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ABSTRACT

A developmental effort--the Media Guidelines Project--sought to create and validate criteria to assist in planning media training programs, in evaluating media-related training proposals, and in assessing training program outputs. The ultimate purpose was to insure the development of manpower with the competencies which will be required in the future. The researchers first mapped the media domain, conducted a task analysis of current media-related jobs and clustered these by type and function, and generated future-oriented, media-related job descriptions. Following this, information was gathered on media training program requirements and a review of media training literature was conducted. Finally, a manual was developed to provide guidelines for planning and evaluating media training programs. This manual has proven to be a practical device whose use facilitates the development and evaluation of media training programs. (PB)

MEDIA GUIDELINES:

Development and Validation of Criteria for Evaluating Media Training

Volume I - Procedures

Dale G. Hamreus
Loring Carl

August, 1973

U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

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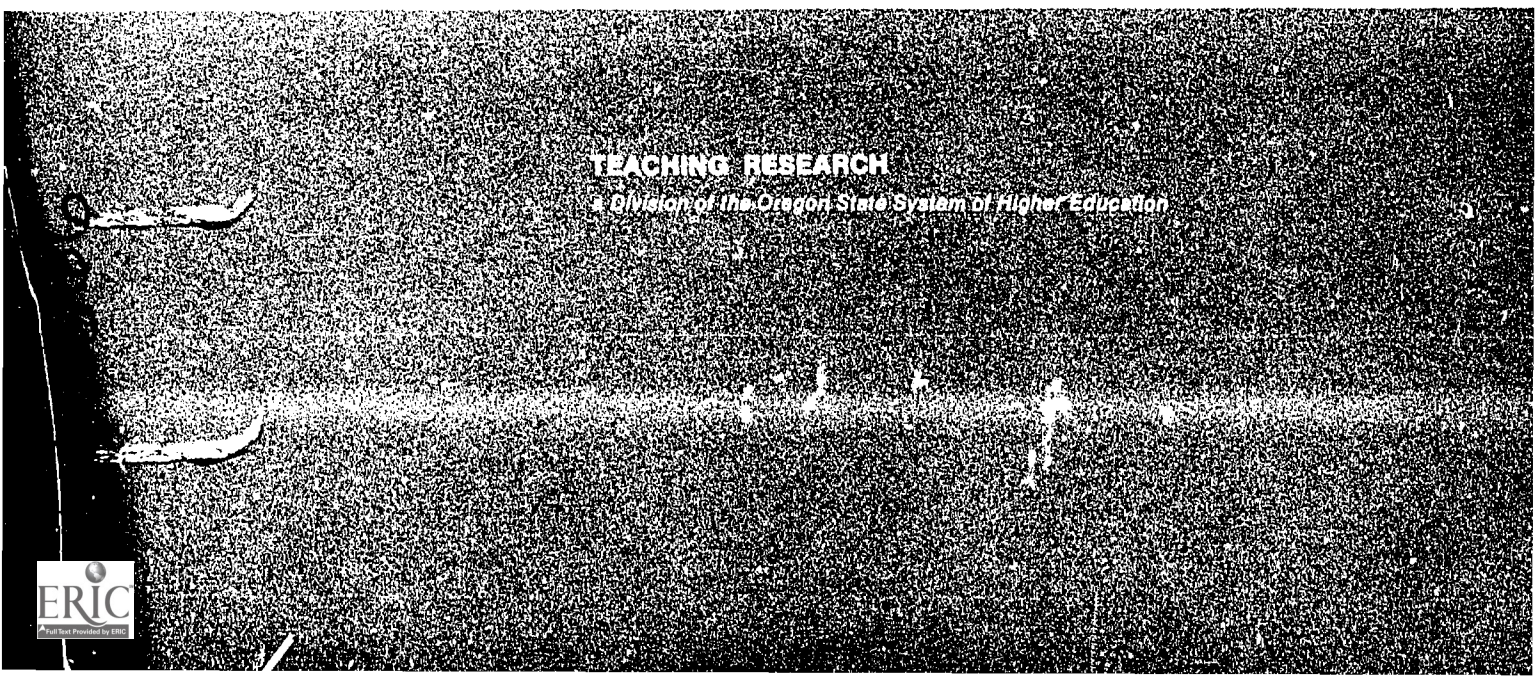

