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A Model for the Development and Administration of a Modern Television Complex for Private Colleges and Universities

Paul Henry Denton
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A MODEL FOR THE DEVELOPMENT AND ADMINISTRATION OF A MODERN TELEVISION COMPLEX FOR PRIVATE COLLEGES AND UNIVERSITIES

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Andrews University

School of Graduate Studies

A MODEL FOR THE DEVELOPMENT AND ADMINISTRATION OF A MODERN TELEVISION COMPLEX FOR PRIVATE COLLEGES AND UNIVERSITIES

A Dissertation
Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

by

Paul Henry Denton

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ABSTRACT

A MODEL FOR THE DEVELOPMENT AND ADMINISTRATION OF A MODERN TELEVISION COMPLEX FOR PRIVATE COLLEGES AND UNIVERSITIES

by

Paul Henry Denton

Chairman: Dr. Bernard M. Lall

Abstract of Graduate Student Research

Dissertation

Andrews University

Department of Education

Title: A MODEL FOR THE DEVELOPMENT AND ADMINISTRATION OF A MODERN TELEVISION COMPLEX FOR PRIVATE COLLEGES AND UNIVERSITIES

Name of researcher: Paul Henry Denton

Name and degree of faculty advisor: Bernard M. Lall, Ph.D.

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Problem

There are virtually no model designs available for television complexes to meet the needs of private colleges and universities. These institutions must meet educational specifications for new or remodeled complexes within strict limits in space and money. The purpose of this study was to develop a model complex and administration of a cost efficient design.

Method

The study utilized the descriptive and developmental methods. Literature was reviewed to gather concepts related to complex facilities, hardware, administration and personnel. Twelve functioning television complexes were visited using a thirty-four item criteria list to evaluate each complex, its hardware, administrative structure, and programs.

Conclusions

Major conclusions drawn as a result of information and experience gained during the course of the study were that:

1. The planning process for a small facility is similar to, yet distinct from larger complexes.
2. Cost efficiency of planning, establishment, and operation are essential.
3. Expenditures for media including video tape can only be justified when it becomes an integral part of instruction.
4. Low cost quality hardware and systematic development of instructional materials make such a program operable.
5. Smaller facilities are needed as electronic

technology has allowed moving to remote locations without large crews or remote trucks.

6. A consolidated media program would be more cost efficient by ridding duplication in services.
7. Flexibility must be planned into the complex hardware, administrative structure, and personnel to meet the needs of the future.
8. Establishment of a complex is a fixed sequence task that can be carefully planned.

Recommendations

The following recommendations are presented:

1. The model developed in this study should be field tested by small colleges and universities planning a television complex and revised in light of this experience.
2. The planning process for a television complex should have stopping off points when need is not clearly established to warrant any expenditures.
3. The planning process should be closely analyzed in order to make certain the facility, hardware, and personnel are cost efficient yet functional to meet investigated needs.

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ACKNOWLEDGEMENTS

This study is filled with frustrations and satisfactions. The success of the project was made possible by many individuals and they deserve credit. A particular expression of graditude is due to the writer's doctoral committee, Dr. Bernard M. Lall, Chairman, Dr. Edward A. Streeter, Dr. Cedric C. Ward, and Dr. Donald E. Van Duinen for their helpfulness and encouragement throughout the study.

Dr. G. Elaine Giddings, friend and editor, attacked the drafts of this paper with many sharp pencils. Editing to the present state of this report was under her untiring guidance.

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Beyond all human help received, the constant care and guidance of a loving God is acknowledged as having been of supreme importance.

CHAPTER I

INTRODUCTION

Throughout the history of education in North America, a variety of instructional media have been employed by teachers to facilitate student learning. Whether the medium was a slate board with chalk, a book with verbal symbols, or a chart displaying the alphabet, the function was basically the same--to more effectively enable students to achieve specific educational objectives. Although these early historical materials were supplemental to the direct instruction of the teachers, the materials did little to increase the effectiveness of individual instruction or the learning process. Cubberly (1919) states that prior to World War I "most of the time (in school) was wasted as a result of an almost complete lack of teaching equipment, books, supplies, and of poor methods of teaching" (p. 35).

During World War II large numbers of Americans, in the military and in manufacturing in support of the war effort, were quickly trained for their new responsibilities. During this period when the armed forces suddenly faced training tasks of staggering

proportions, the "sensory" materials helped in the training of masses of people (Dale, 1954). Motion pictures proved their value in these training programs. Research studies prior to this period had shown an increase of learning when a motion picture was added to other forms of instruction (Kemp, 1968).

After World War II, schools had a time of increasing student enrollments. During the late 1970s these enrollments began to drop in grades kindergarten through twelve in the public- and private-school systems. This enrollment decrease has just reached the colleges and universities in both the public or private sectors. Enrollment projections indicate that decreases will reach the college-university level during the 1982-1983 school year (Dede, 1980).

Private colleges and universities, like all other institutions, have suffered financial difficulties during the 1970s with the high inflationary rate and the shrinking purchasing power of the dollar. Figure 1 shows the predicted shrinking purchasing power of the dollar during the 1980s. Pyke (1977) indicates many small private colleges and universities have had to close their doors as their expenses have overrun the income. Private institutions will need a higher ratio of student-to-teacher contact to help offset the rising expenses. Figure 2 shows that the population of 15-24-year-old

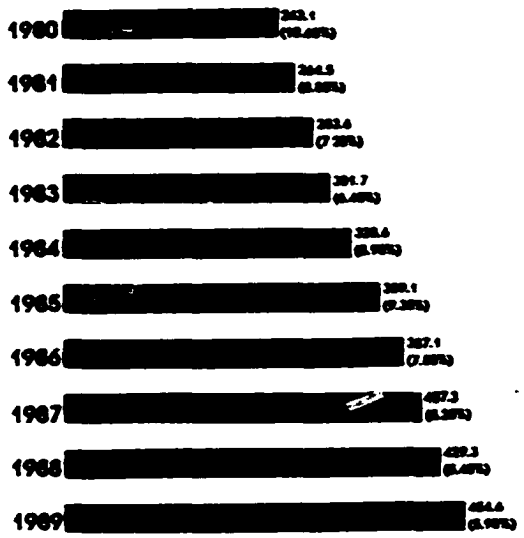


Figure 1. The predicted 80s inflationary rates. The Consumer Price Index is expected to increase an average of 7.6 percent per year during the 1980s (Sumichrast & Sheehan, 1980).

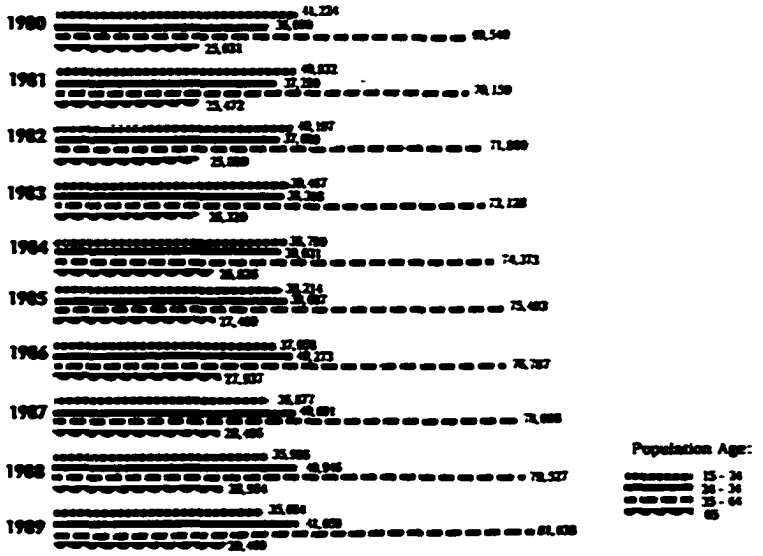


Figure 2. The 80's demographics showing the 15-24-year olds in the United States population shrinking by 630,000 each year through the 1980s. Figures are given in thousands. (Sumichrast & Sheehan, 1980).

people will shrink at an average rate of approximately 630,000 each year of the 1980s (Sumichrast & Sheehan, 1980). Colleges that desire to maintain their current student population must enroll a wider segment of the population, thus moving outside the normal college-age group, to encompass more of the total population surrounding the institution.

Several methods are being used to include a wider segment of the total population in course offerings. Two of these methods, which provide more professor-student contact hours, appear to be working on a limited basis. One of the methods brings together large and small groups of people to the campus for short courses conducted especially for that particular interest group. The second method that is working with limited success is sending the professors to other centers to conduct extension courses for special-interest groups.

Continuing education or lifelong learning is playing a role in the lives of many people (Gross, 1977, p. 49-52). Houle (1964) suggests that through educational programs growth may be experienced in the countless potentialities a person possesses. Some states require continuing-education credits of persons engaged in some professions before the state issues or renews a license.

Dede (1980), in looking at the future of technology in education during the next ten years, sees major changes

being forced on educators by world economics, energy needs, and political situations. Projections have been made which indicate a need for decisions regarding the cost of education, since institutions will have to work within the constraints of only about one half the fiscal resources of 1979 by the end of 1989. Taking these constraints into consideration, a careful look will have to be made regarding the benefits of extended use of educational technology in educational institutions.

Educational programs have continuously needed more money because education is labor-intensive rather than capital-intensive (Dede, 1980). It uses people rather than machines to produce the final product. Extensive use of educational technology is seen as one solution to this economic problem.

An experimental program initiated at a small community college in Cedar Rapids, Iowa, is using the telephone, in teleconferencing, to help gather small groups of students from rural settings together for collegiate instruction (South Bend Tribune, March 28, 1980; Stewart, 1981). Several small groups added together make it feasible to offer instruction and credit to otherwise isolated people. They could have commuted to the main campus but, with rising transportation costs, they chose not to do so. The small enrollments generated by an extension school in any one of the rural locations

would have been economically impractical. The telenetwork-phone lines connected to amplified speakers and microphones provide instant feedback from the groups at several different locations. A proposed two-way television system that would add the visual stimuli in the interaction between the professor and the students could be another solution.

Television can move ideas, people, and resources from place to place (Rhodes, 1971). Yet only 19 percent of the institutions of higher learning were using television for instruction, although another 37 percent planned to use it for instruction in the very near future (Dirr & Pedone, 1979 p. 46). Even though futurists were projecting the use of television as an important way of meeting the challenges of the twenty-first century, few colleges were placing high priority on its use for growing off-campus instruction. It begins to appear that those colleges which were actively incorporating television use into their programming would have an advantage in the near future -- the 80's.

The dilemma for the 37 percent (and more by now) of the institutions planning to use television was that to produce television instructional programs a television complex must be available.

Statement of the Problem

Television has played a role in the teaching-learning processes at the elementary, secondary, college, university, adult-education, and lifelong-learning levels. Through this means, education can be made available to multitudes of people. Yet, there is a lack of professionally designed models for television complexes, particularly in private colleges and universities, models which meet the special needs of these institutions. They must assemble educational specifications for new or remodeled complexes within strict limits in space and money.

Purpose of the Study

Therefore, the purpose of this study is to design a model for the development and administration of a television complex for private colleges and universities to be used through the 1980s. The constraints placed on most of these institutions due to the lack of financial backing for projects of this nature must be kept in mind. Institutions are having a difficult time meeting the daily operational expenses that result from the increasing inflationary figures.

The following subproblems will be investigated in order to accomplish a more adequate treatment of the main problem:

1. Trace what has been written to date regarding on-campus educational television complex requirements and the administrative organization of such complexes.
2. Identify the requirements and standards of a functional television complex.
3. Ascertain, compare, and evaluate the recommendations of the three professional associations dealing with aspects of educational technology as to the guidelines available for the development of educational television complexes. The professional associations examined will be:
   a. Association for Educational Communication and Technology
   b. National Association of Educational Broadcasters
   c. National Audio Visual Association

Basic Assumptions

It is assumed that:

1. The financial resources for higher education will be shrinking within the next ten years since the Consumer Price Index has been projected to more than double itself by 1990.

2. Administrators in higher education will have to make decisions regarding the most economical method of instruction.
3. Instructional programs offered by an instituion are directly related to the facilities available to the institution.
4. Enrollments in traditional colleges and universities will shrinking during the 1980s as the number of college-aged young people continues to decline.

Significance of the Study

The significance of this study will be in providing a design model for a television complex that may be adapted to an individual institution of higher learning. Futurists have predicted the necessity of using this type of instruction to keep abreast of inflation, to counter the increasing cost of energy, and to compensate for the shrinking group of college-age young people.

Delimitations

The study will be limited to an investigation of television complex requirements and administrational needs for private colleges and universities in and contiguous to Michigan. The model developed will apply to four-year private colleges and universities.

Definitions of Terms

The following definitions may serve to clarify significant terms used in this study.

Acoustic Treatment: Application of sound- deadening material to the wall of a television or sound studio to create an environment for optimal sound pickup which is usually less "live".

Broadcast Camera: Camera intended for open-circuit on-the-air telecasting or "broadcast quality".

Cable Television: Television signals distributed to homes or other places via wire.

Camera Control Unit (CCU): Equipment separate from the camera head that contains various video controls, including color balance, contrast, and brightness. It is operated by a video engineer before camera operation (camera set up) and during camera operation (camera shading).

Closed Circuit: Distribution of audio and video signals by means other than broadcasting, including direct video and audio feeds from the camera and audio board, from videotape recorder into a monitor, or the radio frequency (RF) signal distribution via cable.

Control Room: A room adjacent to the television studio in which the director, technical director, the audio engineer, and sometimes the lighting technician perform their various production functions.

Control Track: The area of the video tape used for recording the synchronization information (sync spikes) which is essential for videotape editing.

Editing: The selection and assembly of shots within the picturization concept.

Electronic Editing: The joining of two shots on videotape without cutting the tape.

ENG/EFP: An abbreviation for electronic news gathering/electronic-field production. It refers to quality portable hardware that may be used for quality location video recording.

Ellipsoidal Spotlight: A spotlight producing a very defined beam. It can be shaped further by metal shutters.

Helical Scanning: Diagonal scanning pattern of video signal of single or dual head videotape recorders.

Light Grid: A fixed network of pipes or rail-type material affixed in the ceiling of a studio on which movable lighting may be attached.

Master Control: Central control area for all telecasts of which includes all master switching from different program input, storage, and retreival for on-the-air telecasts. It also oversees technical quality of all program material.

Monitor: Video - A television set that accepts direct cable feeds from TV cameras or broadcast signals.

Audio - Speakers that carry the program sound independent of the line out.

Monochrome: Having shades of only one color; usually refers to black-and-white television.

Post-Production: All work done after shooting; examples: editing, mixing, optical effects, timing, etc.

Pre-Production: All work done before shooting takes place; examples: research, planning, storyboarding, etc.

Quad: An abbreviation for quadruplex videotape recorders.

Quadruplex: A scanning system of videotape recorders that uses four rotating heads mounted around the rim of a head wheel. The head wheel rotates in a plane perpendicular to the direction of the tape motion. Quad recorders use 2-inch wide videotapes.

Servo Controls: Zoom and focus controls that activate motor-driven mechanisms.

Switcher: A control that permits the selection of a specific video input and the change from one video source to another through a variety of transition devices, or the simultaneous presentation of two or more video sources.

Time Base Corrector: An electronic accessory to a videotape recorder that helps to make playbacks or transfers electronically stable. A time-base corrector helps maintain picture quality even in dubbing-up operations.

Time Code: An electronic signal recorded on the cue track of the video tape through a time-code generator, providing a time "address" for each frame in hours, minutes, seconds, and frame numbers of elapsed time.

Organization of the Study

Chapter I includes an introduction, the statement of the problem, the purpose of the study, the basic assumptions, the significance of the study, delimitations of the study, definition of terms, and the organization of the study.

Chapter II presents the review of the literature relative to the problem. It includes information relative to the organization and administration of a complex as well as planning for the facilities, hardware, and personnel needed in a television complex.

Chapter III describes the procedures and methodology of the study, including the collection of data and the type of research. An analysis of the procedures that have been followed in the model development is included with an outline of the evaluation of the model.

Chapter IV provides a brief report of television complexes visited throughout the United States.

Chapter V offers the recommended model complex for the small private college or university regarding

philosophy, purposes, organization, and management of the television complex.

Chapter VI presents the summary, conclusions, and the recommendations arising from the study.

CHAPTER II

REVIEW OF THE LITERATURE

Problems in education in the 1980s include both the movement of people to information and the movement of information to people. Television is able to provide an electronic avenue that makes possible the movement of the "inspired thought" and specialized information. In order to use television to convey information to a larger population, private higher educational institutions will need television complexes administered in such a way as to provide smooth operation.

Literature relevant to the topic is reviewed and pertinent information is presented briefly in this chapter. Major fields of discussion are presented in the following areas: (1) basis for a philosophy of an instructional television complex; (2) the organization and administration of an instructional television complex; (3) planning for instructional television facilities; (4) instructional television hardware; and (5) instructional television complex personnel.

Basis for a Philosophy of an Instructional Television Complex

Education is "the deliberate attempt by the learner or by someone else to control a learning situation in order to bring about the attainment of a desired learning outcome" (Luska, 1976, p. 7). It is not limited to schooling nor to the traditional curriculum or methodologies of schools. It is a lifelong process that can take place in an indefinate variety of circumstances and contexts (Knight, 1980).

The world is witnessing drastic changes in living styles and conditions.

> Educators . . . fail to recognize that the acceleration of change -- in technology, . . . mobility rates, division of labor, in urbanization, ethnic and subcultural conflict and international relations -- means, by definition, the swift arrival of a future that is radically <u>different</u> from the present (Toffler, 1974, p. 4).

Technology and mass media have been applied in many parts of the world to help accelerate these changes.

Waniewicz (1972) quotes expert consensus on the use of mass media in adult education within UNESCO:

> There is convincing evidence from projects in many parts of the world that mass media can be effectively applied to the development of resources to meet basic economic, social, educational, and cultural needs. Experience to date is sufficient proof, and the urgency of extending the scale and effectiveness of adult education is so great that the emphasis should be placed on the massive application of known media of communication to the priority tasks of all countries. (p. 5)

The entire audiovisual field, of which television is a part, rests on the assumption that people learn primarily from what they perceive and that carefully designed visual experiences can provide common experiences (Brown, Lewis, & Harcleroad, 1977).

Perception determines the quality and quanity of communication. It is the process whereby an individual becomes aware of the world around him/ or herself. The eyes, ears, and nerve endings in the skin are primary means of contact with one's environment. These, with other senses, are all implements of perception (Kemp, 1980).

Perception leads to communication and

> Communication is education. Education is communication. The process is theoretically identical. Formal educational situations can be interpreted basically as institutionalized communication proceedings designed for specific individual and societal purposes: to pass on man's knowledge and culture, to discover new knowledge, to acquire skills for earning a living, to develop appreciation for certain values and so forth. Television can be a powerful tool for achieving these kinds of communication/education goals. (Wood & Wylie, 1977, pp. 11-12)

There has been a shift in recent years related to roles in the learning process. The emphasis has shifted from teachers teaching to learners learning. The actual learning process is an individual experience for each person. It is the teacher's job to structure experiences so that learning can take place conveniently and above all

be a successful experience for the student (Kemp, 1980).

It should be stressed that any medium is a means for sending information from one location to another. Materials to be used with the television medium must be developed to require active learning on the part of viewers. Care should be taken to design lessons which require built-in overt responses to materials, with practice items for each main concept and quizzes for each unit (Kressel, 1980). Television lends itself to the team approach to systematic pre-production planning as it is a sophisticated integration of people, material, events, scripting, electronics, timing, and editing (Vander Haeghen, 1980).

Trends in Organization and Administration of Instructional Television Complex

During the 1950s and 1960s, the T.V. College of Chicago and the "Sunrise Semester" of New York University were the talk of the industry. For the first time, college credits and degrees could be obtained by watching instructional television while at home. Instructional materials were broadcast via open circuit facilitating the reception of instructional programs and courses. These instructional courses lost most of their appeal as they were based on traditional instructional television production practices of the "talking faces". These

techniques could not teach with the effectiveness that had been anticipated (Vander Haeghen, 1980).

The electronic transmission of video and audio has been potentially exciting and promising, but the reality has been disappointing because it did not live up to its potential or the expectations of those who promoted it (Brown, Norgerg, & Srygley, 1972).

The effectiveness of the new instructional technologies "depends to a large extent on the manner in which the technologies are organized as an integral part of the overall educational effects and on the way in which reception and utilization are controlled, guided, and organized" (Arove, 1976, p. 74). At least one community college has organized instructional television to the point where it is being reported as a "rebirth" (Vander Haeghen, 1980). This was accomplished through a new dimension, a team approach in the preparation of instructional material. The team approach consists of instructional design specialists, subject specialists, and television- production specialists as well as good, sound financial backing to produce this new generation of instructional materials.

Regardless of the type of organizational structure of the TV complex, "it is imperative to have full administrative support on at least three different levels"

(Wood & Wylie, 1977, p. 238). This support should be evident to the complex administrator.

A media program needs firm commitment and support from the controlling policy board. This may be the board of trustees or the board of regents. At least tacit policy support must be obtained at this level.

Strong support from the top administrative level such as the college president is important. The top executive probably will not be directly involved with the television project, but he must be favorably inclined toward the idea of support.

Success of the television project is often determined by the attitude and support of the administrator directly above the media director. Direct support to the media director is beneficial in working around obstacles and bureaucratic roadblocks.

No project with the potential of television as a communication tool is simple to establish and operate. The success of a television complex and the program of instruction produced depends a great deal on the competence of the complex administrator. This administrator must employ leadership skills necessary to enhance the learning opportunities (Cox, 1971).

John A. Davis (1966), describing any media administrator, states:

> The person charged with the administration of instructional resources has as his primary goal the encouragement and implementation of effective use of the technological and materials resources for the benefit of all learners. He must maintain a perspective which facilitates the achievement of this goal by all his colleagues in the classrooms. Like them, he must be student-centered in his approach to teaching materials and devices. (p. 238)

The chief administrator of a television complex has many duties and responsibilities. Concern must be given to all aspects of the facility to ensure smooth operation. The administrator is the link between the different instructional departments and the instructional programs provided for the students through the television medium. Some of the major concerns of the top administrator include: program selection, instructional development, program development, scheduling, personnel policies and management, coordination with the institution's administration and teaching faculty, as well as the thousands of details which occur daily in any kind of educational administration (Cox, 1971).

As a link between the different departments of the institution, the administrator seeks to secure understanding, acceptance, and support, both internally and externally, for the benefit of the total institutional program. As a director of academic support, the administrator must recognize that the viable business of the institution is to provide the students an opportunity

for learning. Therefore, effort must be made to help improve the quality of instruction as well as transmitting instruction to more individuals (Erickson, 1968). The leader may delegate many of the responsibilities as well as the necessary authority to other qualified personnel.

There are three basic concepts involved in organizational structures used to administer television complexes. These are: (1) the television complex is a separate unit functioning as one segment of instruction; (2) the television complex operates as a part of the overall media center of the institution; and (3) the complex operates as a part of an instructional school within a university. A separately functioning unit is usually established when the institution transmits the television signal as a regular commercial TV station (Hancock, 1971).

