A View of Educational Television

GPL TV SYSTEMS
EDUCATION & TRAINING PRODUCTS GROUP
THE SINGER CO.

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The subject of television in education, and its role in the classroom has been discussed, reported and written in numerous ways ranging from one-page "hand-outs" to weighty volumes. Why then, another booklet on ETV? Simply because our investigation of available material indicates that existing literature over-emphasizes one particular phase of ETV, or one particular piece of equipment; is either so general that its use as a practical tool is questionable, or so technical that the non-engineering oriented audio-visualist is lost in a sea of specifications and seemingly complicated nomenclature.

It is not the intent of this booklet to make a TV specialist of the educator who finds himself involved in the exploration or implementation of ETV in any of its phases. It will attempt, however, to present a clear, objective picture of the "whys," "whens" and "hows" of ETV; to illustrate methods and techniques; to show "typical" systems — from the simple one-camera arrangement to the multi-equipped studio; to discuss the language of television, how to get started with ETV, and federal aid to education programs; auxiliary equipment necessary for the complete studio operation will be illustrated; and, on the following page, statements from several distinguished educators concerning the role of the TV camera in the classroom.

A View of ETV

Television provides a better view. This is the basic justification for using CCTV in the classroom. "Better view" means many things: More people see the same picture; the view is magnified or modified; things normally not seen by the human eye can be rendered visible; the teachers can see themselves as others see them; the same thing can be shown repeatedly.

Although CCTV equipment should not be acquired before its objectives are clearly defined, CCTV is the most versatile and useful audio-visual teaching aid.

Raymond P. Ahlquist, Ph.D.
Associate Dean, School of Medicine
Medical College of Georgia

Closed circuit television in the classroom now deserves a second and a closer look. During the past half decade instructional technology, encompassing multimedia self-directed study materials, more sophisticated and versatile hardware and the development of random-access, information storage and retrieval approaches have teamed up with closed circuit television to provide systems resources never before available to teachers or students.

Sufficient implementation results are available to reveal trends to equip schools with total communciation facilities — to enable individuals in carrels, small groups in seminar rooms or large groups in auditoriums to enrich their learning experience through the almost unlimited capabilities of electronics.

Dr. Philip Lewis, Director
Bureau of Research, Development
and Special Projects
Board of Education, Chicago, Illinois

It is beyond question that even the imaginative and intelligent use of television can ever take the place of the all important educational experience that is the vital dialog between teacher and student, an exchange which should be at once an adventure in searching exploration by the student and an alert and judicious forming and informing by the teacher.

It is also true, however, that television can serve the teacher very well. Indeed, it enables him to present carefully selected material in a much more imaginative, graphic and creative way than the person-to-person, live classroom communication allows.

Therefore, the effective use of television will stem from the prudent answer to three questions which the teacher should ask: (1) what am I teaching? (2) how do I teach it? (3) and from the body of material I am teaching, what can I convey better with television than without it?

Rev. John F. Boyle, S.J.
Director, Communications Teacher-
Training Program
Fordham University College of
Philosophy and Letters
Shrub Oak, N. Y.

Instructional television is a complex process; a number of elements comprise the profitable employment of this potent medium of communications in formal education. Television should be used selectively, creatively, discriminately. Ideally, the educational trustee, board member, administrator, supervisor, and practitioner should each appreciate the different approaches to producing, to staffing, to equipping, to distributing and receiving, and to using that which is termed televised instruction. Before specific systems determinations can be made, educational needs must be defined and educational goals and objectives clearly determined.

Today, extensive use is being made of television at every educational level and with virtually every content area. As we look to the future, the picture is even brighter. Television production, recording, distribution and reception equipments will continue to improve, because of an attentive industry and a constantly developing technology. Education can look forward to a better quality television picture and sound, and to more automated, transistorized, versatile and economical ETV hardware. Recorded program sources will increase — both courses, units of instruction, individual lessons and segments for insertion within locally produced television lessons.

And unfortunately so, for this nation will be required to know more in order to teach more to enable students to learn more in order to earn a livelihood— let alone achieve major accomplishment.

With the pressures facing American education, and with the need to improve and expand the teaching-learning process, it seems clear that television must become an increasingly important assistor to the teaching, the instructor, and the professor at every educational level.

Jack McBride
Director of Television and General Manager
Station KUON-TV, University of Nebraska
General Manager, Nebraska Educational
Television Network, ETV Consultant

A View of ETV as Seen by the Educator

During the past 25 years, advances in the technical world have far outpaced new developments in the educational system. The increased interest in television during the past decade is a manifestation of educations attempt to adapt modern technology to new techniques and contemporary problems.

Television, however, is far more than a passive electronic device for displaying films, tapes, and programs that multiply or magnify the existing system. It is the window through which a new world of electronic devices will be seen, devices whose flexibility and ability to serve are limited only by man's imagination.

The time has come for educators to re-evaluate themselves, their system and its objectives in light of what technology has to offer today and promise for tomorrow. The educator must become a specialist instead of a general practitioner, and as such learn to work with teams of specialists so that together they may move toward the accomplishment of such ideals as a truly individual education.

J. Brady Garber
Educational Communications Department
Bedford Public Schools
Bedford, New York

A decade of development in instructional television has resulted in an improved, flexible technology. There is no longer any doubt that television is a feasible educational tool. Television equipment of varying complexity and cost can be assimilated into the school program. Indeed, students have shown themselves to be quite skillful in using the equipment; they adapt themselves to it with greater ease, at times, than do faculty members.

Television is essentially a neutral communications medium. The quality and impact of the output depends entirely on the quality and resourcefulness of the input. Ingenuity in planning, creativity in production, and realism in evaluation are absolutely necessary if instructional television is to have a lasting influence on modern education.

Brother Louis, F.S.C.
Television Project Director
Saint Patrick High School, Chicago, Illinois

Television is one of the most exciting and challenging of all the communication mediums a teacher can use. Exciting, in that an imaginative teacher can use all the electronic effects and capabilities of the medium to fire the imagination of his students, to make more concrete and meaningful many of the concepts he teaches, thus promoting better learning. Challenging, in that he will very carefully have to define his objectives, plan extensively, and examine his teaching methods closely to make his teaching more meaningful, succinct, and efficient. These things can certainly lead to improvement in the quality of instruction.

Eugene L. Edwards
Coordinator of Instructional Services
Monroe Community College, Rochester, N. Y.

Of all the factors which determine the success of a closed circuit television program, the most important is the attitude of the classroom teacher. A negative or indifferent approach to television can detrimentally effect, even nullify the desired results.

Any educational system contemplating the introduction of instructional television to its curriculum should give utmost priority to a plan of staff orientation which includes the following major points:

1. Television will not usurp the traditional prerogatives of the classroom teacher.
2. A close rapport between the classroom teacher and the television teacher can result in a new and unique form of team teaching.
3. Television can aid the classroom teacher by providing experiences hitherto impossible in a physical or economic sense.
4. Through objective and constructive criticism, the classroom teacher can play a vital role in successful television programming.

Norman C. Locke, Director
Audio-Visual & Television Facilities
Chelmsford School Department
Chelmsford, Massachusetts

Educational Television, or "ETV," is the commonly accepted term to connote any video-transmitted program, intended to educate, instruct, or culturally enrich viewers at home, in the classroom or any other specific school or college location. An integral part of the entire ETV System is Closed Circuit Television, or "CCTV." CCTV is the transmission of one program, or several programs simultaneously, using cable or microwave network, over as many channels as may be required for selective viewing.

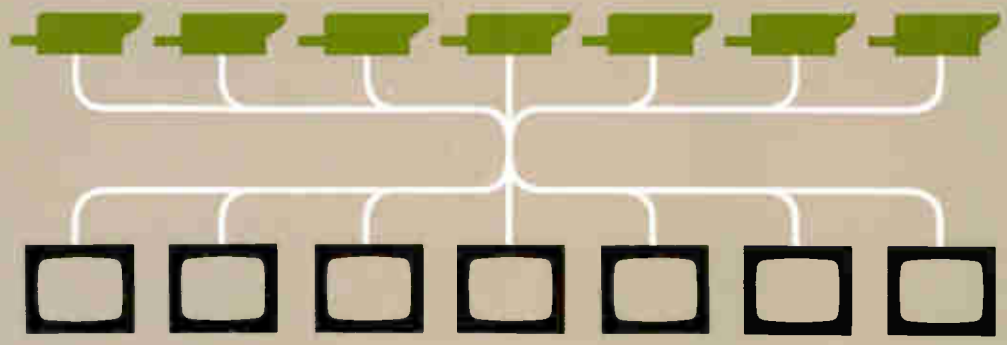
Transmission—
Open Circuit, VHF or UHF
Closed Circuit, RF, Video, Microwave relay

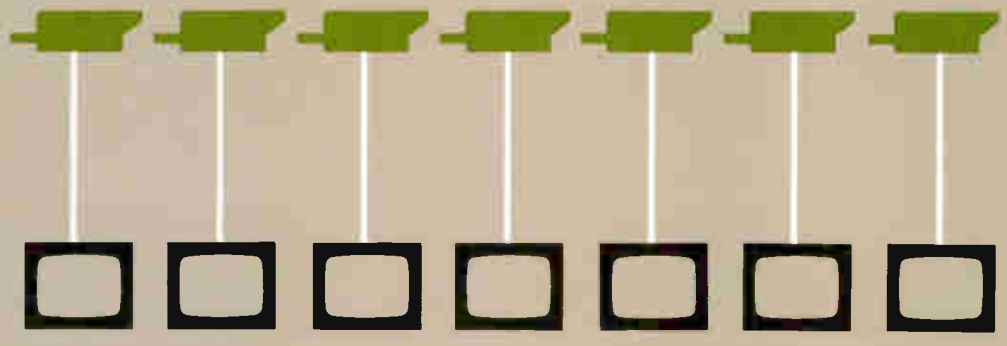
Educational Television can be transmitted through both open and closed circuits, with technical variations available for either—depending on the particular needs of the class, school, or district. *Open Circuit VHF (very high frequency)* or *UHF (ultra high frequency)* is broadcast from a transmitter to all sets within the range of the signal. With *Closed Circuit*, the TV receiver must be linked directly to the program source. With a CCTV system, the school (or district) has complete flexibility to plan, create, produce, schedule and transmit its own programs. Additionally, CCTV offers the flexibility of choosing either "live," filmed or videotape programs.