FINAL REPORT
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Development and Validation of Criteria for Evaluating Media Training

Volume I — Procedures

Dale G. Hamreus
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Teaching Research
A Division of the Oregon State
System of Higher Education

August, 1973

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U. S. Department of Health,
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Chapter I

INTRODUCTION

Problem

Those persons devoted to the development and utilization of instructional media/technology are faced with changing needs and roles approaching what Jim Finn once called an "Identity Crisis." Possibly, educational media personnel are experiencing one of the most severe identity crises of all educational professionals. Unless the media profession can devise an organized method of structuring itself with clear guidelines for training the manpower necessary to service this structure, the current identity crisis will seem slight compared to the one likely to result in the near future.

Among the forces shaping media training needs are educational population growth, educational goals and objectives, changes in instructional organization and methodologies, technological innovations, new patterns of support, the growing field of communication theory, demands for greater accountability, the results of research, and the constant demand for new and extended applications. However, these educational forces are affecting and being affected by societal situations such as population growth, cultural stresses, continued urbanization, changes in governmental relations, career preparation and longevity, increased leisure time, and an expanding accumulation of scientific and technical knowledge.

It is imperative that present and prospective training programs at all levels--preservice, inservice, graduate, post-doctoral, special institute--be responsive to these forces in terms of diagnosing and describing the essential experiences needed to develop competent media manpower.

Objectives

The purpose of the Media Guidelines project was to produce guidelines and other information for planning media training programs and evaluating media-related training proposals and training program outputs. The ultimate purpose is to help insure that present and prospective training programs produce manpower with competencies that will be required five and more years into the future.

At present, there are no available guidelines, no criteria, for planning and evaluating media training programs which take into account media needs in the near future. This project sought to develop and validate such a set of guidelines. These guidelines were designed to serve the following user-groups:

1. those who will plan media training programs, generate training proposals, and conduct training institutes;
2. those who will review and pass upon media training proposals; and
3. those who will evaluate media training program outputs.

The intention has been to provide guidelines that will faciliate the decision-making process on the part of the user-groups enumerated above, and to facilitate clear communication among these groups. In order to be effective, the guidelines must be comprehensive, they must be congruent with the best available projections about the training needs of the near future and they must be validated within the actual

decision-making context.

Major Project Activities

Major activities undertaken in the project included: (1) "mapping" the media domain, (2) conducting a task analysis of current media-related jobs and clustering them by type and function, (3) generating media-related job descriptions which were projected 5 to 10 years into the future, (4) gathering other information on media training program requirements, (5) reviewing the media technology literature related to media training, and (6) translating current and future job descriptions into guidelines for training.

Mapping the Media Domain. To provide a systematic basis for deriving guidelines for training media personnel it was first necessary to put some order to the total field of media or what has been termed in the project the "domain of media." This effort has been referred to as mapping the domain. It made sense to attempt some representation of the media domain which was analogous to a map in as great a detail as present knowledge would permit. Such a map could be continually corrected and refined in its detail as ability to perceive the "true" form of the domain emerged.

Media Job Task Analysis and Clustering. The second major activity involved (1) gathering detailed job descriptions from persons employed in media-related jobs in various educational institutions, (2) analyzing these jobs to determine their contents, and (3) forming clusters of job activities that were similar to each other around dimensions of job functions and responsibilities.