There are two chief patterns for television complexes. Though they both operate as part of the overall media program, Brown's plan (1977) includes five resource centers. His center refers to a program or cluster of programs rather than physical facilities. Figure 3 shows the five centers as: (1) libraries, (2) museums, (3) technological communications services, (4) computer services, and (5) the press. All five of these resource centers are coordinated at a dean's or vice

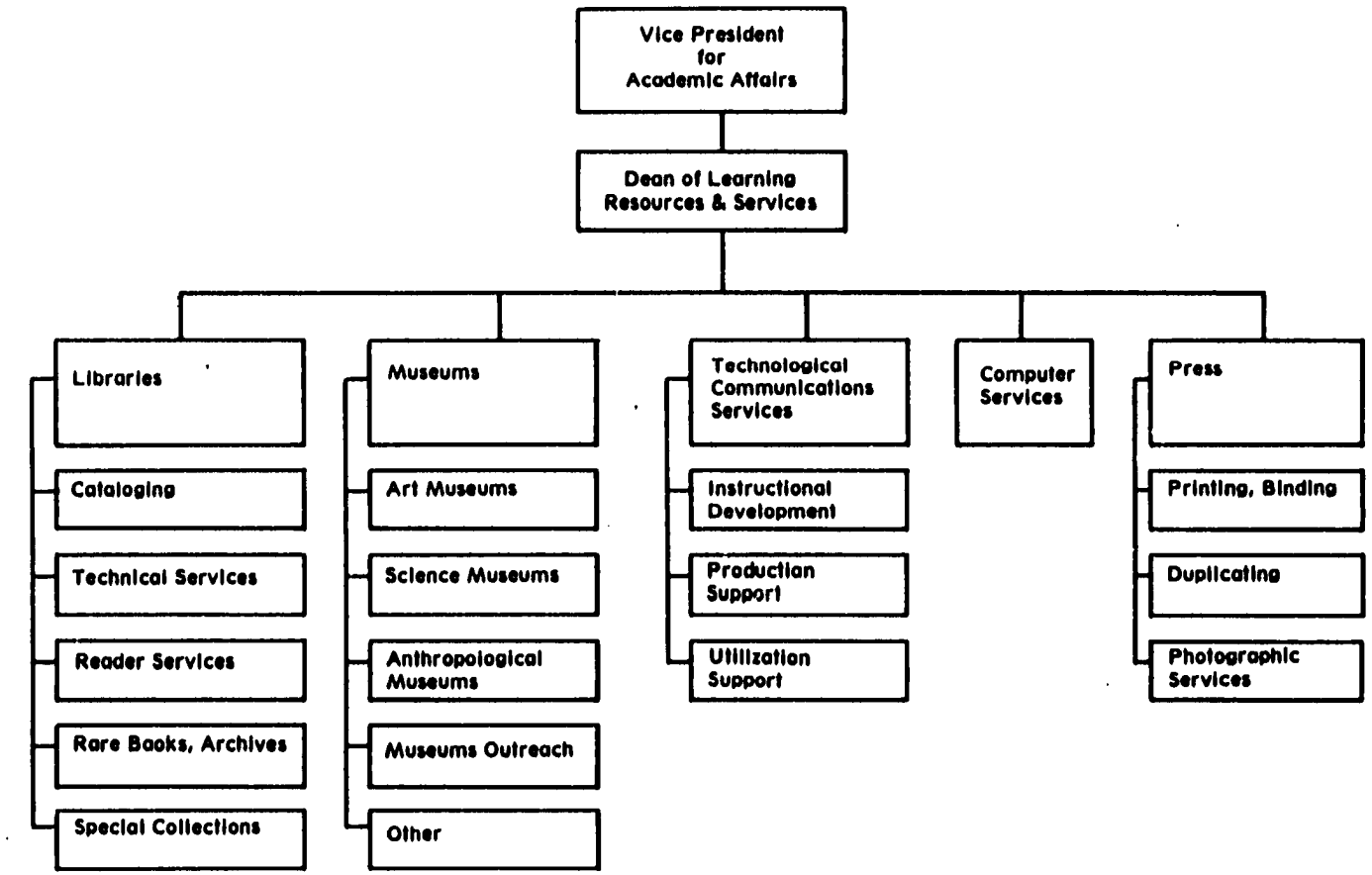


Figure 3. Sample Departmental Organizations of Instructional Resources and Services

president's level within the functional responsibility for Learning Resources for the entire institution. The assignment of responsibility for coordination at this high level ensures proper orientation of the services to serve the needs of and to provide leadership with respect to instruction.

The other plan (Wood & Wylie, 1977), on the other hand, considers educational telecommunications as an integral part of the media used in instruction, rather than as an isolated resource. It should not be set aside as a separate project isolated from the main purpose of the instructional process. To this end,

> a functions or processes organizational structure was proposed that would combine all media into an integrated operation and make administrative subdivisions among the various instructional steps or functions -- rather than among the different media (a television department, a book division or library, an audiovisual center, and so forth). (p. 236)

The organizational chart in figure 4 is a typical representation of such an organization, broken down in seven units. These subdivisions should be altered for the individual institution. The important concept is that the distinctions of a book operation, a separate audiovisual center, and a television project are discarded in favor of the total-media method encompassing all materials but organized by the actual functions

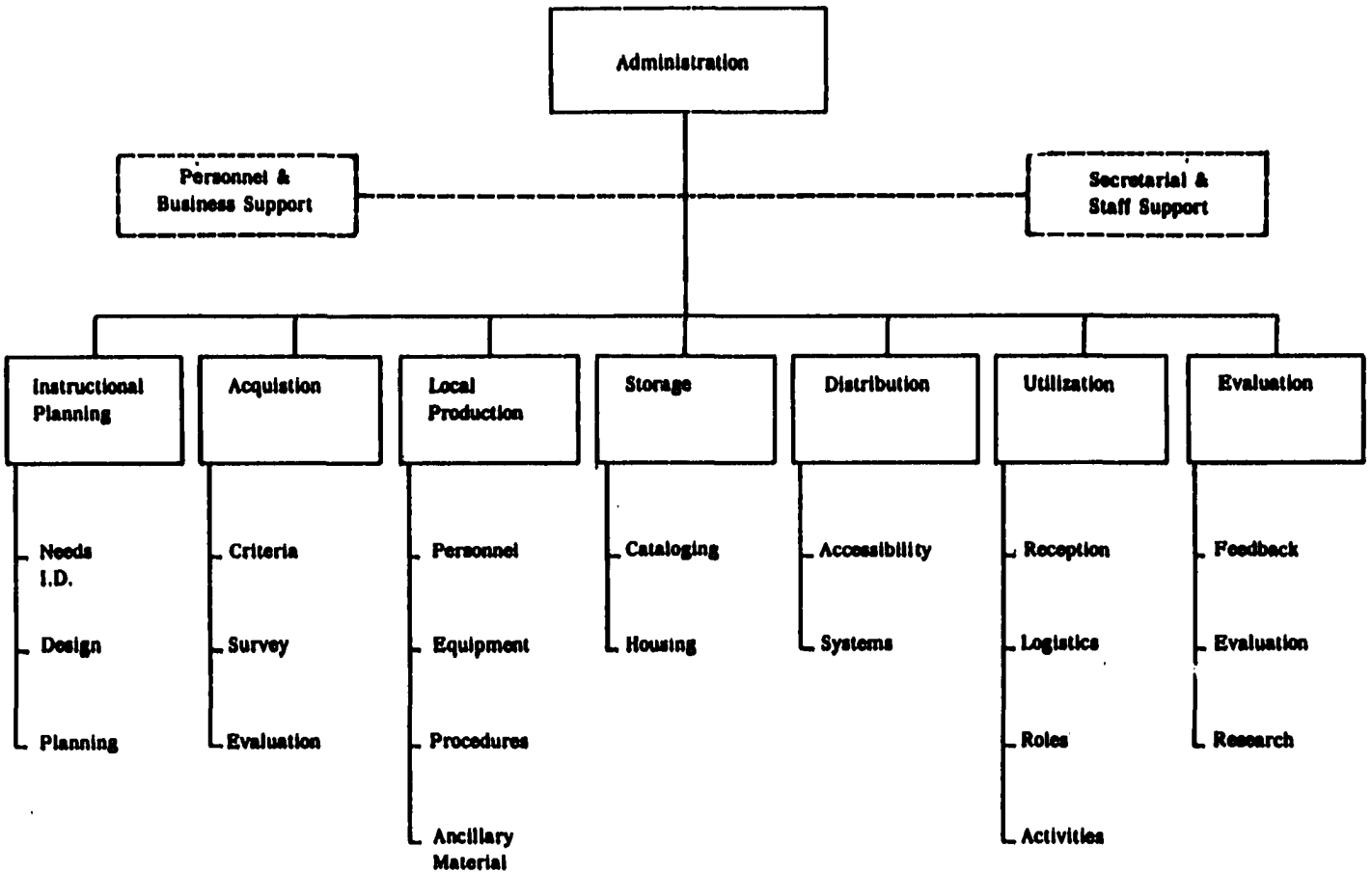


Figure 4. Sample Functional Organization of Instructional Resources and Services.

or processes in the instructional program (Wood & Wylie, 1977).

Trends in Planning for Instructional Television Facilities

After the decision has been made to advance into television production, an instructional institution is often tempted to start thinking immediately about physical facilities, hardware, and personnel. Actually, the more appropriate starting point would be to consider the final product the system will be turning out -- the instructional material. There is a need for determining the role that television is to play within the total instructional program which becomes a starting point for planning. Decisions must be made as to whether instruction through this medium is to be an integral part of the total instructional program or if it is to be supplemental. Without knowing the exact purpose of the lesson material, it would be difficult to resolve the needs of the complete complex (Costello & Gordon, 1961).

The television medium has been successfully used in many programs some of which, according to Vander Haeghen (1980), Coats (1980), DeBeer (1981), Luskin (1981), and others are:

1. Demonstrations of intricate and technically detailed operations in school of technology, just as in

surgery or law where it is impossible for more than one or two to see.

2. Top quality science teachers in chemistry, biology, or physics, doing certain lessons with graphics and visuals for all classes.
3. Larger classes possible for art because all can and work at their own speed.
4. In-service education programs for teachers.
5. Visiting VIPs available to everyone, without general assemblies, by interview and later replay.
6. On-campus events of note offered to local TV stations for telecasting as news.
7. Packaged lesson series sent to affiliated or extension schools to enrich the program and standardize the academic level, rather than depending on one visiting lecturer with one-shot lectures.
8. To provide a mirror to allow students in business, communication, music, teacher education, and preaching to evaluate their own effectiveness.

Wood and Wylie (1977) support this concept of planning but go one step further by considering the basic formats that might be used in the final product. Some of these are:

Straight Lecture: The "talking face".

Illustrated Lecture: Adding a heavy portion of visuals such as slides, overhead transparencies, and films to the lecture format.

Demonstration: Manipulating things, models, handling actual objects, performing a task, and experiments.

Voiced-over Visualization: No visible talking face. An off-camera narrator describing an illustrated lecture.

Interview: Two or more people giving another dimension to a lecture.

Drama: Affective domain objectives which lend themselves to dramatic vignettes, role-playing situations.

Filmed Field Trips: Footage recorded on location of a particular place, event, or activity.

Documentary: A more extensive treatment of a topic involving a mixture of guests, graphics, and on-location inserts (p. 259).

Without knowing what the final product will be, it is difficult to determine the exact needs for a complex. It would be extravagant to plan an elaborate complex if simple "talking face" programs are all that is needed. On the other hand, it would be shortsighted to build a small facility if in the near future more comprehensive materials would be needed.

Careful planning must be the basis of successful television and audiovisual facilities. They must be

designed to happen. Unless a center is designed to occupy its own building, with the building constructed around the needs of the center, the users must be prepared to live with compromises. There is a need to examine the actual existing building, rather than just the floor plans, before coming to the decision to go ahead with the complex in any existing building. In many cases, ceilings are too low, traffic patterns create unusable facilities due to the high level of uncontrollable noise, and columns or beams may be placed in undesirable areas where costs and engineering problems prohibit their removal or movement. Careful consideration must be made concerning the needs and goals for a complex prior to making a decision to use a particular building for housing a media complex (Wadsworth, 1979).

Since World War II, an increasing emphasis has been given to the need of carefully written educational specifications as an essential element in the planning of all educational facilities. Articles and books have been written concerning planning for educational facilities through the use of educational specifications. These have reflected the suggestions put forward by Gardner (1965):

> The writing of educational specifications provides opportunity for the educators to tell the design professions the purpose and requirements of the proposed school facilities.
>
> Educational specifications are precisely what the name implies--with emphasis upon <u>educational</u>.

> Educational specifications are clearly separate from architectural specifications. The great need of architects is not for advice on architecture, but for information about the functions and activities projected for a new school plant. (p. 98)

Castaldi (1977) proposes the idea of forcing the architect to plan an instructional facility specifically designed to meet the educational needs of the individuals for which the facility is being planned. Inflation has been increasing the costs of physical facilities; henceforth, constituents are asking for accountability of the monies spent. Castaldi suggests continued careful study and planning in order to produce the best possible educational specifications.

He points out that when planning any building or facility, the only effective method of planning is the cooperative effort of a team of people. The team should be made up of a cross section of the public the institution serves, as well as professionals, including educators and architects. The educational specifications developed are carefully written guidelines clearly describing the educational activities or programs to be carried on within the facility. These guidelines serve two purposes. First, they give the architect specific guidelines for the design of the facility. Second, they force the institution's publics and educators involved to carefully examine the available educational alternatives

and then plan an educational program specifically for the publics served.

Wood and Wylie (1977) agree with this idea in that writing specifications forces the educator to determine the purpose and extent of the project prior to making decisions regarding the actual facility and hardware.

According to McVey (1977), educational facility design lags behind the development of communication technology, consequently the effectiveness of the media has been limited. To this point, television in higher education has not lived up to its expectations as an instructional tool.

The University of Tennessee-Knoxville School Planning Laboratory of the Educational Facilities Laboratories, Inc., (1975) laid the planning groundwork to provide the information necessary for the development of educational specifications. It has been suggested that educational specifications should be prepared by those institutions involved in new construction or major remodeling projects. The following outline will help in this preparation.

I. Introduction. One or two paragraphs of introduction.

II. Educational Objectives. A summarized, concise listing of objectives.

III. Discernible Trends. Attention must be given to trends in offerings, activities, and enrollments as well as trends in physical facilities.

IV. Activities and Enrollments. This should be looked into very carefully as these two factors, along with trends, have the greatest bearing on the physical facilities developed.

V. Space Requirements. This is based upon the activities, enrollments, trends, furniture and equipment to be utilized. The number of space requirements should be expressed in terms of square feet required for each space.

VI. Storage Requirements. This should include the kinds, sizes, and materials to be stored. Specific information as to type and desired location of needed storage facilities is important. Flexibility should be considered.

VII. Furniture and Equipment. These recommendations should be based on utility, flexibility, comfort, and safety. Openmindedness is important.

VIII. Special Requirements. Physical features and facilities which are not normally included in a well-coordinated, functionally designed classroom must be included.

IX. Desired Space Relationships. These should be described both verbally and diagrammatically. Careful consideration must be given to developing the best possible functional relationships between spaces.

X. General Comments. Anything not included in the other categories should be included here.

Television facilities are very complex, yet the different parts of the facility must work functionally as a whole. Heydeman (1978) supports the need for the many facets of good planning. He states, "Industrial and smaller educational television studios too often are

planned and even designed by people whose talents are more on the creative side of television, but who have little background in the many facets of proper planning and design of a functionally effective television production facility" (p. 22).

Heydeman further suggests there are many ways to construct a television facility, but there are basic steps that will result in a practical, usable, and cost-effective facility. The steps of planning include:

I. Audit of Purpose: By asking various questions of the direct and indirect users of the complex and its services, a set of objectives and goals are prepared.

II. Base Building Design:

A. Determining the size: Prepare a conceptual list of the systems that will be a part of the facility. A careful consideration of the audit of purpose is the prime determinant of the actual planned size.

B. Three Dimensions: There are three important dimensions of a complex: width, length, and heighth. Considerations must include the fact that lighting grids and fixtures extend down from the ceiling yet the effective height should be established

on the aspect ratio of 3:4, meaning the ceiling height is based on the room width. If the room is twenty feet wide the distance from the floor to the bottom of the lights should be fifteen feet. This additional height also allows good but quiet air-conditioning. Air must be moved through large ducts to provide low-noise low-velocity airflow.

C. Distribution Power: Careful considerations and projections for all aspects of electric power must be made. Not only adequate service but careful placement to eliminate electrical interference into the audio and video circuits must be considered.

D. Air-Conditioning: Requirements are based on the BTUs generated by the lighting fixtures, outside temperatures, people working in the studio, and heat-dissipating displays. It is very wise to obtain professional services for HVAC (heating, ventilation, and air-conditioning) needs for the facility.

E. Quiet Environment: Quality television must have a quiet environment. Acoustical

engineers are necessary to determine proper wall treatment and isolation from outside noises.

F. Floor Treatment: A smooth, sound-absorbing floor is required.

III. Nerve Center:

A. Control rooms with adequate facility for the endless number of cables is necessary.

B. Adequate space is needed for the essential controls and personnel needed to produce a program.

IV. Support Facilities:

A. Signal Distribution: A way to route signals away from the complex must be provided. This distribution includes amplifiers and monitoring equipment as well as providing the possibility of multi-channel programming on a campus.

B. Audio Recording: Many smaller facilities double-up as audio-recording facilities.

C. Storage Areas: Areas include space for sets and props as well as specialized equipment.

Westmoreland (1976) discusses the idea of converting an existing classroom into a studio. The supportive areas

are in adjacent rooms, however. He points out three requirements of prime importance in planning such a facility: space, electrical power, and air-conditioning.

Quick and Wolff (1976) list the space required in a television facility to include:

1. The Studio
2. Control Room
3. Storage Areas
4. Viewing and Conference Rooms
5. Restrooms and Make-up Areas
6. Distribution Area
7. Tape Storage Area

Quick and Wolff also point out the need for the facility to be isolated from high noise areas yet to be accessible to simplify the movement of equipment and material needed in production.

Trends in Instructional Television Hardware

Compatibility charts should be developed to be used as buying guides for setting up a facility. Clark (1977) mentions the development of compatibility charts to decide whether the final product will be dealing with people, concepts, events, or things. The charts should be assembled so that with more growth of the facility, hardware may be added with a minimum of obsolescence. Once an institution has made the initial investment for

hardware, it should be locked into a system that should only be upgraded.

Costello and Gordon (1961), Wood and Wylie (1977), and Heydeman (1978) agree as to the need for determining the purpose of the complex. Questions asked of the direct and indirect users of the complex will give ideas as to the requirements of the final products produced.

Hardware should be purchased on the basis of (1) getting the most flexibility for the money, (2) reliability and dependability, and (3) making a high-quality production with crew members with little or no video background (Holmes, 1979).

The actual selection of hardware depends on the job to be performed and the finances available. The least expensive hardware may not be the most economical if flexibility is not considered and the device does not accomplish the work set before it. Decisions regarding hardware purchase must be made only when the objectives, the budget, and the facility design are known (Bond, 1972).

Bowles (1979) states that

> ...too often television equipment is chosen because it has many exotic features in hopes that all these features will produce good TV programs - or software. The sad truth is, bells and whistles do not necessarily make a good program. (p. 47)

According to Meyers (1980), the purchase of hardware

should be from the same supplier and from the same manufacturer. Mixed systems tend to give more problems than components designed to operate as a system. Quick and Wolff (1976) show it is better to approach the purchasing problem from the standpoint of a complete system rather than individual components. Company service is more likely if more than one of the company's components is in the system. Hardware purchase must be viewed in light of the service available after purchase. This significant fact is all too often overlooked in purchasing decisions. If in-house service is planned after purchase, service manuals must be readily available (Bensinger, 1978).

Regardless of the type and complexity of the productions planned, certain basic hardware is needed to pick up pictures and sound, process them, and either record them or transmit them in live programming. The following discussion treats briefly some of the basic items of hardware needed.

Many educational and industrial video complexes have established their standard using the 3/4-inch Umatic format or one-inch Helical Scan, type C, format, since the commercial standardized 2-nch Quadraplex is too expensive. The 3/4-inch Umatic and one-inch helical scan formats give operators the ability to provide good quality electronic

editing. Since 1975, there has been another useful format emerging. This is the half-inch design which is now divided into two camps, VHS and Betamax (Bailey, 1979).

The half-inch formats, VHS and Beta, were originally intended as inexpensive, foolproof recorders for consumer products or home recording and viewing. Many business and industrial installations were quick to start using the smaller cassettes as cheap and compact playback hardware. Several manufacturers have introduced editing hardware which provides this less expensive format to be utilized to assemble quality video tape (Smith, 1981).

Video-editing hardware allows a finished program to be produced in an acceptable quality without having to make an entire production non-stop and free from error. It permits a technician to edit mistakes, insert segments, assemble segments in sequential order, and generally refine programs before they are presented. Good quality editing hardware makes the task of program production less time consuming and more cost effective.

Schnieder (1981) recommends a decision process prior to the purchase of any editing system. A needs assessment should be conducted first. This helps separate the needs of the editor from the wants. It ascertains the exact type of work the system is to accomplish. Questions should be asked regarding whether the manufacturer offers

the required features needed for the amount of money budgeted. Editors and maintenance staff should talk with the manufacturers and try demonstration units. It is advisable to talk to people in other organizations who are actually using the manufacturer's equipment in daily production. A check should be made on whether field service support is available in the local area.

There are four basic levels of video-editing hardware. The two lower-end editors, two VTRs patched together and a joystick controller connecting two VTRs, usually does not provide accuracy and stability needed for quality editing. The mid-range editor is between the joystick and the full computer system. Edit decisions can be stored on a floppy disc or paper-punch tape which allows some ability to manage edit-decision lists. Since these editors can use either a control track or time code, where each picture frame has been numbered, accurate edits can be accomplished.

High-end editors are computer-controlled systems. Interfacing with a wide variety of other devices, such as switchers, recorders, special-effects generators, character generators, etc., can be accomplished to give the most flexibility and control in post-production. Time codes are used to allow complete repeatability and reliability on edits (Chestnut, 1980).

Video cameras range in complexity from simple monochrome industrial surveillance models with no viewfinders to top quality high resolution, professional color models. All color cameras manufactured recently use virtually the same preamps, tubes, yokes, and color standards. The choices now center around the quality of physical construction, operating features and accessories, and ease of maintenance (Haines, 1977).

King (1981) writes,

> Unless you're aiming for broadcast quality, or your budget is generous, then plan to purchase one-gun cameras. Although their color resolution is not as high as with two or three-gun cameras, they can be got at one-tenth to one-half the price of the others. (p. 32)

The one-gun color camera not only can be purchased at a more manageable initial price but its operational maintenance is more realistic for a smaller institution. These cameras must be purchased with their ability to accept external drives to allow their use in multi-camera situations (Russell, 1978).

Multi-purpose cameras with small lightweight heads that can be hand carried, shoulder mounted, or converted easily for studio operation can give a small facility great flexibility. While they can be operated as separate units or with camera control units in a studio, they have a good picture quality and can rival some single purpose

cameras. There are, however, certain losses in operating conveniences and total system capabilities.

Many organizations have started to shoot video motion- picture film style with a single camera and a portable recorder. This method allows remote or location recording of materials where they are happening rather than moving them all into a studio.

Self-contained, shoulder-mounted cameras used for on-the-scene news gathering (ENG) and electronic field production (EFP) are designed to function with one portable recorder. Here again, picture quality can rival that of some of the best studio cameras. These cameras are outfitted to operate from a battery source to add to their flexibility.

Larger complexes use full-sized studio cameras. These cameras use three tubes for the three basic colors of red, green, and blue. They use either dichroic mirrors or a prism beam splitter to separate the different colors. These cameras are remotely controlled by use of camera-control units (Haines, 1977).

Each camera must be fitted with a lens that is able to accomplish the task set before it. Lens arrangements can vary from a simple, fixed-focal length lens to the complicated zoom-lens category. Controls for the lens can

range from a hand on the lens itself to complete remote operation (Wood & Wylie, 1977).