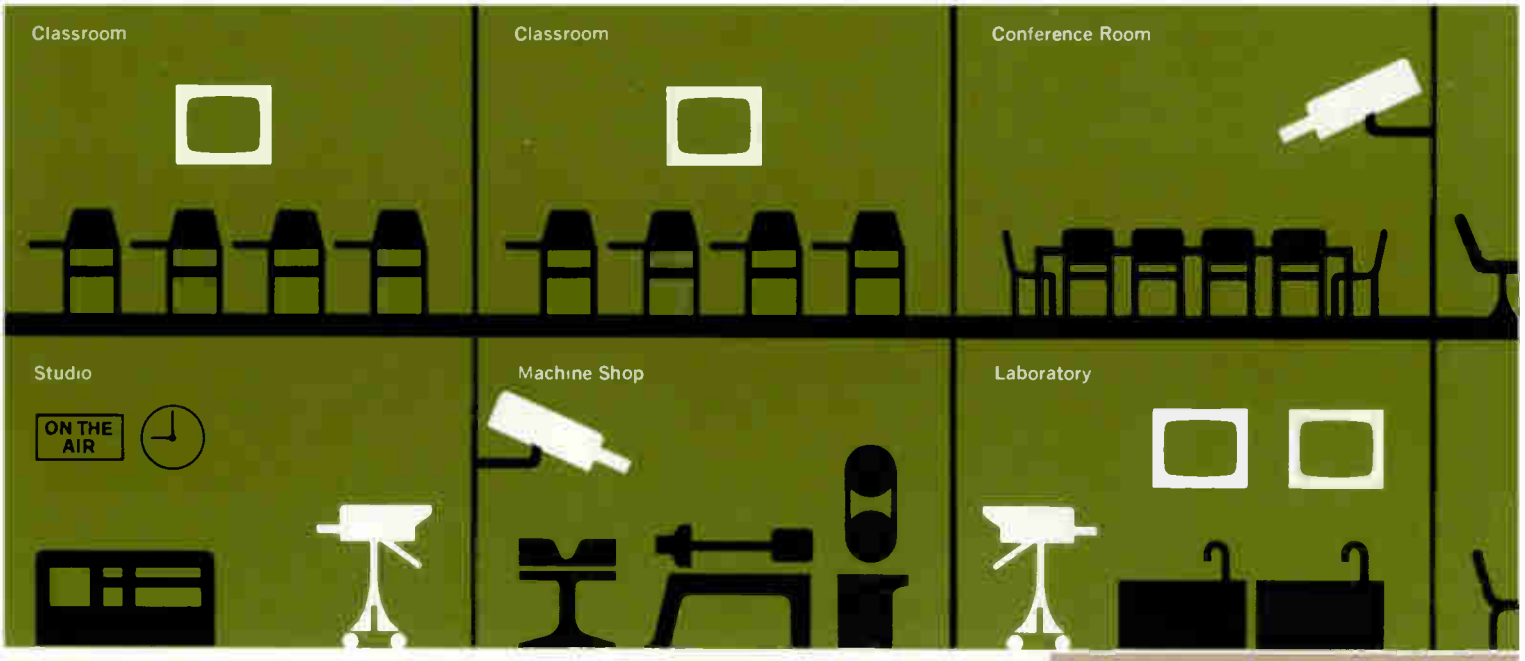
There are two methods of transmitting CCTV. With *RF* (radio frequency), the signal is "private." Up to 12 different programs can be transmitted simultaneously over a single coaxial cable, with receivers tuned to pre-designated channels.

Video transmission does not use radio frequencies. The signal is received directly by a video monitor with no provision for tuning. As Video normally produces a superior picture image, it is generally used for applications such as laboratory experimentation, or whenever more exacting definition is required.

A View of ETV Methods and Techniques

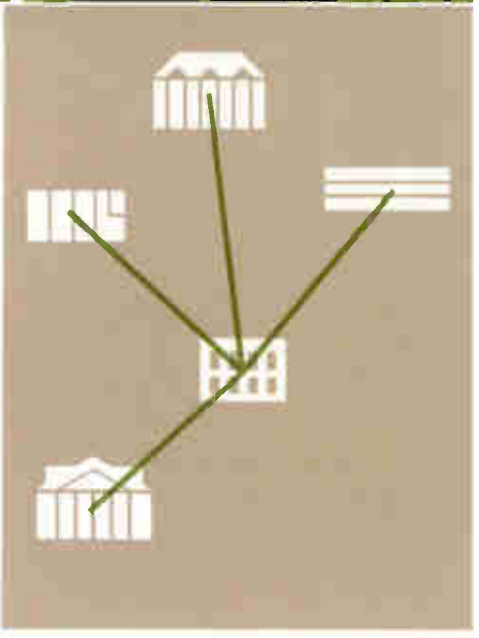






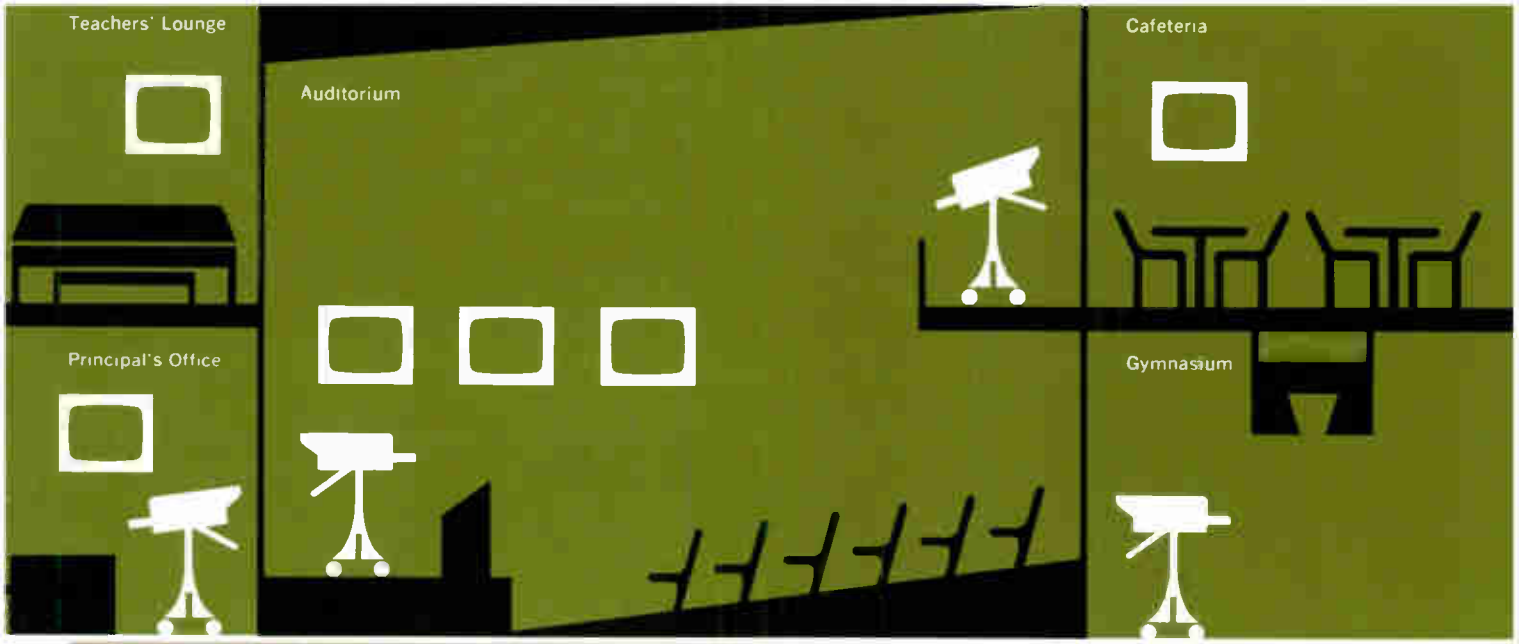
A View of ETV in the single-building school...

The illustration above shows how ETV can typically be utilized within a single school building. Controlled from the studio, either broadcast or closed circuit TV programming can be distributed to any or all classrooms plus any designated areas such as lounges or the cafeteria. Areas such as science laboratories, principal's office and auditorium can be equipped for program origination, with reception or monitoring available throughout the school or, if desired, limited to any designated room or rooms.



...in the "campus-style" school...

On the college campus or multi-building primary or secondary school, the ETV system can link all the dwellings by use of either *leased coaxial cable* or *low power microwave*, generally used only when the buildings are a considerable distance apart. A coaxial cable system, such as the one illustrated above, is installed and maintained by the local telephone company. The "rental," normally paid monthly, is determined by the cable length required.



...and for the school district...

Although coaxial cable can also be used to connect schools remotely located from one another, terrain and distance considerations generally indicate the use of over-the-air microwave signal relay distribution. With this system, commonly referred to as "2500 MC" (the frequency assigned for this purpose by the Federal Communication Commission), each channel is beamed from the transmitting facility directly to receiving schools within direct sight, or "bounced" off relay antennae to schools hidden from the main transmitter as illustrated above: This low power microwave generally requires far less expensive equipment than that required for normal commercial microwave transmission covering extensive viewing areas. This closed-circuit, "non-tunable" system is not used for home commercial TV.

"GPL TV" has been a hallmark of quality throughout education, industry, business and government since 1945, when a group of scientists left the MIT Radiation Lab to form General Precision Laboratories, Inc. The original name of the company eventually gave way to today's GPL Division, General Precision, Inc., but the quality standards established by the original founders—most of whom are still with the company—have maintained an uncompromising position of excellence.

GPL Research and Development facilities continually enable the division to play a vital pioneering role in all areas where video can contribute to improve efficiency and cost reduction.

A list of GPL TV "firsts" could easily fill a book the size of this one. The list is impressive, dating back to the very start of video transmission itself. GPL was an initial supplier to the broadcast industry in the late forties. GPL furnished the early remote-controlled studio viewfinder camera, described as "too revolutionary for its time." GPL was a pioneer in the development of vidicon equipment for the earliest closed-circuit and educational systems. GPL was an active participant in the pioneer ETV installation — the Hagerstown Project.

Later, GPL engineered the first high resolution TV system, and just recently introduced TVs first fully-modular, solid-state, miniaturized camera.

In more esoteric areas, engineering capabilities for military video projects such as Airborne Command & Control data retrieval and display; precision TV annotation and magnification; "real-time" TV projection of color images from black and white lenticular film sources; and scores of others, enable GPL to design and produce commercial/educational TV cameras and systems that meet the most critical requirements of quality, definition and endurance.

There is no "double standard" at GPL . . . no dual design and production facilities, one for commercial and one for military. Each GPL educational TV component specified for a school system has already passed the more critical specifications required by the military.

That's merely one of the many reasons schools, school districts and universities all over the country specify GPL with confidence.