Future Media-Related Jobs. A third major Project activity called for predicting the nature of media-related jobs over the next 5 to 10 years. While such projections necessarily involve conjecture and a certain number of arbitrary assumptions, they are nonetheless necessary if the media profession is to develop any real capability in preparing for future needs. Furthermore, technological forecasting in industry and other kinds of future studies are gradually developing techniques more useful than "crystal ball gazing" or "top-of-the-head" thinking characteristic of past methods. The project attempted to employ some of the new forecasting techniques.

Media Training Program Requirements. In addition to the other tasks accomplished in the project, information concerning requirements of media training programs was solicited from leaders in the media field as well as school administrators. Such information was summarized and reported in the form of recommendations regarding media training requirements.

Annotated Bibliography. Since an extensive review of the literature related to the field of media was necessary in the conduct of the project, an annotated bibliography was prepared of selected references considered for planning media training programs.

Guidelines Manual. The final task of the Project was to develop a manual that would provide guidelines for persons seeking to plan media training programs and to evaluate media-related training proposals and training program outputs. The manual was organized into five parts--part one, a checklist for guiding program planning and evaluating activities; part two, a general overview and description of the media domain; part three, an organized listing of descriptions of current media-related job activities; part four, an organized summary of projected trends, contributing forces, their implications for training media personnel in the next 5 to 10 years, and activities they

suggest; and part five, the annotated bibliography.

Review of Related Research

Previous to and concurrent with the execution of this project, several interrelated efforts have been carried out which require identification. The objectives for identifying the following efforts were threefold: (1) to sensitize the readers to major contributions and developments in the area of educational media/technology which relate to the establishment of training program criteria; (2) to recognize specific efforts which have directly contributed to the products of the Media Guidelines Projects; and (3) to note specific efforts in adjacent areas to educational media/technology which have a national impact and which contributed at least indirectly to the products of the Media Guidelines Project.

This discussion should not be regarded as comprehensive in scope, rather it is selective in that regard. The reader is encouraged to consult the annotated bibliography in Volume II for an extensive description of the range of sources which were reviewed for the project.

Readily apparent to those interested in and committed to the area of educational media/technology is the scope and intensity of activities which have been executed in the last decade. Support for these activities has come from a wide variety of sources: the U.S. Office of Education (through the National Defense Education Act, Elementary and Secondary Education Act, etc.); the National Education Association, the American Association of School Librarians and the Association for Educational Communications and Technology, private foundations, colleges and universities (especially graduate schools), state departments of education, the military, industry, and a host of other organizations and agencies, both public and private.

U.S. Office of Education Funded Projects. The U.S. Office of Education has shown a great deal of interest in the training, development and utilization of educational media/technology and respective personnel. The following summarize several funded projects of importance to this project.

Hayward California State College held a series of seminars and conferences to discuss the types of audiovisual specialists which needed to be prepared and the appropriate training which would develop these personnel. Kenneth Norberg, 1963, The Content and Pattern for the Professional Training of Audiovisual Communication Specialists, Contract No. OE 2-16-029, Educational Media Branch, U.S. Office of Education, 1963, was among the first who brought a host of leading educators and instructional technologists together to give planned direction to the training of professional media personnel.

In a grant through the University of Pittsburg , Center for Library and Educational Media Studies, Ann M. Martin and C. Walter Stone conducted a project, Study of Regional Instructional Media Resources, Phase I - Manpower, Contract No. OE 3-16-027, Title VII, U.S. Office of Education, 1965, which produced a grouping or clustering of media jobs to be performed with educational requirements identified with each. The tools and methodology employed in this project contributed to the development of more effective means by which jobs and training in the media profession could be conceptualized and planned.

To more effectively plan for the media selection and utilization functions, Wesley C. Mierhenry, through the University of Nebraska, was

granted a contract, Media Competencies for Teachers, National Defense Education Act, Title VII, U.S. Office of Education, Contract No. 5-073-2-12-6, 1966, to derive capabilities that teachers should demonstrate in the application of education media. This project not only produced teacher-media competencies and their respective curricular implications, but also contributed to a more close-working relationship between teacher education and media preparation programs and a common referent for both.

