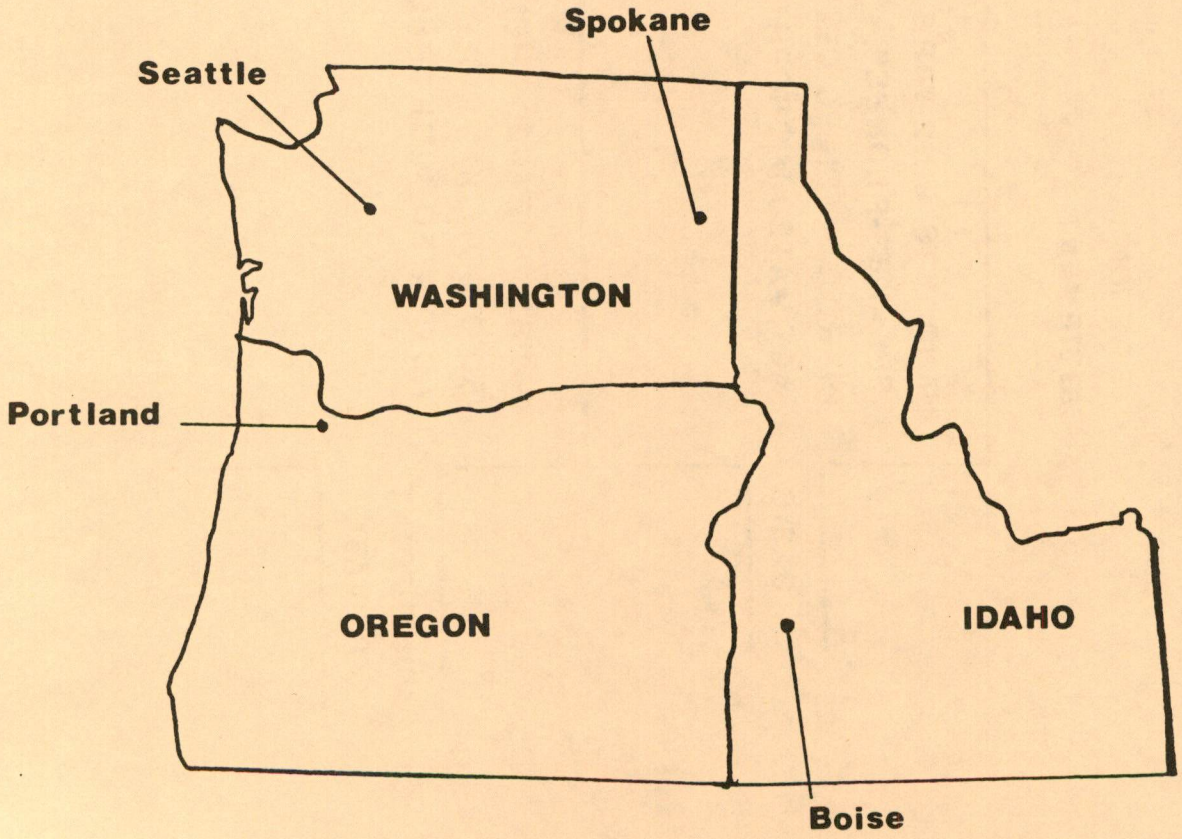
Depending on which pair of wires has loudest message, other pair will be "softened" but not completely cut off.

TELECONFERENCING SYSTEMS

	STATION EQUIPMENT	TRANS-MISSION SYSTEM	CONTROL CENTER
BASIC	HANDSETS OR 2-WIRE "SPEAKER-PHONES" (HARD SWITCH VOICE-ACTIVATED MICROPHONES)	2-WIRE	OPERATOR OR DIAL-UP CALL PHONE TO REPORT "TROUBLE" CASSETTE RECORDER TO PLAY INSERTS
MULTI-POINT PRIVATE	4-WIRE "SPEAKER PHONES" (SOFT SWITCH VOICE-ACTIVATED MICROPHONES)	4-WIRE	TECHNICIAN - CONTROLLED CONSOLE BACKUP FUNCTIONS FOR PROGRAM CONTROL, TELEPHONE NETWORK, SOUND SYSTEM AND NETWORK HANDLED BY STAFF

REGION X

ALASKA
Anchorage


Spokane
Seattle
WASHINGTON
Portland
OREGON
IDAHO
Boise

Equipment able to provide
"natural" interactive environment

Capability to connect
large numbers of
widely scattered states

Capability to connect
with any system in world
(2 wire to 4)

Standardization of
equipment and installation

Equipment able to do job
inconspicuously

OPTIMUM
TECHNICAL REQUIREMENTS
OF A
TELECONFERENCING SYSTEM

Central "Control Center"
for technical and
program coordination

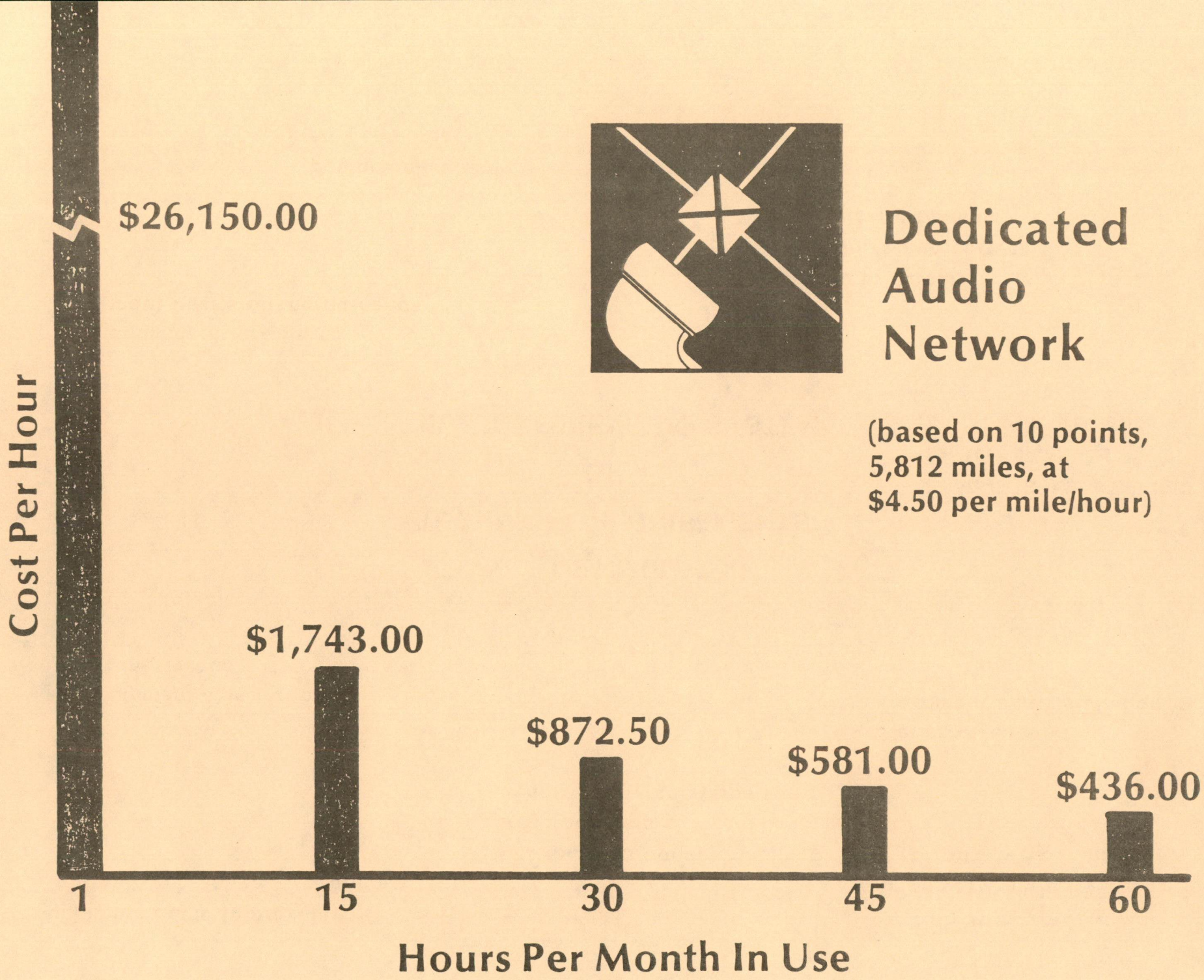
Equipment flexible to
meet user's changing needs

Ability to quickly
recognize and correct
technical problems

Equipment reliable
and serviceable

Dedicated Audio Network

(based on 10 points, 5,812 miles, at $4.50 per mile/hour)



Ten Point Network: 5,812 Miles

CASE STUDY 1

Recently, federal legislature passed a mandatory certification process for rehabilitation counselors. A part of this process is certification maintenance, whereby certified counselors must accrue 30 contact hours of continuing education in each year to maintain their certification.

You are the coordinator of staff development for a state VR agency with an annual training budget of $25,000. There are 125 counselors employed by your agency and dispersed statewide, who now will need to receive the minimum number of contact hours of continuing education each year. To add to this problem, your state governor just passed a 25% travel reduction.

Design a plan for a one year's training calendar that will:

1. Meet the certification maintenance needs of all of the new counselors within your agency.
2. Stay within the allotted training budget.
3. Minimize "downtime" needed for staff to attend training activities.

CASE STUDY 2

You are the director of a Regional Rehabilitation Continuing Education Program in a five-state region which provides continuing education to over 2,000 rehabilitation personnel at all levels in 10 state VR agencies.

For the upcoming fiscal year, you have budget $45,000 to provide a total of 65 days of training to 1,000 rehabilitation professionals within your region. Unfortunately, however, you have recently been notified of a 25% budget cut.

What kind of training delivery alternative can you devise which might enable you to fulfill your training commitments at the reduced funding level?

Design a plan specifying the equipment, tasks and considerations necessary for fulfillment.

CASE STUDY 3

As Coordinator of training for a Rehabilitation Research & Training Center, you are responsible for designing a training program of national scope. This training program must reach a cross section of rehabilitation trainees in each region, representing regional rehabilitation research & training centers, rehabilitation counselor education programs and staff development personnel of state vocational rehabilitation agencies and rehabilitation facilities.

The training delivery parameters are as follows:

You have a limited amount of trainer time and money available to design and delivery your product; and

The nature of the curriculum content is such that presentation of live interactive visual material is not necessary.

Describe the training delivery strategy that you will implement to fulfil your commitment.