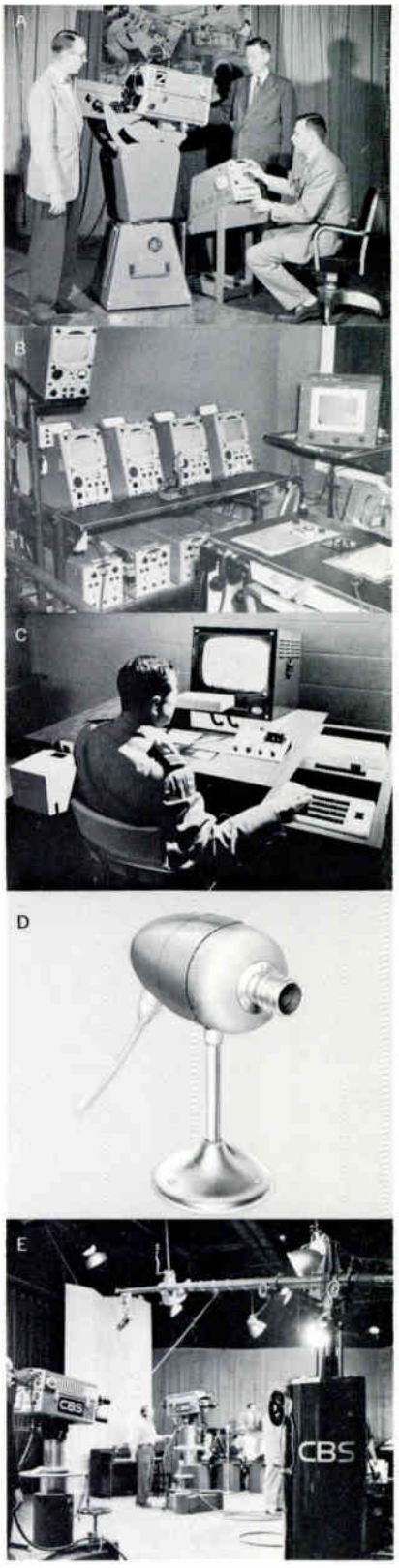
A. Early Remote-Control Viewfinder Camera

B. Typical studio set-up during TV's infancy.

C. Sophisticated video equipment such as this GPL "PARD" data retrieval and display console, are used for numerous military Command and Control applications.

D. Early model GPL "bullet" TV camera.

E. GPL broadcast viewfinder cameras used during the early 50's.



A View of GPL

GPL Cameras, Monitors, Consoles and accessories are designed to answer virtually all educational television needs, and are designed to integrate with all other audio/visual equipment (described on pp 20 & 21) to provide the school or school system with a complete ETV studio.