Through monies from U.S.O.E. and 8 Rocky Mountain States, a project was supported, Edgar R. Morphet and Charles O. Ryan, Designing Education for the Future, Volumes I, II, III, Citation Press, New York, 1967, which brought together some of the leading thinking related to: (1) prospective changes in society by 1980, (2) implications of prospective changes in society for education, and (3) needed changes in education to meet the needs of society by 1980. This effort, in toto, served three important functions: (a) it created new perspectives between the social institution of education and its responsibilities to meet the burgeoning and changing needs of society; (b) it synthesized major implications for education programs committed to meeting the needs of the range of populations serviced; and, (c) it diagnosed and prescribed fundamental changes which will probably have to occur in educational programs if individual and societal needs for growth and development are to be met. This effort collected a wide range of knowledge and insights for the planning of effective educational systems within which educational media programs function. Although not conclusive in its approach, this study makes evident both the need for effective educational planning and the massive challenge attached with it.

In 1967 the Teaching Research Division, Oregon State System of Higher Education, received a contract to collect and describe research and development evidence which would facilitate the design, development, and application of media/technology to instructional problems and programs in education: Jack V. Edling, et. al., The Contribution of Behavioral Science to Instructional Technology: A Resource Book for Media Specialists, supported by a contract from the Office of Education, Bureau of Research, U.S. Department of Health, Education and Welfare, 1968. Employing a process whereby leading interdisciplinary sources from instructional technology, systems, learning, development, social psychology, and anthropology could bring their thinking together on the problem area, this project produced a resource document for the field which described (a) the systems approach to instructional development; (b) learner outcomes, learning processes, and the conditions of learning; (c) learner variables and the design of instruction; (d) the relationship of instructional media to the learning process; and, (e) the utilization of the behavioral sciences as a basis for inquiry in educational design and development. In effect, this document provides essential conceptualization and documentation for the emerging role and activities of the instructional technologist.

Under the direction of Jack V. Edling and James E. Buck, the Teaching Research Division, Oregon State System of Higher Education, conducted a two-phase project (Jack V. Edling, An Interpretative Study of Individualized Instructional Programs: Phase I - Analysis and Interpretation, Contract No. OEC 0-9-470710-0776(010), U.S. Department of Health, Education and Welfare, Office of Education, 1969) which has collected and documented for dissemination a sample

of innovative programs in elementary and secondary education in the U.S. The products of these efforts describe for many administrators, teachers, and school board members detailed requirements for implementing a program of individualized instruction. Approximately forty-six programs are discussed for the evaluation and consulation of those schools which desire to provide an individualized learning approach. Of special interest to the concerns of this project was the high correlation between innovative programs and the utilization of educational media/technology. Additionally, these documents contribute substantially to an understanding of the realities of promoting and implementing a more effective educational program which has strongly integrated mediational components.

Within the Elementary Education Models Program in U.S.O.E., the Teaching Research Division, Oregon State System of Higher Education, was integrally involved in the development of one of the nine nationally funded models (H. Del Schalock, A Competency Based, Field Centered, Systems Approach to Elementary Teacher Education - Phase I, Contract No. OEC-0-8-089022-3318(010), U.S. Department of Health, Education and Welfare, Office of Education, Bureau of Research, 1968 and H. Del Schalock A Plan for Managing the Development, Implementation, and Operation of A Model Elementary Teacher Education Program, Contract No. OEC-0-9-470506-4039(010), U.S. Department of Health, Education and Welfare, Office of Education, Bureau of Research, 1969). Although designed for application to elementary teacher education programs, the model developed provides a conceptualization of the purposes and processes which exemplary education programs should attend to. A recognition of the recurring demand for the utilization of educational media/technology, functions and personnel, is provided for each model.