AGENDA

SESSION DATE: AUGUST 3, 1979

START: 12 NOON, CST

END: 4PM, CST

TITLE: Teletechniques

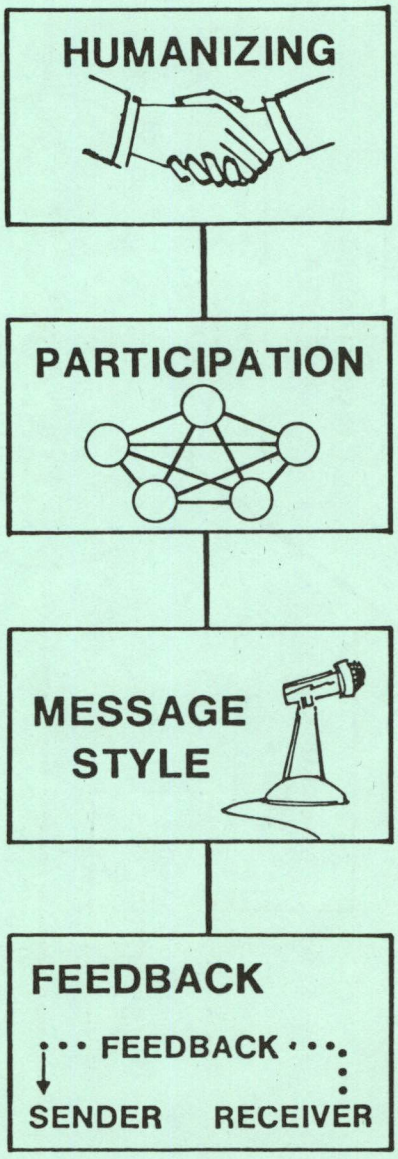
MODERATORS: Susanne Bruyere and Lorne Parker

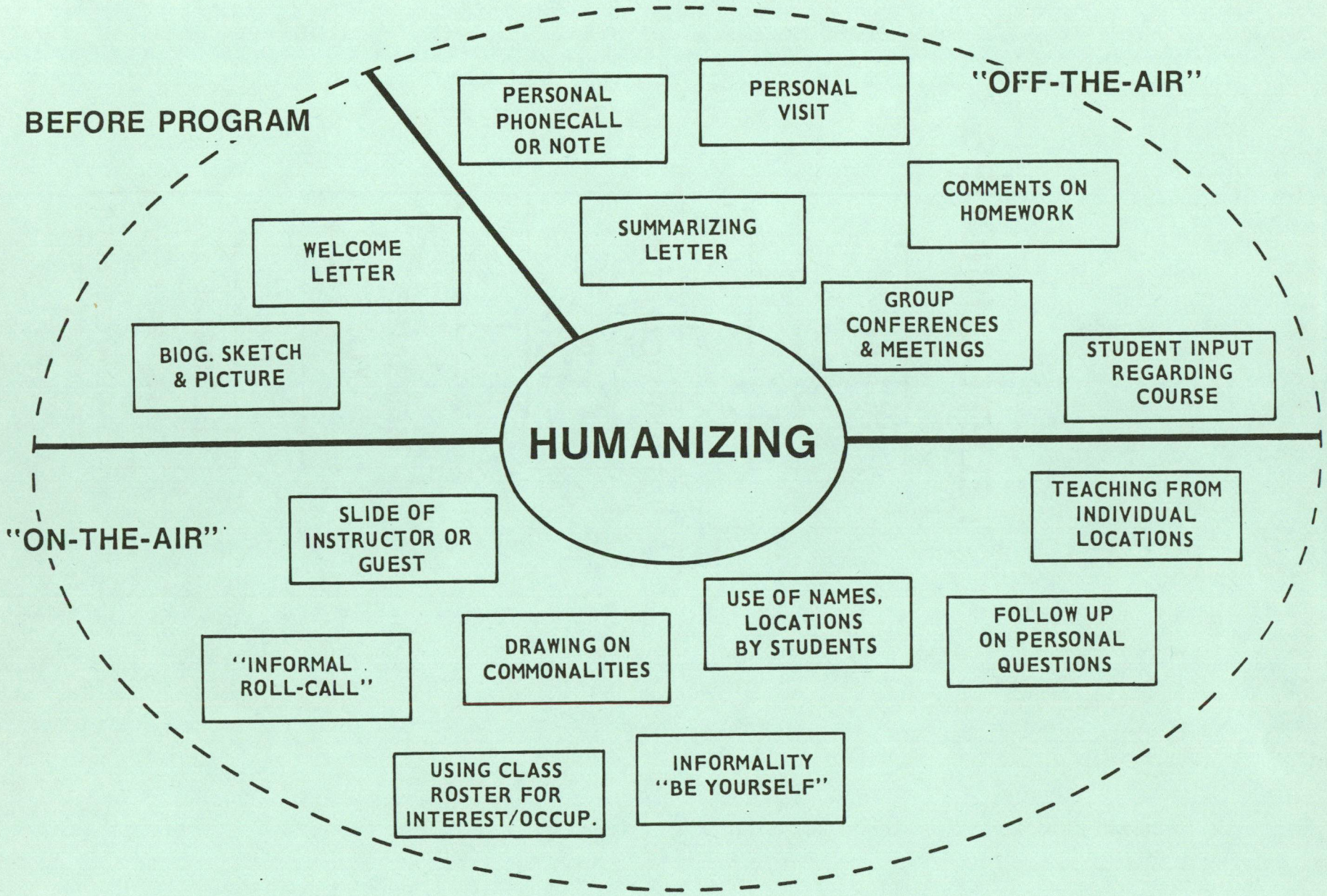
SPEAKERS: same as above, plus Panel to be announced

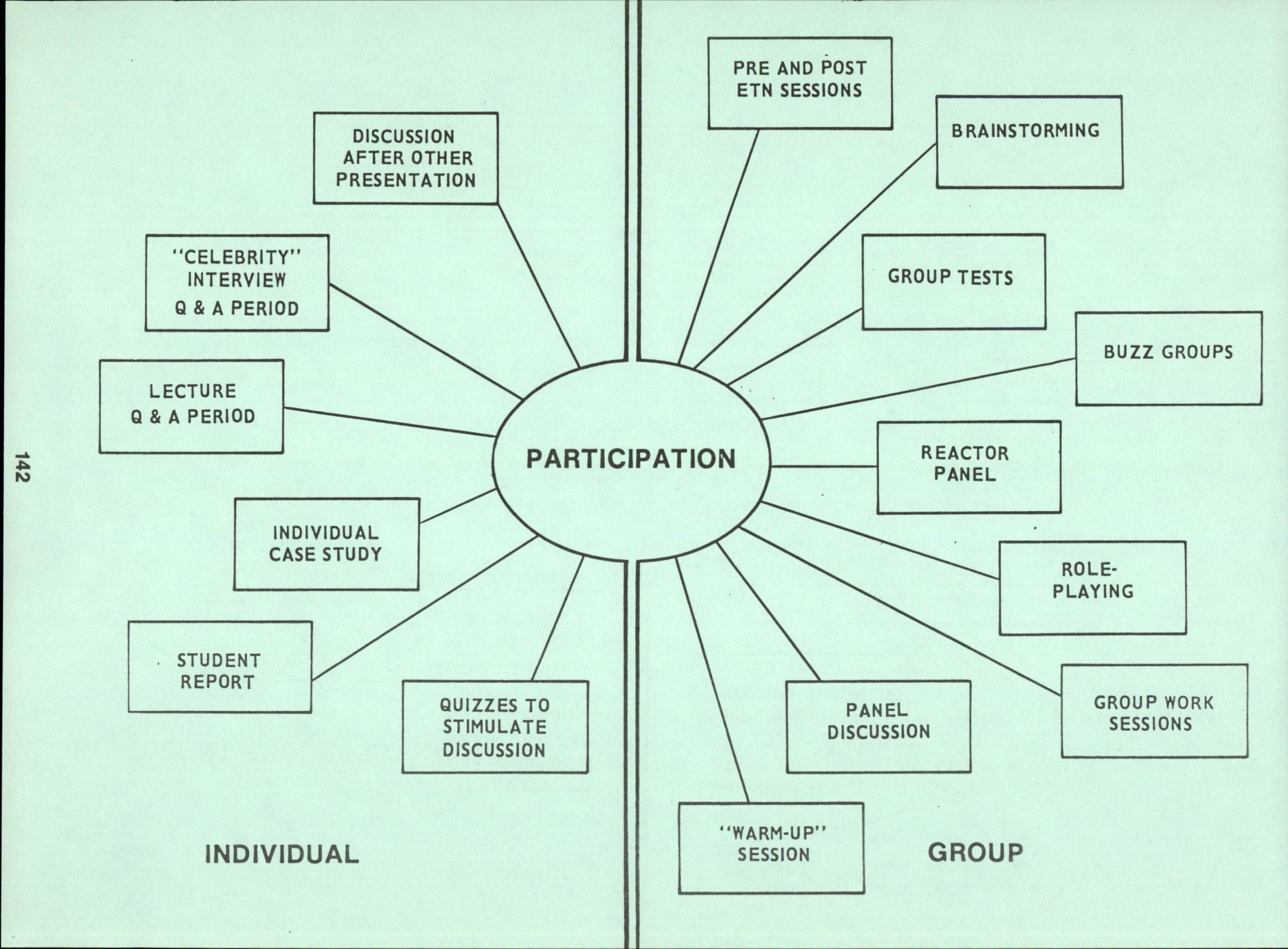
Agenda Item	Person/Format	Approx. Time	Notes
A. Preparation (off-air)	Local Coordinators	30 min.	
1. Review & discussion of group report regarding case study in Session II			
2. Review of experiences since the last session			
B. Introduction & Overview	Bruyere	15 min.	
1. Informal Roll Call			
2. Summary of content from Session II			
3. Overview of Session III	Handbook		
C. Case Reports & Comments	Parker	30 min.	
D. Introduction to Teletechniques	Parker/Slides & Handbook	5 min.	
1. The "whys" of instructional design			
2. Reaching faculty/trainers			
E. Teletechniques-4 Design Components	Parker/Slides & Handbook	13 min.	
1. Humanizing			
2. Participation			
3. Message Style			
4. Feedback			
F. Interactive Techniques For Teleconferencing	Slides	12 min.	
G. Instructional Strategies	Parker/Handbook	10 min.	