Two to four cameras should be adequate for the smaller operation. A minimum of two cameras is needed to allow shots to be set while recording with the first. This permits camera movement without offensive visual movement in the final product. A third camera gives more flexibility of setting up shots prior to their need and it can assume the role of furnishing superimpositions of names, logos, and other graphics for production.

The multiple-camera system must include a synchronizing generator to drive all cameras with an identical set of electronic pulses. This enables camera cuts and dissolves to be made without any breakup in the picture. Each camera is "scanning" a field and needs to be synchronized with each of the others so that when they are switched there is no nonmatching signals (Quick & Wolff, 1976).

Wiliszowski (1978) states,

> The selection of a production switcher should never be a factor of money alone. The intelligent decision is based on need, quality for money spent, accessibility of parts and service, as well as the budget. (p. 26)

Need should be the first consideration in the selection of a switcher. One of the first factors is

to determine the number of video inputs the complex will need to handle the production situation.

Picture stability can be increased by routing the signal through a time-base corrector when duplicating a video tape. By evenly spacing scan traces throughout the picture, the duplicated tape can be played on a wide variety of players without jitters or drifts in the picture (Zettl, 1976).

Ferguson (1979) insists that the audio portion of the average audiovisual presentation conveys at least half the information to the audience. With this in mind, it is wise to choose an adaptable, appropriate, and versatile audio board that meets the needs of the facility. Audio boards provide the ability to mix a number of audio sources, each of which may have a different level and equalization. More versatility means more can go wrong. The more complex a piece of hardware becomes, the more opportunity for failure. Audio hardware should meet the needs of the facility with room for growth.

Meyers (1980) established a priority list for the purchase of hardware.

1. Portable camera and recorder
2. Editing system and monitors
3. Playback units
4. Audio gear: board, tape, recording, turntables

5. Studio cameras and switcher
6. Character generator
7. Film/Slide chain
8. Time-base corrector
9. Back-up portable system (p. 15).

Trends in Instructional Television Personne

In all organizations, one person must be ultimately in charge of the total complex and what is produced. This position calls for a person who will be concerned with financial matters, course development, program selection, scheduling, and coordination with school administrators and teachers. The role of the person in charge will vary from complex to complex (Cox, 1971).

In the budget for a complex, there needs to be provision made to hire other qualified personnel to obtain ultimate usage of the purchased hardware and expenditures for the facility. A professional TV director needs to be hired to work with the TV teacher, curriculum experts, instructional design personnel, writers, and researchers from the beginning (Vander Haeghen, 1980, Wood & Wylie, 1977).

A typical TV studio crew is made up of at least five to twenty persons. The director coordinates functions such as: research, writing, making graphics, lighting, scene construction, directing, camera operation, sound

recording, switching video inputs, operation of recorders, video editing, and other specialized tasks needed to bring together a story, theme, or unique idea (Wood & Wylie, 1977, Zettl, 1976). "A good director is a complementary blend of craftsman, mechanic, artist, philosopher, writer, and photographer" (Chance, 1979, p.34). There must be a blend of both the technical and the creative aspects since television is equally involved with creative production and the hardware.

The main difference between staffing a small complex compared to one larger is the number of part-time and full-time personnel. Each complex must provide the same basic functions. A school district or college production studio will have mainly part-time personnel while a large substantial facility operating a three-studio complex will employ mostly full-time personnel. In the smaller venture, one individual is required to wear several hats and perform several assignments (Cox, 1971; Hancock, 1971).

Working directly with the director, as part of the creative team, is the producer. This person must be able to communicate with all involved, with the production as well as the client, and is usually in charge of the financial matters of a production. The thoughts, feelings, and styles of the producer and director should

align themselves to achieve a quality creation. A producer or director can create an adequate production even if other team members are medium to fair. Nevertheless, "quality television production demands an attitude of cooperative teamwork for a producer who is objectively aware of the responsibility and commitment in communicating, motivating, and effective producing and a director who is knowledgeable and sensitive in relating to people and hardware and still manages to be a dominating creative force in the television production" (Chance, 1980, p. 28). In many instructional television installations, the producer and director are one in the same person (Wood & Wylie, 1977).

Production functions may not all require a full-time staff member. Many school-related operations use student help as production crew members. These students are trained and directed by the full-time director. The students may be paid wages or may be part of a work-study program where they receive academic credit and sometimes wages. Some institutions use unpaid volunteers as crew to save money (Wood & Wylie, 1977).

Vander Haeghen (1980) insists that the best personnel should be hired in some special cases for special programs. These freelance people can be hired by the program, the day, or by the hour. This eliminates some

of the overhead for personnel yet gives a quality production. An example of these freelance personnel would be writers or talent with TV experience.

Many smaller video departments use a limited number of full-time personnel especially when materials are shot and recorded on location using portable hardware. Frequently, there are only one or two full-time employees in these types of operations. These people must accomplish all the different tasks (Glasser & Gach, 1978).

Regardless of the extent and level of production, engineering and technical personnel are indispensible.

> Heading into even modest production without proper technical help ... is unwise, uneconomical, and self-defeating. At the hands of amateurs, minor mechanical problems will turn in to complex electronic ones. Little difficulties will snowball and waste hours of staff time. (Gordon, 1970, p. 156)

A program can survive with unskilled people in many positions but nothing can be accomplished if the equipment does not function.

Summary

The purpose of this chapter was to review literature relating to a basic philosophy for the use of television as an integral part of instruction, and trends in the organization and administration of an instructional television complex, planning for instructional television facilities, instructional television hardware, and

instructional television personnel which could be applied to the planning of a small television complex.

This chapter provides a basis for the model which is presented in chapter V.

Chapter III presents the procedures put to use in the study.

CHAPTER III

PROCEDURES AND METHODOLOGY OF THE STUDY

Type of Procedure

This study is developmental in nature. Developmental research is defined by McGrath (1970) as ". . . the use of scientific knowledge for the production of useful materials, devices, systems, methods or processes, exclusive of design and production engineering" (p. 20). Nedler and Gephart (1972) support this idea by saying, "The purpose served by the developmental process is the creation of tools and procedures needed to do work in a specific environment" (p. 25).

Any organization which exists in a world of vigorous change--especially one with such complex and significant accountability as higher educational institutions--needs to lay plans for change and structure its organization to respond effectively to a changing environment. Many institutions find themselves reacting to changes brought about by sources outside the institution rather than doing their part to effect this changing environment. Planning, as it is used here, is not securing facilities, personnel,

or other resources to meet the projected functions but rather is " . . . the process of preparing for the commitment to be made less disruptively" (Kirby, 1966, p. 21).

Effective planning requires that a systems approach be adopted. The systems approach means that logical boundaries must be drawn around each system of the overall television complex for effective and efficient function.

Roger Kaufman (1971) outlines a process of planning and developing organizational and administrative strategies that may be used in the planning and development of a television complex. The six basic steps comprise: (1) identify the problem; (2) determine solution requirements and solution alternative; (3) select solution strategies and tools; (4) implement; (5) determine performance effectiveness; and (6) revise as required (p. 251).

Since a model will be developed rather than an actual complex, Kaufman's steps are modified as follows:

Step 1: Identify the Problem

The first step in the suggested model is to identify the problem, based on documented needs. One of these areas of planning involves future instructional needs using television and the administration of such a program.

Step 2: Determine Solution Requirements and Alternatives

Information found in the literature and basic facts about the structure, organization and management of television complexes found visiting twelve functioning television complexes was the basis for determining solution requirements and alternatives. These complexes were located in colleges, universities, health care facilities, public school systems, and public access cable studios across the United States. Most of the complexes were in states contiguous to Michigan. This material helped establish requirements for one solution and some alternatives to the problems faced by small colleges and universities.

Step 3: Select Strategies and Tools

From alternative information found in the previous steps, the selection of appropriate tools and strategies is accomplished.

Step 4: Development of the Model

A detailed model, including the actual television complex and the necessary administrative organization for smooth operation of such a model, is developed. This is done only after carefully identifying the needs of private institutions of higher learning. The model originates as a result of reviewed literature and visiting existing

complexes in both public and private institutions. The model incorporates the constraints placed on most private institutions due to the lack of financial backing for projects of this nature.

Step 5: Evaluation of the Model

Kaufman (1971) suggests:

> Any time a performance requirement is not met, necessary revision is required . . . . It should be noted that in the suggested model, revision may be required at any step, or point, in problem solving--it is not necessary to commit to a "disaster plan" and have to wait until the plan has been fully implemented to institute requred changes. (pp. 251-252)

The developed model is submitted to a panel of experts to help make an objective evaluation.

Step 6: Revision of the Model

The model is revised based on the reactions of the panel of experts. Each suggestion submitted by an expert is carefully considered from an objective point of view.

Sources of Data

In pursuit of literature pertaining to the development and administration of a television complex, careful searches were made in various sources. This search included the following areas:

1. Current holdings in the libraries of Andrews University, Michigan State University, and Western Michigan University.

2. United States Government Publications Index
3. Educational Resources Information Center
4. Dissertation Abstracts International
5. Education Index, June, 1965 - June, 1981.
6. Readers Guide to Periodical Literature, June, 1965 - June, 1981.
7. Technical literature from commercial manufacturers of television hardware and software.

Gathering Background Information

In order to gather necessary data or information the following steps were taken:

1. The literature was reviewed for the current trends in the development and administration of television complexes.
2. Twelve functioning television complexes in states which are contiguous to Michigan, or mentioned in the literature were visited. While visiting the selected complexes, diagrams and photographs of the complex, organizational and administrative charts, areas needed, and a comprehensive list of hardware and software were obtained.
3. While visiting the selected television complexes, the writer interviewed the director and the director's colleagues. Items of concern included:
   a. Patterns of administrative organization

b. Job descriptions for the personnel

c. Functions and services provided by the complex

d. Services performed by the complex for on- and off- campus instruction and lifelong-learning programs

e. Cost effectiveness of instructional programs provided by the complex

4. Visiting each complex served as an opportunity to evaluate the complex as to needed functions, space, budget, personnel, hardware, software, and the overall effectiveness of programs provided by the complex in the total instructional program.

5. An exhaustive study of the literature was made on the current and future needs of higher educational institutions to provide television services for all forms of instruction.

Based on the information obtained through the review of literature and visitations of television complexes the model was developed as follows:

1. Rationale for the television complex for on-campus, off-campus, and lifelong-learning programs

2. Functions of the television complex for both on- and off-campus instruction

3. Methods of distribution of instructional programs

4. Organization complex and management of the television complex for instructional purposes, including:

administrative structure, staffing patterns, job descriptions, personnel qualifications, space relationships, standards and needs regarding space, hardware and software, rationale for the collection and selection of hardware and software, a realistic hardware replacement schedule, et cetera.

Once the information was gathered, a design was developed for a model television complex and an organizational structure that would be specifically for private colleges and universities in the United States. In developing the model, the needs of the private institutions and financial constraints which exist in most of these institutions was kept in mind.

Panel of Experts

After the model was developed, it was submitted to a panel of jurors for an objective evaluation.

A panel of seven experts in the area of educational television was selected. This panel was asked to evaluate the model and the necessary administrative organization for the operation of the complex. The panel of experts was selected from the television experts employed in four-year colleges and universities.

A letter was sent to each selected panel member requesting assistance and asking his willingness to help in this evaluation (see appendix A). When the proposed

juror indicated willingness to participate in the evaluation, a copy of the model was sent for evaluation.

Each juror was asked to evaluate the proposed model as a useful aid in planning a new educational television complex or remodeling an existing complex and to provide the necessary administrative organization. Their appraisal was made in writing using a response sheet (see sample in appendix B.

Revisions were made to the original model based on this evaluation from each panel member.

Name, title, and institution of panel members are listed in appendix C.

Summary

The purpose of this chapter was to establish the type of procedure that was used in this study. It outlines a process for planning and developing an instructional television complex. Six steps were given in the planning process: identify the problem; determine solution requirements and alternatives; select strategies and tools; develop the model; evaluate the model; and revise the model. Data sources and the procedure for validation were presented.

Chapter IV gives an analysis and evaluation of visited functioning complexes which will help establish the basic requirements for designing a new complex.

CHAPTER IV

ANALYSIS AND EVALUATION OF COMPLEX VISITATIONS

Background

An important prerequisite for planning new instructional television facilities is visiting as many operating complexes as possible or practical (Rankins, 1979). Questions should be asked about the operation, strengths as well as weaknesses, and what the operators would change if they were to rebuild or remodel. Accurate notes should be taken with as much of the facility photographed as is practical and profitable. Perhaps of equal importance to gathering technical data is getting acquainted with the practitioners and operators of these facilities.

In harmony with Rankins', Castaldi's (1977), and Bond's (1972) suggestion for planning, this writer visited twelve facilities throughout the United States (see table 1). These are all preparing instructional materials or programs for community service. The greater number of these facilities visited are located in the state of Michigan with others in California, Indiana, and North Carolina. These facilities represent college, university,

public school, medical, industrial, and community antenna television. An attempt was made to include a cross section of large as well as small representative complexes. Most existing facilities are traditional but several institutions have introduced non-traditional systems which appear to be more cost efficient. Eleven traditional and one non-traditional complexes were visited.

The purpose of this chapter is to make a comparative evaluation, using a thirty-four-item criteria list, of each complex visited. The criteria list included items regarding programs produced, facilities, hardware, and administrative structure. No attempt was made to appraise the quality of programs produced. A complete listing of the thirty-four items can be found in appendix D. The materials gathered are presented in the following order: programs, facilities, hardware, and administration.

Programs

Type of Programs Produced and Work Volume

Programs produced in each studio were analyzed according to Wood and Wylie's (1977) description (see table 1). A complete range of formats was discovered. While most materials were prepared for specific classes on the local level, Coastline Community College prepares full

college courses using contracted facilities and production personnel. Indiana University produces materials that are distributed over the PBS network. The other two large universities prepare some materials that are marketed nationwide. North Carolina State University's "TOTE" programs are contracted in ten different locations throughout the United States giving college and graduate classes for credit.

Table 1

Work Volume and Program Formats

Complex	Type of Programs	Work Volume	Program Format*
Indiana University	PBS/Instructional	Low	All
	Student Training	High	All
University of Michigan	Instructional	Low	All
	Student Training	High	All
Western Michigan University	Instructional	Low	All
	Student Training	Moderate	All
Coastline Community College	Instructional	High	All
Kaiser Health Care	Human Resource Development	High	All
Clark Equipment	Human Resource Development	High	All
North Carolina State University (School of Textiles)	Instructional	High	Illust. Lect. Demonstrations
Andrews University	Instructional/ Student Training	Low	Lecture, Demo., Interview
Grand Rapids Public School	Instructional (Cable)	High	All
Wyoming Community CATV	Public Service (Cable)	Moderate	Lecture
Calvin College	Instructional	Low	Lecture Demo.
Kellogg Community College	Instructional	Moderate	Lecture, Demo. V-O Visuals Interview Filmed Field Trips

* Based on Wood and Wylie (1979) Descriptions

Work volume latitude is from low to high. Some of the smaller complexes were turning out a high volume of material while some of the larger were producing little; however, the program quality was probably lower in the smaller complexes as less planning and sophistication were used.

Facilities

The term facilities includes studio size, floor and acoustical treatment, lighting, studio and master controls, storage, dressing rooms, maintenance, and graphic and photographic work areas.

Studio Size

The size and shape of each complex studio was considered. In table 2, it should be noted that the larger institutions, Indiana University, University of Michigan, and Western Michigan University, all have studios with at least 3,500 square feet. These were all constructed when money was abundant and hardware was not as sophisticated as it is currently. Two studios were included in these complexes, one for production and the other for instruction.

Clark Equipment has a studio with almost 2,000 square feet as it is producing industrial training materials with large industrial equipment.

All the smaller institutions have smaller complexes but these seem more in line with now current philosophies where more and more actual production is being completed on location rather than within a studio.

Table 2

Number of Complexes and Their Size

Complex	Number of Studios	Size	Ceiling Height
Indiana University	2	55' X 90'	20'
		30' X 40'	20'
University of Michigan	2	60' X 70'	20'
		25' X 40'	20'
Western Michigan University	2	50' X 70'	20'
		30' X 35'	20'
Coastline Community College	0	All Contracted Facilities	-
Kaiser Health Care	1	20' X 20'	8'
Clark Equipment	1	35' X 55'	20'
North Carolina State University (School of Textiles)	1	Non-Traditional Classroom/Studio	12'
Andrews University	1	20' X 25'	14'
Grand Rapids Public School	1	15' X 25'	12'
Wyoming Community CATV	1	25' X 30'	15'
Calvin College	1	30' X 40'	30'
Kellogg Community College	1	20' X 50'	12'

Ceiling heights vary from eight feet to thirty feet with a mean of approximately seventeen feet. The smaller studio needs to have a ceiling height to allow lighting fixtures to be suspended. It appears that a 14-foot ceiling is a minimum (Heydeman, 1978).

Studio Floors, Doors, and Acoustical Treatment

Table 3 presents comparisons of floor coverings and studio wall acoustical treatment. These components as well as ceiling height and actual treatment help establish an environment for optimal sound pickup. Floors in eleven visited studios are constructed of concrete, but all are covered to make the concrete more attractive. Two facilities, Clark and Wyoming, have floors of finished smooth concrete that is painted. Asbestos or vinyl tiles are used in nine complexes. The two studio floors at Western Michigan University floors are poured plastic that is seamless and extremely attractive. Indoor-outdoor carpet glued to the studio floor at Andrews University gives an attractive and smooth surface.

All studio walls are acoustically treated to provide a less "live" environment. Acoustical tile is used in seven smaller studios. The large studios use fiberglass insulation blankets adhered to wall surfaces then covered with wire mesh to hold them in position.

While the material used for floor covering does not seem to make a great deal of difference, it must provide a level, smooth, attractive, shared surface so cameras can travel on it smoothly and freely.

Wall acoustical treatment needs to be pleasing in appearance and still provide the deadening effect needed

to eliminate some sound bounce. Acoustical tiles adhered to wall surfaces provide an attractive yet serviceable wall where many people are involved.

Heavy, sound proof doors are included that are large enough to accommodate large pieces of scenery, furniture, and set properties. These prevent sound outside from being transmitted into a production.

Table 3

Studio Floors, Doors, and Acoustical Wall Treatment

Complex	Floor	Doors	Wall Acoustical Treatment
Indiana University	Tile Tile	Large Sound proofed	Fiberglass/Cyclorama Fiberglass/Drapes
University of Michigan	Tile Tile	Large Sound proofed	Fiberglass/Cyclorama Fiberglass/Drapes
Western Michigan University	Poured Plastic Poured Plastic	Large Sound proofed	Fiberglass/Cyclorama Fiberglass/Cyclorama
Coastline Community College	-	-	-
Kaiser Health Care	Tile	Regular	Cyclorama
Clark Equipment	Concrete	Large SP	Burned Glass
North Carolina State University (School of Textiles)	Tile	Regular SP	Acoustical Tile
Andrews University	Carpet	Regular	Acoustical Tile/ Drapes
Grand Rapids Public Schools	Tile	Regular SP	Cyclorama
Wyoming Community CATV	Concrete	Regular	Cyclorama
Calvin College	Tile	Regular	Panels/ Drapes
Kellogg Community College	Tile	Regular SP	Insulation Cyclorama

Studio Lighting

Lighting fixtures, ellipsoidal spotlights, fresnel spotlights and scoops used in these facilities are from four different manufactures. All four seem to have produced a product that performs its assigned task.

In table 4, it can be seen that the total number of lighting fixtures varies extremely from six to over one hundred in the different complexes. This gives one light for every thirty-five square feet of floor space to one for every 200 square feet of floor space.

Table 4

Studio Lighting Manufactures and Number of Fixtures

Complex	Lighting Fixture Manufacturer	Approx. No. of Lights
Indiana University	Kliegl	140
	Kliegl	40
University of Michigan	Kliegl	120
	Kliegl	30
Western Michigan University	Kliegl	96
	Kliegl	35
Coastline Community College	-	-
Kaiser Health Care	Lowel	12
Clark Equipment	Berkey	15
North Carolina State University (School of Textiles)	Kliegl	9
Andrew University	Electro Control	21
Grand Rapids Public Schools	Lowel	12
Wyoming Community CATV	Lowel	11
Calvin College	Berkey	6
Kellogg Community College	Berkey	25

The number of lighting fixtures needed in a studio must be determined by three basic factors. These are: (1) providing adequate baselight, minimum lighting for a camera to "see well"; (2) sophistication of programs produced; and (3) how much time will be available between production scenes.

All studio lighting must be able to control contrast in a scene and provide a correct color temperature when color cameras are to be used.

Control Room

The control room is located in a separate room adjacent to the studio, with the exception of the "TOTE" studio of North Carolina State University. It has a console in the back of the room to permit one operator to perform the many tasks needed to produce their instructional programs. This eliminates several operators or technicians and provides a cost efficient program.

The large studios at Indiana University and University of Michigan have separate rooms for video and audio. This provides better control of each as operators are not distracted by other activities.

Clark Equipment has a unique control area which is housed in a large motor home. Much of their programming is accomplished on location, so this provides control

hardware for both remote work and studio without duplication.

Table 5 shows that smaller facilities have rooms where at least three of the four district controlling areas are provided. These areas are (1) program control, (2) video switching, (3) audio control, and (4) lighting control.

Table 5

Functions Accomplished in Control Room

Complex	Program Control	Video Switching	Audio Control	Lighting Control
Indiana University	●	●	▲	▲
University of Michigan	●	●	△	△
Western Michigan University	●	●	●	●
Coastline Community College	-	-	-	-
Kaiser Health Care	●	●	●	●
Clark Equipment	●	●	●	o
North Caroline State University (School of Textiles)	●	●	●	●
Andrews University	●	●	●	●
Grand Rapids Public School	●	●	●	●
Wyoming Community CATV	●	●	●	o
Calvin College	●	-	●	●
Kellogg Community College	●	●	●	●

● In control room o In studio ▲ Separate △ Both separate and in control room

Master Control

Only the three larger universities provide a master control center in their facilities. These are Indiana

University, University of Michigan and Western Michigan University. Recording hardware, camera control units, monitors, and telecine or film chains are housed with workspace for technicians.

Clark Equipment has included in their control van the same functions as these larger facilities. There is no separate room.

A small facility can include these functions within a control-room area.

Storage

Table 6 presents space set aside for storage areas. Storage areas are needed for equipment, sets and props, and master-tape storage.

Table 6

Complex Storage Facilities

Complex	Equipment Storage	Set Storage	Master Tape Storage
Indiana University	Studio	Extra	Yes
University of Michigan	Studio	Extra	Yes
Western Michigan University	Studio	Extra	Yes
Coastline Community College	-	-	Yes
Kaiser Health Care	Studio	-	Yes
Clark Equipment	Engr. Shop	Extra	Yes
North Carolina State University (School of Textiles)	Studio: Classroom	-	Yes
Andrews University	Equipment Room	Prop. Room	Control Room
Grand Rapids Public School	Equip. Storage	Equip. Storage	Cable Feed
Wyoming Community CATV	Studio	Studio	Control Room
Calvin College	Control Room	Studio	Control Room
Kellogg Community College	Control Room	Studio	Yes

Equipment storage must be properly secured from random access and theft. Locked cabinets are provided for microphones, camera lenses, extra lights, and cables. Equipment storage is realized in studios, engineering shops, control rooms, and equipment rooms by furnishing lockable cabinets. It seems convenience and security are the important considerations.

Set and property storage need to be accessible by large doors to the studio. The smaller studios at Indiana University, Wyoming CATV, Calvin College, and Kellogg Community College operate without an extra storage room. Sets and properties are stored in part of each studio.