National Education Association. Concurrent with the execution of the Media Guidelines Project, a similar project was conducted under the direction of the (then) Department of Audiovisual Instruction of the National Education Association. (C. James Wallington, et. al., Jobs in Instructional Media Study (JIMS), Intern's Report, Project No. 8-0688, U.S. Department of Health, Education and Welfare, Office of Education, Bureau of Research, 1969.) The intent of this effort was to establish a career ladder for educational media personnel who may be termed para- or nonprofessional and to provide curriculum guidelines for their training.

The American Association of School Librarians and The Department of Audiovisual Institutions. "To bring standards in line with the needs and requirements of today's educational goals and to coordinate standards for school library and audiovisual programs," the American Association of School Librarians (AASL) and The Department of Audiovisual Instruction (DAVI-NEA) jointly prepared, with representatives for 29 professional and civic associations, Standards for School Media Programs, 1969. These are basically quantitative criteria which attempt to establish minimum requirements for school media programs for the declared purpose of acting "as a stimulus to correct the serious deficiencies now existing in too many of our schools." In addition to advocating an interrelated set of functions regarding the development, storage, retrieval, dissemination, and utilization of both print and nonprint resources, the Joint Standards appear to have the following implications: (1) the school building is the primary learning unit, (2) the media program must have strong linkages

with both students and instructors, (4) a staff with differentiated skills must carry out the functions of the media program, (5) a professional media center must provide adequate materials and devices to support the effective development, selection and/or utilization of instructional media, and (6) leadership and services in the school media program must be coordinated and facilitated at the school district, regional, state, and federal levels. The impact of the Joint Standards at this time is hard to judge; however, the qualitative discussions within the Joint Standards focus on student growth and development (learning) and thereby provide incentives and guidelines to the continuum of school media programs covering the innovation/traditional dimension and the well-established/newly emerging dimension.

Private Foundations. Funded by a grant from the Knapp Foundation of North Carolina, Inc., Robert N. Case is directing a project (School Library Manpower Project) which is a five-year study to be administered in two phases to: (1) identify the kinds of tasks performed in school libraries, (2) define and describe the levels of responsibility associated with library personnel and (3) specify the training program implications for the preparation of library personnel. Within this project, six experimental education programs for school librarians are planned to be designed and developed (two undergraduate, four graduate) in terms of performance objectives and level of professional capability to be achieved. The basic data derived from the job analysis of practicing librarians will provide a foundation from which such programs can be planned, evaluated, and operated. Four characteristics of this project represent current directions in the preparation of educational media/technology personnel: (a) the establishment of a methodology by which job descriptions can be derived and updated; (b) the development of a competency and performance-based curriculum; (c) the generation of reliable information regarding the needs and priorities for trained personnel; and, (d) the participation of a coalition of organizations and associations in the specification of training program guidelines and rationale.

Graduate Schools. A study conducted at the Graduate Library School, University of Pittsburgh, Morris L. Cogan and Harold Lancour, (The Professional Education of Media Service Personnel, 1964) which investigated the career patterns of media specialists and the curricular needs to support the preparation of needed personnel in media (Cogan and Lancour, 1964). Within that effort, W. C. Mierhenry made a significant contribution by identifying the functions which media specialists perform and the core and specific competencies which each function calls for. This beginning effort has provided a conceptual referent for many efforts in the training, development, and utilization of educational media/technology.

The Graduate School of Education at the University of Indiana has recently completed a three-year study of all programs and courses in educational media (Larson, 1969). With the objective of "developing a graduate program to train instructional design and media specialists." the educational media faculty has identified and agreed upon: (a) thirteen areas of professional education emphasis which represent primary media functions; (b) fourteen areas of research and development interest; (c) entry requirements and behavioral competencies; (d) criterion exit behaviors; (e) curriculum components to support competency acquisition and demonstration; (f) alternative program structures related to major and minor emphases; and, (g) needed resources to support

the graduate program in educational media. This study represents one of many currently in progress to develop a professional program for media specialists which provides exemplary activities in teaching, research, development, and dissemination.