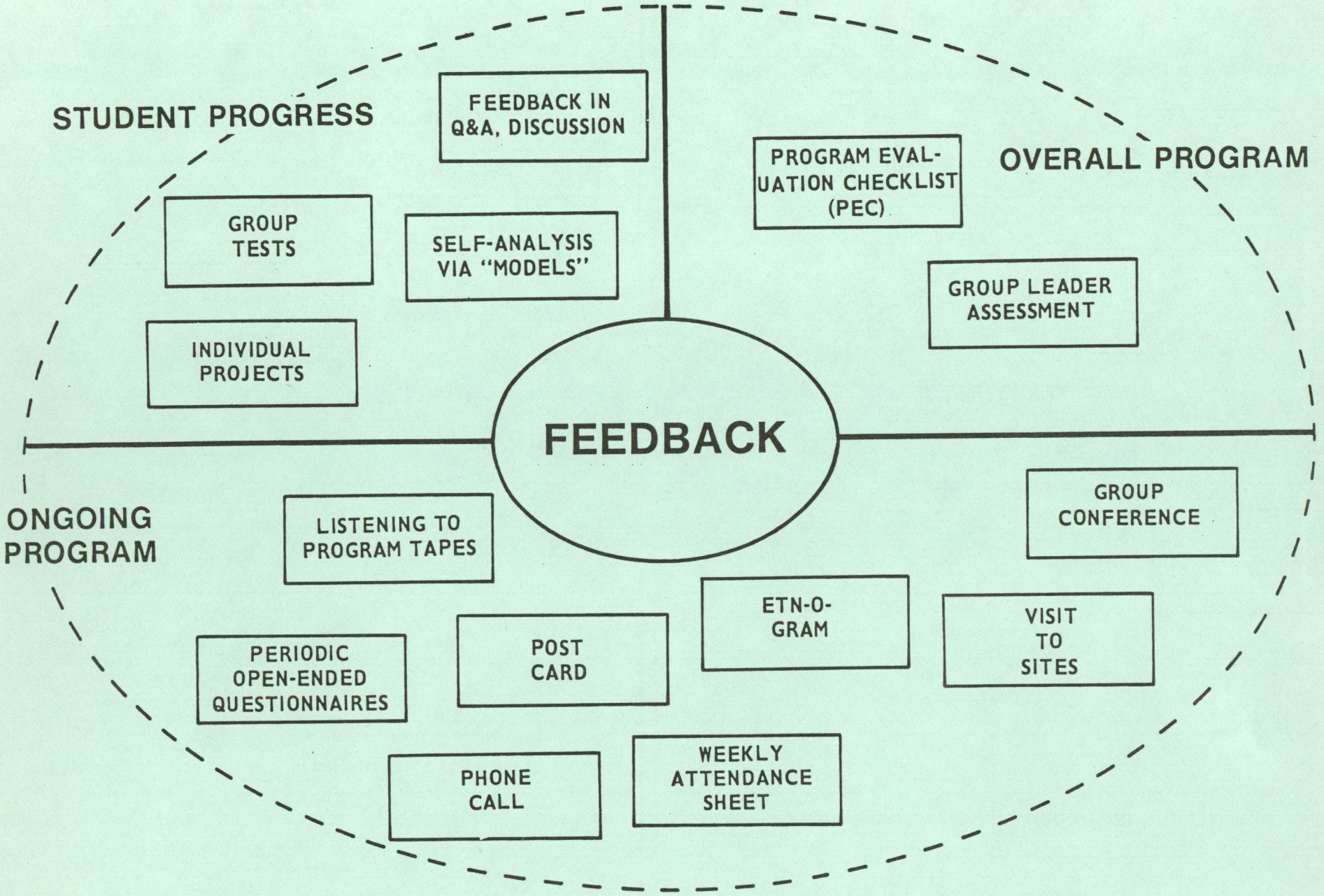
Agenda Item	Person/Format	Approx. Time	Notes
H. Local Program Facilitators 1. Choosing sites 2. Assessing facilities 3. Using a local coordinator	Parker	10 min.	
I. An Evaluation System for Teleconferencing 1. Evaluating teleconferences, need for a unique design 2. Using a bank of questions 3. Using the telephone as a tool for implementing the evaluation 4. Making use of the results	Parker/ Handbook	10 min.	
J. Summary & Future Implications	Bruyere/ Panel Discussion	30 min.	
K. Local Presentors (off-air)	Local Coordinators	30 min.	
L. Wrap-up (off-air) 1. Local discussion of viability of concepts & techniques presented, in their regional efforts 2. Formulate a plan: a. What type of activity to pursue? b. How can these goals be reached? c. Who will do each activity? d. When? e. Would assistance through a follow-up teleconference be helpful? 3. Local Coordinator summarizes above plan and sends copies to Lorne Parker and each of the local participants.	Local Coordinators	30 min.	

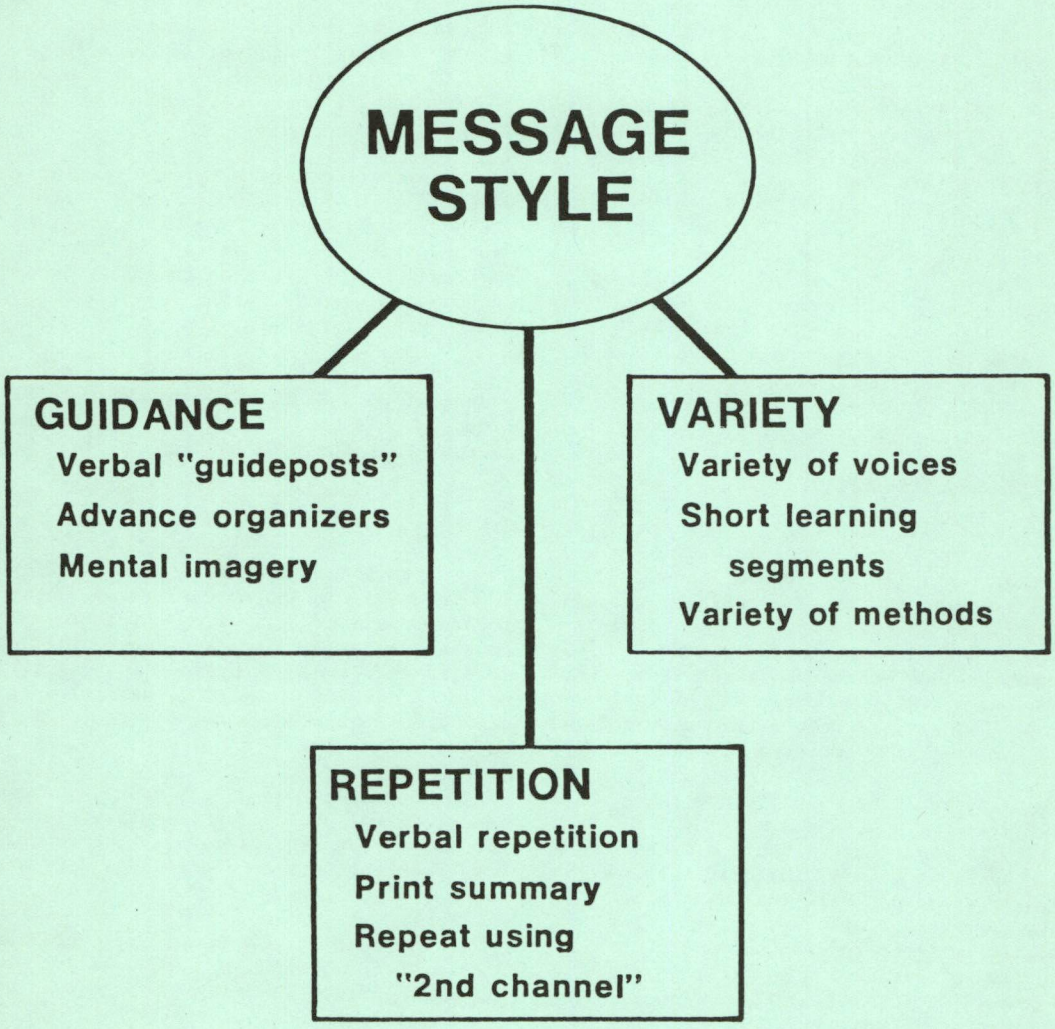
TELETECHNIQUES




BEFORE PROGRAM
"OFF-THE-AIR"
"ON-THE-AIR"
HUMANIZING
PERSONAL PHONECALL OR NOTE
PERSONAL VISIT
COMMENTS ON HOMEWORK
SUMMARIZING LETTER
WELCOME LETTER
BIOG. SKETCH & PICTURE
GROUP CONFERENCES & MEETINGS
STUDENT INPUT REGARDING COURSE
TEACHING FROM INDIVIDUAL LOCATIONS
SLIDE OF INSTRUCTOR OR GUEST
USE OF NAMES, LOCATIONS BY STUDENTS
FOLLOW UP ON PERSONAL QUESTIONS
"INFORMAL ROLL-CALL"
DRAWING ON COMMONALITIES
USING CLASS ROSTER FOR INTEREST/OCCUP.
INFORMALITY "BE YOURSELF"


PARTICIPATION
DISCUSSION AFTER OTHER PRESENTATION
"CELEBRITY" INTERVIEW Q & A PERIOD
LECTURE Q & A PERIOD
INDIVIDUAL CASE STUDY
STUDENT REPORT
QUIZZES TO STIMULATE DISCUSSION
INDIVIDUAL
PRE AND POST ETN SESSIONS
BRAINSTORMING
GROUP TESTS
BUZZ GROUPS
REACTOR PANEL
ROLE-PLAYING
GROUP WORK SESSIONS
PANEL DISCUSSION
"WARM-UP" SESSION
GROUP


STUDENT PROGRESS
FEEDBACK IN Q&A, DISCUSSION
GROUP TESTS
SELF-ANALYSIS VIA "MODELS"
INDIVIDUAL PROJECTS
OVERALL PROGRAM
PROGRAM EVAL-UATION CHECKLIST (PEC)
GROUP LEADER ASSESSMENT
FEEDBACK
ONGOING PROGRAM
LISTENING TO PROGRAM TAPES
PERIODIC OPEN-ENDED QUESTIONNAIRES
POST CARD
PHONE CALL
ETN-O-GRAM
WEEKLY ATTENDANCE SHEET
GROUP CONFERENCE
VISIT TO SITES


MESSAGE STYLE
GUIDANCE
Verbal "guideposts"
Advance organizers
Mental imagery
VARIETY
Variety of voices
Short learning segments
Variety of methods
REPETITION
Verbal repetition
Print summary
Repeat using "2nd channel"

HUMANIZING TELEPHONE BASED INSTRUCTIONAL PROGRAMS

BY

LORNE A. PARKER
and
MARCIA A. BAIRD

The telephone, like an old shoe, is so familiar, utilitarian and time-worn, that it's often taken for granted. For this reason, perhaps Ma Bell's extraordinary artifact gets limited play in the literature of instructional technology. How can something as "unadulterated" as an old shoe compete with the pizazz of video, computers and satellites?

Although the telephone is a mainstay of our personal and professional communication, it continues to be overlooked as an effective educational medium. During the past 20 years, its use for learning has been limited in favor of more glamourous media. Thus the telephone remains a virtually untapped natural resource for education.

WISCONSIN'S EDUCATIONAL TELEPHONE NETWORK

The University of Wisconsin has a long tradition of tapping educational resources to reach people in their home communities. In the 1900's, then UW President Charles Van Hise charged Wisconsin educators to extend the boundaries of the campus to the boundaries of the state. One technique developed to extend UW resources was WHA Radio--the first radio station in the United States. An outgrowth of radio, the telephone, too, was pressed into development and use in Wisconsin for statewide educational programming.

It is not the intent here to reiterate the Wisconsin Educational Telephone Network (ETN). It has already been fully described in other papers--Zimmerman, 1970, and Parker, 1974, 1973, 1972, 1970 and 1969. Although this paper will include a brief explanation and description of the Wisconsin system, the major thrust here will be to discuss some of the important personalizing, discussion and teaching techniques that are built into the design of long distance ETN programs.

TELEPHONE NETWORK DEVELOPMENT MEETS NEEDS FOR MEDICAL EDUCATION

A telephone network was born in Wisconsin in 1965 to meet the continuing education needs of medical doctors in all corners of the state. ETN, as it is known in Wisconsin, is a 4-wire dedicated telephone network that takes the form of a huge party line.

The two-way audio medium reaches into ETN learning centers in courthouses, extension offices, University of Wisconsin campuses and centers, libraries and hospitals in each of the state's 72 counties. In all, University of Wisconsin Extension faculty can reach in to 120 different Wisconsin communities via ETN to more than 200 specific sites. More than 25,000 enrolled in programs during 1974-75.

ETN STATION EQUIPMENT

The vehicle that links all ETN students into one large Wisconsin classroom is a new communications unit called the Edu-Com II. Developed by Darome, Inc., Harvard, Illinois, in conjunction with the University of Wisconsin and the Wisconsin Telephone Company, it is a portable, self-contained unit consisting of a large speaker and four microphones. The unit plugs into a standard telephone jack and AC power outlet. All ETN classrooms have identical equipment and no technical skill or special knowledge is required to operate it.