A. Precision 990 One-Piece Camera

B. Precision 1000 One-Piece Camera System

C. Precision 1000 Two-Piece Camera System

D. Precision 1200 Viewfinder Camera

A. ETV Studio Control Console

B. Precision 950 EIA Sync Pulse Generator

C. Waveform Monitor (Half Rack)

D. Video Tape Recorder Remote Control

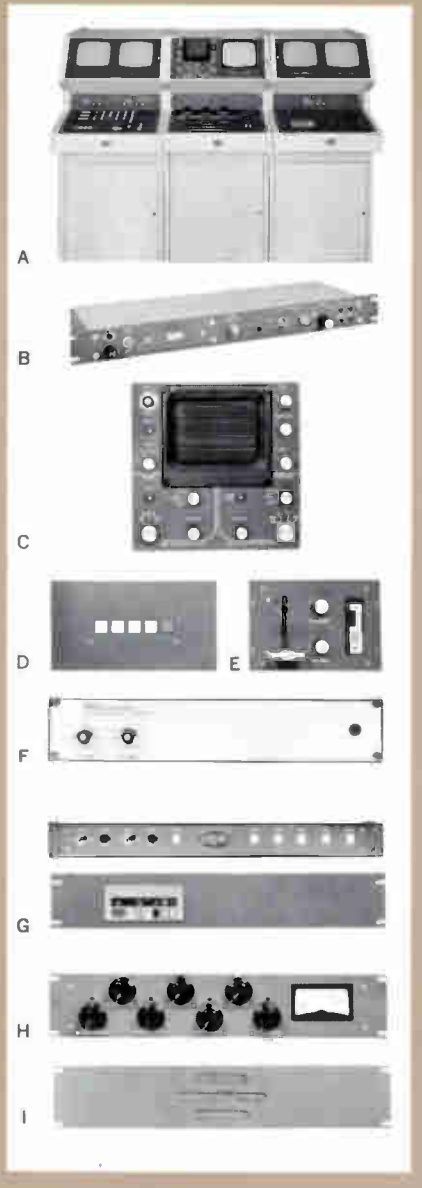
E. Special Effects Control

F. Special Effects Generator

G. Projector Control Panels

H. 7 Input Audio Mixer

I. Cue Amplifier and Speaker



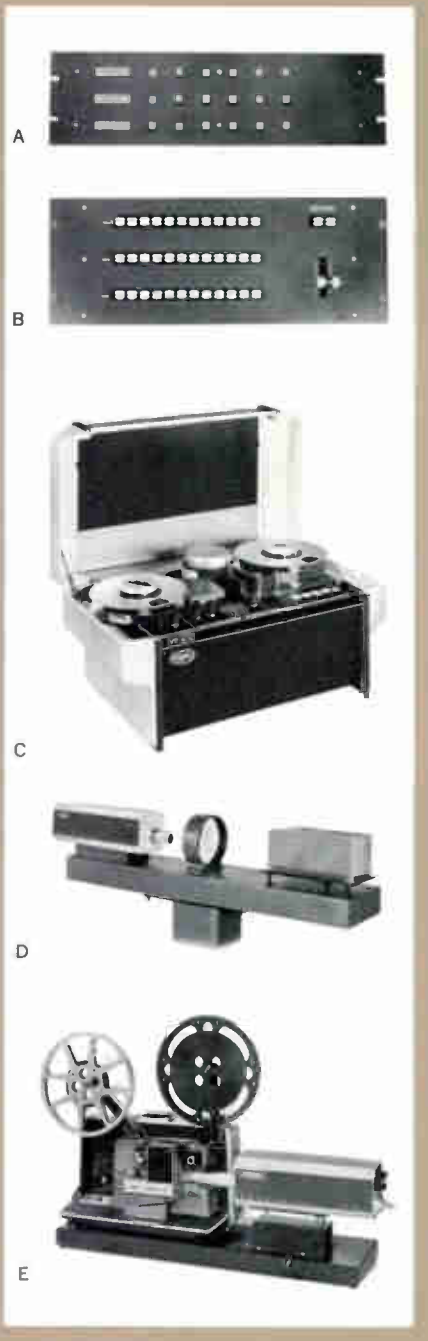
A. Special Effects Input Switcher

B. Switcher/Fader with Preview Deck

C. VR-400 Video Tape Recorder

D. Film Chain Multiplexer

E. TV 16 Uniplex Film Chain



A View of GPL TV Equipment

A. 9" Transistorized Monitor, Cabinet or Rack Mount

B. 14" Transistorized Monitor for 19" Rack Mounting

C. 23" Television Monitor

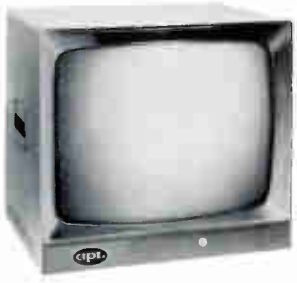
D. 25" Television Monitor

A

B

C

D



A. Dual 9" Transistorized Monitors for 19" Rack Mounting

B. 23" or 25" Television Monitor, Yoke Mount

A

B

A. Fixed Lenses

B. Zoom Lens

C. Intercom Headset

D. Pan And Tilt, Medium, Light, or Heavy Duty

E. Tripod And Dolly

A

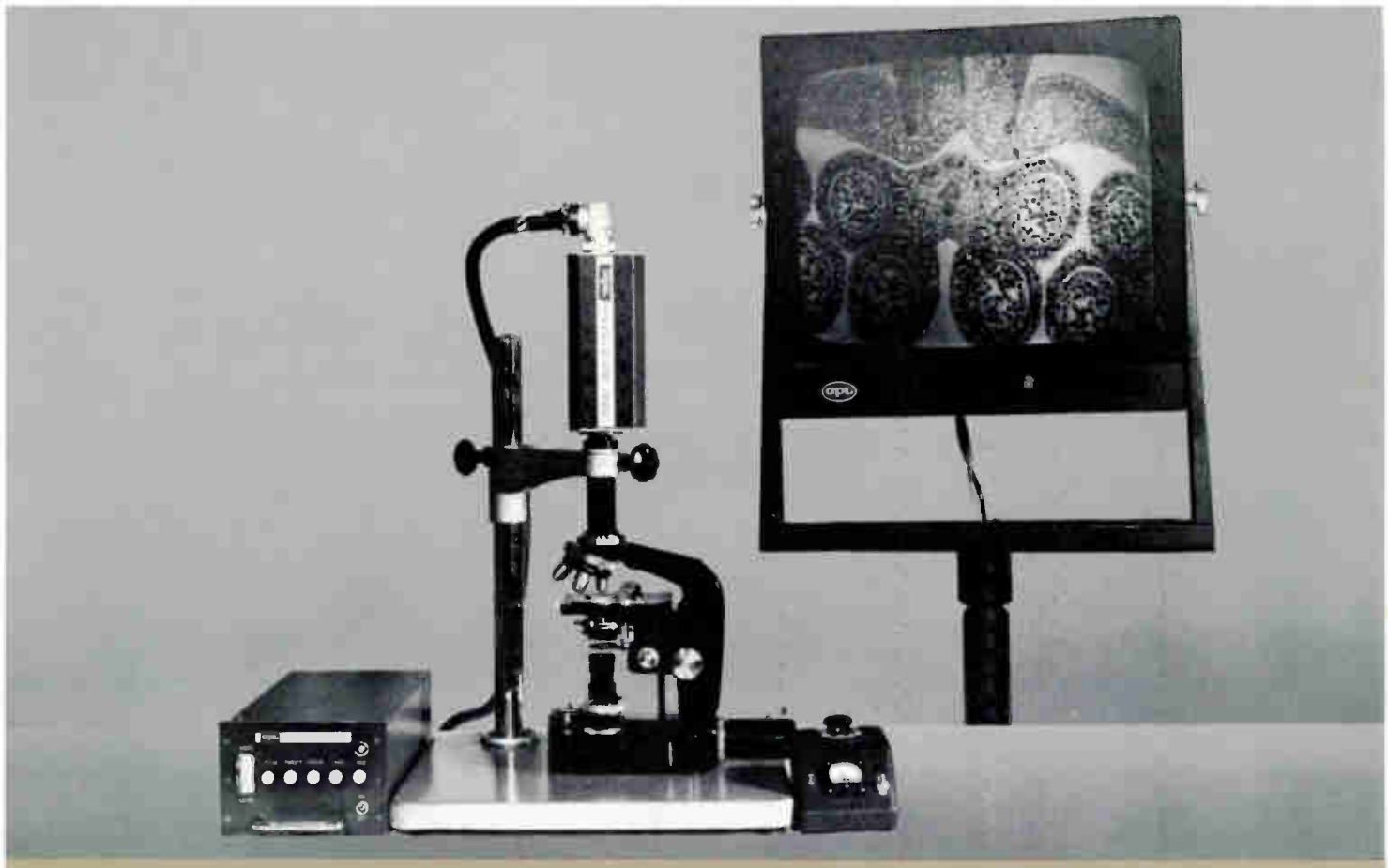
B

C

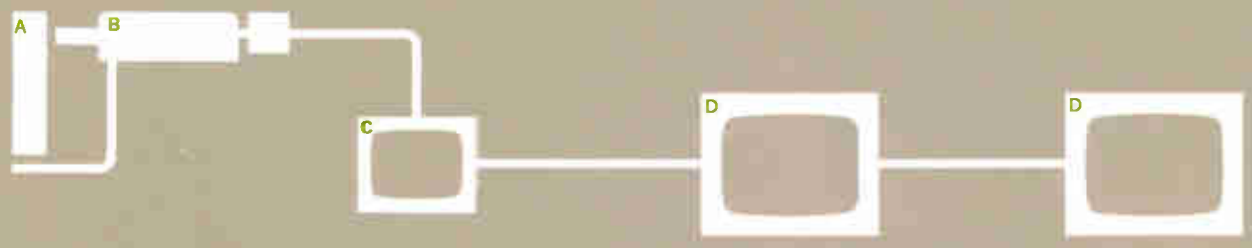
D

E

The following pages show how closed-circuit ETV equipment can be used in typical application situations — from a simple single-camera system to a complete, complex studio.



Single Camera Chain

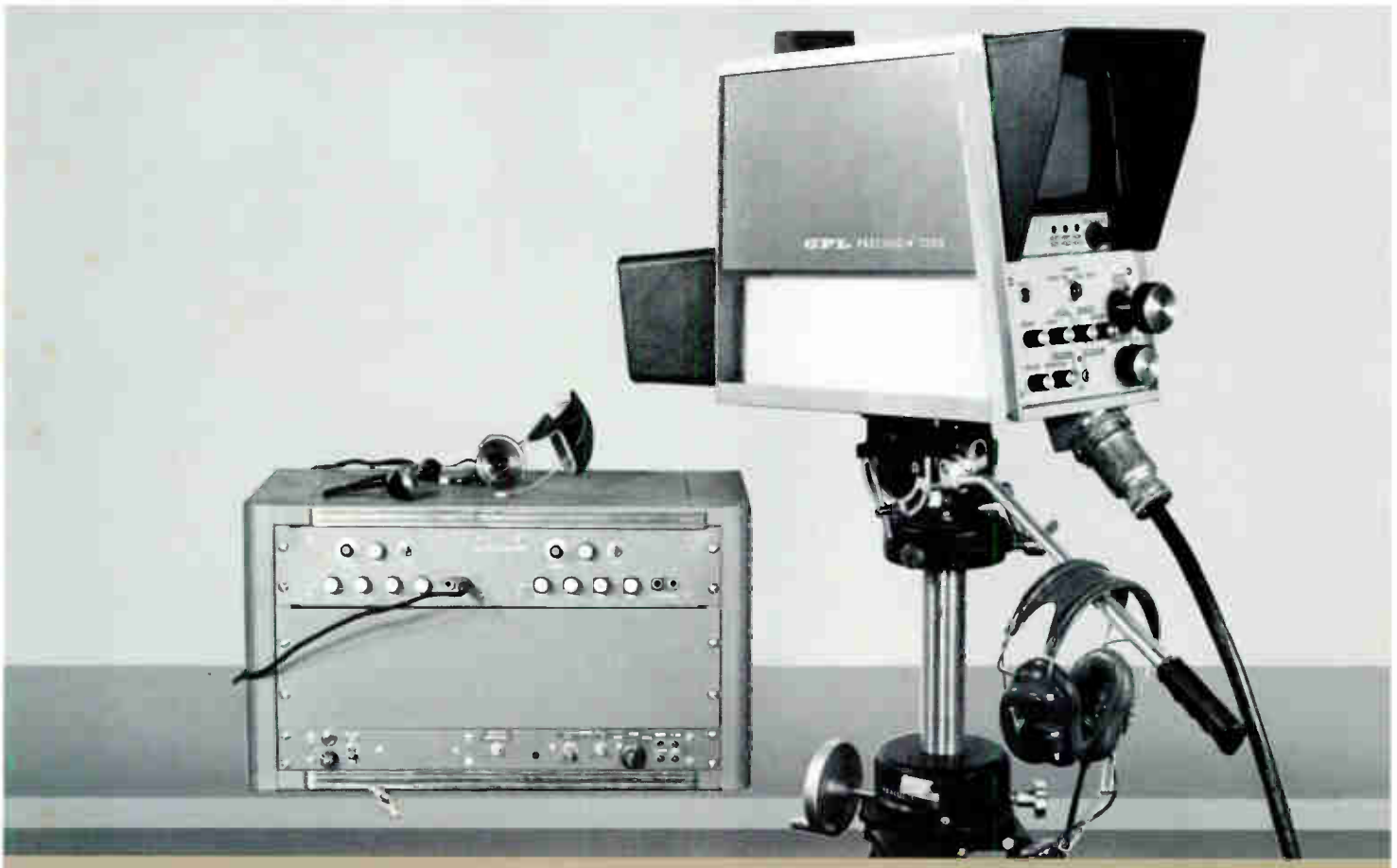


One camera, picking up any object & transmitting signal to one or more monitors.

Features

- ☐ Permits clear, mass viewing of single specimen.
- ☐ For application such as microscopy, individual students' microscopes are unnecessary.
- ☐ Lecturing becomes clear and uniform. Instructor can remain in one place.
- ☐ Can be switched into a master ETV program.
- ☐ Excellent supplement for a lecture period.
- ☐ Completely controlled by teacher.
- ☐ Simply installed and operated.

A. Microscope
B. Camera
C. 14" Instructors Monitor
D. 23", 25" Class Room Monitors



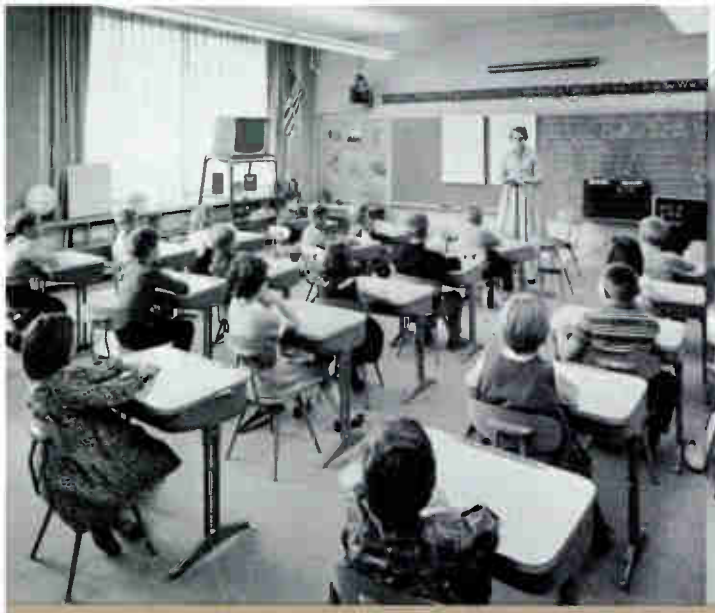
Single Viewfinder Camera Chain

One Viewfinder camera for remote programming

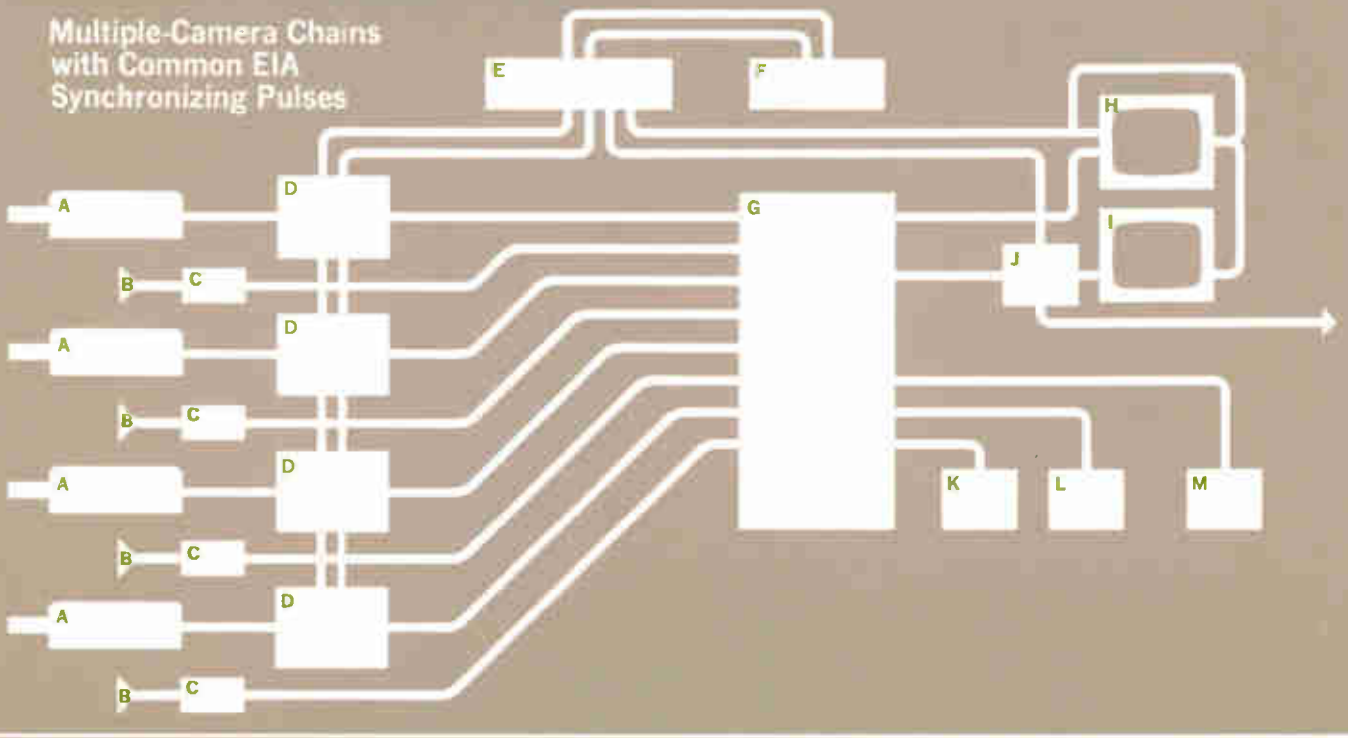
Features

- ☐ Portable, lightweight.
- ☐ Offers non-composite signal output for connection to master studio control room.
- ☐ Offers composite signal output for on-location, video taping or input to master distribution system.
- ☐ Offers advantage of remote pick-up of live programs.
- ☐ Adaptable to zoom lens or multi-lens turrets.
- ☐ Space provided on front panel of CCU for accessories.