Andrews University has a small room with a regular three- foot door into the studio with no entrance from outside. The large complexes have an extra room with unlimited access. Clark Equipment has special racks constructed to accept large box-containers. Sets and properties are stored in the boxes which are stacked through use of an industrial fork lift.

Dressing or Make-up Rooms

Indiana University, University of Michigan, Western Michigan University, Clark Equipment, and Andrews University include special studio support areas designated for dressing and make-up. All the other facilities do not include an area for this function.

If production is planned to be fairly limited, studio- support areas for dressing and make-up can be relatively simple.

Maintenance Facilities

Regardless of the extent and sophistication of production, equipment maintenance is of utmost importance. Of the twelve institutions visited, all had some sort of facility for the upkeep of hardware used. These ranged from a simple repair shop to a multi-faceted operation.

If there is to be any production it appears that some sort of facility must be provided to keep hardware in operation. Without an in-house facility more hardware would have to be owned by the institution.

Graphic and Photographic Areas

Graphic materials, which include title cards, charts and graphs, are prepared and used in all the complexes. Areas where these materials were prepared (see table 7) varied from a small space in a control room to large scale departments.

Wyoming Community CATV prepares graphic material in a corner of their control room. The larger complexes, Indiana University, University of Michigan, Western Michigan University, and Clark Equipment, all have departments set up to prepare graphic materials.

All the other complexes, with the exception of Coastline Community College, prepared their graphics materials using facilities established as a dual functioning area. Graphics labs, audiovisual centers, or instructional resource centers served well for this preparation and facilities were not duplicated.

Table 7

Graphic and Photographic Workspaces

Complex	Graphics Prepared	Where	Photo
Indiana University	Yes	Department	Department
University of Michigan	Yes	Department	Department
Western Michigan University	Yes	Department	Department
Coastline Community College	-	-	-
Kaiser Health Care	Yes	Audiovisual Center	Audiovisual Center
Clark Equipment	Yes	Department	-
North Carolina State University (School of Textiles)	Yes	Audiovisual Center	Audiovisual Center
Andrews University	Yes	Audiovisual Center	Audiovisual Center
Grand Rapids Public School	Yes	Instructional Media Center	Instructional Media Center
Wyoming Community CATV	Yes	Control Room	-
Calvin College	Yes	Audiovisual Center	Audiovisual Center
Kellogg Community College	Yes	Instructional Resource Ctr.	Instructional Resource Ctr.

Photographic processes were also utilized to help prepare graphic materials in all but three of the complexes. Clark, Coastline, and Wyoming did not have space designated for photography but Clark and Wyoming were preparing specialized video programs. Clark uses realism or exploded graphic views of machinery in its programs while Wyoming produces news type programs where most graphics are line drawings. Coastline uses only contracted facilities for program production. The remainder had areas as part of their audiovisual centers, instruction resource centers, or in the case of the three large universities, departments had been established.

It appears graphic workspace and photographic workspace are a must in preparing good quality video production for instruction. If these are not included as part of other media-center facilities, then there is a need to include these workspaces in conjunction with the television complex.

Hardware

Hardware includes cameras, video recorders, remote capabilities, mixers, and video editors.

Cameras

The television camera is one of the most important single- production elements. Most other elements in the

process are greatly influenced by characteristics of the camera.

As can be seen in table 8, most of the complexes are capable of producing video material in color. The exceptions are two studios at University of Michigan and Western Michigan University, used for student instruction, and the sole studio at Andrews University used both for production and student instruction.

Table 8

Studio Cameras

Complex	Studio Capabilities	Broadcast or Non-broadcast	Camera Type	Camera Manufacture	Number of Guns
Indiana University	Color	B	Studio	RCA	3
	Color	B	Studio	RCA	3
University of Michigan	Color	B	Studio	RCA	3
	Monochrome	B	Studio	RCA	1
Western Michigan University	Color	B	Multi-purpose	Ikagami	3
	Monochrome	B	Studio	RCA	1
Coastline Community College	-	-	-	-	-
Kaiser Health Care	Color	NB	Mini-Cams	JVC	3
Clark Equipment	Color	B	Studio	Hitachi	3
North Carolina State University (School of Textiles)	Color	NB	Mini-Cams	Panasonic	1
Andrews University	Monochrome	NB	Studio	Panasonic	1
Grand Rapids Public School	Color	NB	Studio	Hitachi	3
Wyoming Community CATV	Color	NB	Studio-Mini	Sony	1
Calvin College	Color	NB	Consumer	RCA	1
Kellogg Community College	Color	NB	Studio-Mini	Sony	1

Broadcast quality cameras are only used at Indiana University, University of Michigan, and Western Michigan University. These are all three-gun cameras with a pickup tube for each primary color. All the other complexes are using non-broadcast quality cameras and range from three - gun pickup to single-gun. Maintenance on the three-gun camera is extremely expensive.

The number of cameras used in each studio is displayed in table 8. One to six cameras are used. These numbers do not include portable cameras to be used for location or remote shooting--with the exception of Kaiser Health Care and Western Michigan University. Western has used multi-purpose cameras that are convertible for remote work. Kaiser only used mini-cameras that can be used in its studio as needed.

Kellogg Community College uses one studio camera and one external-drive mini-camera in its studio. The mini-cam is used on location or remote recording as needed. This does disable the studio, but with limited (one full-time) personnel it seems to make little difference.

Cameras used are manufactured by several different companies. Most are of Japanese origin. It seems as if the important criteria is whether they perform as needed for production and whether they can be maintained to obtain good results at a reasonable cost.

A small multiple-camera studio should ultimately be equipped with three cameras and possibly one mini-camera of good quality. If multiple-purpose cameras can be gotten at a reasonable cost and production volume is not extreme this would be beneficial for a small complex.

Video Recorders

Table 9 discloses the wide array of recording hardware used in visited studios. Eight of the fourteen studios found in the twelve complexes are using 3/4-inch Umatic as their standard. Even though Indiana University uses 2-inch quadruplex in their large production studio, they are using Umatic format for some of their remote work.

Table 9

Video Recorders and Remote Capabilities

Complex	VCR VTR Format	Remote Capabilities
Indiana University	2" Quad	Yes
	¾" Umatic	No
University of Michigan	1" Helical	Yes
	¾" Umatic	No
Western Michigan University	1" Helical	Yes
	¾" Umatic	No
Coastline Community College		
Kaiser Health Care	¾" Umatic	Yes
Clark Equipment	1" Helical	Yes
North Carolina State University (School of Textiles)	¾" Umatic	Yes
Andrews University	½"EIAJ	Yes
Grand Rapids Public School	¾" Umatic	Yes
Wyoming Community CATV	¾" Umatic	No
Calvin College	½" VHS	Yes
Kellogg Community College	¾" Umatic	Yes

University of Michigan and Western Michigan University have moved from quad to one-inch helical scan broadcast quality recorders. Clark Equipment established their facility using the one-inch helical scan machines as their standard. While these are excellent machines, for the smaller institution these would be expensive unless there was to be a great deal of material recorded.

Andrews University uses the 1/2-inch EIAJ format for all their recordings. Calvin College has shifted from Umatic format to 1/2-inch VHS. This provides tape quality for their recorded materials and meets their purpose for usage. This cuts software costs by more than one half.

While it would be ideal to use one-inch helical scan recorders, small college or university television complexes can obtain quality original tapes using 3/4-inch Umatic format. This format provides options when it comes to editing.

Remote Capabilities

All major complexes had capabilities for remote taping with the exceptions of the three large university second studios. As students became better trained, they usually found employment within the larger production area.

Wyoming Community CATV was the only other studio not using remote hardware. Their programming does not require

this option at this time (see table 9). All operations use the same format for remote recording hardware as is used in their studios. Indiana University has started using 3/4-inch Umatic for some of their remote recordings, then dubbing up to quad through an image enhancer.

There seems to be a trend to move more instructional recordings out of the traditional studio to where the action normally takes place. Remote capabilities seem to be a necessity if quality instructional materials are made. Kaiser Health uses mainly remote recordings.

Mixers (Video and Audio)

With the exception of Calvin College, all complexes were supplied with video switchers and audio mixers. Calvin College was planning to add these items in the future.

All video switchers and audio mixers were categorized into sizes and capabilities. Table 10 lists the level of sophistication. When there are more than one camera or more than one audio pickup, these two pieces of equipment are a necessity.

Video Editors

Video-editing hardware allows the production of a finished program of an acceptable quality without having to make the entire production non-stop, in sequence, and

free from error. It permits removing mistakes, inserting new material, assembling segments, and general program refinements.

Table 10

Video Switchers and Audio Mixers

Complex	Video Switcher	Audio Mixer
Indiana University	Large Production Medium Production	Quality Medium
University of Michigan	Large Production Medium Production	Quality Basic
Western Michigan University	Large Basic	Quality (Stereo) Basic
Coastline Community College	-	-
Kaiser Health Care	Basic	Basic
Clark Equipment	Large	Medium
North Carolina State University (School of Textiles)	Basic	Basic
Andrews University	Mechanical Basic	Basic
Grand Rapids Public School	Basic	Basic
Wyoming Community CATV	Basic	Basic
Calvin College	None	None
Kellogg Community College	Basic	Basic & Quality

Two facilities did not provide editing hardware. These were Andrews University and the "TOTE" facility of North Carolina State University. The "TOTE" program provides non-traditional television instructional materials recorded in a classroom/studio setting.

All other facilities were outfitted with editors

ranging from simple joystick editing controllers using a control track to computer-controlled hardware using time codes.

Table 11 gives editor types and type of address to frames.

Table 11

Video Editing Hardware

Complex	Editor Type	Frame Address
Indiana University	Quad Joystick	Time Code Control Track
University of Michigan	Computer Joystick	Time Code Control Track
Western Michigan University	Computer Joystick	Time Code Control Track
Coastline Community College	-	-
Kaiser Health Care	Joystick	Time Code
Clark Equipment	Memory Computer	Time Code
North Carolina State University (School of Textiles)	None	None
Andrews University	None	None
Grand Rapids Public School	Joystick	Control Track
Wyoming Community CATV	Joystick	Control Track
Calvin College	Joystick	Control Track
Kellogg Community College	Joystick	Control Track

Administration

Administrative Structure and Personnel

The visited complexes were established mainly as departments, but two, Kaiser and Kellogg, were established as a function of a total program of instruction. These two were just a part of the total team for providing instruction to their institution.

Table 12 shows the structure and the approximate number of full-time employees of each facility. The number of employees ranged from one to fifty-five.

Table 12

Administrative Structure and Number of Full-time Employees

Complex	Approx. No. of Full-time Employees	Structure of Administration
Indiana University	55	Department
University of Michigan	10	Department
Western Michigan University	7	Department
Coastline Community College	-	-
Kaiser Health Care	*13	Functional
Clark Equipment	10	Department
North Carolina State University (School of Textiles)	2	Functional
Andrews University	*2	Department
Grand Rapids Public School	5	Department
Wyoming Community CATV	1	Department
Calvin College	*1.5	Department
Kellogg Community College	**3	Functional

*All Audiovisual Center Personnel
**All Local Production Personnel

An adequate number of professionally trained personnel is necessary to produce quality instructional materials. The exact number of people needed varies with work volume, type of programming, and type of complex. These people should make up the "core" of a production crew part-time personnel can be used as needed.

A functional structure seems to allow an atmosphere of cooperation rather than competition. Each department is not competing with another. The functional structure puts the operation into part of the total instructional team.

Figures 13 through 18 are included in appendix E. These show floor plans and sketches of these facilities. Photographs are included, Plates 1 through 17, to present some of the unique characteristics of these complexes.

Summary

The purpose of this chapter was to present a comparative evaluation based on a thirty-four-item criteria list which looked at programs produced, facilities, hardware, and administration of each complex visited.

The evaluation helped furnish insights for the basic needs in designing the model found in chapter V.

Chapter V

RECOMMENDED MODEL FOR THE DEVELOPMENT AND ADMINISTRATION OF A MODERN TELEVISION COMPLEX FOR SMALL PRIVATE COLLEGES AND UNIVERSITIES

This chapter describes a model developed specifically for the establishment and administration of a small cost efficient television complex. Cost efficiency is accomplished by utilizing personnel, hardware, and facilities without duplicating services. The studio is designed to operate with less personnel, yet accomplish necessary functions. A unified media program, with common goals, will not compete for resources. Hardware and facility costs are minimized but are planned to provide sufficient means to accomplish the goals and objectives of this type of operation. The basis for the model as well as the process of validation is outlined and explained. The steps taken, with a time line are presented through a flow diagram.

The Basis for the Model

The model was developed on the basis of:

1. Concepts gleaned from a review of literature

regarding current trends in the development and administrative structure of television complexes.

2. Concepts gathered through an analysis and evaluation of twelve functioning television complexes found in colleges, universities, community colleges, a public-school system, a large industrial corporation, a health-care corporation, and a community television facility.
3. Input from personal contact with educators and operators concerned with media production and their evaluation of a proposed model.
4. Constraints placed on private colleges and universities due to the lack of funds and space.

Proposed Philosophy for Television Complexe in Small Private Colleges and Universities

All activities included as part of the educational process must be based on sound philosophical principles. These include:

To Facilitate the Communication of Ideas

Perception determines the quality and quantity of communication. It is the process whereby an individual becomes aware of the world around him/or herself. Senses are used to apprehend objects, people, things, and events. The eyes, ears, and nerve endings in the skin are the primary means through which individuals maintain contact

with their environment. Meanings are given to things by the perceiver in terms of the sum of all prior experiences. Though no two persons can have exactly the same meanings for things observed, common experiences tend to produce shared meanings which make communication possible (Toch & MacLean, 1962).

Communication has been generally restricted to face - to-face contacts in classrooms. Inflation and energy depletion have made this impractical or impossible for thousands.

Television can structure perceptual experience for many individuals simultaneously. Its effectiveness is based on the assumptions that people primarily learn from what they perceive. Carefully designed materials can influence behavior in a positive way.

Education is a creative process, designed to develop desirable intellectual, physical, social, and spiritual skills and values. As the needs of humans change, they must explore fields of knowledge which will enhance their potential and be relevant to them. Learning cannot be isolated to just the first few years of a person's life but must continue throughout the entire lifespan.

To Provide Quality Education

Media forms have been just aids to instruction. In many conventional educational programs, these materials

are typically used as supplemental or as enrichment to good instruction. Audiovisual materials are costly additions under these traditional conditions.

It was assumed that good learning by the student was a direct result of good teaching. Learning is an activity that must be performed by the student (Kemp,1980). It is the teacher's job to structure experiences and communicate them so learning can take place conveniently and logically by the students.

Researchers have shown that pupils learn from any medium when it is carefully planned. Schramn et al.(1971) state, "Given a reasonably favorable situation, a pupil will learn, from any medium . . . . This has been demonstrated by hundreds of experiments" (p. 15). The research into and results of media instruction show that media makes the greatest impact not as supplemental but as instructional input itself.

Instructional television has contributed to realistic decisions in curriculum planning, rather than the traditional intuitive subject-content approach. It requires a systematic integration of personnel, content, and visual experiences designed to operate through a variety of strategies, a number of relative cues, and continuous evaluation (Vander Haeghen, 1980).

Subject content is the basis for planning, with only casual attention given to other details. Instructional

television has contributed to a systematic-planning procedure. It involves personnel, content and selection of visual experiences that will serve to reach a particular objective.

Success with an instructional design demands careful planning and a realistic approach to the numerous problems that must be solved. Properly designed instruction, using a variety of instructional strategies, a number of relative cues, and continuous evaluation, can be transmitted through the video medium.

To Individualize Instruction

Students learn and progress at their own pace. No two students are the same nor do they retain the same material. In traditional teaching, these facts, even though known, cannot be adequately considered. Information is presented at the instructor's rate of delivery. Students are physically passive, although listening, taking notes, or completing related study materials. Once the material has been presented, it cannot be precisely duplicated or reviewed (Brown, Lewis, & Harcleroad, 1977).

The television medium allows students to follow the same track, using identical materials, but with individualized pacing. Materials may be re-examined in part or in their entirety at any time.

To Make Education More Productive

Instructional television, when properly produced, uses the instructional-design approach. This is a systematic way to plan, carefully considering what must be learned, entry-level skills of learners, effective methodology, selection of learning experiences and evaluation. Student learning rate is increased by providing worthwhile experiences for learners (Kemp, 1980). The experiences are prepared on the level of students involved. Careful preplanning allows the teacher to use all instructional time to better advantage.

Instructional television materials should be prepared using a team of specialists. Three individuals or groups are needed to make up the production team. The subject specialist has a broad knowledge and familiarity with the potential audience. The communications specialist knows how to handle content (treatment, scriptwriting, camera angles, etc.) and knows the advantages, limitations, and uses of various material. The technical personnel comprise those responsible for the graphics, camera work, lighting, sound recording, and directing production. The reactions and suggestions resulting from this team approach improve the final instructional program.

To Update Lifelong Learners

The instructional television complex is a service in the cause of education. It can communicate new ideas, can keep learners abreast of new developments, can support and supplement allied educational services. It gives each student common experiences in learning allowing each to pace the learning rate. One teacher can inform large numbers at one time. The television complex is a place where ideas can grow, be developed, and be produced for distribution and sharing. Used as a delivery system, television (air transmission, cable, satellite, or video cassette) can be used to make learning experiences accessible to more students (Luskin, 1981).

To Develop Instructional Materials

The instructional television complex personnel can develop and produce instructional materials suited to the specific requirements of the learners (Wood & Wylie, 1977). Planning materials with the institution's philosophy, goals, and objectives can hold together a well-defined student group. The material can transmit the institution's ideals and values as these can become an integral part of the instruction. These resources can be more effective than ready-prepared materials with broad objectives, as they are developed from needs assessments of the learning audience.

To Decentralize Instruction

In normal instruction, a professor may teach the same course in several locations but not concurrently. Recorded video instruction permits students in many locations, including a campus setting, the same instruction simultaneously (Vander Haeghen, 1980). The only limitations are the number of instructional centers with the necessary hardware to reproduce pre-recorded materials. This system provides immediacy in getting instructional programs to the different centers. Quality instruction can still be maintained on campus.

Potential students, especially continuing education and lifelong learners, need not interrupt their normal lifestyle yet still have the opportunity to receive good quality instruction. More student contact hours are generated by professors in this instructional distribution system.

Purposes and Intent of the Instructional Television Complex in Small Private Colleges and Universities

The total number of college-age young people, 17-25 years, is shrinking (Sumichrast & Sheehan, 1980). Prices of quality education are escalating due in part to the high inflationary rate for supplies and services. This puts most institutions in a situation where income must be increased to keep doors open. Income in most private

schools is derived from student tuition and contributions.

It has been found that older students enroll in instructional programs when instruction does not interfere with established lifestyles, is not threatening (especially when the potential student has been away from classrooms for a period of time), and is readily available in a convenient place and time (Vander Haeghen, 1980). There is a growing need for education to be continuing, easily accessible, and relevant to real-life situations.

Television can meet these needs. It can make instruction more accessible to greater numbers of students thus enlarging the pupil-teacher ratio. It can provide learners with review capabilities.

The nature of the television medium necessitates the need for systematic pre-planning as it is a sophisticated integration of people, things, events, scripting, electronics, timing, and editing. When instruction is carefully designed, television creates the next best thing to personal contact between teacher and student.

For Making Education Convenient

The television complex can accomplish immediacy of instruction in many places simultaneously. Numerous learning centers can be established, equipped with playback hardware, where students can be instructed by a professor some distance away. Television is a personal,

intimate medium, so it can be shown in private on a one-viewer-per-screen system. The potential number of viewing centers is limitless (Russell, 1977).

Instructional materials can be repeated as many times as the learner wishes to review. Students need not adjust personal time tables around structured class schedules. This system provides flexibility for the learner.

For Providing Quality Instruction

Televised instruction need not be a correspondence course with pictures or a lecture with supplemental readings. It can be an examination and presentation of a body of knowledge and information. Through the use of sight, sound, color, movement, and print, it can be designed to stimulate involvement, clarity, and quantify carefully developed, validated learning objectives (Vander Haeghen, 1980).

Lessons should include television materials, related textual materials, and study guide instructions. From learning objectives to sample test questions, the study guide can weave a pattern of study activities that can lead the student viewer from text to video and video to text through a carefully developed sequence of study.

The process of designing a television course requires the creative and intellectual endeavors of a team of specialists in instruction, television, print, and

promotion. The team can provide a base of content and strive to assure academic credibility and validity.

For Improving Instructional Materials

Development of instructional materials using systematic approaches can have a positive influence. Television lends itself to this approach as it is a sophisticated integration of people, things, events, scripting, electronics, timing, and editing. The systematic procedure provides for a continuous process of collecting and interpreting information to assess decisions made in developing materials. Learning materials should be designed to take students from one level of knowledge or skill to another. The purpose of this evaluation is to assess the decisions made in the design process (Wood & Wylie, 1977).

For Production of Materials Suited to the Needs of a Special Interest Group

Most commercially prepared instructional materials are prepared with very broad learning objectives. These materials are meant to partially meet needs of a wide spectrum of students. Materials can be prepared with the institution's philosophy and goals and the requirements of the target audience clearly in mind.

Expansion of knowledge and changing technology has given colleges and universities a particular opportunity

and challenge to provide programs and offerings that will enable society to keep pace with these changes.

Several small special-interest groups can be added together to establish one large group which would make it practical to provide instruction. Many potential students cannot afford to travel to a campus to receive the wanted continuing education. Many are employed with no way to take leave for the needed special courses unless they are offered in convenient locations close to their homes (Stewart, 1981).

Private colleges and universities established on religious beliefs can provide their constituency continuing education with their religious leaders giving instruction. Traditional continuing educational programs would allow these leaders to provide instruction only in a few largely populated areas.

For Providing Material for a Nation-wide Distribution System

The complex can provide materials in a nation-wide distribution system. This will increase the student-teacher and cost-benefit ratio. The cost-benefit ratio is a correlation between total educational dollars spent and value received by students (Luskin, 1981). Not only will the teacher become more effective for dollars spent but the educational results can be raised. (or improved)

The philosophy and purposes can be realized to serve a special public from a television complex, provided the system is properly initiated, organized, staffed, advertised, and funded.

Based on the above philosophy and purposes, this writer makes the following recommendations for developing a working model for small colleges and universities.

Recommendation 1: Conduct an Extensive Needs Assessment

The needs assessment is a logical problem-solving tool by which a variety of alternatives may be used to reach a decision (Wood & Wylie, 1977; Heydeman, 1978). It can:

1. Determine feelings and attitudes of potential students towards accepting television programming as an integral part of their instruction.
2. Document need of an instructional project using television as a delivery system.
3. Find the extent of a potential instructional project through television.
4. Detect the exact purpose of such an instructional scheme.
5. Rank priorities for action.
6. Pin down the best format for instructional materials.

Recommendation 2: Base Instructional Television Complex on Established Need

If an instructional television complex can be shown to be essential for delivering quality instruction to students, small private colleges and universities should provide it.

Using television as a delivery system, quality instruction can be provided to a wide cross section of the publics served by the institution. Instruction can be dispatched to many convenient locations at one time. Carefully prepared materials can reflect institutional philosophy and goals in all subject matter. It will provide learners with multi-channel stimuli to help increase learning.

Many colleges, universities, and commercial software companies are producing top notch instructional materials in video format. These materials should be used after careful screening to insure institutional philosophy and goals are accurately reflected. Evaluation criteria needs to be established by the Institutional Instructional Communications Committee (this committee is discussed in recommendation 3). As a by-product of this evaluation, more frequent re-assessment of institutional patterns of teaching and its relationships to published philosophy can take place.