Instructors may originate programs from any statewide ETN classroom or from the ETN studios in Old Radio Hall on the University of Wisconsin-Madison campus. Participants at any ETN location simply depress and hold a bar on the base of one of the microphones to speak with the instructor or any other ETN student in the state.

The Darome Edu-Com units were designed for groups of up to 200. In cases when an ETN classroom group is this large, the units have a built-in public address unit for easy hearing at that particular site.

ETN PROGRAMMING

From the 18 locations participating in the first ETN program, the system has expanded both in listening locations and program diversification. In addition to the original medical sessions, programs are now offered in pharmacy, English, law, social work, library science, education, nursing, agriculture, engineering, economics, business, and the arts. And, the list goes on and on.

Most ETN programs are non-credit continuing education for professional adults, although some credit courses are offered each semester. Programs vary from one to three hours in length and include a variety of program formats.

In addition to course offerings, the network is also used in other ways. Messages from the University Extension office in Madison are relayed each morning to statewide Extension faculty, followed by agents, in turn, forwarding messages to the Madison office. County faculty also confer with each other via ETN each morning either by prior arrangement or by spontaneous quiry.

County staff meet via ETN each Monday morning for a statewide faculty meeting, and other statewide departmental meetings are also regularly scheduled on ETN. Emergency agricultural information concerning early Wisconsin frosts and corn blight disease, for example, is also disseminated to agents around the state via ETN.

THE COST OF THE ETN SYSTEM

Educational programming on the ETN system is an important activity of many University of Wisconsin-

Extension departments. And, the cost is minimal. Although Extension faculty use the network time without charge, the cost per instructional hour for ETN non-credit programs averages about 14 cents per student contact hour. This cost reflects only the telephone system rental, payment of station equipment and its operation, and not course instructional materials or an instructor's time. The cost is determined by the total operating budget for Instructional Communications Systems, the unit administratively responsible for the ETN system.

TEACHING EFFECTIVENESS VIA THE TELEPHONE

In the past ten years several studies have analyzed the effects of student learning via amplified telephone systems. These systems are referred to as tele-lectures or Educational Telephone Network (ETN). The research on teaching via the telephone is rather extensive. The literature (seems to) support the view that with proper design of program materials, the telephone is an effective inexpensive educational communication channel.

Most of the investigations on tele-lecture have centered around the comparison of face-to-face lectures to remote tele-lectures. Studies include all types of subject matter: graduate courses, Hartje (1973); undergrad credit, Hoyt & Frye (1972), Zimmerman (1970); teacher education extension courses, Blackwood & Trent (1968), Pellett (1970); formalized adult instruction at their place of business with the instructor rotating his appearances among the location, Gold (1973); art education to small schools in 4 western states receiving simultaneous instruction from a central source with the aid of overhead transparencies, Jesser and Clarke (1966).

As early as 1963 Beattie and Frick reported high school history was taught by a college professor lecturing in American History (via tele-lecture system).

All the studies indicated that the telephone classes compared to face-to-face classes were equally successful, or that the telephone was found to be a useful educational communication system capable of being used for effective educational experiences.

Feedback--Discussion

Etzioni (1972) indicates a real strength of the telephone for education as it provides a mechanism for real-time dialogue between geographically dispersed groups and continuous feedback between students and instructor.

Sharing Resources

In a time when most educators are looking for quality educational resources at the lowest possible cost, Perraton (1969) indicates that a telephone lecture network can provide a vehicle for universities to share information and instructors. An Adult Basic Education course was taught by Dr. Burton Kreitlow on the Wisconsin ETN and expanded to include students at the Tuskegee Institute.

Effect Use of Tele-lectures

Puzzuoli (1970) suggests that tele-lecture teaching is more effective when the professor limits continuous lecturing to 20-25 minutes, provides printed material, uses audiovisual techniques as a supplement, makes a number of personal visits to the remote locations and bases the class on problem solving techniques.

LIMITATIONS OF NON-VISUAL TWO-WAY AUDIO TRANSMISSION

The two-way audio channel can be a highly effective means of reaching statewide clientele. Research on the teaching effectiveness of tele-lectures, combined with 10 years of ETN programming experiences in Wisconsin tells us that. The system has many other apparent strengths--it is a truly continuing education medium open for all; it is a time and economical money saver for those who instruct courses and for those who attend; it can reach entirely new audiences in the state; it can reach isolated professionals; and it can be a vehicle for universities and other institutions to share resources.

However, we also need to shift gears briefly and look at the other side--the inherent limitations of non-visual, two-way audio transmission. Subject matter specialists who use the ETN system need to not only understand the system and its capabilities, but also respect its limitations.

It's Hard Making a Dispersed Group A "Group"

One limitation of a system like ETN is that it's hard to make a geographically dispersed group a "group" and not just a collection of voices attached to strangers. It often takes extra instructor effort to create a current of group feeling and rapport when 165 people are scattered all around at some 50 different ETN locations, for example. But, it can be done.

Discussion Doesn't Just Happen

A second limitation of two-way audio transmission relates to the fact that adults like to be actively involved in the learning process. That desire for two-way communication between students and instructors and among students is the basic justification for ETN's existence. But ETN instructors often have to work to get discussion started and to continually reinforce it during the program.

People Don't Listen Very Long

A third limitation is tied to a general characteristic of all audiences, ETN and otherwise. That fact is that they don't listen for very long. Research studies verify what we know from experience. It's hard work concentrating on a solitary audio message for very long. For adults, that "very long" is not much more than 12 or 15 minutes.

Fortunately there are a variety of techniques that can be used to improve a two-way audio program's listenability and to stop mind-drift. Many of these techniques have been incorporated in adult education programs for many years, but there are unique adaptations when used with a statewide two-way audio

communications channel like ETN.

The limitations surrounding a non-visual two-way communications channel like ETN can be overcome. There are scores of techniques to humanize the ETN learning experience, to stimulate statewide discussion and to make programs lively and interesting.

The question of "How do I personalize this kind of learning experience for my students?", and "How do I get discussion going?" are among the first concerns expressed by new ETN programmers. That's why we're going to describe some of these techniques first.

Because by nature of their professions, ETN instructors are already subject specialists. Program formats for their content area and anticipated clientele may not change significantly from a face-to-face situation to an ETN program. We have however, a dozen formats that have been used successfully and repeatedly by many.

As with all three major techniques suggested here, ETN instructors are only limited by individual imagination and creativity.

PERSONALIZING THE ETN EXPERIENCE FOR STUDENTS

A system like ETN will be a new, very different way of learning for some students. It is a new medium, and the technology of it will frighten some; it may seem a face-less kind of cold and non personal environment. Instructors however, can employ several techniques to make the ETN experience highly personal. Here are some:

Send Students Welcome Letter

Once a student has registered and before the first class session, many instructors send their students a "welcome aboard" letter. In it the instructor explains about the ETN system and what the course has in it for the individual. A first assignment can also be made in this letter to get the students involved right away.

Include Instructor/Guest Instructors Picture

ETN students are curious about their instructors and each other. ETN lecturers often include a picture of themselves and brief bibliography either in the course brochure or in the first program's handout materials. Occasionally ETN programs with a limited number of sites have asked students to send a slide of themselves or the group at their site to the instructor so it can be duplicated and sent to all sites. In programs devoted to individual or group reporting, the combination of a person's voice and picture can be a personalizing experience for all learners.

Distribute Class Roster to Everyone

Just as students like to know something about their ETN instructor, they're also curious about other students. A class roster distributed to all students can accomplish this. On the roster, students may be separated by ETN location, with a brief description of educational and/or professional experiences, address, telephone number, etc.

Call Students by Name

Most people like to be recognized by their name. When ETN students ask questions or make comments, instructors may ask them to first identify themselves and their location. This helps both the instructor and the students around the state identify a name with a voice. Referring to a student's professional experience, for example, is another way to personalize the ETN learning environment.

Assign Reports

Student reporting on the network has many values. It's an excellent device to personalize the ETN experience for the student, particularly if the student draws upon his or her own personal or professional experiences.

Establish Additional Communications Channels

An ETN-O-Gram, simply a half sheet of paper, was a regular invitation to one ETN class to make comments or ask questions that didn't fit into an ETN program's question and answer period. Other instructors continually urge their students to write or call them if they have questions after an ETN program.

Visit ETN Sites Around the State

Many ETN instructors try to visit some of the ETN locations in the state during a program series. Students at other nearby ETN locations may then try to travel to a designated location when the instructor visits there. At this time, ETN instructors may also visit their students in their work situations before class and stay for an hour or two after the ETN program to further get to know a local class better.

Schedule Face-to-Face Group Conferences

ETN instructors have also arranged one day face-to-face conferences in the middle of or at the conclusion of an ETN program series. For ease in student traveling, these conferences can be split among the northern and southern participants, or held in conjunction with other conferences, such as the Wisconsin Teachers Education conference. Such gatherings allow participants to meet each other and to take part in learning activities that may not be feasible on ETN.

Let Personality Come Through Network

Finally in a non-visual communications channel like ETN, it's important for instructors and students to let their personalities come through the microphones. ETN students can hear the laughter in each

other's voices and they do know, for example, whether or not a person is enthusiastic by the way they come across on the microphone. When people smile, for example, their voice also reflects it. If instructors are sitting alone in the ETN studio, they may feel their gestures and facial expression are ridiculous, but they're not. Any animation that makes a message more vital is just as important or more--in an ETN program as it is in the classroom.

STIMULATING STATEWIDE DISCUSSION ON THE ETN SYSTEM

The ETN system is unique, partly because it allows two-way communication and interaction among faculty and students in every Wisconsin county. Sometimes students seem more inclined to ask questions on the network than in a classroom situation. However, stimulating that interaction on a non-visual communications channel may be a challenge for some instructors. Instead of instant discussion during a question and answer period, instructors may for many reasons, find themselves greeted with dead silence. Some techniques used to make ETN programs truly two-way channels include:

Plant Questions

Planting questions among students is one technique to get discussion started. ETN programmers have primed a few enrollees in their programs before a series to ask questions if discussion starts off slow or lags. Also, moderators usually try to have several questions ready themselves.

Assign Feedback

Programmers can create situations to generate questions and discussion. Frequently this is done with course handouts. An instructor, for example, may ask several ETN locations to react to specified questions during the next ETN program. When that day's program is finished, an instructor knows that these students are going to work together on the assigned question. This technique helps a specific listening group become better acquainted and also helps build discussion into the next ETN session.

Relate Questions to Student's Occupation

ETN instructors can design discussion around student names and occupations. These facts may be taken from the course registration blank or from student identification cards completed at the first ETN program.

If an instructor talks about apprenticeship, for example, and he knows from his list that there are 5 to 6 people in his statewide ETN class who either work with an apprentice or who are associated with an apprenticeable occupation, then he can direct questions to some of those people. Frequently people are more comfortable talking about that which they're involved in day to day or that they've experienced. In addition to stimulating discussion, this technique also helps personalize the ETN experience for learners.