A. Portable Viewfinder Camera
B. Portable Camera Control Unit



Multiple-Camera Chains with Common EIA Synchronizing Pulses



Remote area observation

Features

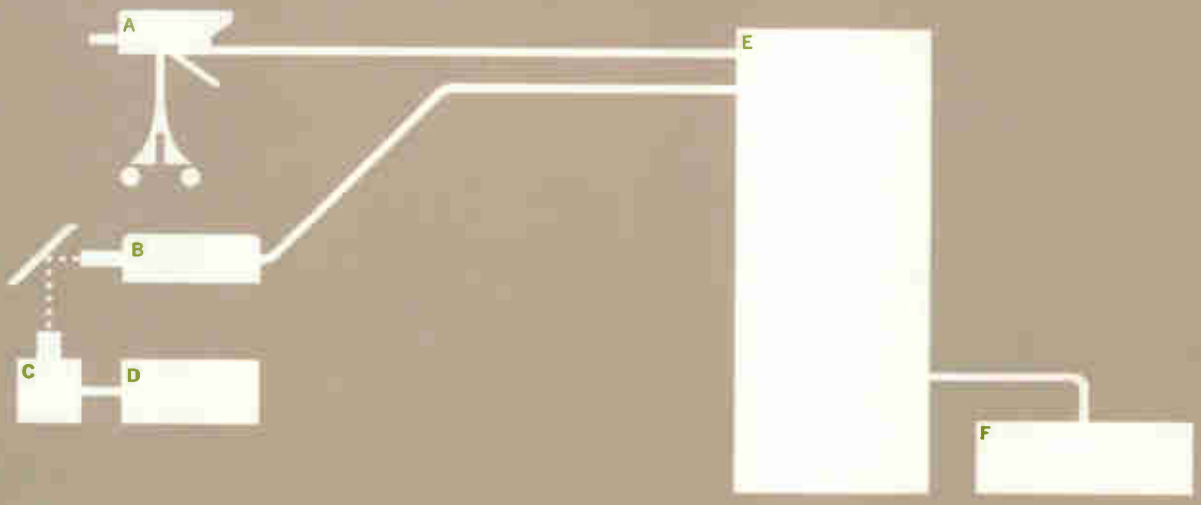
- ☐ Automatic sequential switching of viewed areas.
- ☐ Capability to select and "hold" any area for detailed study.
- ☐ Audio intercom between areas.
- ☐ Complete EIA operation for non-interrupted switching.
- ☐ Provision for pan, tilt, and zoom.

Above left, Elementary school teacher is 'monitored' by CCTV camera.

Above right: At a remote location, college education students observe the teacher's classroom technique and student response.

A. EIA Cameras
B. Sound Pickup Device or Microphone
C. Audio Pre-Amp
D. Camera Control Unit
E. Pulse Distribution
F. EIA Synchronization Generator
G. Master Control
H. Sequence Monitor
I. Hold Monitor
J. Video & Synchronization Mixer
K. Sequenced Audio
L. Select and Hold Control
M. Sequential Switch Timer

Dual-Camera Mobile Originating and Recording System

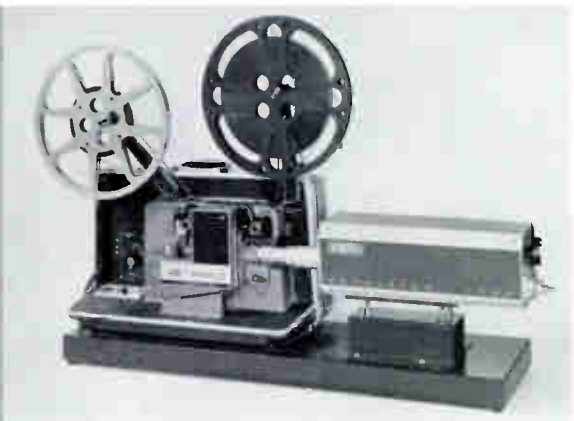


Complete mobile studio.

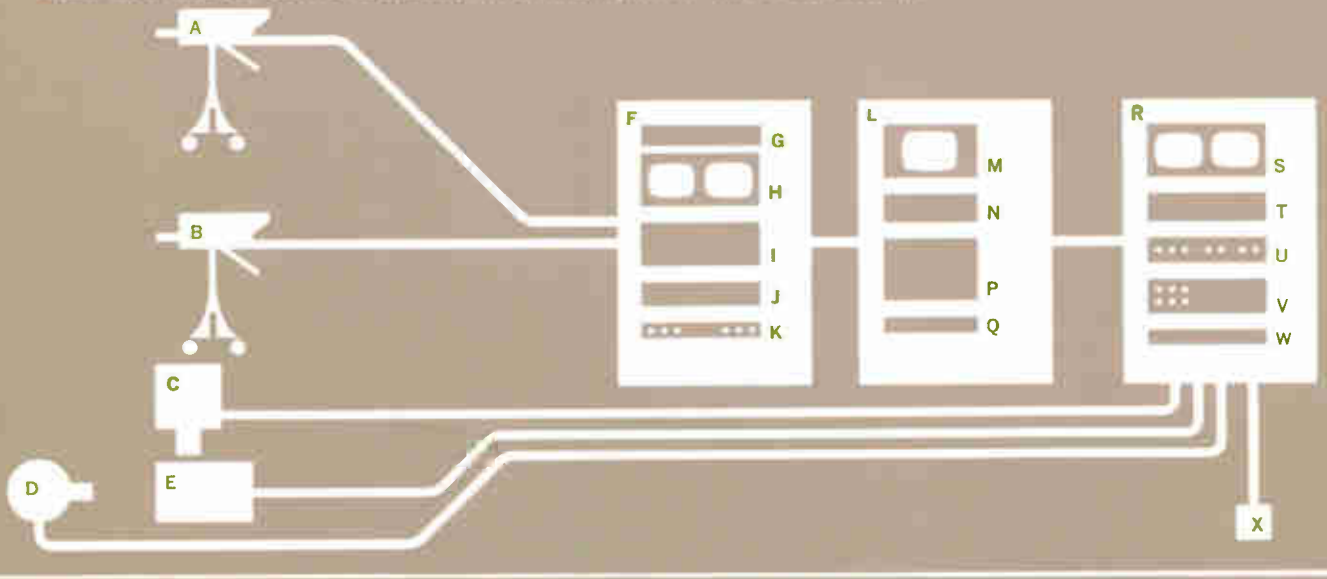
Features

- ☐ Includes slide and graphics camera chain.
- ☐ Complete EIA operation.
- ☐ Compact.
- ☐ Finger-tip controls.
- ☐ Accommodates video tape recorder.
- ☐ Programming can originate from any location.
- ☐ Equipped to feed a master distribution system.
- ☐ Excellent teaching supplement.
- ☐ Easily controlled by teacher.

A. Viewfinder Camera
B. Film and Graphic Camera
C. Film Projector
D. Remote Control for Projector
E. Audio Video Mobile Console, including Line and Preview Monitor, Waveform Monitor, Dual Camera Control Unit, Switcher, Audio Mixer Preamp, EIA Synchronization Generator, Special Effects Generator, and Special Effects Switcher
F. Video Tape Recorder or Master Distribution System



Dual Viewfinder Camera Studio with Multiplexer and Film Chain



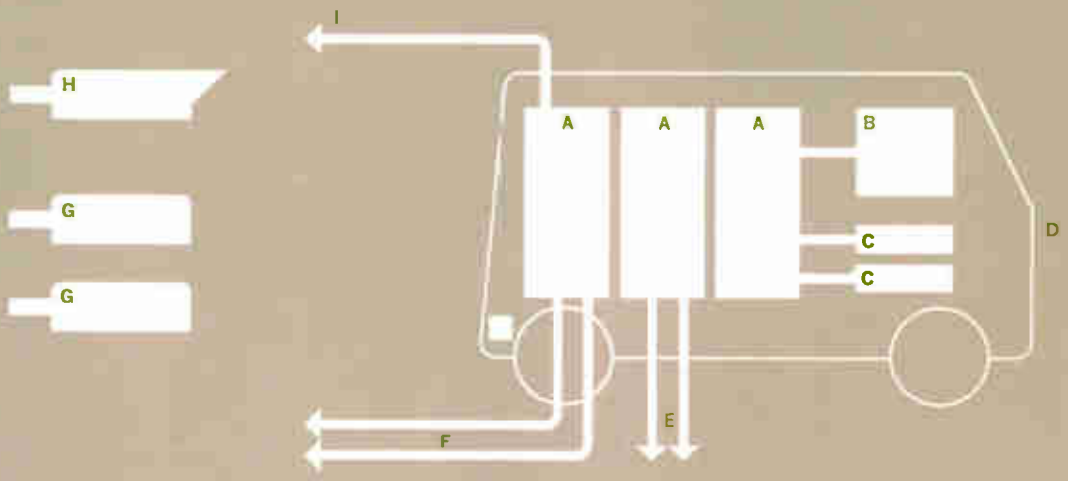
Complete, fixed, professional television studio, equipped to produce better live and taped programs of broadcast quality.

Features

- ☐ Meets or exceeds broadcast specifications, including EIA RS-170.
- ☐ Compact.
- ☐ Provides for all program special effects, switching, fading, superimposition, previewing, audio and film chain operation.
- ☐ Fully transistorized.
- ☐ Adaptable to zoom lens or four lens turret.
- ☐ Simply operated by students.

A. Studio Camera
B. Studio Camera
C. 16mm Motion Picture Projector
D. Slide Projector
E. Multiplexer With Film Camera
F. Control Console #1
G. EIA Synchonization Generator
H. Studio Camera Control Monitors
I. Camera Control Panels
J. Special Effects Generator
K. Effects Switcher A & B
L. Control Console #2
M. Program Monitor
N. Waveform Monitor
P. Switcher Fader with Preview Deck
Q. Audio Video Modulator
R. Control Console #3
S. Preview and Film Control Monitors
T. Film Camera Control Panel
U. Projector Control Panel
V. Six Channel Audio Mixer Pre Amp
W. Video Distribution Amplifier
X. Audio Input

TV Van



Complete single or multi-camera mobile studio.