This ready-prepared material needs to be supplemented

with locally produced programs put together by a team of specialists in instructional development, subject matter, and technology.

Commitment to local production is necessary by the immediate supervisor, top administration, and the board of trustees if it is to function adequately.

The complex should be established as a post of total instructional and media program. This will save duplication of effort and services thus save in expenditures for the institution.

Recommendation 3: Effective Organizational Structure

Adequate planning and a strongly structured organization are needed for continuous progress. Figure 5 shows such a structure, based on planning developed as a result of this study. It places the director of instructional communications on the same level as a dean or director of extension schools. This will give a unified media program credibility (Lyle, 1974).

The most efficient structure is a combination of centralization in overall decisions in planning, organizing, coordination of policy, and decentralization in the operation of the media program. (Media program here includes the traditional library, educational resources, audiovisual center, and television complex). The make-up of the organization would be as follows:

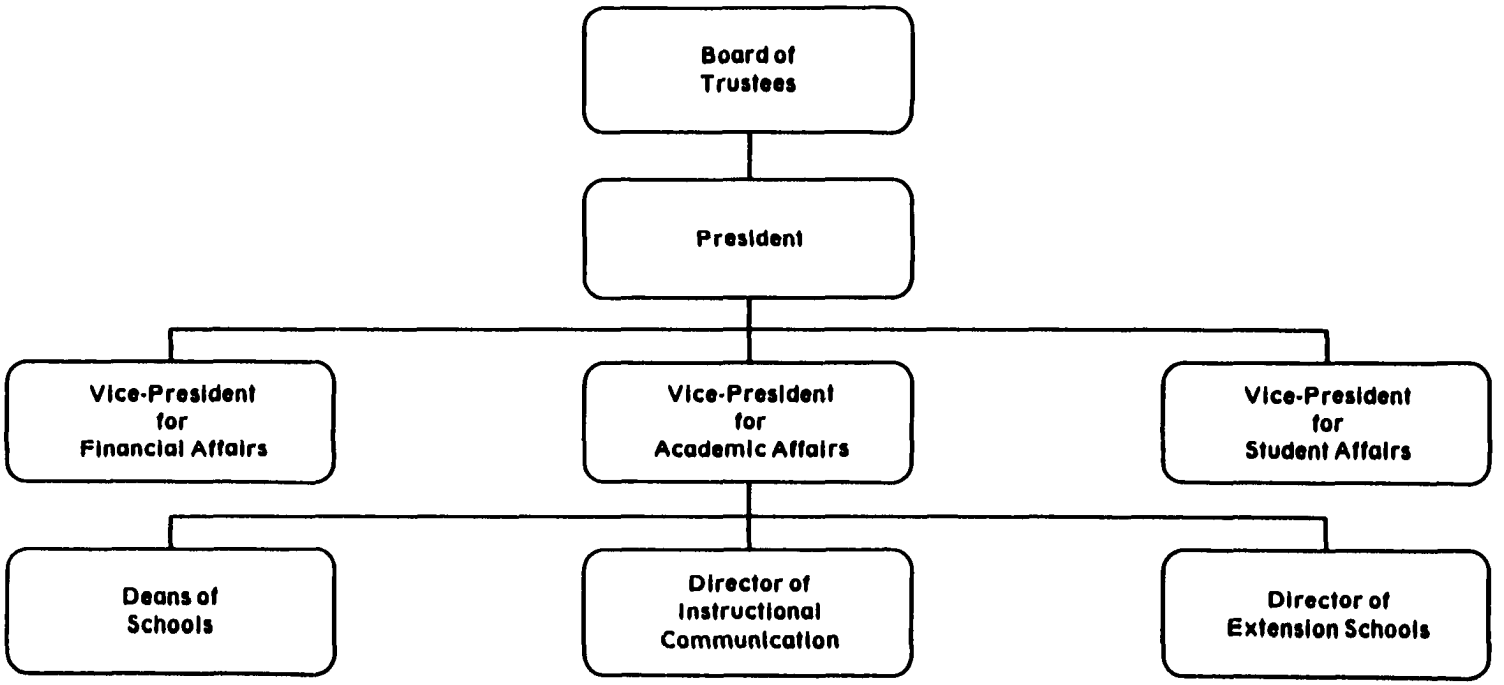


Figure 5. Proposed Hierarchal Structure of the media program of which the television complex is a part.

I. The central or top administrative structure would be on a par with other administrative committees of the college or university, but identified as an Instructional Communications Committee. The personnel, responsibilities, and authority of such a committee require careful delineation since instructional media serve most if not all departments of the college or university, and potentially constitutes a large part of the extension courses:

A. Personnel

1. Vice President for Academic Affairs or Academic Dean: responsible for reviewing policies, evaluating faculty, curriculum development
2. Vice President for Financial Affairs or Business Manager: Responsible for institutional budget, official processes of allotment and priorities, counsel to avoid wrong directions
3. Dean of schools or chairpersons of instructional departments: Responsible for setting and maintaining educational standards, individual student needs
4. Director of Extension Schools: Responsible for innovation of extension-course staffing for course offerings,

planning special programs, maintenance of liaison with all departments offering courses in the extension program

5. Director of Instructional Communication: Responsible for executing program planned and implementing policy

B. Responsibility of Committee

1. Determines institutional needs for all forms of media (books, slides, filmstrips, video tapes, motion pictures)
2. Develops rationale for the instructional media program
3. Encourages maximum utilization of resources
4. Generates policy
5. Recommends adequate financial aid

II. An Instructional Media Committee would be on the next level which is the operational level.

A. Personnel

1. Director of Instructional Communications: Responsible for administering a unified media program (including traditional library, teaching materials center, educational resources center, audiovisual center, and instructional television complex), liaison between policy making body and operation level

2. Representatives from various functions within Instructional Communications: Responsible for day to day operation in various functions in unified program
3. Director of Extension Schools: Responsible for knowing needs of extension students, setting priorities
4. Appointed faculty members (number determined by faculty size): Responsible for obtaining faculty support, helping to determine needs for campus instructional programs

B. Responsibilities of Committee:
1. Determines media needs of institution
2. Supplements a unified media program
3. Sets priorities for hardware, develops materials, purchases materials

III. The television complex should be a part of an integrated media or instructional system. A functions organization is proposed that will combine all media into an integrated operation and make subdivisions among the various functions common to all rather than amidst differing media such as library, teaching materials, audiovisual, and television. The organizational chart, figure 6, shows

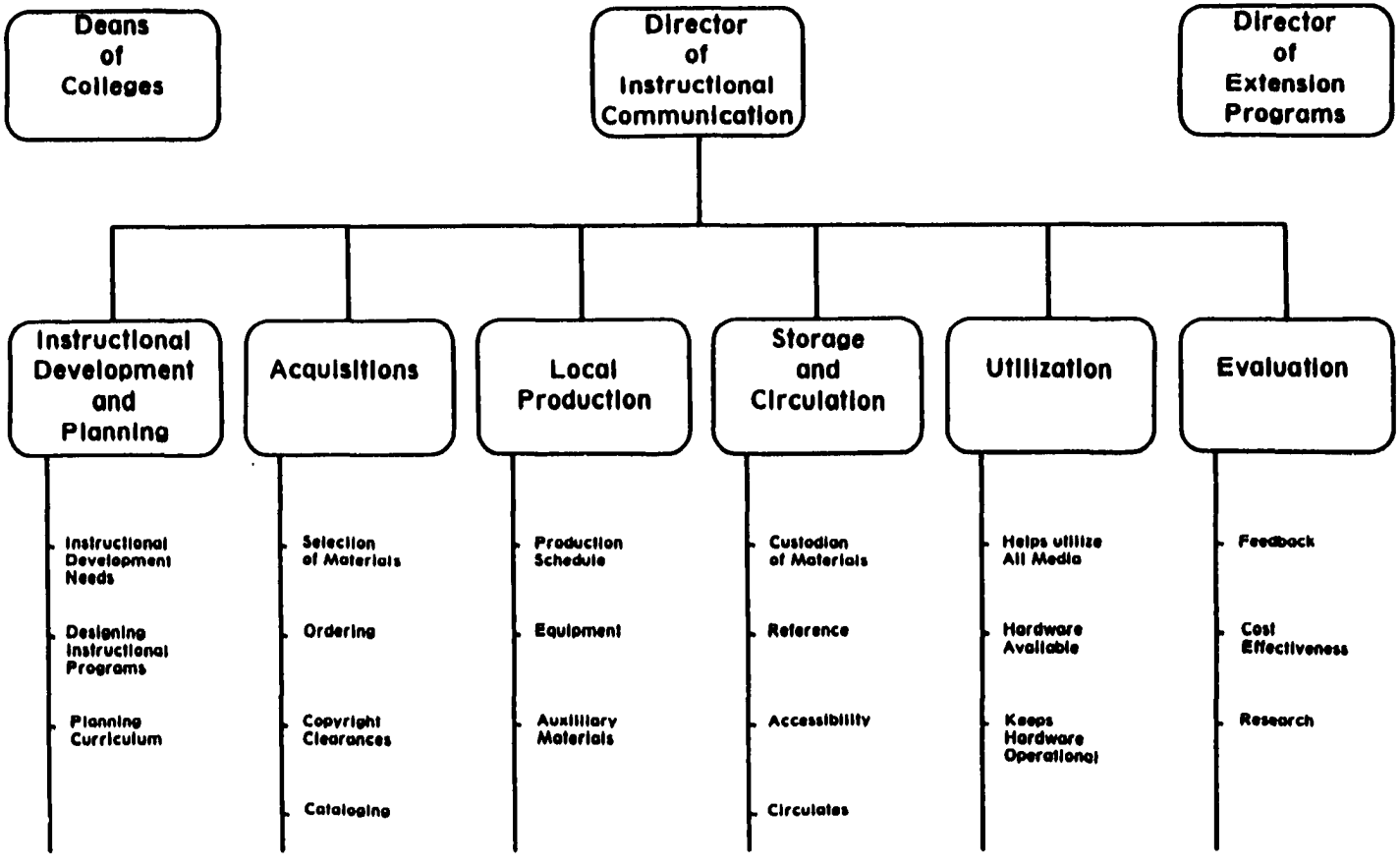


Figure 6. Proposed Functions Organizational Chart for an integrated media program.

the proposed structure with the total media program broken into six functional units. These are:

A. Instructional planning and development
   1. Identifies needs for special instruction or training
   2. Designs instructional program to meet needs
   3. Decides what types of materials are needed for specific instructional problem

B. Acquisition
   1. Acquires all instructional materials such as books, filmstrips, slides, videotapes

C. Production
   1. Produces all materials needed that cannot be purchased or leased which would include videotapes, workbooks

D. Storage and Circulation
   1. Catalogs and stores books, slides, overhead transparencies, video tapes, films, and audio tapes
   2. Circulates materials

E. Utilization
   1. Helps utilize all media, makes hardware available, and keeps hardware operational

F. Evaluation

1. Conducts research as to effective uses of programs, cost effectiveness, and provides feedback

Recommendation 4: Professional Staff

The unified media program suggested above rules out traditional media centers and thereby avoids costly duplication of services. These duplications are found in many campuses as a result of meeting apparent needs one at a time. The consolidation of related instructional media programs, after the first wrench of restructuring, could produce better quality and perhaps save money. Professional training and commitment of a minimum number of staff members would be the heart of the program. Job descriptions and qualifications for the minimum number follow.

I. Director of Instructional Communications

A. Qualifications

1. Earned doctoral degree (master's degree for small college) in instructional technology, general education, or curriculum development; cognate in library science or instructional media (Major and cognate could be reversed)

2. Five years high-school teaching, or five

years college teaching, training in all forms of instructional media, plus successful experience as a traditional media director or librarian (Davis, 1966)

B. Characteristic Duties

1. Acts as secretary of instructional communication committee of the institution
2. Acts of chairperson for instructional media committee
3. Helps prepare with long-range plans for instructional program
4. Is active in planning, organizing, and implementing projects for unified media programs
5. Develops opportunities for faculty members to improve their instruction with the context of new ideas
6. Promotes academic programs, courses, and workshops related to instructional media and the learning process
7. Provides for the research and development of instructional materials

II. Instructional development assistant

A. Qualifications

At least an M.A. in instructional design or development (Since this area determines the

effectiveness of the total program, especially the serviceableness of the television instruction, a doctoral degree in the area might be helpful.)

B. Characteristic duties

1. Helps instructors define instructional objectives, select materials, resources and hardware
2. Develops instructional materials based on needs of instructors
3. Determines learning strategies for all courses offered especially for television

III. Acquisitions Assistant

A. Qualifications

1. At least a M.S. in library science and instructional technology
2. Successful experience acquisitioning and cataloging books, video tapes, motion pictures, slide/tape programs, filmstrips, and audio tapes

B. Characteristic duties

1. Locates, orders media for rental, lease or purchase
2. Helps with clearances, rights, and copyrights
3. Catalogs books, journals, video tapes,

audio tapes, slide/tape programs, filmstrips, and motion pictures

IV. Local Production Assistant

A. Qualifications

1. Master's degree in instructional technology with an emphasis in media production
2. Possess working knowledge of aspects of producing instructional materials as overheads, slides, filmstrips, audio tapes, video tapes, printed materials such as manuals, workbooks, or programmed learning packages

B. Characteristic duties

1. Directs entire production schedule for all locally produced instructional materials
2. Oversees all local production
3. Produces video telelessons
4. Oversees video lesson editing

V. Storage and Circulation Assistant

A. Qualifications

1. Master's degree in library science or school-media specialist
2. Background in computer scheduling

B. Duties

1. Operates as traditional librarian with print and non-print media-- books,

journals, reference materials, video programs, slide/tape programs, filmstrips, audio tutorial materials

VI. Utilization Assistant

A. Qualifications

1. Successful practical experience in educational technology
2. Background in hardware maintenance
3. Background in computer scheduling

B. Duties

1. Helps display visual materials for classes
2. Establishes and maintains closed circuit television nets and hardware
3. Helps train professors to use media effectively
4. Schedules hardware as needed
5. Keeps hardware operational

VII. Research and Evaluation Assistant

A. Qualifications

1. Degree in instructional technology at Master's level
2. Experience in methods of research and needs assessments

B. Duties

1. Conducts research projects to determine program effectiveness

2. Determines cost effectiveness of program
3. Determines program direction
4. Validates quality of off-campus instructional programs using media
5. Provides feedback of up-dating materials

Recommendation 5: Physical Facilities

The planning team for the physical facilities should include a cross-section of the public to be served by the facility, professionals in education and television, as well as the architect. An attempt must be made to envision the final television lesson to be developed and prepared in the facility. This will help mold the facility's goals, objectives, and activities that must take place in the facility. The complex must provide adequate space and appropriate physical arrangements for the full utilization of specialized hardware and personnel.

Pedagogical needs that should be incorporated into the complex are: flexibility, since hardware becomes obsolete rapidly; location for convenience; facilities for controlling unwanted noise; abundant electric power of constant voltage; adequate heating, ventilation and air conditioning; and expansion provisions.

The activities for which the complex must be built include developing instructional materials; writing video scripts; class demonstrations; preparing graphic

materials; preparing photographic materials; making, storing, and setting up sets and props; video switching; mixing audio sources; operating video cameras; preparing audio materials; duplicating video tapes; editing and time-base-correcting video tape; dressing and make-up; placing slides and films on video; and storing backup hardware and video master tapes.

There appear to be no suggested standards as to space requirements for a facility of this kind from the professional associations mentioned in chapter I. They could not provide any guidelines or suggestions.

Space allotment should be kept at a minimum but be functional to include areas for specialized activities. Areas are needed for the following functions:

Reception and Producer/Director

Instructional developer

The local production area would include:

Studio/Classroom

Control/Editing Room

Photographic Lab

Graphics Lab

Equipment Storage

Set and Property Storage

Dressing/Make-up Room

Repair Work Area

Master Tape Storage

Video Tape Distribution

The facilities of the complex should meet the following specifications:

Studio/Classroom-- doubles as regular television studio and classroom

Shape: rectangular with ratio of 2:3 and ceilings height based on room width on a 3:4 ratio

Lighting: two sets of lights in windowless room

Ventilation: low velocity air flow for heating and cooling

Acoustics: fiberglass insulation with wire mesh; sound locks on doors

Floor: flat, smooth, attractive

Equipment: audio and video cables installed in walls; audio and video monitors in front and back of room; movable connected student desks

Control/Editing Room-- doubles as control room and post-production editing room; should have floor elevated at least two feet above studio floor

Ventilation: low velocity air flow for heating and cooling

Acoustics: acoustical tile adhered to walls

Floor: removable to allow cable installation

Access: sound lock door to studio; door to hallway; soundproof window connecting studio/classroom

Photographic Lab-- should be provided if not already provided as part of existing media program. Windowless room should provide for photocopying, process-camera work, and darkroom work.

Graphics Lab-- should have at least 70- foot candles of non-directional illumination. Workspace should be provided with storage space.

Equipment Storage-- windowless room with limited access. Locking cabinets with racks for electronic hardware.

Set and Property Storage-- room with access from outside with large doors, connected to studio/classroom with same-sized doors. Vertical storage racks for sets and shelving for props. Fire and safety regulations to be observed.

Dressing/Make-up Room-- access to studio/classroom with large make-up mirror and lighting.

Master Tape Storage-- adjacent to control/editing room with climatic control. Shelving for vertical tape storage. Fire and safety regulations to be observed.

Repair Workspace-- adjacent to studio/classroom and control room. Lockable storage for spare parts can be

under test bench equipped with racks for mounting test hardware.

Video Distribution Area-- adjacent to controlroom and tape storage area with space for campus distribution hardware as needed. An area for shipping video tapes to other distribution centers should be included.

The actual square footage needed for each specialized activity must be determined by each institution developing facilities.

A general schematic plan for determining a physical layout is given in the space relationship figure (see figure 7).

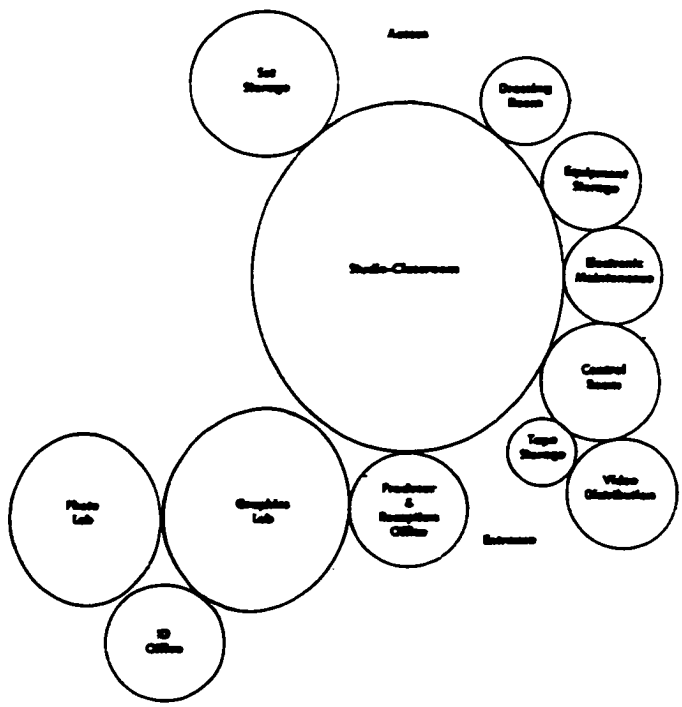


Figure 7. Proposed Space Relationships of a Televison Complex.

Recommendation 6: Hardware

Criteria for choosing and purchasing any hardware should be based on (1) getting the most flexibility for money spent, (2) reliability and dependability, and (3) making a high quality production with non-professional personnel.

A master plan for hardware purchasing should be planned in the form of compatability charts. This plan serves as a buying guide that will permit growth with little obsolescence of original purchases. A set of compatability charts, based on Clark's (1977) suggestion, are submitted here (see figures 8 and 9). These will need to be altered for each complex planned as they must reflect the telelessons to be developed and produced. These charts should be updated periodically with key criteria as:

1. Production rate and production sophistication calls for clearly different kinds of hardware (see figure 10)
2. Facility orientation should be based on what camera sees, not size of institution
3. Each hardware purchase should be well planned to be compatible with existing hardware and future purchases

The charts are designed with the very basic hardware on the left. Moving toward the right gives lists of more

1 - Inexpensive Color Camera w/ Ext. Sync.	1 - Inexpensive Color Camera w/ Ext. Sync.	2 - Inexpensive Color Camera w/ Ext. Sync.	2 - Inexpensive Color Camera w/ Ext. Sync.
1 - VCR with Auto Assembler	1 - VCR with Auto Assembler	1 - VCR with Auto Assembler	1 - VCR with Auto Assembler
1 - B & W Monitor	2 - B & W Monitor	4 - B & W Monitor	4 - B & W Monitor
1 - Lavalier Microphone	2 - Lavalier Microphone	3 - Lavalier Microphone	4 - Laralier Microphone
- Portable Lighting	- Portable Lighting	- Portable Lighting	- Portable Lighting
	1 - Good Quality Color Camera w/ Ext. Sync.	1 - Good Quality Color Camera w/ Ext. Sync.	2 - Good Quality Color Camera w/ Ext. Sync.
	1 - Remotely Controlled Servo Zoom Lens	1 - Remotely Controlled Servo Zoom Lens	2 - Remotely Controlled Servo Zoom Lens
	1 - Fluid Camera Head	2 - Fluid Camera Head	2 - Fluid Camera Head
	1 - Switcher w/Sync Gen.	1 - Switcher w/Sync Gen.	1 - Switcher w/Sync Gen.
	1 - Color Monitor 25"	2 - Color Monitor 25"	2 - Color Monitor 25"
	1 - VCR	2 - VCR	3 - VCR
	1 - Audio Mixer	1 - Audio Mixer	1 - Audio Mixer
		1 - Full Editor Control Track	1 - Full Editor w/ Time Code
			- Extra Lighting

Increasing Production Sophistication →

Figure 8. Hardware Compatibility Chart for Tapes about Concepts

Recorder/Player	Recorder/Player	Recorder/Player	Recorder/Player
Good Tripod w/Dolly	2- Good Tripod w/Dolly	2- Good Tripod w/Dolly	2- Good Tripod w/Dolly
Inexpensive Color Camera	2- Inexpensive Color Camera	2- Inexpensive Color Camera	2- Inexpensive Color Camera
Color Monitor	Color Monitor	1- Good Quality Color Camera	2- Good Quality Color Camera
Lavilier Mic	2- Lavilier Mic	1- Portable VCR	1- Portable VCR
Lighting	Lighting	Color Monitor	Color Monitor
	Switcher w/Sync Gen.	4- Lavilier Mic	4- Lavilier Mic
	Audio Mixer	Lighting(Studio)	Lighting(Studio)
	Pulse Cross B & W Monitor	Lighting (Portable)	Lighting (Portable)
		Switcher w/Sync Gen.	Switcher w/Sync Gen.
		Audio Mixer	Audio Mixer
		Pulse Cross B & W Monitor	Pulse Cross B & W Monitor
		Scope	Scope
		Directional Mic	Directional Mic
			Full Editor wtih Time Code

Increasing Production Sophistication →

Figure 9. Hardware Compatibility Charts for Tapes about People

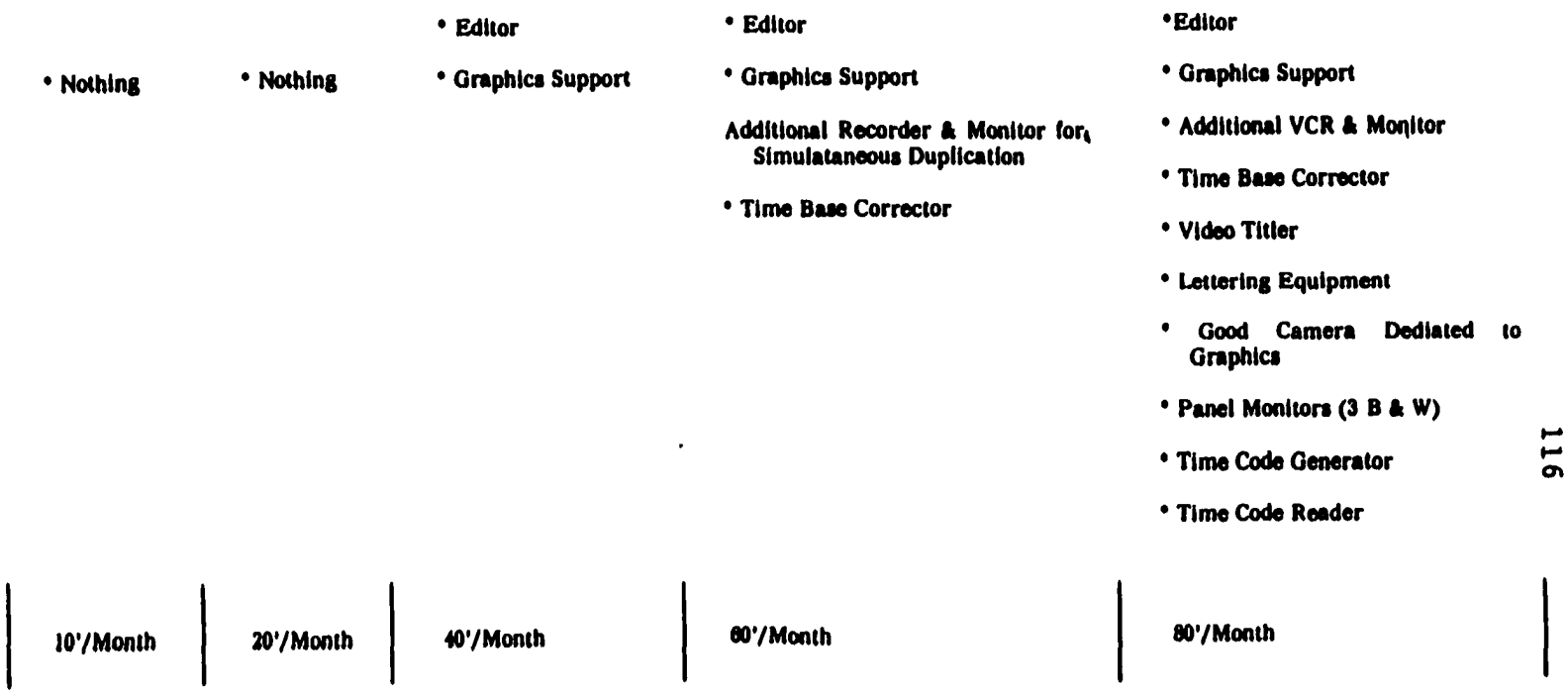


Figure 10. Production Rate Overlay for Hardware Compatibility Charts (In Minutes per Month)

sophistication. The shortest list that will provide production expectations should be used for originally outfitting the complex.