Initiate Weekly Quiz/Group Projects

Weekly quizzes completed by each ETN site or other kinds of group projects can stimulate both on-site and statewide discussion. Both permit learners to actively participate in face-to-face dialogue and also help keep program content relevant and practical for them. Instructors have found that a weekly group quiz at the beginning of class is an excellent stimulus for student discussion on the network.

Group to Group Discussions

Not all student questions and comments need to be channeled through the ETN instructor or moderator. ETN students at Green Bay, for example, talk directly to or question students at Superior or Darlington. Group projects can encourage ETN participants to share discussion among themselves. After hearing or reading a group project report from Green Bay, for example, the Superior group could evaluate the report on the network or further question them. Frequently other ETN sites join in the discussion and the moderator and instructor can "step back" and participate as a fellow learner.

Schedule Oral Assignments

Assignment reporting on the network is another built-in discussion device. Short reports of 5 to 10 minutes can easily be incorporated in ETN program formats. In addition to stimulating interest among fellow students, this technique helps trigger comments or reactions from other students.

TEACHING TECHNIQUES INCORPORATED INTO ETN PROGRAMS

There are many elements to a program. The ideas within it, or its content, are paramount. A second important element is the way in which these ideas are presented.

Instructors use a variety of "ways" to present ETN programs. Many of these approaches will be familiar to adult educators as they have been used for many years in continuing education settings. However, many have been adapted to fit the needs of telephone teaching. Others have arisen out of ETN programming experiences.

These formats include:

Lecture/Question and Answer

The lecture/question and answer format is popular on ETN among doctors, nurses and attorneys. They're to learning this way, and it's also an efficient method. Large numbers of facts, new information or review material can be presented in a short period of time.

On ETN, however, it's not just a lecture. The ETN lecture is reinforced in many ways by supplementing the oral material with written handouts. Prior to an ETN program, students receive skeleton outlines so that they can easily follow tele-lecture, and take

notes. Significant visual materials are usually incorporated into handouts. A study question list, bibliographies, additional reading sources, and perhaps an instructor's picture are among other visual material used to accompany and reinforce audio presentations.

Sufficient question and answer time is, however, needed so that there can be two-way communication. ETN students around the state need the opportunity to clarify speaker ideas, support or dispute material, or carry the discussion into personally relevant areas.

Celebrity Expertise

Well-known national and international authorities are frequent ETN guests. Guests of this caliber not only attract students to the program, but they also are rich teaching and learning resources and interest-holders. Guests can easily and inexpensively be connected to the statewide ETN network via long distance telephone lines. Main presentations may be given during the actual program, or prerecorded. In the later case, celebrities can be connected live for the question and answer period. Presentations by other resource people can also be handled in this same manner. All speakers should be provided with an ETN audience profile. Skeleton outlines or other handout material should reinforce guests presentations.

Student Reports

The peer teaching concept is an excellent ETN teaching technique. Example teaching, no matter what the subject area, helps bring programs down to earth and stimulates interest. The sharing of experiences, whether they be of a professional or personal nature, also personalizes the ETN learning experience for all.

Interview

Interviews of 15 to 20 minutes are meaningful segments of many ETN programs. An education instructor frequently asked his students what resource people they would like to hear and question during an ETN interview. During the program, the instructor interviews a guest with 5 to 8 questions that students have sent in. Following that segment, the network is "open up" so that students can carry the discussion into other areas.

Panel Discussion

If the topic is especially complex or controversial, panel discussions can create lively, informative ETN programs. Panelists may be located anywhere in the state or the country. In addition to the topic at hand, panelist's voices helps hold listener's attention. Panels should include no more than 4 members, however, as statewide participants need to be able to distinguish voices. And, as with any panel discussion, a moderator helps keep the topic in focus. Again, bibliographies and any other appropriate written materials should be sent to the ETN students prior to the program.

Reactor Panels

ETN reactor panels can improve program communication, particularly clarification of important points and ideas. Panelists represent the entire audience by reacting to an ETN speaker's presentation. To be successful, the speaker, panel members and the moderator should agree on program objectives and procedures before the actual ETN program.

Because of large ETN enrollments and limited program question and answer time, reactor panels can also efficiently cover common audience questions. Once these questions are covered, the ETN network is opened up for questioning by statewide participants This technique is also successful to stimulate student discussion.

Role Playing, Skits

Small group skits or playlets can stimulate ETN audience thinking and statewide discussion. An ETN program for social workers and foster parents in Wisconsin frequently uses short vignettes, to portray foster parent feelings. ETN participants can prerecord skits prior to the actual program or perform them during the program. Structured role playing, where the script and performance are carefully planned out prior to the presentation, work well on ETN. A suitable introduction and discussion following the skit are also needed to meet the intended objective.

Buzz Groups

ETN participants frequently split into buzz groups at their sites during ETN programs. Wisconsin Water Supply operators use approximately 30 minutes of their two hour ETN programs for local discussions. After the program's main ETN presentation, groups "break off" from the network to discuss how the day's topic related to local situation. This buzz group format gives participants another opportunity to actively participate in the program and also helps keep program content relevant and practical. Group leaders at each location serve as a resource person, thus alleviating the need to use limited ETN program time for common participant questions. Buzz sessions can also be used to formulate group questions, brainstorm a problem or develop a case study presentation or solution.

Case Study

Case studies of real problems are one way to bring discussions down to earth and to stimulate both local and statewide ETN discussion. Clergymen enrolled in the ETN program "Parish and Personal Conflict: Disaster or Opportunity" were encouraged to bring with them written case studies of conflict situations in which they were currently or had recently been involved. This data then became the agenda for each ETN location group consideration. Spokesmen at each site may also represent their group and report on how the group analyzed the study to the statewide network.

Group Work Sessions

Many instructors include times of activity as well as listening and discussion in ETN programs. An agricultural engineer who frequently works with 4-H woodworking leaders via ETN does just that when he presents technical material. In a wood identification program, for example, the first half of the program laid the basic background information to the topic; the second half was devoted to actual wood identification by participants at each ETN site around the state.

A wood identification key and wood samples were sent to each site. The program instructor would work with the ETN group by saying, "Okay, pick up piece of wood marked number 1. Note let's look at it and tie it into the key. Does it have this characteristic, does it have that characteristic?" After working down the key for practice, he'd ask ETN students to take one second sample and trace it down the key, and come on the network when a group felt they had identified it.

Brainstorming

Brainstorming is a simple concept for getting the most creative energy out of a group discussion by collecting a large number of ideas. Statewide committee meetings often follow this format on ETN. Network brainstorming sessions have ranged from collecting ideas about Wisconsin heritage programs to ideas for a weekend conference for forest owners.

After the program rules are explained, ETN moderators simply open up the network for ideas. The quantity of ideas is more important here than the quality. Freewheeling is invited. Editing and synthesis can always be accomplished after the ETN session. Follow-up ETN sessions are sometimes scheduled to appraise and further evaluate edited ideas.

Pre-ETN Warmup Sessions/Post ETN Sessions

A method used successfully by several ETN clientele groups is a warmup session prior to the actual ETN program. Groups at each site meet an hour before the ETN time to work on group projects, case studies, discuss outside reading material, and so on in small face-to-face situations. Often students find this pre-session to be valuable warmup for getting into the program topic. Then, when it's time for the ETN program to begin, students are eager to share their ideas, thought and comments with other statewide participants and the instructor.

On site discussion is also frequently scheduled for the hour following the ETN session.

The ETN medium is only a means to an end, but it will dictate certain possibilities and impossibilities. The initial psychological barriers to teaching via a telephone system will probably be more difficult for instructors to overcome than the real ones. Once these limitations are understood and accepted, however, the many capabilities and potentials of the system will be more apparent.

EVALUATION PROCESS FOR EDUCATIONAL TELEPHONE NETWORK PROGRAMS

To determine if appropriate education techniques were designed into ETN programs, an evaluation system called the Program Evaluation Checklist (PEC) was developed. Its purpose is to study the relationship between the telephone system of communications and a program educational objectives, and also the tailoring of educational materials for transmission through a system like ETN.

Content specialists and communication educational specialists developed PEC based on variables common to the concerns, interests and objectives of both disciplines. The PEC consists of a list of statements which defines specific aspects of program content, organization, methods of presentation, materials, lecturer matters and physical facilities. All students in each ETN class that is evaluated are asked to rate each statement and determine how well it describes the program. For example, in evaluating the program lecturer, one question asks, "The program lecturer/moderator encouraged participants to take an active part in the program." Ratings are made on a numerical scale of 0 to 9. Demographic questions are also included in evaluations to obtain profiles of ETN students.

At the completion of the evaluation process for selected ETN programs, an extensive report is completed and is reviewed with individual instructors. Evaluation materials are strictly confidential between the Instructional Communications Systems staff and the instructor. The paramount purpose of this evaluation process is to determine program strengths and weaknesses and to assist and enhance the selection and utilization of appropriate education techniques for future ETN programs.

SUMMARY

For the most part, the use of the telephone for education has been virtually overlooked for the more glamourous media. It remains an untapped natural resource for education.

Wisconsin's Educational Telephone Network (ETN) developed out of a need to provide continuing education to medical doctors throughout the state. In 1974, well over 25,000 students enrolled in courses taught by the medium at a yearly cost well below that of conventional classes.

The development of the new Darome Edu-Com ETN station equipment has added to the technology of effectively using a telephone system for delivering educational experiences to a statewide audience.

The research on the tele-lecture systems and the use of telephone in education indicate that the telephone is a highly effective technique in communicating educational materials to students in widely dispersed geographical areas. Also research indicates that there has been no significant difference between the performance of students with the presence or absence of an instructor from the classroom in teaching via the telephone system.

Although there have been some technical problems with tele-lecture systems, the largest challenge is related to the development of quality programs. Techniques are offered to personalize this kind of learning environment for students to enhance two-way discussion and to incorporate a variety of formats into the course design.

In order to evaluate the effectiveness of the program design and educational techniques used on the telephone system, a program evaluation checklist (PEC) was developed at the University of Wisconsin to measure the effectiveness of programs offered on telephone systems.

CONCLUSIONS

In a historical perspective, Wisconsin's Educational Telephone Network is a new medium for instruction. It is a unique statewide delivery system and one that's proven to be an effective communications channel.

Access to this delivery system, however, is not enough. Its instructors must know how to use it effectively for it is both similar to and different from other media.

In Wisconsin, ETN has a significant following among faculty and students in every corner of the state. Its popular acceptance will continue to grow in the years to come through the work of professionals who both respect its limitations and exploit its power and its potentials.

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HIP-POCKET TECHNIQUES

for:

Humanizing

Send A Welcome Letter

Let participants know they are important to the success of the program by sending them a welcome letter before the first teleconference. Include program goals, suggestions for preparing for the first session (such as a question or problem to think about), and some information about yourself (biographical sketch, photocopied picture).

Make A Master Roster

The more you know about the individuals in your group, the better you'll communicate. Use information on preregistration lists to make up a master roster of participants at each location with a line or two of related information about them. Use this roster to focus discussion on the needs and interests of the individuals participating.

Use Of Names

Always call participants by name. Use your roster list. When an individual asks a question, note the name so you can use it again in your response. People like to be recognized by name; it's especially important in teleconferencing.

Let Your Personality Come Through

Be yourself. It's important to come across the way you do in a face-to-face situation even though microphones are used for communicating. Try to form a mental picture of what it's like to be at one of the locations and talk directly to individuals rather than to an "audience out there."