Features

- ☐ Outdoor programming under any environmental conditions.
- ☐ Economical—easily transported anywhere within a school district.
- ☐ Permits programming anywhere within a school or school district.

A Mobile Studio Control Consoles
B. Video Tape Recorder
C Audio Tape Recorders
D. Vehicle
E. Pan-Tilt-Zoom Control Cables
F. Camera Cables
G. Remote Observation Cameras or Graphics Camera
H. Portable Studio Viewfinder Camera
I. Audio Input

The single camera chain — camera plus monitor(s) — is all that is required for the most basic ETV arrangement.

For the studio, a viewfinder camera, monitors and whatever optional console equipment or controls deemed necessary (described on pages 12 and 13) is required.

However, the auxiliary originating and studio equipment described here add immeasurably to the versatility and flexibility of the ETV studio. A video tape recorder and one or more of the various projectors available mean that recorded, filmed or taped material can be integrated with live programming to broaden the use of ETV as an important part of the curriculum. Studio equipment such as microphones, speakers, audio components and proper lighting add greatly to program quality and versatility.

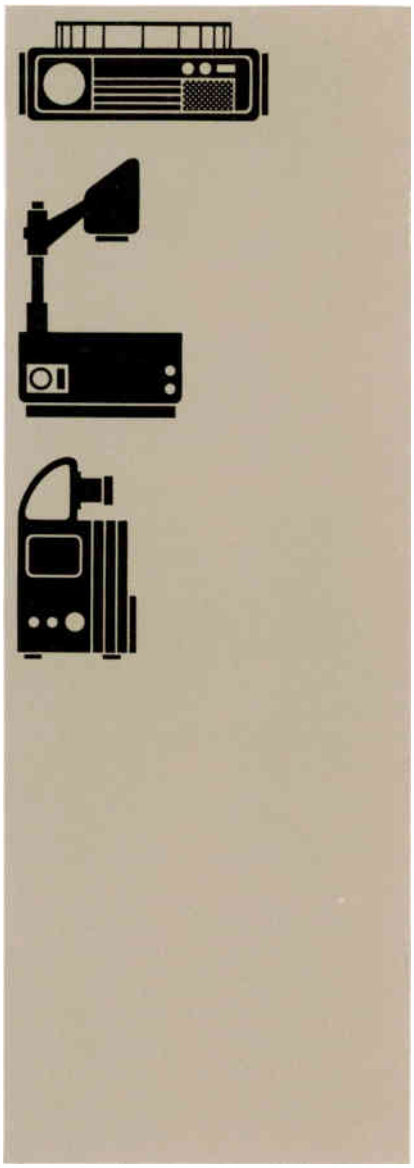
Schools or colleges planning an ETV studio may want to consider most of this equipment as part of the initial investment. However, due to either budget limitations or scheduled studio expansion, much auxiliary equipment can be added at a later date.

VIDEOTAPE RECORDER Use of a Videotape Recorder (VTR) allows the school full control of scheduling, program content and repeat telecasting to multiple audiences. Using a vidicon camera and sound system complete programs can be taped for either instant or future playback on standard monitors or receivers. The tapes provide quality comparable to live telecasting, are easily edited or up-dated, can be reused repeatedly and preserved indefnitely. The library can include tapes originated at the studio or purchased separately.

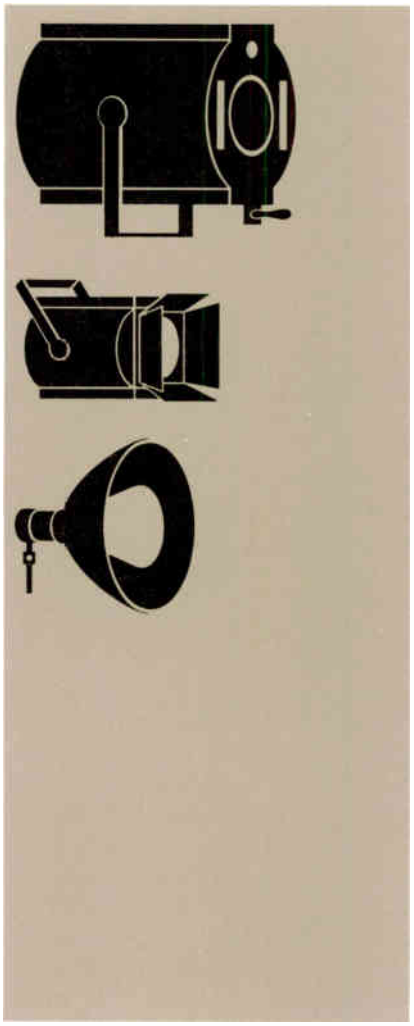
FILM PROJECTOR When used as part of a film chain (see System #5, page 18, and film chain photo, page 12) the motion picture projector is used to present material such as movies and lectures already on film.

A View of ETV Auxiliary Equipment

SLIDE, OVERHEAD AND OPAQUE PROJECTORS The use of these projectors to telecast slides; transparent "viewgraphs," alone or with overlays; photographs; maps; diagrams; and most other transparent or opaque materials, offer unlimited flexibility to the ETV studio.

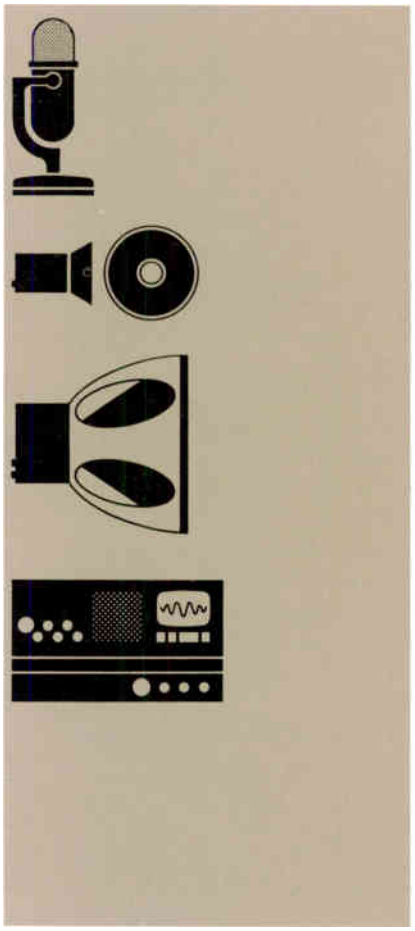


LIGHTING Providing necessary direct, back or fill lighting for the studio or remote origination broadcast is relatively simple. The objective is to achieve illumination with the proper contrast and balance to provide a good "signal" or picture on the monitor. Requirements vary slightly depending on studio size, external available light (for remote telecasting) and desired effects. Your GPL system expert or ETV planner can recommend the best lighting arrangement and necessary equipment for your particular studio.



AUDIO EQUIPMENT Microphones for "on-camera" performers; plus loud speakers, P.A. amplifier and head-sets to provide studio-to-control-room communication are important components of the well-fitted ETV set-up. Microphones most commonly used are the standard table models; overhead "boom" movable mikes; and the popular lavalier, worn by the performer. Other audio components, such as record playing and audio tape decks add programming flexibility but are not considered essential for the basic ETV studio.

Other auxiliary equipment, such as tripod, dolly, telephone headset, pan and tilt units are included with the GPL TV equipment pictured on pages 12 and 13.



This glossary is intended merely to serve as a guide for the non-technical educator involved either directly or indirectly with ETV. It's intention is to include only those terms with which the educator is likely to become involved.

AMPLIFIER An electronic device used to boost a weak signal without undue distortion to the signal.

AUDIO-VIDEO MIXER (MODULATOR) An electronic component of an RF (radio frequency) transmission system that combines the separate audio and video signals from microphone and camera into a single high frequency signal. It is then transmitted to the receiving equipment where the signals are again separated and directed to the speaker and screen.

BAND A portion of the frequencies in the spectrum allocated by the FCC. AM radio extends from 550-1600 kilocycles; FM radio from 88-108 megacycles; VHF TV for channels 2-13; UHF TV for channels 14-83. ETV band of 2500-2690 megacycles for point-to-point microwave transmission.

BANDWIDTH The frequency range of a specific signal being transmitted. Each United States broadcast television channel covers 6 megacycles for both audio and video.

BROADCAST The "open circuit" transmission of either radio or television signals through the air at frequencies which can be received by any appropriately tunable equipment within range of the transmitter.

CAMERA CHAIN A single camera system plus necessary associated electronic devices as needed to transmit a television picture.

CHANNEL The segment of the spectrum to which a television station is assigned or to which a closed circuit television camera is tuned when transmitting via radio frequencies.

CLOSED CIRCUIT A system of transmitting TV signals to receiving equipment directly linked to the originating equipment by coaxial cable, microwave relay, or telephone lines.

COAXIAL CABLE A special cable designed to carry one or more channels of television signals simultaneously.

EIA STANDARDS EIA, Electronics Industry Association, sets standards for equipment manufacturers. Their standards must be met by any television equipment intended for broadcast transmission or reception.

FILM CHAIN One or more film projectors, plus optics and a TV camera used to pickup and transmit images.

GAMMA CORRECTION Electronic compensation to enhance gray scale reproduction in a televised image. Occasionally used in televising film where varying densities cause undesirable gray scale rendition.

GRAY SCALE White-through gray-to black shade values on the TV screen.

IMAGE ORTHICON A television camera pickup tube commonly used in commercial broadcasting, and occasionally used in closed circuit installations.

INTERLACE A method of scanning the faceplate of the vidicon tube in two separate fields of alternate lines so that each image is scanned twice.

KINESCOPE RECORDING A film recording made by a motion picture camera specially designed to photograph a television program directly off the front of a television tube. Sound is recorded simultaneously.

MASTER DISTRIBUTION SYSTEM Amplifiers, transformers and tap-off connections for transmission to receivers or monitors located within a building or between buildings. Includes external antenna signal reception and local program origination.

MICROWAVE A method of transmitting closed circuit radio and television signals through the air on a highly directional line-of-sight system from the originating station to one or more receiving stations.

MONITOR A special type of receiver used specifically in video reception, rather than RF. Video monitors are not tunable to channels, and must be used with video cameras. ("Monitor" also designates a receiver used by the cameraman or program director to check the transmitted picture.)

MULTIPLEXER A specialized optical device that makes it possible to use a single television camera in conjunction with one or more motion picture, film strip, and/or slide projectors in a film chain.

RECEIVER A television set, designed for tuned (RF) channel reception of sound and picture.

RESOLUTION The ability of a TV system to distinguish and reproduce fine detail in the subject televised.

RF (RADIO FREQUENCY) A system of transmission utilizing tuned bandwidths of the radio spectrum to carry both audio and video signals . . . as in commercial TV broadcasting.