Recommendation 7: Flow Diagram

An attempt is made here to present a proposed flow diagram and to place steps of the task for developing a consolidated media program including a television complex in a systematic sequence (see Figure 11). The flow diagram is meant to have the first decision made, then the first action function completed before continuing to the next decision. Institutional resources are used most effectively when the flow diagram is used. It should be noted that there are waiting periods included where re-training or re-selling must be completed before proceeding. These points could delay the project indefinitely.

Time line for steps in task. Need for this type of delivery system is established in the first two decisions. An affirmative answer to decision one gives way for conducting a needs assessment to resolve the readiness of publics to accept instruction through a delivery system such as television. Confirmed need has to be the only basis for institutional expenditures. It is thinkable that by end of year one, decision and resulting action functions one through five can be completed. However, it

is conceivable that a negative answer to decision one, regarding the institution's administration openmindedness, might stop the entire project. Any of the other four decisions receiving a negative response can delay the undertaking. Re-training periods have been included in the total scheme and may further delay completion. These periods are imperative if the instructional resources are to be used most effectively. Decisions regarding administration's openmindedness; the need for instruction via television; a unified media approach; staff within a unified media system; and the types of television lessons needed would be made during the first year.

The second year in this project should see decisions made pretaining to: need for new or alterations of existing facilities; flexibility of planned facilities; finances for facility, hardware, and operations; extent of telelessons needed; program sophistication; and production volume. If facilities and hardware are already existing, provisions have been included to skip some of the ready made decisions.

Projected for completion during year three are decisions having to do with: setting priorities for programming; readiness of materials for production; circulation of telelessons; and scheduling telelesson circulation.

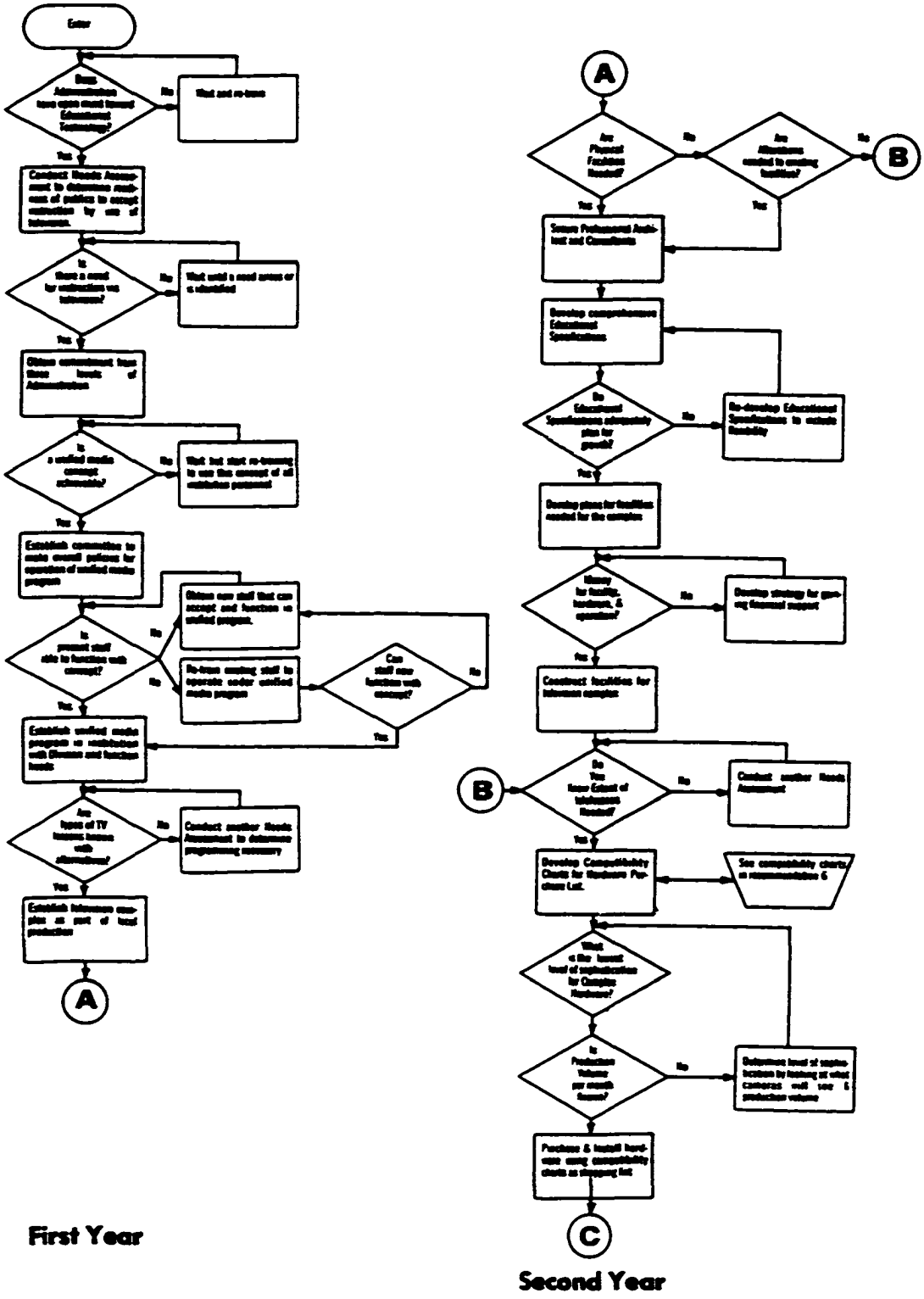
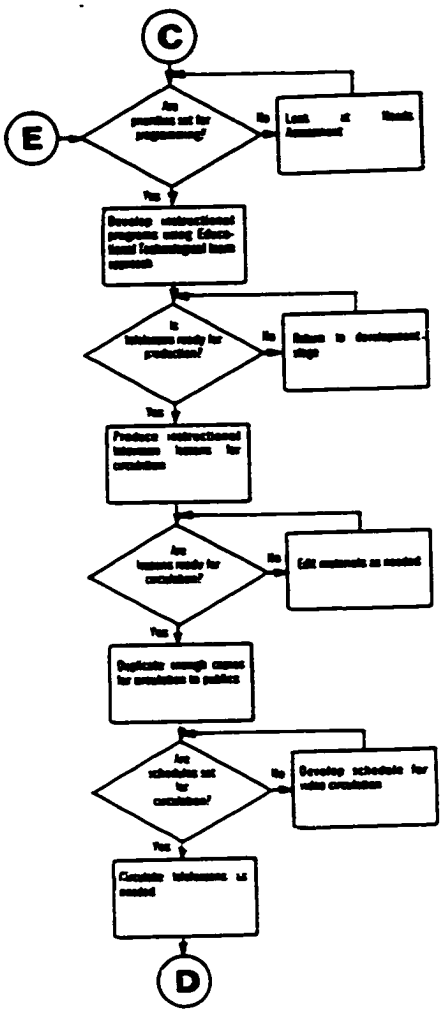
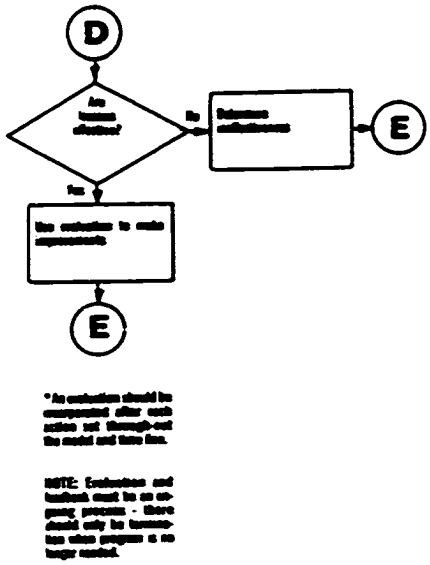


Figure 11. Flow diagram giving planning decisions, actions, and evaluations with time factor.



Third Year



Fourth Year

Figure 11. Continued.

At the end of year four, a complete evaluation should have taken place regarding the effectiveness of lesson materials. A feedback to the instructional developer, subject specialist, and local production personnel must be provided. This evaluation process must be on-going as long as materials are produced in this manner.

Summary

In the preceding pages, an attempt has been made to identify a problem faced by small private colleges and universities to prepare instructional material for a wider audience.

A solution to this problem was offered to allow these smaller colleges and universities produce materials locally for distribution at several learning centers. These centers can be in homes with video playback hardware. The lesson materials would provide an efficient, effective, and economical way to produce quality educational materials reflecting the institution's philosophy and goals.

A detailed plan and program was suggested for a model television complex and included the philosophy, functions, organization, administrators and their qualifications, a facility plan with appropriate hardware and a suggested flow diagram with a timetable.

While the proposed plans were designed specifically

for a television complex to be used in small private colleges and universities in states contiguous to Michigan, they may be adapted with appropriate changes for their institutions within the United States and possibly other countries as well.

Validation of the Model

A proposed model was sent to a panel of jurors for their evaluation and comments. The list of the jurors who responded giving their evaluation and written comments is given in appendix C. The response sheet sent to the jurors for their convenience can be found in appendix B.

Some minor changes were made regarding room sizes based on comments received from the experts. The original model had a smaller control/editing room and equipment storage room. These were enlarged slightly as recommended by the experts.

All jurors endorsed the model as a useful guide that if it were used, would improve the process of a cost-efficient media program in a small college or university.

All except one of the experts expressed the model would be useful in developing a television complex and its administration. The one juror who expressed an uncertainty did so because he wished to see how interactive television would fit into the program and a better evaluation regarding aspects of curriculum.

Narrative responses given by panel members, intended to support strengths or weaknesses found in the model, were clearly indicated. They are quoted in the following statements, but individuals are not identified in order to protect their privacy:

> You seem to have a good administrative plan with priority given the instructional technology team. Will colleges and universities buy this?
>
> Very good presentation. Curriculum and the learning process are the driving forces which determine technological acquisition and process. Director of Instructional Communication is directly responsible to the highest academic officer.
>
> In general very, very good, well analyzed.
>
> The concept of a unified media program is a major strength if it can be achieved. It should certainly help to avoid needless duplication and competition for resources common in existing organizational structures. There is a good division of labor within the integrated program and adequate attention given to basic areas.
>
> Not any apparent plans for interactive video. As a planning guide, the flow diagrams are excellent with a realistic look at cost efficiency.
>
> The basic concept is a must-- most campuses have too much duplication and inefficiency.

One further step in which the validity of this model could be tested would be for a college or university to use it in developing a television complex as a part of their local production facility. Modifications and additions would no doubt become necessary in light of such an experience.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The primary purpose of this study was to design a model for the development and administration of a television complex especially for private colleges and universities with enrollments under five thousand students. This was presented in chapter 5 where the model was designed to operate as a cost-efficient complex, yet provide for documented needs of the institution. It would help provide quality instruction for a number of students off-campus while simultaneously accommodating on-campus students.

The developed model suggests seven recommendations by which an institution could develop a television complex.

1. Establishes the need for such a complex by conducting a needs assessment of the publics to be served by such a facility
2. Establishes a complex
3. Sets out a cost-efficient organizational structure where services are not duplicated within an

institution and where a consolidated media program is initiated to give academic support

4. Presents job descriptions and qualifications for key staff members
5. Gives suggestions for physical facilities
6. Supplies hardware compatability charts to help eliminate obsolescence
7. Offers a flow diagram to aid with decisions and create a time line

In order to present a viable basis for the model, literature was reviewed. There are very few documents dealing with a complex model which is directly pointed at higher education. Industrial installations have emerged to help train human resources and these can provide insight for planning. Literature was considered only if it had been published within the past decade, as technology has advanced rapidly since television's introduction into instruction during the 1950s.

In the review of literature, the following aspects of television were studied: organization and administration of an instructional television complex, planning for instructional television facilities, instructional television hardware, and instructional television complex personnel.

Trends have begun to shift from traditionally large studio complexes to more functional operations with

smaller facilities. Much of the programming is completed by using remote portable hardware that can be operated with a minimal crew.

Before starting on any complex, two things are important: careful study of purpose and commitment on three levels of administration.

Hardware obsolescence is a major problem that must be dealt with in planning for a complex using technology. There was agreement among writers like Bensinger (1978), Bond (1972), Cammock (1979), Clark (1977), Dorn (1980), Eason (1981), and others that obsolescence could be kept at a minimum if the exact purpose of the complex and what the cameras were to see was established prior to any purchasing. Flexibility, reliability, dependability, and ease of operation should be criteria for all purchases.

A plan for a more cost-efficient and effective academic support service was advocated by writers like Wood and Wylie (1977). This system would do away with the differing media departments such as book, television, and audiovisual centers. Instead, a consolidated or unified media program would be established with functional subdivisions of instructional resource services. Though such a consolidation has been successful on lower levels, evidence of successful operation on the college level is not available.

Twelve active television complexes were visited

throughout the United States. These were all preparing instructional materials or programs for community service. Several complexes were cited in the literature as providing unique programs. These complexes represented colleges, universities, medical, industrial, and community service. An attempt was made to include a cross section of large and small representative complexes. Eleven of the complexes were traditional and one was non-traditional. During each visit, a criteria list of thirty-six items was used to evaluate each complex, its hardware, administrative structure, and personnel. Organizational charts, photographs, floor plans, and lists of hardware were made. These details were organized and analyzed to provide a summary which was used to formulate conclusions and recommendation for the proposed model.

The three professional educational communication organizations surveyed, Association for Educational Communication and Technology, Association for Educational Broadcasters, and National Audio Visual Association, could not provide any guidelines or models for television complexes of any size.

Conclusions

Major conclusions drawn as a result of literature surveyed, data gathered, and experience gained during the course of the study were:

1. Small television complexes are being designed and built, and there is reason to believe they will not continue to provide a needed service in the future.
2. The planning process for a smaller facility is similar to, yet distinct from the planning of larger television complexes.
3. Restricted funds for the planning, establishment, and operation of a television complex is a major problem that smaller colleges and universities face.
4. Because of the cost involved, many smaller colleges and universities try to plan television complexes without the benefit of professional consultants.
5. Costs of an instructional program utilizing television can be justified when all media become an integral part of quality instruction.
6. Colleges and universities have the potential to benefit from advances in educational technology and electronic technology, particularly in regard to systematic development of instructional materials and quality low-cost hardware. These will permit putting the instruction on video tape which can be edited and up-dated as needed.
7. Advances in electronic technology have made it feasible to operate a complex in less space and to transport hardware to specialized classrooms with a very small crew.

8. A unified campus media program could become more cost efficient and provide a quality academic support organization.
9. Colleges and universities must meet needs of non-traditional students by providing continuing education and lifelong-learning programs away from present campuses.
10. Smaller colleges and universities are likely to have to meet increased needs in the future, requiring extensions to initiate programs using television. It is particularly important, then, that the initial facility and hardware be adaptable.

Recommendations

Based upon the findings of this study, the following recommendations are presented for consideration:

1. The model developed in this study should be field tested by any small colleges and universities planning a television complex, and revised in light of this experience.
2. The planning process for a television complex as part of the local media production should be based on a needs assessment of the publics served and should have stopping off points when need is not sufficient to warrant expenditures.
3. The planning process for a television complex should

be closely analyzed in order to make certain the facility, hardware, and personnel are cost efficient yet functional to meet investigated needs.

4. Short seminars or training courses should be developed to prepare college and university personnel for changes from traditional students to include non-traditional students through use of educational technology and electronic delivery systems.

With more careful planning in relation to specific needs and budget limitations, a small college or university can meet community and academic needs much more effectively than most of them are doing now.

APPENDIXES

APPENDIX A

Letter to Experts

Andrews University Berrien Springs, Michigan 49104 (616) 471-7771

March 17, 1982

I know you are busy, and will take as little of your time as possible. You have been selected, with seven others, to serve on a panel of experts to evaluate my project --an important part of my doctoral program. I am counting on your kindness, and your interest in the use of instructional television, to gain your help. I will also try to contact you by telephone to ask for your help personally.

I have been concerned for some time about the need to provide traditional students quality education while providing non-traditional students the opportunity for continuing education and lifelong learning experiences. Financial aspects in all education have become more difficult to meet and we will need to look at cost efficient methods to provide learning experiences to potential students.

Would you please take a few minutes to read my recommended model for the establishment of a television complex and its administration, and then respond on the sheet provided. A stamped, addressed envelope is enclosed, so that you can return the response sheet to me.

My project must be completed by the first of April in order to revise it according to your evaluation. If you could help me by responding in the next day or two, I would be most grateful.

I thank you for your kind help.

Sincerely yours,

Paul H. Denton, Director
Audiovisual Center

APPENDIX B

Response Sheet

RESPONSE SHEET

After my reading the "Recommended Model" from A Model for the Development and Administration of a Modern Television Complex for Private Colleges and Universities:

1. I have noted the following weaknesses in the model and planning guides:

_____

_____

_____

_____

_____

2. I have noted the following strengths in the model and planning guides:

_____

_____

_____

_____

_____

_____

3. I feel that the model and planning aid would be useful to help develop a cost efficient television complex and its administration.

☐ Yes
☐ No
☐ Uncertain

4. I feel that the model, if it were followed, would improve the process of a cost efficient media program in a small private college or university.

☐ Yes
☐ No
☐ Uncertain

Signed:_____ Date_____

Thank you very much for helping.

APPENDIX C

Names, Titles, and Institution of Panel Members

Names, Institutions, and Titles of Panel of Experts

Dr. John DeBeers, Director
Audiovisual Center
Calvin College
Grand Rapids, Michigan

Mr. Frank Jemison, Manager
Television Services
Western Michigan University
Kalamazoo, Michigan

Mr. William Miller, Director
Media Center
Goshen College
Goshen, Indiana

Mr. George R. Cryder
Audio Visual Director
Ohio Wesleyan University
Delaware, Ohio

Mr. John B. Bergeson
Director, Instructional Materials Center
Central Michigan University
Mt. Pleasant, Michigan

Mr. Jon H. Vandermeer
Educational Resources Center
Western Michigan University
Kalamazoo, Michigan

Dr. Richard K. Powell
Director, Teaching Materials Center
(Formally, Coordinator NETVHE)
Andrews University
Berrien Springs, Michigan

APPENDIX D

Criteria List for Evaluation of Complexes

Criteria List for Complex Evaluation

I. Programs

- A. Type of Instructional Programs Produced
  - 1. Formats of programs
  - 2. Where and how programs are used in total instructional program.
- B. Work Volume of Complex
  - 1. Comparative work load as opposed to number staff members

II. Facilities

- A. Studio
  - 1. Size and Number
  - 2. Ceiling Heights
  - 3. Lighting Systems
  - 4. Number of Lighting Fixtures
  - 5. Floors and Doors
  - 6. Wall Acoustical Treatement
  - 7. Air Conditioning, Heating, and Ventilation
- B. Control Room
  - 1. Control Areas
- C. Master Control Room
  - 1. Location or Existance
  - 2. Hardware
- D. Storage Areas
  - 1. Types
  - 2. Fixtures included

E. Dressing and Make-up Rooms

1. Facilities included

F. Maintenance

1. Existance

2. Type of Maintenance Performed

G. Graphic and Photographic Areas

1. Existance

2. Location

III. Hardware

A. Cameras

1. Number

2. Types

3. Manufacture

B. Video Recorders

1. Type

2. Style

C. Video Switches and Audio Mixers

1. Type

2. Sophistication

D. Video Editors

1. Type

2. Frame Address

IV. Administration

A. Structure

1. Type

2. Reports to who?

B. Personnel

1. Number of Employees

2. Type of work performed

APPENDIX E

Floor Plans, Sketches, and Photographs

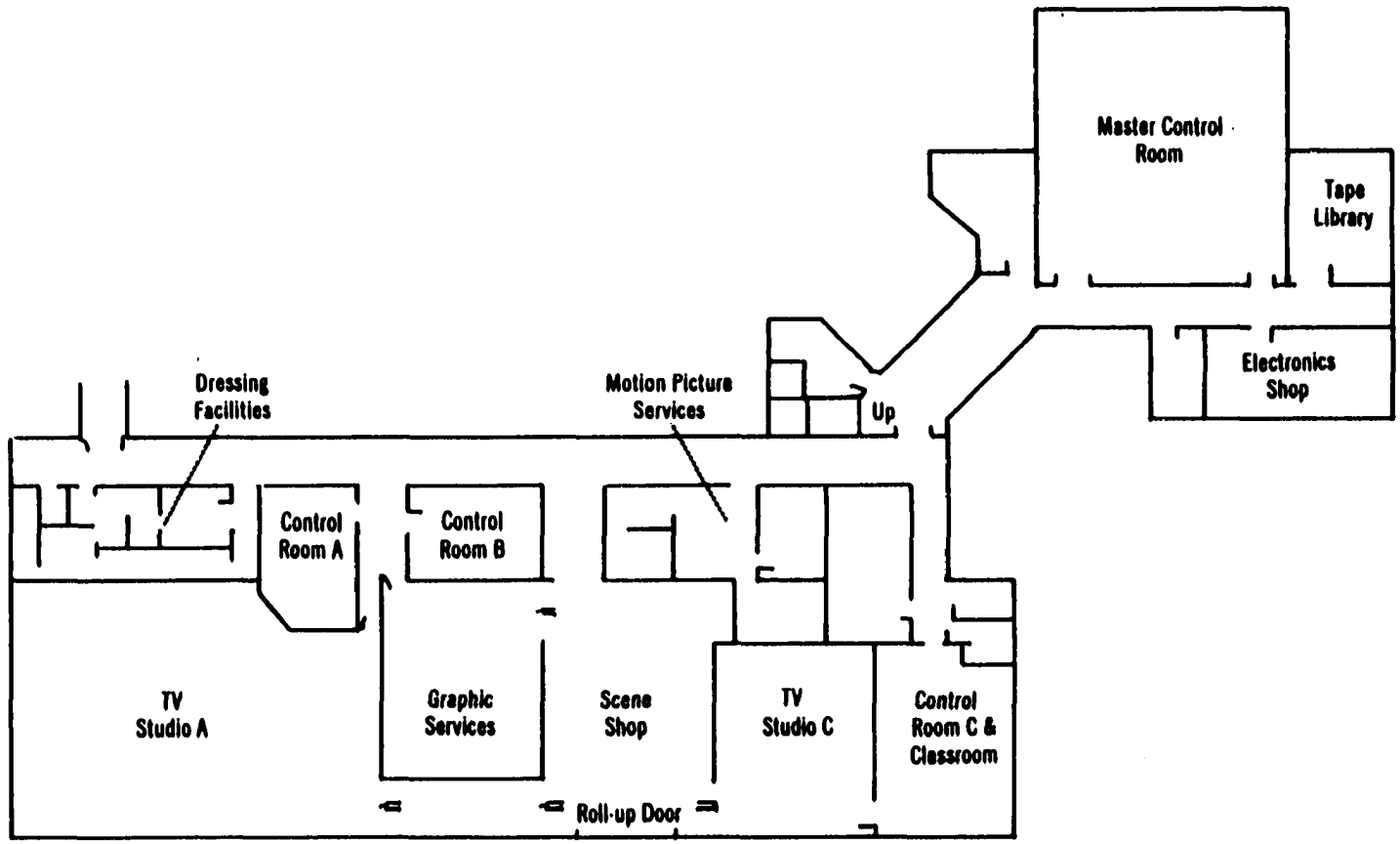


Figure 12. Floor Plan of Western Michigan University's Television Complex.