Open With An "Informal Roll Call"

To create an informal, friendly atmosphere and to give participants a chance to become accustomed to using the equipment, ask for a few responses from selected locations. A few exchanges such as, "How's the weather?" or "How many are there with you today?" let individuals overcome any hesitancy in using the microphones.

Adapted from:
BRIDGING THE DISTANCE: An Instructional Guide to Teleconferencing, University of Wisconsin-Extension, 1978.

HIP-POCKET TECHNIQUES

for:

Participation

Warm Up Your Audience

Enthusiasm and encouragement by the programmer is vital to getting participation. Help individuals feel comfortable about sharing their experiences. Participants may need more encouragement than in a face-to-face setting, so your role as programmer is important.

Plant Some Questions

Before the program, call a few specific participants and ask them to be ready with a comment or question if the discussion should lag. You can use registration information to identify individuals who would be willing to assume this role. Planted questions can help stimulate a chain reaction among group members.

Use Questions As A Tool

Use a list of highlight questions which summarize the main ideas for each session. Send these to participants before the program. Use this list to kick off discussion by asking group members to pick out a question they would like to talk about in greater depth.

Use Interactive Formats

Use formats which encourage group members to participate. Almost all techniques used in adult education (case study, interview, panel discussion, role playing) can be used successfully in teleconferencing. For example, a series of short case studies can be presented by individuals at the beginning of the program, with discussion following the case studies.

Get Specific Groups Involved

Ask a group at one of the locations to be responsible for the answer to a specific question to be presented at the next session. This responsibility encourages participants to sit down and talk with one another after program time. The technique also fosters cooperation—and there is a built-in leadoff for the next program's discussion.

Adapted from:
BRIDGING THE DISTANCE: An Instructional Guide to Teleconferencing, University of Wisconsin-Extension, 1978.

HIP-POCKET TECHNIQUES

for:

Message Style

Preview Your Message

Give a preview of what you are going to say in the form of a short, general overview. Giving individuals an idea in advance of the various parts of a message and how it will be organized (from general ideas to specific examples or vice-versa) helps them in their own understanding and remembering processes.

Use Variety

Plan for short segments. Variety keeps interest levels high and this leads to more active listening. Keep your program fast-paced, providing short segments of concentrated listening (10-15 minutes) alternated with other activities. These activities might range from a simple question-and-answer to the use of a buzz group (adaptation of the six-minute—six-people discussion technique) at each location.

Repeat and Summarize Main Points

Use repetition and summary to help individuals remember important points. Repeat new words, concepts, or phrases at least three times during an hour program. New words can be spelled on-the-air to aid audience understanding or a printed word list can be added to the packet of materials sent to individuals.

Provide Print Backup

Use print materials to back up your message—an outline, some illustrative brochures, or even a detailed workbook. Print reinforces what we hear and is a permanent record for review purposes.

Send A Summary Letter

The most important summary is at the end of the program. If time runs out, a short summary letter could be used to tie together some of the important points brought out during a panel discussion or interview.

Adapted from:
BRIDGING THE DISTANCE: An Instructional Guide to Teleconferencing, University of Wisconsin-Extension, 1978.

HIP-POCKET TECHNIQUES

for:

Feedback

Ask For Feedback

The most basic technique for getting feedback is simply to ask for it during the program. Check on your pacing and on the quality of the reception at the locations. Ask the group if there are questions about the material you are discussing. Because individuals new to teleconferencing may be shy about giving feedback, preassign it, calling several people in advance of the program.

Use On-The-Spot Application Of Information

Find out if the material being presented is relevant to participants' situations. Pause several times during the presentation to ask for individual feedback. Ask one or two participants to briefly comment on the value of the information to him or her. Would the person use it? If so, how? Application-of-information feedback stimulates others to think creatively.

Use Group Questions

Instead of evaluating participants individually, use a weekly question which is discussed and answered after program time by groups at locations. A group working to develop a cooperative best answer stimulates rapport and helps give individuals more in-depth understanding. Have group members sign their names to the answer (allowing for a minority opinion) and mail it to you for evaluation before the next program.

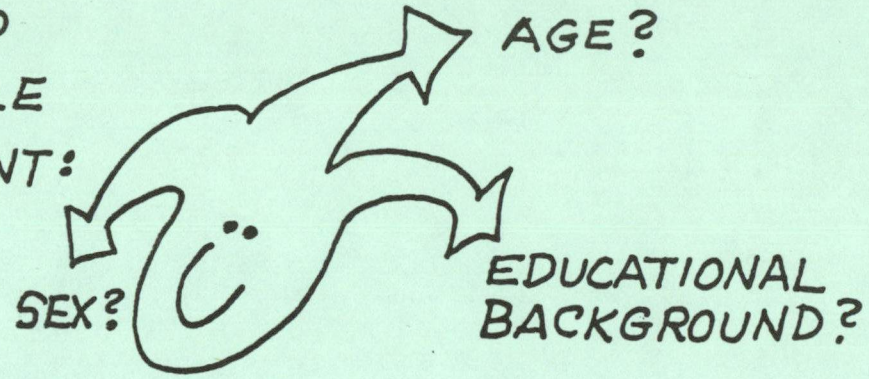
Use Written Forms Of Feedback

Use written methods to determine whether your program is meeting its objectives. A postcard questionnaire or a preaddressed mailer with space for comments can be included with print materials sent out before the program.

Adapted from:
BRIDGING THE DISTANCE: An Instructional Guide to Teleconferencing, University of Wisconsin-Extension, 1978.

PROGRAM EVALUATION CHECKLIST

→ SYSTEMATIC METHOD OF STUDYING PROFILE OF ADULT PARTICIPANT:



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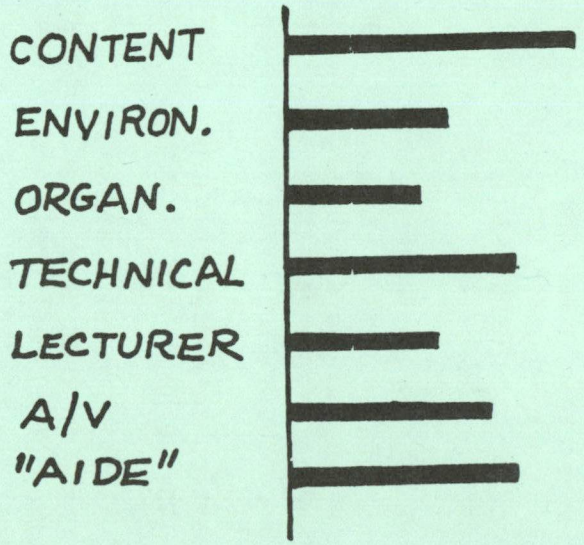
→ MEASURING COMPONENTS OF EDUCATIONAL COMMUNICATIONS:



EVALUATION

Purpose

The purpose of evaluation is to determine the strengths and weaknesses of current programs so that improvements can be made in future program design. Changes in program design come about with an analysis of evaluation results by program coordinators, educational specialists and individual program lecturers. Through this exchange and analysis, the results of the evaluation can be built into the next learning experience.

This is the designated purpose of the evaluation for program on the ETN and SEEN systems. The results are confidential and released only to the program coordinator. However, there are other peripheral benefits in conducting an evaluation. For one, it provides one additional channel of communication between the participants and the instructor. The evaluation is a tangible sign of interest in student opinion. This can be particularly meaningful for remote participants who have little contact with the home base of program origination.

Evaluation results are primarily a function of judging program effectiveness. In that process of judgment, the evaluation can stimulate consideration of overall goals and values in teaching. It is this stimulation that shapes the educational process and motivates improvement in educational quality.

The Development of the Evaluation Instrument

The Program Evaluation Checklist (PEC) is a systematic method of studying the profile of the adult participant and measuring the components of educational communication.

General Student and Program Information. This instrument collects certain demographic information such as age, sex and educational background. The individual program coordinator may specify any further information he/she may wish to obtain such as professional experience or occupation. These demographic variables are incorporated into the General Information portion of the evaluation. The data obtained constructs a student profile. It gives a present and future picture of target audiences for particular programs, and allows for a comparative analysis of various audience types' receptivity to teleconferencing programs.

Frequently the general information portion also asks if the audience has participated in ETN courses in the past and if they would be interested in future ETN programs. Experience with ETN programs will condition the participant's evaluation of the course, and his interest in future courses indicates modified reactions to the course.

Program Evaluation

There are essentially five steps in the original development of the evaluation checklist items. First, the critical expectations of ETN programs are identified. These are the program's objectives in the most general sense, i.e., the quality of student-teacher contact, scope,

relevance and importance of subject matter, and the instructor's ability to tailor his/her teaching performance to an audio delivery system.

Second, course design must be broken down into various aspects which facilitate the ordering of data, and third, the objectives must be classified into these categories. The following are the seven primary aspects and expectations with which the teleconferencing systems are concerned:

1. THE ENVIRONMENT--the arrangement of the physical facilities, seating, lighting, etc.

2. THE TECHNICAL COMPONENTS--the functioning of the mechanical components of the program.

3. THE AUDIO-VISUAL MATERIALS--the use of auxiliary materials and equipment.

4. THE PROGRAM AIDE'S BEHAVIOR--the performance of the persons responsible for the individual listening stations.

5. THE LECTURER"S BEHAVIOR--the delivery of course material.

6. THE PROGRAM ORGANIZATION--the involvement of the participants in the presentations and discussion of program content.

7. THE PROGRAM INFLUENCE--the impact of the educational program upon the participants.

Fourth, descriptor words for these categories are derived. The items as they appear on the evaluation are classified in six groups: 1) program facilities, 2) program lecturer, 3) organization, 4) program material, 5) program content, and 6) technical operations quality.

With these categories and descriptors formulated, course expectations are framed into positive, affirmative statements which describe the program from the student's point of view. These are the evaluation items. For example, "The material presented in this course can be applied to my present needs." This is followed by PM (program material). The preparation of the generalized description of the principal program expectations (the items) is the fifth and final step of the evaluation.

At least five of these items are used for each of the seven program aspects. Usually there is one item at the end of each evaluation which asks for the participant's overall feelings toward the program, and frequently there is a space left for comments.

How the PEC Works - The Rating Scale

Each of these items are set against a rating scale. This rating scale is a systematic procedure for measurement which precludes the student's patience or writing ability, factors which often reander an open-ended evaluation format invalid. Because of the geographic dispersion of the

audience, evaluation by observation is impossible. The method of self-evaluation on a rating scale renders reliable data and allows for formulating conclusions about a program with a high degree of confidence. The data derived from its use is amenable to statistical analysis, and, as a research tool, it may be used repeatedly to test hypotheses in the field of educational communications.

The rating scale used is a ten-point ordinal scale which ranges from 0 to 9. With an ordinal rating scale, it is assumed that the intervals between numbers are psychologically equal from one number to the next, and the numbers increase in value in a systematic progression.

The ordinal rating scale provides an immediate conversion of audience responses to numerical values, so that responses need not be converted for computerization. When computerized, ordinal scales render means, percentiles and standards of deviation with reasonable reliability. These three statistical outputs are adequate to our purposes.

The ordinal scale also allows for a satisfactory degree of reliable comparative analysis from item to item and from evaluation to evaluation.