SWITCHER A control which permits the selection of one image from any of several cameras.

SWITCHER-FADER A control that permits each of two or more cameras to be selectively fed into the distribution system. The "fader" permits gradual transition from one camera to another.

SYNCHRONIZING GENERATOR An electronic device that synchronizes the image scanned by the camera with the image appearing on the receiving tube. It is also used to avoid "picture roll" when switching between two or more cameras.

UNIPLEXER Projection of film directly into the TV camera.

VIDEO The visual components of a television signal.

VIDEO TRANSMISSION The picture signal applied directly to the viewing tube without use of an RF carrier. As circuit conversion and reconversion stages are unnecessary, there is no deterioration—resulting in a higher quality image.

VIDICON The camera pick-up tube in the vidicon camera, used in most closed circuit systems as well as filmed programs in broadcasting.

VIEWFINDER A small monitor built into the TV camera enabling the cameraman to see exactly what his camera is "seeing."

WAVEFORM MONITOR A test instrument indicating signal characteristics projected on a screen similar to a television receiver.

A View of TV Language

With the increasing number of aid to education laws, it is becoming more difficult to isolate those provisions which make funds available for the purchase of equipment (such as television). In order to receive monies from the Federal government for a specific project it is mandatory to know the purpose of a given piece of legislation, and to know where to apply.

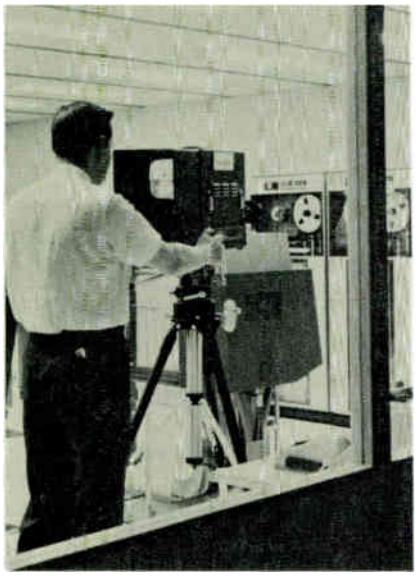
The following has been compiled with the aim of helping those institutions interested in using television as an educational tool. Generally, money is not available for the purchase of equipment as such. Only if the equipment serves as part of a larger educational program —as the means of accomplishing a specified goal—are funds made available.

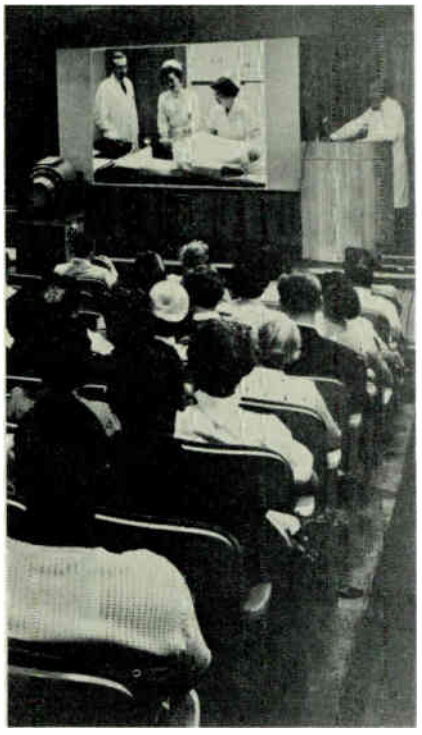
1. Purpose: Acquire educational equipment, specifically audiovisual equipment and television.
   Who may apply: Colleges and universities.
   Where to apply: State commissions.
   Authorization: Higher Education Act of 1965—Title IV A.
2. Purpose: Support educational programs in areas having high concentrations of low-income families. Funds can be used for hiring additional staff, constructing needed facilities, and acquiring necessary equipment.
   Who may apply: Local school district through State Education Boards.
   Where to apply: U.S. Office of Education, Division of Compensatory Education.
   Authorization: Elementary and Secondary Education Act—Title I.
3. Purpose: Support supplementary educational centers and services not presently available in area. Items such as mobile libraries, radio, television, and language laboratories can be acquired.
   Who may apply: Local education agencies.
   Where to apply: U.S. Office of Education, Division of Plans and Supplementary Centers.
   Authorization: Elementary and Secondary Education Act—Title III.
4. Purpose: Construct and equip national and regional research facilities.
   Who may apply: Educational laboratories and research development centers.
   Where to apply: U.S. Office of Education, Division of Educational Laboratories.
5. Purpose: Construct or improve academic facilities in community colleges and technical institutes.
   Who may apply: Public community colleges and technical institutes.
   Where to apply: State commissions.
   Authorization: Higher Education Facilities Act—Title I.
6. Purpose: Construct or improve undergraduate academic facilities.
   Who may apply: Colleges and universities.
   Where to apply: State commissions.
   Authorization: Higher Education Facilities Act—Title I.
7. Purpose: Construct or improve graduate academic facilities.
   Who may apply: Public and private academic institutions, and graduate center boards.
   Where to apply: U.S. Office of Education, Division of Graduate Programs.
   Authorization: Higher Education Facilities Act—Title II.
8. Purpose: Strengthen instruction in science, mathematics, modern foreign languages, and other critical subjects.
   Who may apply: Local school districts.
   Where to apply: State education agency.
   Authorization: National Defense Education Act—Title III.
9. Purpose Support development and demonstration of educational materials and processes.
   Who may apply: Colleges, universities, State education agencies.
   Where to apply: U.S. Office of Education, Bureau of Research.
   Authorization: Cooperative Research Act.
10. Purpose: Provide for the development and testing of educational innovations in educational laboratories until ready for classroom use.
    Who may apply: Colleges, universities, agencies, and organizations.
    Where to apply: U.S. Office of Education, Division of Educational Laboratories.
    Authorization: Cooperative Research Act.
11. Purpose: Support research on educational uses of television, radio, motion pictures, and other media.
    Who may apply: For grants—public or non-profit institutions; for contracts—private organizations and individuals.
    Where to apply: U.S. Office of Education, Division of Higher Education Research.
    Authorization: National Defense Education Act—Title VII.
12. Purpose: Support research on the improvement of education at all levels and in all subject areas through research, surveys, and evaluation.
    Who may apply: Colleges, universities, State education agencies.
    Where to apply: U.S. Office of Education, Bureau of Research.
    Authorization: Cooperative Research Act.
13. Purpose: Conduct research on the major problems of education in special centers for research and development.
    Who may apply: Colleges, universities, agencies, and organizations.
    Where to apply: U.S. Office of Education, Division of Educational Laboratories.
    Authorization: Cooperative Research Act.
14. Purpose: Provide loans to private schools for improving instruction in critical subjects.
    Who may apply: Non-profit private elementary and secondary schools.
    Where to apply: U.S. Office of Education, Division of Plans and Supplementary Centers.
    Authorization: National Defense Education Act—Title III.
15. Purpose: Improve the qualifications of elementary and secondary teachers and related specialists, using new methods.
    Who may apply: Colleges and universities.
    Where to apply: U.S. Office of Education, Division of Educational Personnel Training.
    Authorization: National Defense Education Act—Title XI.
16. Purpose: Provide loans for construction or improvement of higher educational facilities other than academic.
    Who may apply: Public and private non-profit institutions, cooperative centers, boards of higher education.
    Where to apply: U.S. Office of Education Regional Offices.
    Authorization: Higher Educational Facilities Act—Title III.
17. Purpose: Support research, training, and pilot programs for special vocational needs.
    Who may apply: State education agencies, colleges and universities, non-profit organizations, and local education agencies.
    Where to apply: U.S. Office of Education, Division of Community and Vocational Education Research.
    Authorization: Vocational Education Act of 1963—Sec. 4(c).

NOTE: Specific appropriations vary from one year to the next. For the current year's figure, the GPL ETV Dept. invites your call.

The included information is, to the best of our information, complete and correct at the time of the latest revision of this booklet. Additional provisions and information may be available at the time of reading.

A View of Federal Aid to Education





SCHOOLS AND COLLEGES

ALABAMA
Alabama ETV Commission, Birmingham
University of Alabama, Alabama
Birmingham Area ETV Assn., Birmingham

CALIFORNIA
University of Southern Calif., Los Angeles
Stanford University, Palo Alto
Calif. Institute of Technology, Pasadena
San Jose Unified Schools, San Jose
El Monte High School, El Monte
San Mateo Jr. College, San Mateo
University of California, Riverside
Orange State College, Fullerton
Fullerton Public Schools, Fullerton

COLORADO
La Junta High School, La Junta
Jefferson County School District, Denver

CONNECTICUT
Conn. State Teachers College, New Britain
Yale University, New Haven
Trinity College, Hartford
Groton Public Schools, Groton

DELAWARE
Salesianum School, Wilmington

FLORIDA
University of Miami, Coral Gables
Dade County Bd. of Public Instruction, Miami

GEORGIA
City of Atlanta, Board of Education, Atlanta
WETV Educational Station, Atlanta
Medical College of Georgia, Augusta

ILLINOIS
Chicago Educ TV Assn (WTTW), Chicago
Chicago Medical School, Chicago
Mundelein College, Chicago
University of Chicago, Chicago
University of Illinois, Urbana
Maine Township High School East, Park Ridge
University of Illinois, Chicago
St. Patrick High School, Chicago
Chicago Teachers College North, Chicago
Joseph Sears School, Kenilworth
Valley View School District, Lockport
Northern Illinois State College, DeKalb
Belleville Township H.S. & Jr. College, Belleville
Gordon Technical H.S., Chicago
City of Chicago, Bd. of Education
Eastern Illinois University, Malcomb
Immaculate Heart of Mary H.S., Westchester
Southern Illinois University, Alton
Southern Illinois University, Carbondale
Southern Illinois University, Edwardsville
Stephens College, Columbia
Seabury-Western Theological Seminary, Evanston
State of Illinois, Department of Education, Springfield
De Paul University, Chicago
New Trier High School District, Winnetka

INDIANA
Indiana University, Bloomington
Columbus Community School, Columbus
Columbus Senior High School, Columbus

IOWA
Iowa State College, Ames
State University of Iowa, Iowa City

KENTUCKY
Berea College, Berea
University of Kentucky, Lexington
Western Kentucky University, Bowling Green
Speed Scientific School, Louisville
University of Louisville Medical School, Louisville
Murray State University, Murray

KANSAS
Osawatomie State Hospital, Osawatomie

LOUISIANA
Tulane University, New Orleans
Louisiana State University, Baton Rouge
Ouachita Valley Trade School, West Monroe

MARYLAND
Washington Cty. School System, Hagerstown
University of Maryland, College Park
Baltimore Junior College, Baltimore