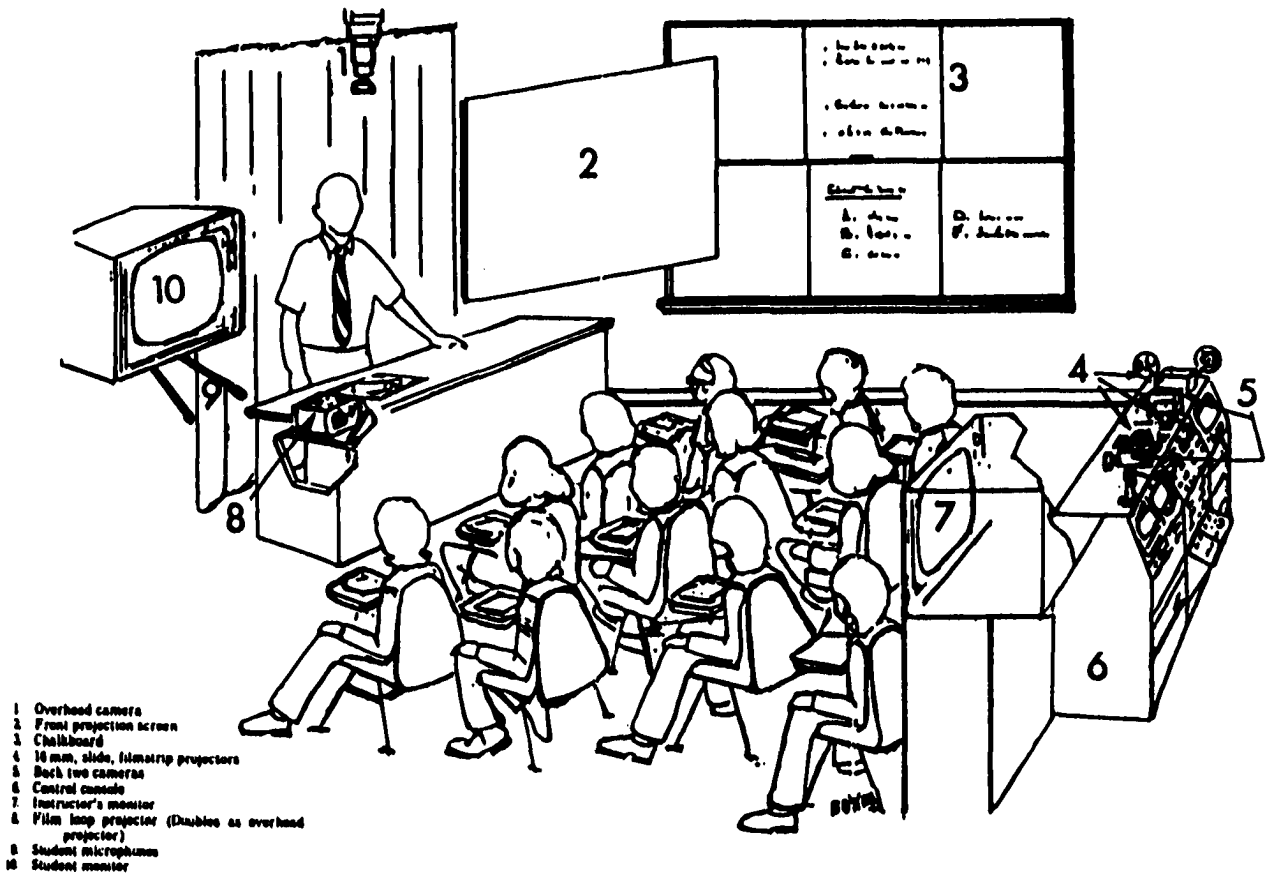


Figure 13. A sketch of North Carolina State University's "TOTE" Studio/Classroom.

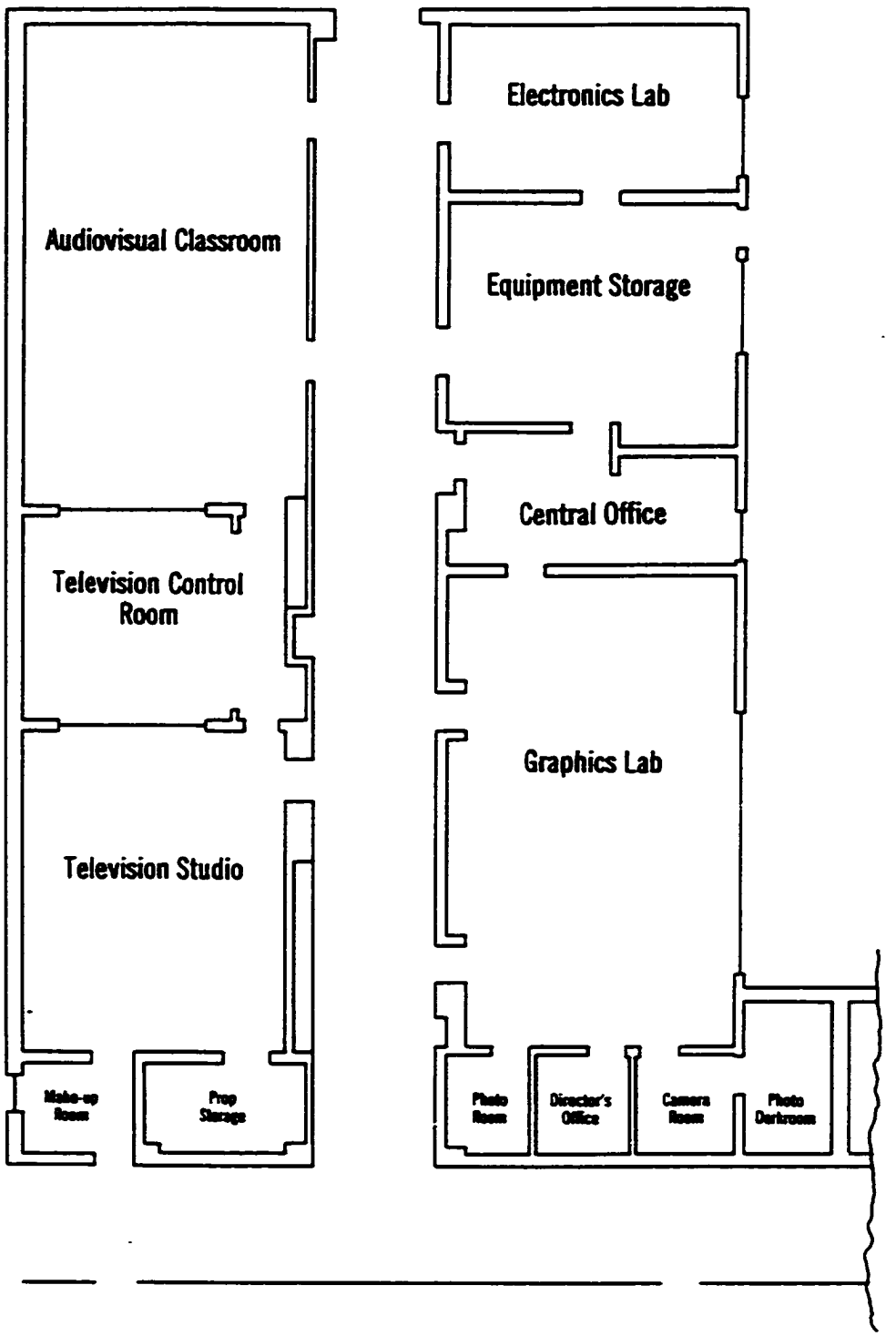


Figure 14. Floor Plan of Andrews University's Audio Visual Complex which includes television complex.

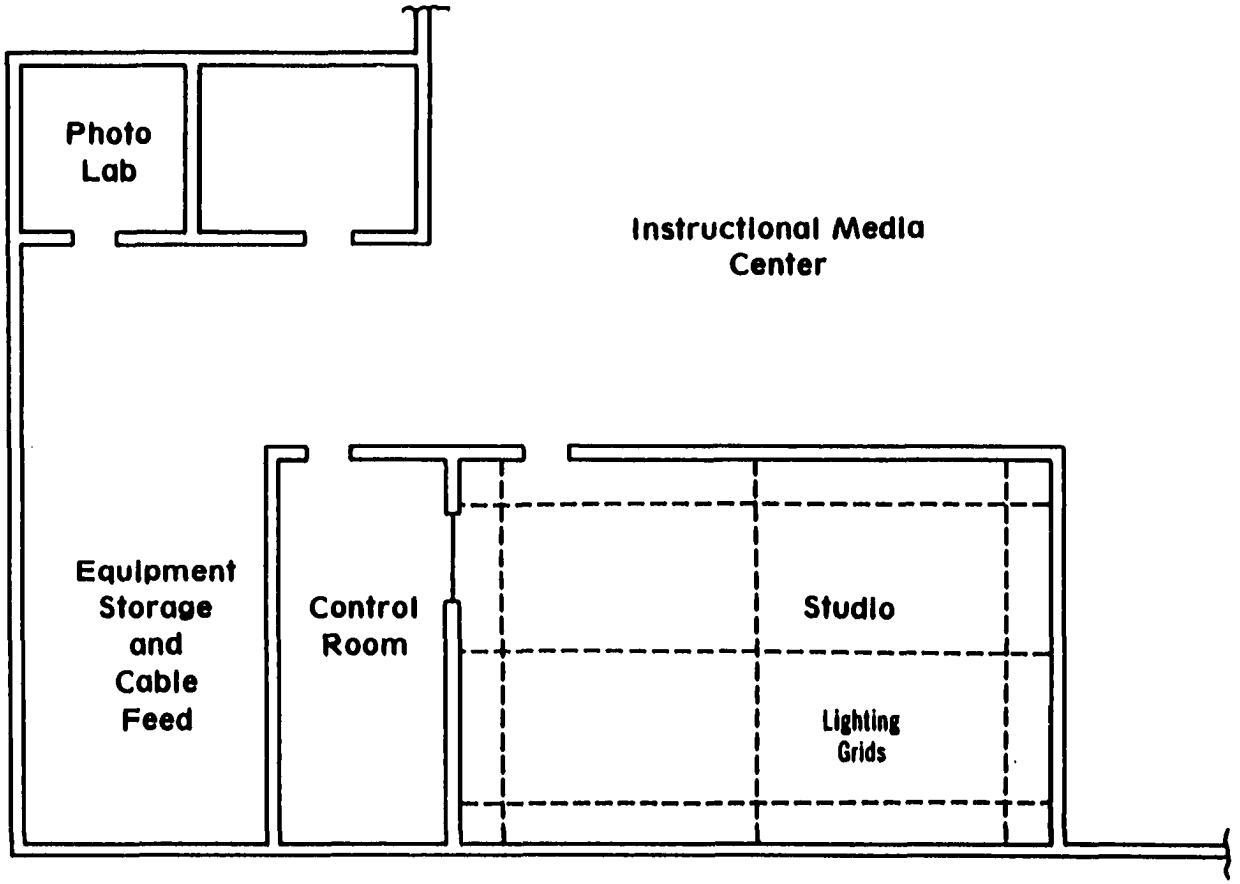


Figure 15. Floor Plan of Grand Rapids Public School's Television Complex housed as part of the instructional media center in the junior college.

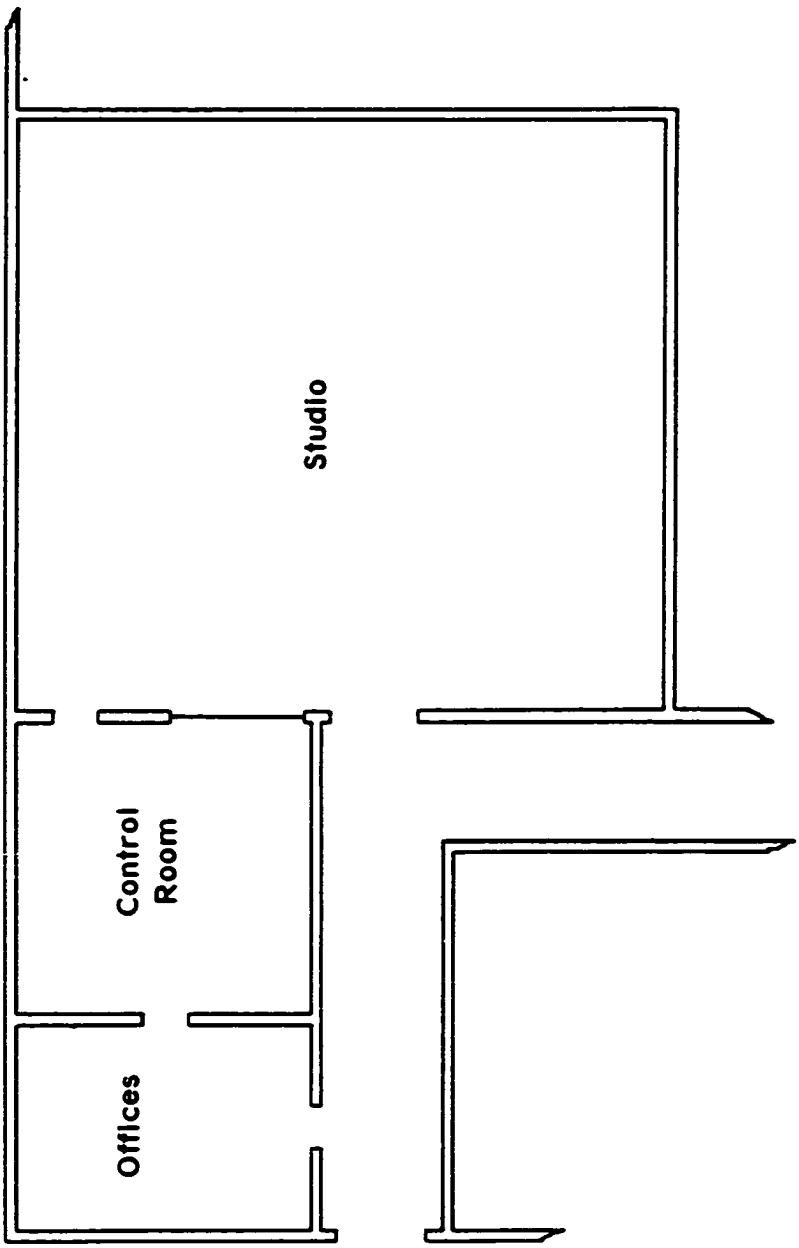


Figure 16. Floor Plan of Wyoming CATV Studio

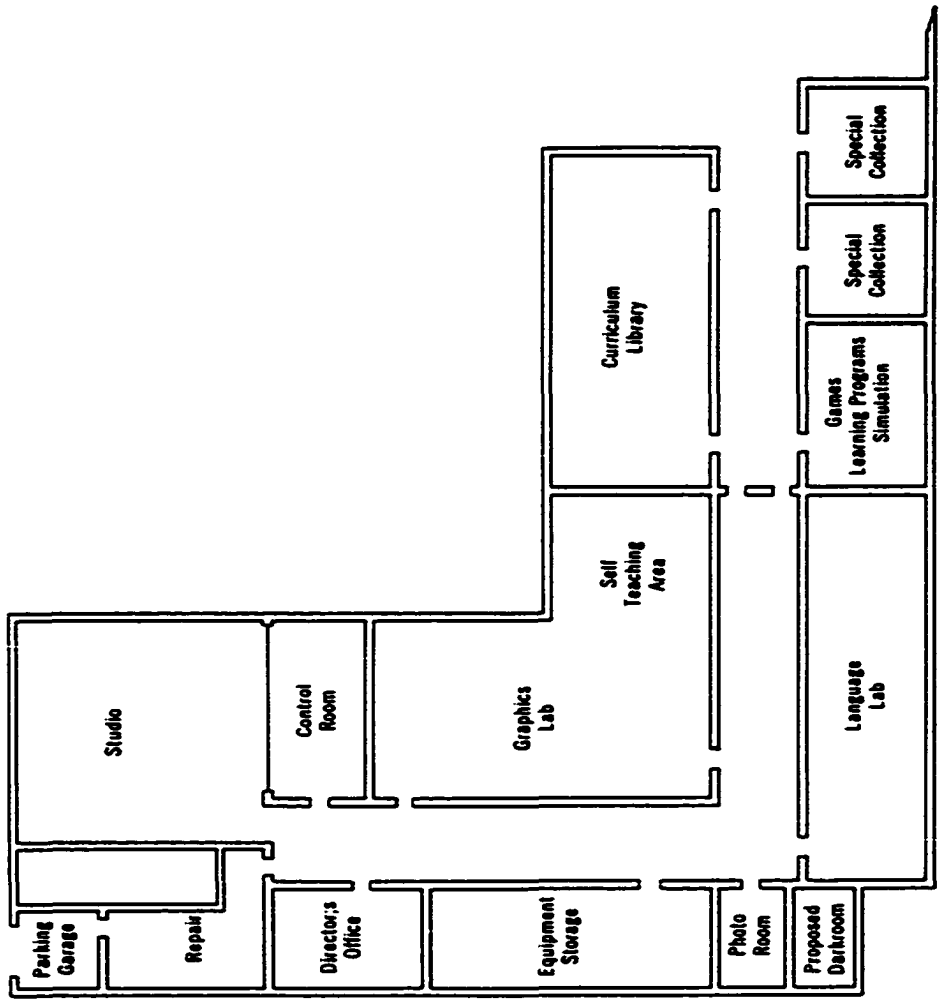


Figure 17. Floor Plan of Calvin College's Audio Visual Center, television studio, and curriculum library.

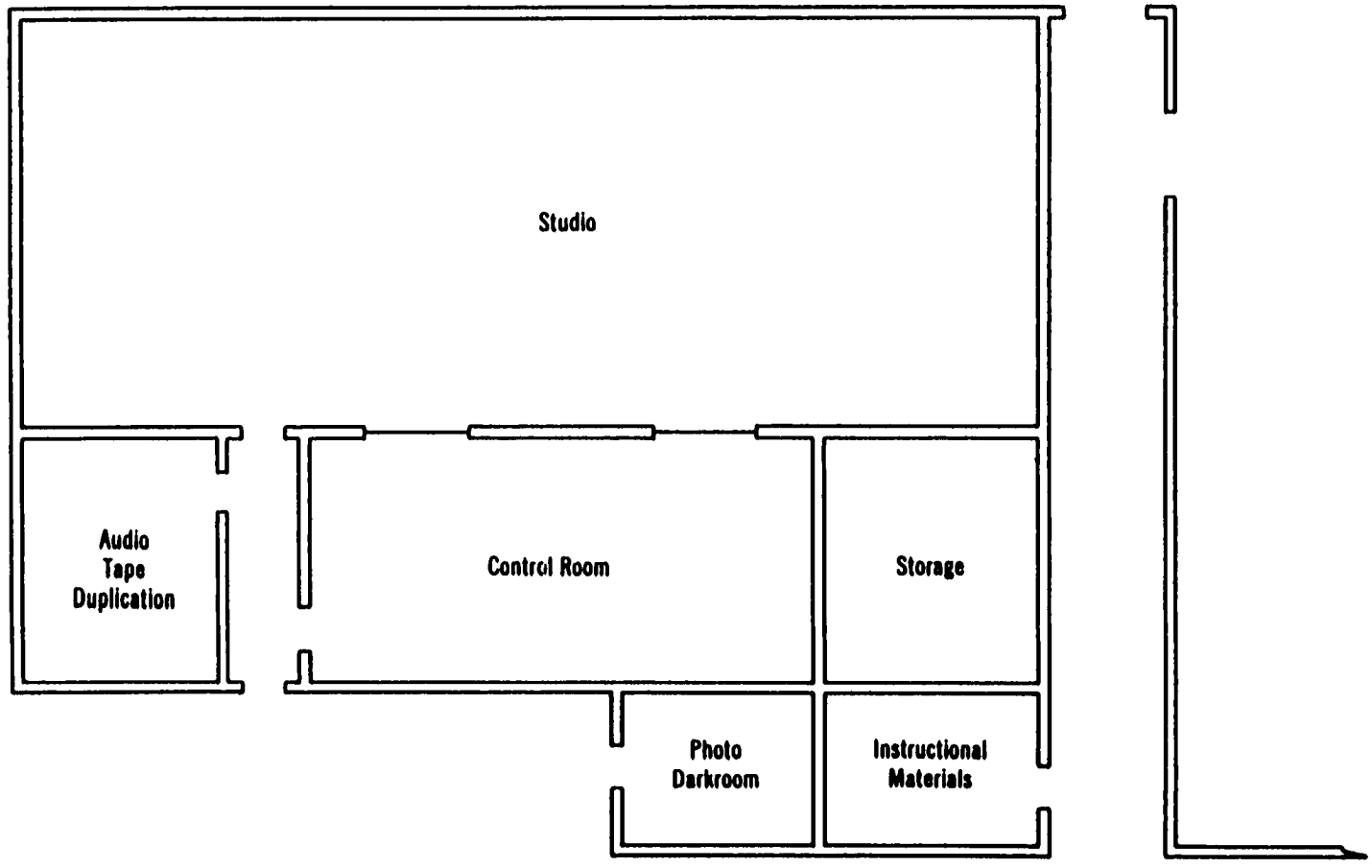


Figure 18. **Floor plan of Kellogg Community College's television complex as housed in Instructional Resource Center.**

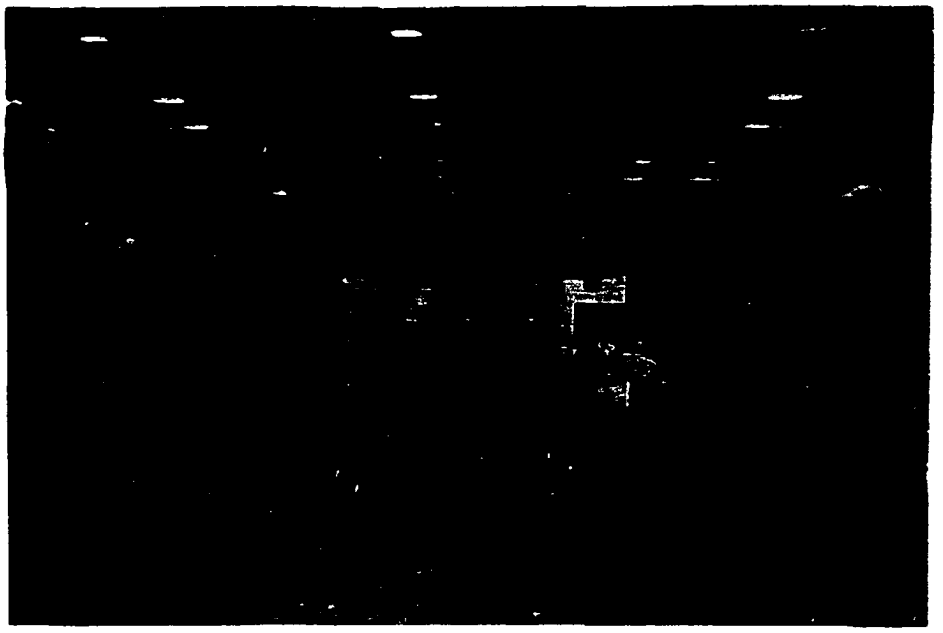


Plate 1. Studio 'A' at Western Michigan University.