The rating scale appears on the PEC instructions which explain that 0 indicates the item does not describe the course, and 9 means that it very definitely does. For each item, the participant is instructed to fill in the number that represents his response. The responses are then run through the computer to obtain mean responses for each item. These means are further grouped into "subscore" for each of the program aspects. In this way, program strengths and weaknesses are easily pinpointed for an individual course, and the data provides a base for statistical comparison from course to course, from year to year.

This method of evaluation can provide relatively reliable feedback in a very short period of time, usually prior to course completion.

Evaluation Results

Evaluation results can be obtained in two forms, as computer printout or as evaluation highlights, which are prepared from the computer data. In the highlights, the results are written up for each subscore (or program aspect) and for overall evaluation results. For example:

Overall Evaluation

The participants were asked in item #28 to evaluate the course as a complete unit. The mean score was 7.01 with a standard deviation of 2.98.

And as it appeared on the computer printout:

ITEM	LOW	2	3	4	5	6	7	8	HIGH	OMIT	MEAN	S
28	0.03	0.10	0.04	0.06	0.10	0.04	0.06	0.12	0.30	0.01	7.01	2.9

The printout breaks the data down into the precents of responses for each number of the rating scale. With this breakdown, it is easy to see what

percent of the class rated a particular item very low or very high. This allows some expanded insight into the mean score. For instance, though the mean score is 7.01 which is not exorbitantly high, 30% of the participants gave the item the highest possible rating of 9. This sort of information can be obtained from the printout, but is also represented statistically in the Evaluation Highlights by the Standard of Deviation.

For the demographic information, both the highlights and the printout give and percent of participants failing into each category as it appeared on the evaluation.

For example:

AGE: 23% are age 20-25, 41% are age 26-35, 23% are age 36-45, 13% are 46+

The increments for ages are fairly standard, but for other demographic variables, categories will be specified by the program coordinator. Obviously, a course in bookkeeping has a different clientele than a course in nursing, so for the variable "Occupation", selections would change.

Validity of the Evaluation Questions

One important characteristic of a good evaluation instrument is its validity. Does it measure what it is supposed to measure? Normally an instructor developing evaluation items decides whether or not his questions bear relationship to the presented material, particularly to the outcome of the program. These judgements by a single individual are subject to a large margin of error.

To be certain of validity and to improve the quality of the evaluation instrument, each item in the Program Evaluation Checklist bank was judged by a number of qualified individuals. All the items have been evaluated by students and faculty members. The evaluation items were rechecked for any ambiguity or irrelevant phrase by a professional editor who also estimated the reading level of the items.

Reliability

Reliability refers to the consistency of a test, or, in this case, of the evaluation instrument. For example, if the evaluation is split into two halves, the students' scores on the first half should be similar to the scores on the second half. Reliability may vary from 0.00 to 1.00 but a good evaluation instrument should have a reliability coefficient of at least 0.80, preferably 0.90.

A MERMAC computer program is used to measure the reliability of each section of the evaluation instruments. The program not only determines the reliability of each cluster of items such as technical, lecturer, content, etc., but also gives information for evaluation improvements such as quality of items, item difficulty and predictive power of an item.

The Spearman-Brown split halves technique is the basis for the computer program.

Using Evaluation Results

Since each of the subscores (program material, program lecturer, organization, physical facilities, technical operations and content) represent a judgement by different criteria, we are able to use the subscores to determine the strengths and weaknesses of the course.

The various subscores are interrelated, which must be considered when analyzing evaluation results: poor technical operations will condition the responses to other aspects; a very good lecturer can sway judgements of course material; etc.

Instrument Reliability

The evaluation data also provides an overall rating of all items taken together. The effectiveness and reliability of the evaluation can be double checked by comparing the overall rating with the rating the participants gave to the item which asks for their overall feelings toward the program. These should be reasonable reflections of each other.

The Content Subscore is one that might be given some special consideration by the program coordinators. Most of the items on the PEC are standard within a certain range, but the content items are prepared primarily by the program coordinator. These items are related to course outcome, how well the materials relates to what the students want and need to learn. At least five content items are created specifically for every course evaluated. The content items take the individual course objectively and frame them into affirmative outcome statements. For example, from a Real Estate Course: "I now have an understanding of listing contracts and contract of sale," from a course for English Language teachers, "I now am aware of a new approach to spelling."

In an analysis of the content items from the evaluation, a program coordinator or lecturer should be able to judge how effectively the course design and content fulfills the needs of the participants and how well the course met with its objectives.

General Comments

The comments returned by the participants with the evaluation are considered carefully with the data. Generally, the comments can be supplied in an aggregated, typewritten form. This is an important avenue of communication between instructor and participant, and should not be overlooked. Frequently, answers to particularly low evaluation scores can be found in the comments.

Summary

The purpose of evaluating teleconferencing programs is to help programming faculty determine the strengths and weaknesses of programs transmitted via the systems, so that improvements can be made in future programs.

In order to accomplish this task, a search was carried out for the appropriate method of studying the profile of the adult participant and measuring the components of educational communication. The search resulted in the selection and development of a rating-scale method of evaluation. This type of evaluation is most suitable because it represents a systematic procedure for measurement.

The data derived from the Program Evaluation Checklist is amenable to statistical analysis. It is also a research tool which may be repeatedly employed to test teaching techniques in the field of educational communications.

INSTRUCTIONAL COMMUNICATIONS SYSTEMS
University of Wisconsin-Extension

PROGRAM EVALUATION CHECKLIST
1976 Piano Teachers Forum

INFORMATION ABOUT EVALUATION: This evaluation is designed to seek your impressions about the ETN program in which you have participated. We ask that you be as truthful and thorough in your evaluation as possible. Through this evaluation we can develop better ETN programs.

INSTRUCTIONS FOR EVALUATION: Read each evaluation item and rate on a scale of 0-9 (0 being the lowest and 9 the highest) so that it expresses the degree to which the statement describes the program. Code your response onto the blue answer sheet in the appropriately numbered row. Use a No. 2 or softer pencil if available. Make no stray marks.

PROGRAM EVALUATION CHECKLIST

1. The music performed was clear and distinct as it came over the Educational Telephone Network (ETN). (T-2)

2. Performance of examples of the piano music enhanced my understanding of the program content. (O-9)

3. The lecturers made me feel I could freely ask questions or make comments. (PL-2)

4. As a result of this course, I feel I have a greater understanding of improvisation. (C-1)

5. The total presentation was summarized by the lecturer before he/she asked for questions. (O-12)

6. The Educational Telephone Network (ETN) equipment was easy to operate. (T-8)

7. As a result of this course, I have a better understanding of integrating popular music into my total teaching. (C-2)

8. The question and answer period was beneficial. (O-2)

9. The knowledge I gained helped me solve a problem. (K-1)

10. I benefited from this course by becoming more accurate in my work. (PC-3)

11. The Educational Telephone Network (ETN) seemed to be adequate for communicating the type of subject matter presented. (T-3)

12. The knowledge I gained helped me develop creative or innovative ideas. (K-3)

13. The lecturers covered the material at a comfortable rate. (PL-8)

14. The review of basic harmony was helpful. (C-3)

PROGRAM EVALUATION CHECKLIST (Cont.)

15. Participants were encouraged by the lecturers to take an active part in the program. (O-6)

16. I now understand popular harmony better. (C-4)

17. The mechanical quality (line noise, etc.) of the educational Telephone Network (ETN) reception was satisfactory. (T-4)

18. I benefited by being able to relate course material immediately to my needs. (PC-1)

19. The program was well paced within the allotted time. (O-11)

20. The bibliographies and teaching patterns which were distributed were valuable for the presentation. (C-5)

21. New knowledge gained helped me apply knowledge I already had. (K-2)

22. Insights were gained into interpreting some of the Chopin Preludes. (C-6)

23. It was easy to ask questions over the Educational Telephone Network (ETN). (T-9)

24. The Mendelssohn "Songs Without Words" will now be considered for teaching material. (C-7)

25. I benefited from this course by becoming more productive. (PC-4)

26. Insights were gained into him to teach students to practice. (C-8)

27. The knowledge I gained helped me pin point a problem area. (K-4)

28. I benefited from this course by being able to perform functions required by my clients or customers. (PC-2)

29. The Schumann works which were covered will now be considered for teaching material. (C-9)

30. On the scale of 0-9 please indicate your evaluation of the April 26 (Kern) presentation. (PL-10)

31. Please indicate your evaluation of the May 3 (Pearce) program. (PL-11)

32. Please indicate your evaluation of the May 10 (Radunsky) program. (PL-12)

33. On the scale of 0-9 please indicate your overall evaluation of this ETN series.

GENERAL INFORMATION: Please complete the following questions. The number after the appropriate response should be filled in on the blue code sheet in the appropriately numbered row.

34. AGE: 20-25 0; 26-35 1; 36-45 2; 46 & over 3;

35. SEX: Female 0; Male 1;

36. HOW DID YOU LEARN OF THIS COURSE: At or from Extension Office 0; Direct Mail 1; Newspaper 2; Radio 3; At my School 4; Music Association 5; Other Person 6; Other (Please specify) 7; _____

37. HAVE YOU PARTICIPATED IN ETN COURSES IN THE PAST: Yes 0; No 1;

38. WOULD YOU BE INTERESTED IN PARTICIPATING IN FUTURE ETN COURSES: Yes 0; No 1;

39. COST: Please estimate as accurately as possible the total cost to you for attending this course (books, meals, fees, time away from work, etc.) Less than $10 0; $11-$20 1; $21-$50 2; $51-$100 3; $100-$200 4; More than $200 5;

40. EDUCATIONAL BACKGROUND (highest level): High School 0; Some Conservatory 1; Conservatory Diploma or Certificate 2; Some College 3; College Bachelors 4; College Masters 5; College Post Masters 6; Ph. D. 7;

41. INSTRUMENTS TAUGHT: Piano 0; Spinet Organ 1; Console Organ 2; Organ & Piano 3; Spinet & Console Organ 4; All Three 5;

42. YEARS OF TEACHING PIANO: None 0; 1-5 1; 6-10 2; 11-15 3; 16-20 4; 21 & over 5;

43. YEARS OF TEACHING SPINET ORGEN: None 0; 1-5 1; 6-10 2; 11-15 3; 16-20 4; 21 & over 5;

44. YEARS OF TEACHING CONSOLE ORGAN: None 0; 1-5 1; 6-10 2; 11-15 3; 16-20 4; 21 & over 5;

45. NUMBER OF STUDENTS TAUGHT PER WEEK IN PIANO: 0-9 0; 10-20 1; 21-30 2; 31-40 3; 41-50 4; 51-60 5; 60 & over 6;

46. NUMBER OF STUDENTS TAUGHT PER WEEK IN SPINET ORGAN: 0-9 0; 10-20 1; 21-30 2; 31-40 3; 41-50 4; 51-60 5; 61 & over 6;

47. NUMBER OF STUDENTS TAUGHT PER WEEK IN CONSOLE ORGAN: 0-9 0; 10-20 1; 21-30 2; 31-40 3; 41-50 4; 51-60 5; 60 & over 6;