State Departments of Education. An early effort directed by Francis Noel, Practices of State Departments of Education in New Educational Media Audiovisual During 1960-61, University of Southern California, 1963, described the policies and practices of state departments of education in regard to the development and utilization of educational media and the impact demonstrated by SDE's.

Military. Located at the Occupational Research Division, Lackland AFB, Texas, Chief Ray Christal has directed a continuing effort in Occupational Research for Air Force Training Programs. Of specific importance to the Media Guidelines Project has been his work in describing, evaluating, and structuring Air Force occupational data. More specifically, his work has generated a refined methodology for collecting, analyzing and describing enlisted jobs in the Air Force. Basic data has been generated in this long-term effort for: designing systems; establishing specialties, career ladders, and management categories; determining job qualification requirements; and, evaluating rank and salary schedules.

Chapter II

METHODS - PRODUCTS

This chapter will describe both the methods employed in the study and the products which resulted. Products were included in this chapter because in several instances the discussion of method would have been awkward to separate from the results.

Since each major activity in the project was somewhat distinct and separate, each activity has been reported here as a separate part. The parts include: Part I, Mapping the Media Domain; Part II, Task Analysis and Clustering Methodology; Part III, Future Job Descriptions; Part IV, Media Training Requirements; Part V, Annotated Bibliography; and Part VI, Guidelines Manual.

PART I: MAPPING THE DOMAIN OF MEDIA

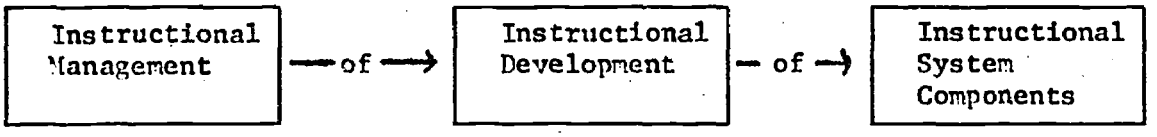
This aspect of the project constituted the starting point of the project and continued throughout. Before any significant efforts could be generated to produce useful data from which guidelines for planning and evaluating media training programs could be defined, it soon became evident that some conceptual map which defined the media field was necessary.

The process for developing a conceptual map of the "Media Domain" was rather straight forward. Literature was reviewed, outstanding leaders in the field were questioned, practitioners in the field were interviewed and considerable "think-time" was exerted by the project staff. A task force of the project staff was assigned the responsibility to develop a conceptual map, however, all staff members periodically became involved.

Initial Conceptual Attempt

The first substantial effort to develop a conceptual map of the domain of media resulted in the following?

DOMAIN OF MEDIA



Several very important realizations were accomplished in this first stage. Instructional management became clearly defined as an essential aspect of the overall domain of media separate from but related to the operational or instructional development were conceived as combining several essential but distinctly different functions which regulated the flow of activities. For example, Instructional Management was defined by the functions of organizational management and personnel management; while Instructional Development was defined by the functions of research theory, design, production, evaluation, support-supply and utilization.

Instructional System Components, the third part of the map was considered to include the means through which learning was accomplished and was the central reason for the existance of the first two components. It was defined to include messages, man, materials, devices, techniques

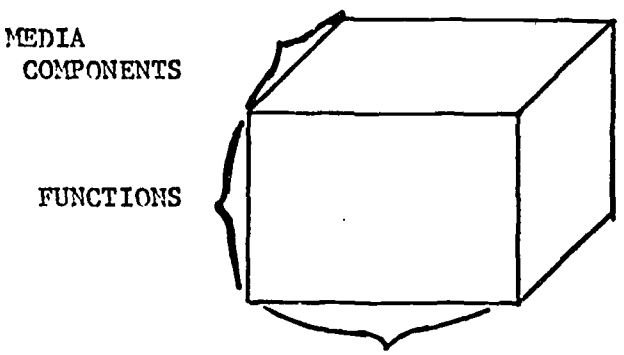
and setting.