MICHIGAN
University of Michigan, Ann Arbor
Educational TV Foundation, Detroit
Michigan State University, East Lansing
Western Michigan University, Kalamazoo
Michigan Tech. University, Houghton

MASSACHUSETTS
Salem State College, Salem
St. Patrick's, Stoneham

MINNESOTA
University of Minnesota, Minneapolis
University of Minnesota H.S., Minneapolis

MISSOURI
Bayless School District, St. Louis
St. Louis ETV Commission, St. Louis
Washington University, St. Louis
University of Missouri, Columbia
St. Louis State Institute of Psychiatry, St. Louis
St. Louis University, St. Louis
Central Missouri State College, Warrensburg
Concordia Seminary, St. Louis
Kirksville School District, Kirksville
Ladue School District, St. Louis
McBride High School, St. Louis
North Circle Project, Ferguson
St. Louis County, AV Dept., Creve Coeur
St. Louis Jr. College, St. Louis
Ferguson-Florissant School District, Ferguson

NEBRASKA
University of Nebraska, Lincoln
Nebraska Psychiatric Institute, Omaha
Concordia Teachers Coll., Seward
Omaha Women's Job Corp Center, Omaha

NEW HAMPSHIRE
Dartmouth Medical College, Hanover

NEW JERSEY
Princeton University, Princeton
Trenton, N. J. Schools, Trenton
Trenton State College, Trenton

NEW MEXICO
University of New Mexico, Albuquerque
Los Alamos High Schools, Los Alamos

A (Partial) View of GPL ETV Users

NEW YORK
Erie County Technical Institute, Buffalo
Brooklyn College, New York City
Columbia University, New York City
Metropolitan ETV Assn., New York City
PS-33, New York City
Port Chester High School, Port Chester
University of Rochester, Rochester
Skidmore College, Saratoga Springs
Scarsdale High School, Scarsdale
Smithtown High School, Smithtown
Syracuse University, Syracuse
White Plains High School, White Plains
Bedford School District, Bedford
Monroe Community College, Rochester
Loyola Seminary, Shrub Oak
Cornell University, Coll. of Agriculture, Ithaca
BOCES Learning Center, Lyons Falls
BOCES Special Education Department, Yorktown Heights
Rochester City School ETV System, Rochester

NORTH CAROLINA
University of North Carolina, Chapel Hill
N. Carolina State Coll. for Women, Greensboro
N. Carolina State College, Raleigh
Duke University, Durham

OHIO
Greater Cincinnati TV Educ. Foundation (WCCT), Cincinnati
Ohio State University, Columbus
Willoughby-Eastlake School District, Willoughby
Lorain County Community College, Lorain
University Hospital, Cleveland

OREGON
Oregon Technical Institute, Klamath Falls

PENNSYLVANIA
Bucknell University, Lewisburg
Temple University, Philadelphia
Elmer L. Meyers H.S., Wilkes Barre
University of Pittsburgh, Pittsburgh
Valley Forge Military Academy, Valley Forge
Bucknell University, Lewistown
Drexell Institute of Technology, Phila.
Bryn Mawr College, Bryn Mawr
Hanover School District, Hanover
Lafayette College, Allentown
Pennsylvania State U., (WPSX TV), University Park
Clinton County Schools, Clinton County
Hahnemann Medical Coll., Phila.
Vanguard School, Ardmore
Pennsylvania Coll. of Podiatry, Phila.
University of Pennsylvania, Phila.
Upper Merion School District, King of Prussia
Mohawk High School, Bessemer
Cheyney State College, Cheyney

PUERTO RICO
Dept. of Education (WIPR-TV), San Juan

SOUTH CAROLINA
Clemson College, Clemson

TENNESSEE
Memphis Community TV Foundation (WKNO-TV), Memphis
Fisk University, Nashville
University of Tennessee, Knoxville
Oak Ridge Institute of Nuclear Studies (ORINS), Oak Ridge
Science Hill High School, Johnson City

TEXAS
University of Texas, Austin
Dental Branch, Houston
Snyder H.S., Snyder
Midwestern University, Wichita Falls
So. Park Independent School Dist., Beaumont
Edinburg Independent School Dist., Edinburg
Brazosport Independent School Dist., Brazosport
Southern Methodist University, Dallas
University of Texas, Austin
Arlington State College, Arlington
Richardson Independent School Dist., Richardson
East Texas State University, Commerce
Texas Education Agency, Austin

UTAH
Utah State College, Logan
University of Utah (KUED), Salt Lake City

VIRGINIA
Madison College, Harrisburg
University of Virginia, Richmond

WASHINGTON
Pacific Lutheran University, Tacoma

WASHINGTON, D.C.
Georgetown University
Howard University

WISCONSIN
University of Wisconsin, Madison
Milwaukee Vocational and Adult Schools, Milwaukee
New London H.S., New London
Kenosha Technical Institute, Kenosha

INDUSTRIAL TRAINING
American Air Lines, Inc., Tulsa, Oklahoma
Union Electric Company, St. Louis, Missouri
International Mineral & Chemical Co., Skoke, Illinois
A. B. Dick Co., Niles, Illinois
McDonald Aircraft, St. Louis, Missouri
Western Electric, Allentown, Pennsylvania
Western Electric, Watertown, Massachusetts
Xerox Corp., Garden City, New York
Xero Corp., Rochester, New York
General Fire Extinguisher Corp., Northbrook, Illinois
Electronic Associates, Inc., Princeton, New Jersey
United States Steel, Pittsburgh, Pennsylvania
Fischer & Porter Co., Warminster, Pennsylvania
Allied Van Lines, Broadview, Illinois
Bell Labs, Holmdel, New Jersey
New York Telephone Company, New York, New York

MILITARY TRAINING
Fort Knox, Louisville, Kentucky
Combat Tank Training Center
Army Post Graduate School
Monterey, California
Map Reading and Navigation
Naval Supply Center (Treasure Island), Oakland, California
Two Educational TV Studios
Naval Shipyard, San Francisco, California
Biological Defense Lab.
U.S. Navy, San Diego, California
Recruit Training Command
U.S. Navy, Great Lakes, Illinois
Recruit Training Command TV Training Center E & E "P" School
U.S. Navy, Charleston, South Carolina
Fleet Ballistic Missile Training Center
U.S. Navy, Dam Neck, Virginia
U.S. Naval Guided Missiles School

Establishing educational television to meet specific needs requires careful and deliberate planning. Experience has shown that the following steps should be taken to ensure an enriched program of television instruction.

STEP ONE

Establish a Board or committee of television instruction to:

A. Justify need.

B. Determine goals.

C. Set policy.

The Board should consist of knowledgeable representatives from the faculty, school board, and interested public.

A. Justify Need (Can it improve instruction?)

In education, TV is used in seven basic ways. One or more may provide the required justification.

1. Extended Instruction

☐ To other classrooms and overflow classrooms.

☐ To other buildings in the school district.

☐ To other school districts.

☐ To supplement adult educational programs.

☐ For pre-school preparation.

☐ As a teacher training tool.

2. Programmed Instruction

☐ Distribution of films.

☐ Enrichment of curriculum through use of recorded or live information—combined with various other activities—to provide a total learning situation.

☐ Retrieval of recorded information, for self instruction, from a video tape library.

☐ Lesson planning and preparation.

3. Observation

☐ Teacher training.

☐ Nurse training.

4. Record Material

☐ High caliber presentations can be retained by more students.

☐ Perfection of material presentation.

☐ Concentrated student study and analysis.

5. Information Presentation

☐ Live current events in the arts and sciences.

☐ Use of visual aids and "experts" beyond the reach of single classroom.

6. Conducting Research

☐ Non-synthetic study of material for multi-classrooms.

☐ Mass simultaneous testing.

7. A Demonstration Magnifier

☐ For Lab experiments using graphics or microscopy.

☐ Medical and surgical procedures.

☐ Split-screen comparison techniques.

B. Determine Goals

Educational television should seek certain goals to enrich the curriculum. These include:

☐ Good educational and technical quality.

☐ Educationally sound.

☐ Constant review with provision for expansion or updating.

☐ Provide services that relate directly to faculty needs.

☐ Programming to serve specific audiences.

C. Set Policy

It is important to establish, at the outset, the policy under which television instruction will be conducted. There must be a commitment by the administration to make TV a permanent part of the school program.

A Program Director must be selected and given maximum freedom to develop the goals independent of irrelevant pressures. The curriculum to be supplemented by TV must be selected. Space must be allocated and equipment selected. Personnel must be chosen to operate the facility. Finally, promotion campaigns may be required to obtain program approval.

STEP TWO

Investigate all possible sources of financial aid — including local, state and federal.

STEP THREE

The nearest GPL field service representative should be contacted. His name appears on the insert listing found on the inside back cover. He, a GPL factory educational consultant, or both, will meet with school officials to plan the entire TV installation.

STEP FOUR

Organization of Information

☐ Determine what information will be made available through a library of video tapes.

☐ Determine what information will be presented live through school owned origination equipment.

☐ Determine the use of off-the-air ETV channels and commercial broadcast channels for special events programming.

☐ Coordinate information with curriculum director and faculty.

STEP FIVE

Establish a schedule for programming.

STEP SIX

Presentation of Information

☐ Through in-class TV monitors, or inter or intra school distribution.

STEP SEVEN

Availability of Money

☐ Provide sufficient funds for operation of the system after installation.

A View Toward Getting Started in ETV

Acquiring GPL products for a successful television operation in your school or district, means far more than merely the purchase of equipment. Regardless of the size of the installation, the complexity of the operation, or the cost of the equipment . . . each GPL customer receives:

Consultation . . . between a GPL educational TV planner, systems expert, and all pertinent members of the school staff, Board, etc., to discuss needs, goals, problems, costs, operation, and the dozens of other questions that arise when planning a TV installation.

Design . . . of the system, equipment or studio that is exactly right for the individual need.

Installation . . . by experienced engineers or technicians who consider every phase of operational efficiency, economy, maintenance and provision for future expansion.

Training . . . of the personnel that will operate and maintain the equipment, and extensive instruction in achieving maximum results from each single component of the system.

Service . . . whenever needed, merely a phone call away. A GPL-equipped school is always assured of expert technical maintenance, additional consultation, supervision and training whenever required.

GPL field service television consultants and technicians are located in over 45 cities covering the entire United States, Canada, and overseas. Each is expert in all phases of planning, installation and service of GPL television cameras, monitors and accessories, plus all other related equipment required for an efficient, economical ETV system.

For the name, address and phone number of the TV field service consultant for your area, write: GPL TV Dept., Pleasantville, New York 10570.

A View of GPL Field Service

SINGER
GPL TV SYSTEMS

EDUCATION & TRAINING PRODUCTS GROUP

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