48. MEMBERSHIP IN PROFESSIONAL MUSIC ORGANIZATIONS: Wisconsin Music Teachers Assoc. 0; Wisconsin Music Educators Conference 1; Wisconsin Federated Music Clubs 2; American Federation of Musicians 3; Sigma Alpha Iota 4; Phi Mu Alpha Sinfonia 5; Other (please indicate) 6; _____

49. PIANO TEACHER FORUMS ATTENDED: April 26 (Kern) only 0; May 3 (Pearce) only 1; May 10 (Radunsky) only 2; April 26 & May 3 3; April 26 & May 10 4; May 3 & May 10 5; All three 6;

PREVIOUS PIANO FORUMS WHICH YOU HAVE ATTENDED:

50. 1973 (Glover-Perry-Buchauer) Yes 0; No 1;
51. 1974 (Hinson-Marcus-Larimer-Istomin) Yes 0; No 1;
52. 1975 (Rezits-Elliston-List) Yes 0; No 1;

FUTURE PROGRAM OFFERINGS FOR PIANO TEACHERS ON ETN: (Fill in number after your choice

53. NUMBER OF PROGRAMS PREFERRED IN A SERIES: One 0; Two 1; Three 2; Four 3; Five 4; Six 5;

54. TIME OF YEAR PREFERRED: Summer 0; Fall 1; Winter 2; Spring 3;

55. TIME OF DAY PREFERRED: Morning 0; Afternoon 1; Evening 2;

56. DAY OF WEEK PREFERRED: Sunday 0; Monday 1; Tuesday 2; Wednesday 3; Thursday 4; Friday 5; Saturday 6;

57. HIGHEST DESIRABLE REGISTRATION FEE: $6 0; $9 1; $12 2; $15 3; $18 4; $21 5;

58. INDICATE TYPE OF PROGRAM DESIGN PREFERRED IN THE FOLLOWING FORMATS:
-0 (3 sessions) - 1 on elementary materials, 1 on intermediate materials, 1 on advanced materials
-1 (3 sessions) - 2 on elementary materials, 1 on intermediate materials
-2 (3 sessions) - 1 on elementary materials, 2 on intermediate materials
-3 (3 sessions) - 1 on intermediate materials, 2 on advanced materials

59. INDICATE TYPE OF PERSONNEL PREFERRED IN THE FOLLOWING FORMATS:
-0 (3 sessions) - 1 outstanding teaching youth, 1 teaching piano pedagogy, 1 international concert artist
-1 (3 sessions) - 2 outstanding teaching youth, 1 teaching piano pedagogy
-2 (3 sessions) - 1 outstanding teaching youth, 2 teaching piano pedagogy
-3 (3 sessions) - 1 teaching piano pedagogy, 2 international concert artists

60. PLEASE LIST SPECIFIC SUBJECT MATTER DESIRED FOR FUTURE PROGRAM OFFERINGS:

61. LIST SPECIFIC PERSONNEL DESIRED IN A SERIES:

UNIVERSITY OF WISCONSIN - EXTENSION

1976 PIANO TEACHERS FORUM

AGE

20-25	26-35	36-45	46&UP	OMIT
0.02	0.24	0.31	0.40	0.03

SEX

FEMALE	MALE	OMIT
0.91	0.03	0.05

HOW LEARNED

EXTOF	DIRML	NEWSP	RADIO	SCH	MUSIC	OTPER	OTHER	OMIT
0.16	0.45	0.12	0.00	0.05	0.02	0.10	0.03	0.07

PART IN ETN B-4

YES	NO	OMIT
0.52	0.45	0.03

INT IN FUTR ETN

YES	NO	OMIT
0.93	0.03	0.03

COST

LT10	11-20	21-50	51-1H	1H-2H	MT200	OMIT
0.07	0.72	0.16	0.00	0.00	0.00	0.05

ED BACKGROUND

H S	CONSCERTIF	COLL	BACH	MSTRS	POST	PHD	OMIT
0.02	0.02	0.03	0.22	0.43	0.17	0.02	0.00	0.09

INSTRMNTS TAUGHT

SPIN	CONS	O&P	S&C	ALL 3		OMIT
0.59	0.00	0.00	0.14	0.02	0.24	0.02

YRS TCHNG PIANO

NONE	1-5	6-10	11-15	16-20	21&UP	OMIT
0.00	0.14	0.31	0.22	0.09	0.22	0.02

YRS TCHNG SPINET

NONE	1-5	6-10	11-15	16-20	21&UP	OMIT
0.60	0.09	0.09	0.03	0.02	0.07	0.10

YRS TCHNG CONSLE

NONE	1-5	6-10	11-15	16-20	21&UP	OMIT
0.55	0.12	0.05	0.09	0.02	0.10	0.07

ITEM	LOW	1	2	3	4	5	6	7	8	HIGH	OMIT	BEST	MEAN	S.D.
1.	0.02	0.00	0.00	0.02	0.00	0.02	0.03	0.12	0.19	0.59	0.02	HIGH	9.12	1.62
2.	0.03	0.00	0.00	0.00	0.00	0.03	0.05	0.09	0.12	0.66	0.02	HIGH	9.09	1.89
3.	0.02	0.00	0.02	0.00	0.00	0.03	0.05	0.07	0.14	0.66	0.02	HIGH	9.14	1.75
4.	0.02	0.02	0.05	0.07	0.12	0.12	0.10	0.12	0.09	0.22	0.07	HIGH	7.00	2.47

5.	0.05	0.05	0.07	0.09	0.05	0.12	0.09	0.14	0.12	0.19	0.03	HIGH	6.61	2.82
6.	0.02	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.10	0.84	0.02	HIGH	9.67	1.31
7.	0.00	0.03	0.07	0.05	0.07	0.07	0.05	0.21	0.14	0.26	0.05	HIGH	7.47	2.46
8.	0.02	0.00	0.09	0.02	0.02	0.05	0.16	0.09	0.17	0.36	0.03	HIGH	7.96	2.39
9.	0.02	0.05	0.02	0.05	0.12	0.12	0.12	0.09	0.14	0.26	0.02	HIGH	7.19	2.53
10.	0.02	0.02	0.03	0.02	0.07	0.07	0.14	0.17	0.12	0.33	0.02	HIGH	7.82	2.28
11.	0.02	0.00	0.02	0.02	0.05	0.05	0.12	0.09	0.12	0.50	0.02	HIGH	8.47	2.10
12.	0.00	0.02	0.00	0.09	0.03	0.16	0.09	0.21	0.14	0.24	0.03	HIGH	7.66	2.06
13.	0.00	0.02	0.02	0.02	0.05	0.09	0.07	0.19	0.22	0.31	0.02	HIGH	8.19	1.94
14.	0.03	0.07	0.02	0.10	0.12	0.05	0.10	0.12	0.14	0.21	0.03	HIGH	6.79	2.75
15.	0.00	0.02	0.00	0.02	0.05	0.09	0.03	0.09	0.12	0.57	0.02	HIGH	8.74	1.93
16.	0.02	0.05	0.02	0.09	0.09	0.14	0.09	0.16	0.14	0.17	0.05	HIGH	6.95	2.48
17.	0.00	0.02	0.00	0.00	0.02	0.05	0.09	0.17	0.10	0.53	0.02	HIGH	8.84	1.65
18.	0.00	0.03	0.00	0.00	0.02	0.12	0.12	0.12	0.17	0.40	0.02	HIGH	8.35	1.94
19.	0.02	0.00	0.00	0.02	0.09	0.03	0.14	0.12	0.22	0.34	0.02	HIGH	8.26	1.96
20.	0.00	0.00	0.02	0.02	0.05	0.10	0.14	0.10	0.10	0.45	0.02	HIGH	8.35	1.90
21.	0.00	0.00	0.00	0.03	0.03	0.09	0.07	0.16	0.12	0.48	0.02	HIGH	8.61	1.75
22.	0.26	0.12	0.03	0.10	0.10	0.05	0.07	0.10	0.09	0.03	0.03	HIGH	4.43	3.02
23.	0.02	0.03	0.00	0.05	0.02	0.05	0.10	0.10	0.09	0.52	0.02	HIGH	8.33	2.37
24.	0.03	0.05	0.07	0.03	0.07	0.07	0.10	0.14	0.10	0.26	0.07	HIGH	7.07	2.80
25.	0.07	0.02	0.02	0.05	0.05	0.10	0.12	0.21	0.10	0.24	0.02	HIGH	7.21	2.64
26.	0.00	0.02	0.00	0.02	0.00	0.05	0.03	0.12	0.21	0.53	0.02	HIGH	8.98	1.62
27.	0.02	0.00	0.03	0.00	0.09	0.07	0.16	0.16	0.17	0.28	0.03	HIGH	7.88	2.10
28.	0.10	0.03	0.02	0.05	0.16	0.05	0.10	0.12	0.12	0.10	0.14	HIGH	6.18	2.87
29.	0.07	0.05	0.02	0.02	0.07	0.07	0.03	0.12	0.16	0.26	0.14	HIGH	7.24	2.99
30.	0.00	0.03	0.02	0.03	0.03	0.10	0.10	0.07	0.12	0.40	0.09	HIGH	8.08	2.30
31.	0.02	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.21	0.69	0.02	HIGH	9.44	1.39
32.	0.05	0.05	0.07	0.12	0.17	0.12	0.12	0.10	0.07	0.09	0.03	HIGH	5.79	2.49
33.	0.00	0.00	0.00	0.02	0.05	0.07	0.12	0.22	0.22	0.24	0.05	HIGH	8.24	1.56

--SUBSCORE--	ITEMS	RESP	MEAN	S.D.	REL
TECHNICAL	5	0.98	8.89	1.90	0.90
ORGANIZATION	5	0.98	8.14	2.37	0.80
LECTURER	5	0.97	8.14	2.37	0.70
CONTENT	9	0.95	7.15	2.78	0.82
KNOWLEDGE	4	0.97	7.84	2.18	0.84
COMPETENCY	4	0.95	7.43	2.55	0.77
TOTAL 1-33	33	0.96	7.87	2.47	0.93

SAMPLE SIZE = 58

A SPECIAL BONUS!

1 Hour of Meet-Me Bridge Time

FREE!

THE DEAL

Here's an opportunity to begin using teleconferencing for your training needs right away! As a participant in this teleconference: "The Use of Telecommunications Technology in the Training of Rehabilitation Personnel", you are invited to make use of 1 (one) hour of free Meet-Me Bridge time during the month of August.

Using the Meet-Me Bridge, you are able to interconnect up to 20 individuals or groups over ordinary telephone lines. Participants need only dial a special number at a pre-determined time, and they will automatically join the teleconference you have convened.

No charge will be incurred for 1 hour or less of bridge time used during August, 1979. Long distance charges will be the responsibility of each participant who "calls into" the Meet-Me Teleconference System.

THE GUIDELINES

In order to set up the teleconference you should contact Carol Matthews (University of Wisconsin-Extension) at 608-262-4342. Call as far in advance of the date you plan to hold your teleconference as possible, and be ready to supply Carol with the following information:

- -Your name, address, telephone number, and organization.
- -Requested date, time, and duration (1 hour or less) of your teleconference.
- -Nature (title) of your teleconference meeting.
- -Number of locations in your teleconference (including your site).
- -Names and phone numbers for each of the participating locations.
- -Will regular handsets be used, amplified telephones, convenors, etc. or a combination of these?

GOOD LUCK! HAPPY TELECONFERENCING!