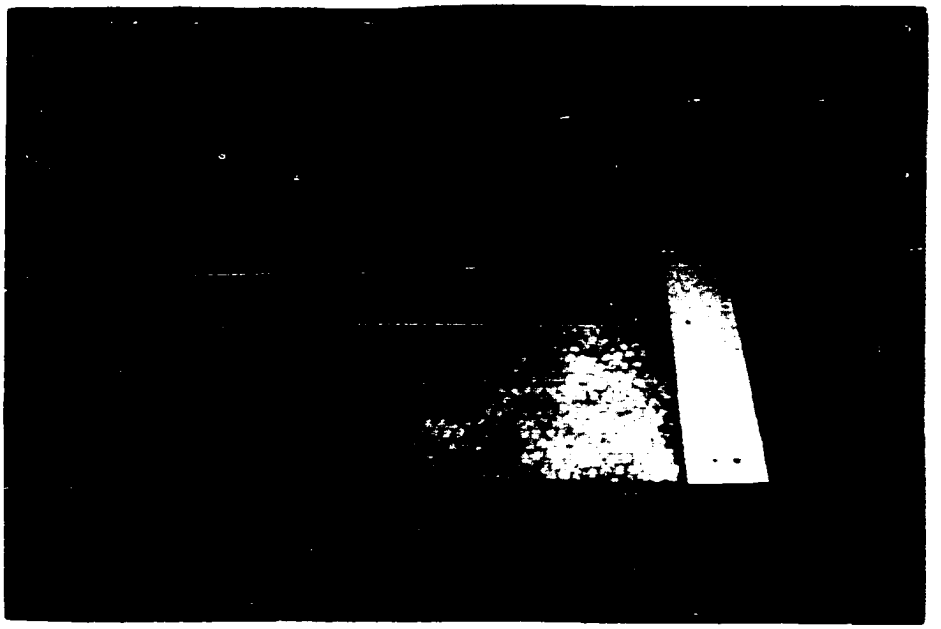


Plate 2. Wall acoustical treatment using fiberglass covered with wire at Western Michigan University.

Plate 3. Control/Classroom in Studio 'C' at Western Michigan University.

Plate 4. Camera Control Units with monitors and oscilloscopes in Master Control at Western Michigan University.

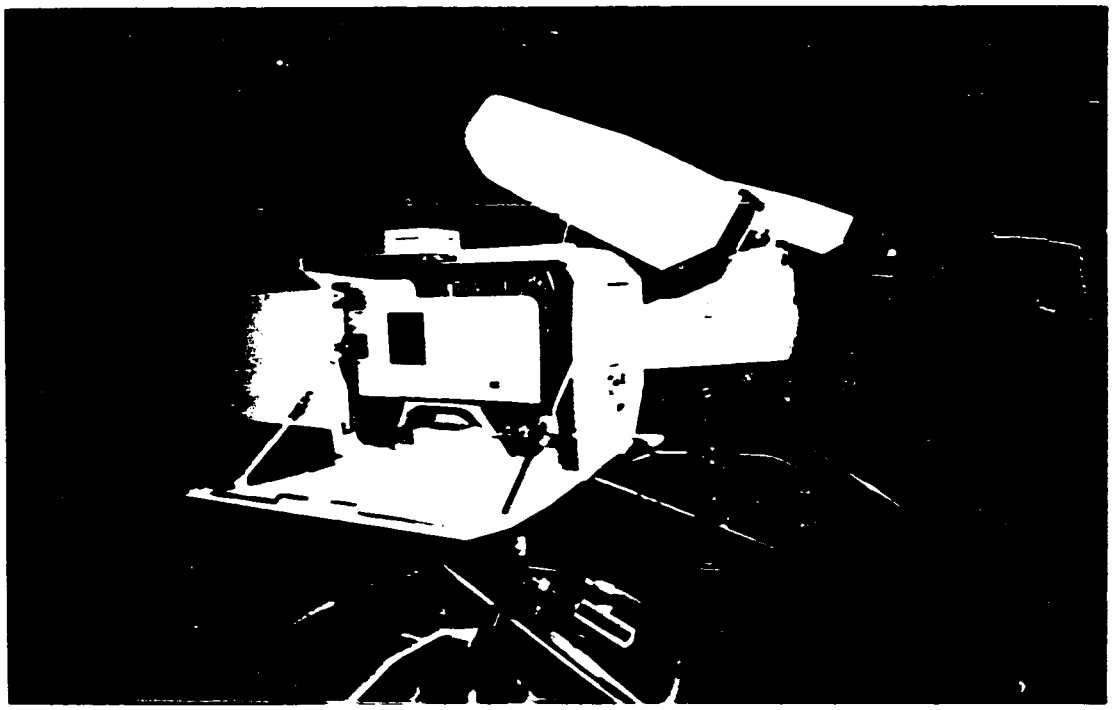


Plate 5. Multi-purose camera at Western Michigan University in studio situation with housings open showing mini-camera internally.

Plate 6. Hard cyclorama at Clark Equipment studio.

Plate 7. Wall acoustical treatment using burned glass panels at Clark Equipment studio.

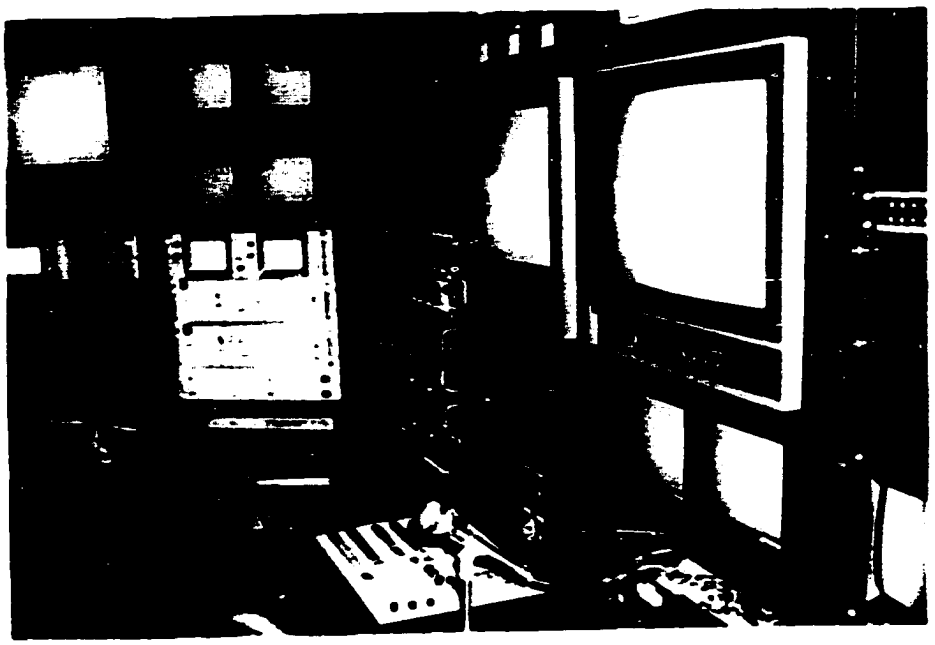


Plate 8. Hardware placement in Clark Equipment's Controlroom/Van.

Plate 9. Video Cameras equipped with teleprompters at Clark Equipment complex.

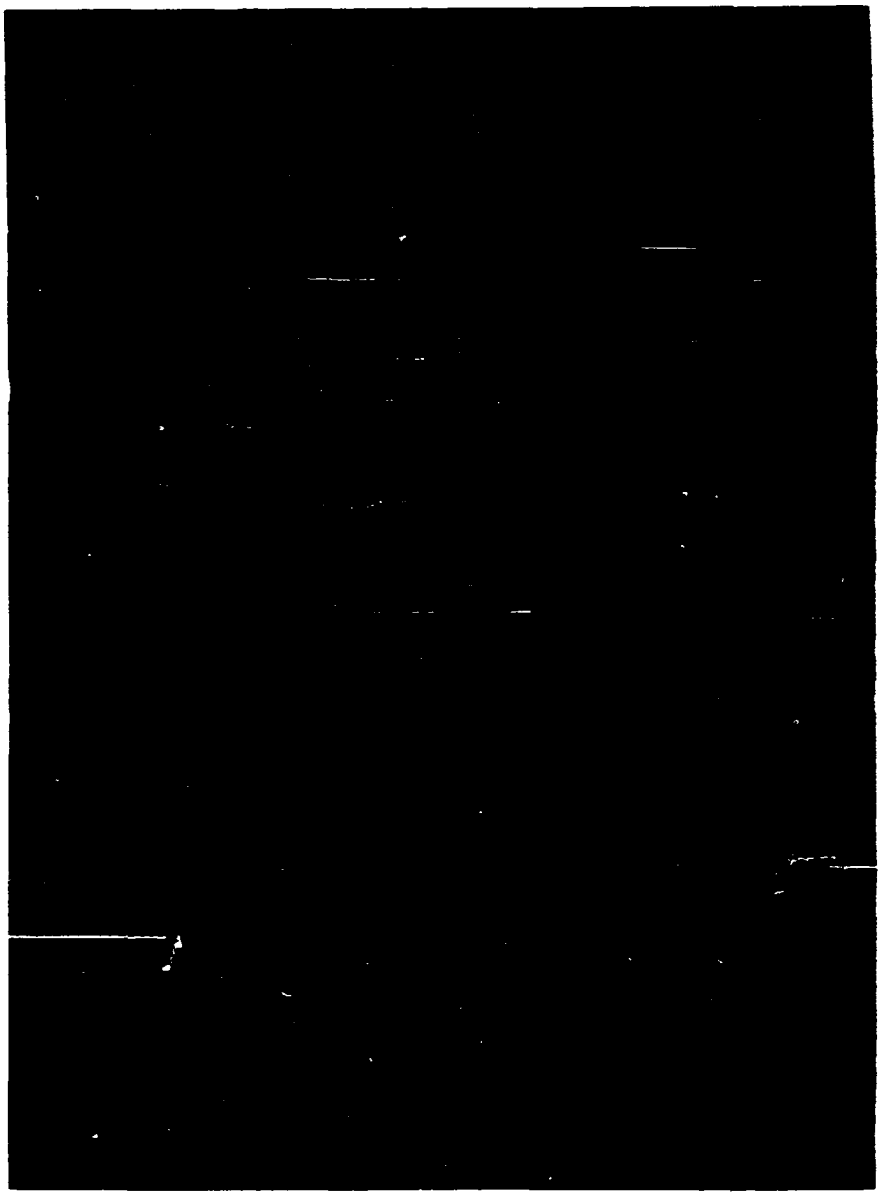


Plate 10. Control/Projection console at North Carolina State University "TOTE" Studio/Classroom.

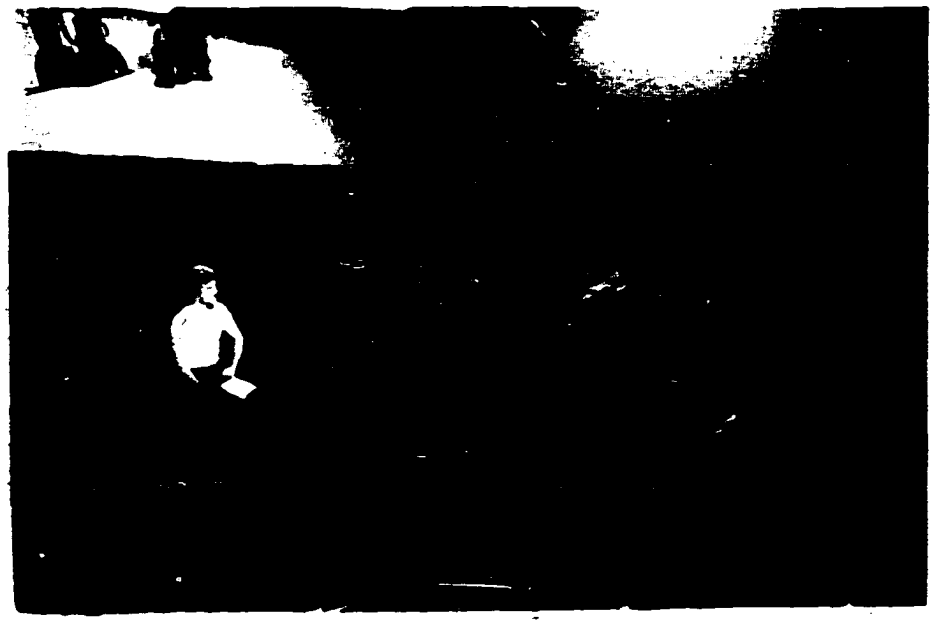


Plate 11. Andrews University's television studio using two monochrome cameras.

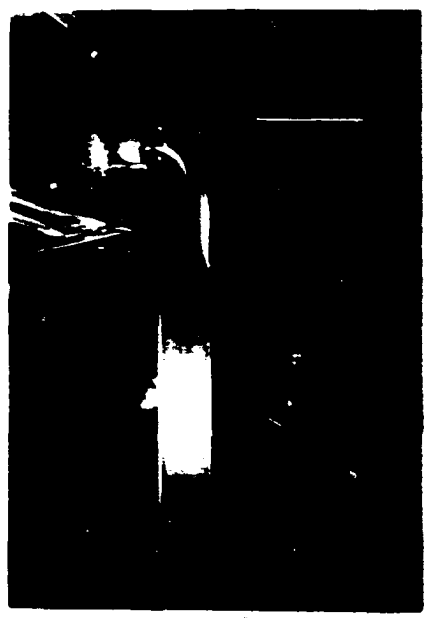


Plate 12. Cross-section of lighting grids which double as electrical conduit and grids at Andrews University.

Plate 13. Controlroom at Andrews University. Console includes audio as well as video hardware.

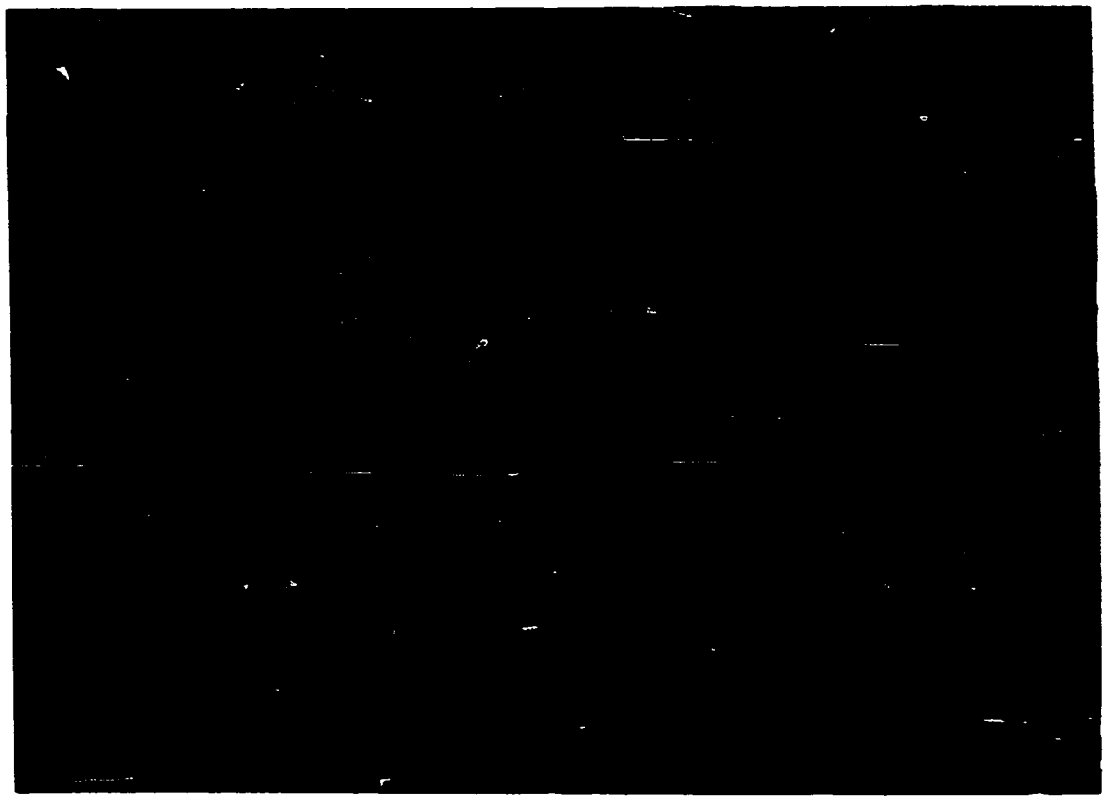


Plate 14. Hardware positioning in controlroom at Grand Rapids Public School's television complex.

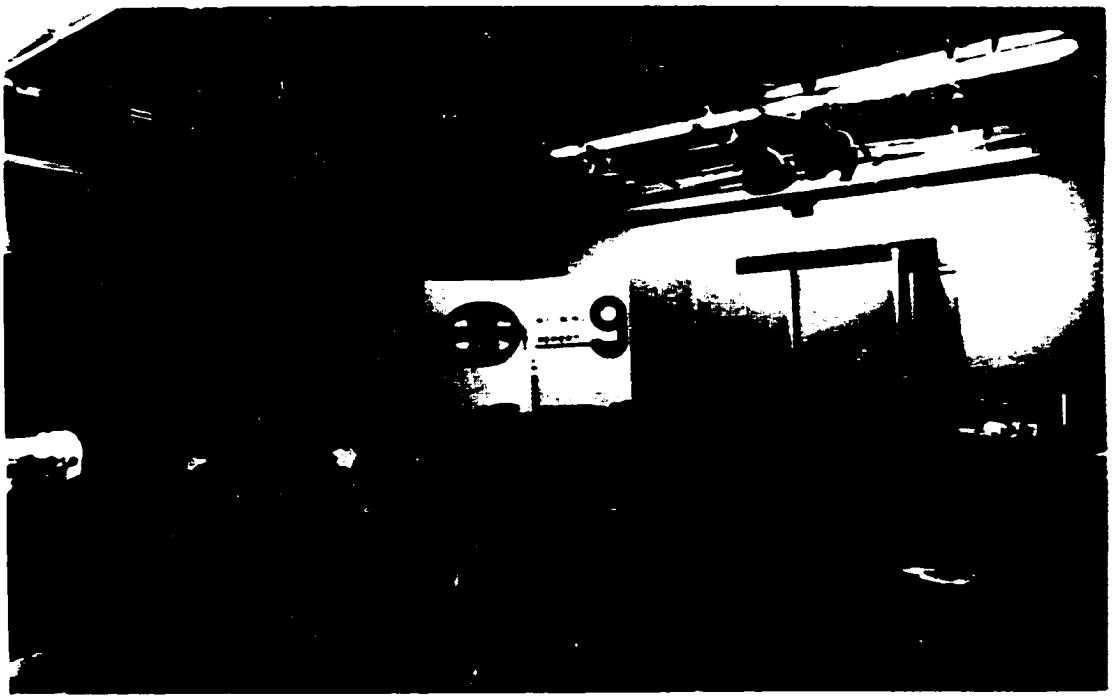


Plate 15. Studio with set, lighting grids, and cameras at Wyoming CATV studio.

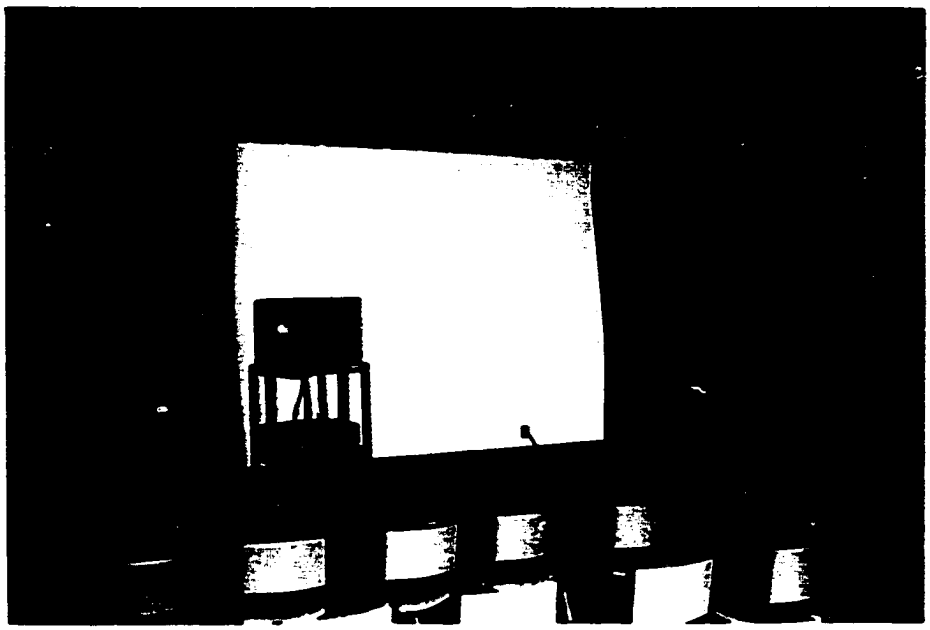


Plate 16. Television studio at Calvin College.

Plate 17. Controlroom with observation balcony above at Calvin College.

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BIBLIOGRAPHY

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