Second Conceptual Map

Although the initial map gave the impetus to the conceptual development it proved to be too limiting to be sueful. Its major limitations centered around that it only represented linear dimensionality and required one directionality to have utility.

The second stage of conceptual development produced a three dimensional map which was represented as follows?

DOMAIN OF MEDIA



INSTITUTIONS

In the above illustration the term Media Components replaced the term instructional system components used in the first map. It was felt that the term instructional system components implied an inclusion of things beyond the limits of the domain of media and its use might subsequently become awkward. Along with the change of name for this component additional refinement was accomplished by distinguishing between software and hardware classes of components among the listing. Software was defined to include the components of messages and man, whereas hardware was defined to include the components of materials and devices. The component of techniques remained separate and distinct from both software and hardware. This differentiation emerged principally to distinguish between message elements that must be transmitted (software), the means by which messages are stored and transmitted (hardware), and the techniques for combining software and hardware to produce learning. The component setting was dropped and became a complete dimension of its own as described below.

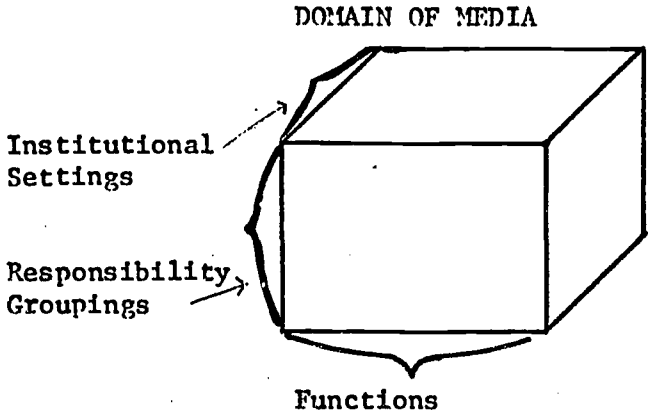
The dimension of Functions in the above illustration was an effort to direct the attention away from specific job roles such as management or development and instead to focus on the generic processes that occur across all job areas in the media domain. The functions dimension comprehensively combined all functions listed separately in the first map under Instructional Management and Instructional Development. The functions in this stage of the map included: research theory, design, production, evaluation, support-supply, utilization organizational management and personnel management.

The third dimension in the above diagram Institutions, refers to the institutional settings in which the functions and components

are located. This included such institutions as elementary and secondary schools, community colleges, universities, district and regional offices, etc. in which media activities occur.

The Third Conceptual Map

The final conceptual map created in the project combined some of the elements defined in the second map but went one step further. It is illustrated below:



In the above diagram institutional settings and functions remained a defined in map two; however, a new third dimension emerged: Responsibility groupings. Whereas the other dimensions of the map emerged via logical extrapolations, the responsibility groupings dimension emerged as a result of the clustering of media jobs (discussed in Part II). It was discovered that the jobs performed by media people naturally grouped themselves into six general but distinctive responsibilities: directive-administrative, professional, artistic-production, technical, clerical and manual.

The fully developed three-dimensional map of the media domain is represented in Figure 1. The details of the map include first of all an effort to identify functions to be performed by instructional media personnel in various institutional settings. Nine categories illustrated in Figure 1 make up the functions dimension and include research, evaluation, design, production, logistics, utilization, organizational management, information management and personnel management.

Two changes in the functions dimension from the early maps occurred. The function support-supply was renamed logistics on the contention that logistics is a simpler term and has considerable history of meaning for reference. The second change involved the inclusion of a third management element: information management. Although it can be argued that organization management could adequately include the aspects of information flow and exchange, it became evident in analyzing the job clusters that information matters make up a large portion of the management areas of responsibility in any media center. Because of this heavy emphasis it was decided that a separate element for information management be included in the map.

Next, the map identifies broad areas of responsibilities that media personnel assume in performing their jobs in various institutional settings which are called responsibility groupings. The directive-administrative grouping includes job activities that represent top administrative and management responsibilities necessary to control media operations; the

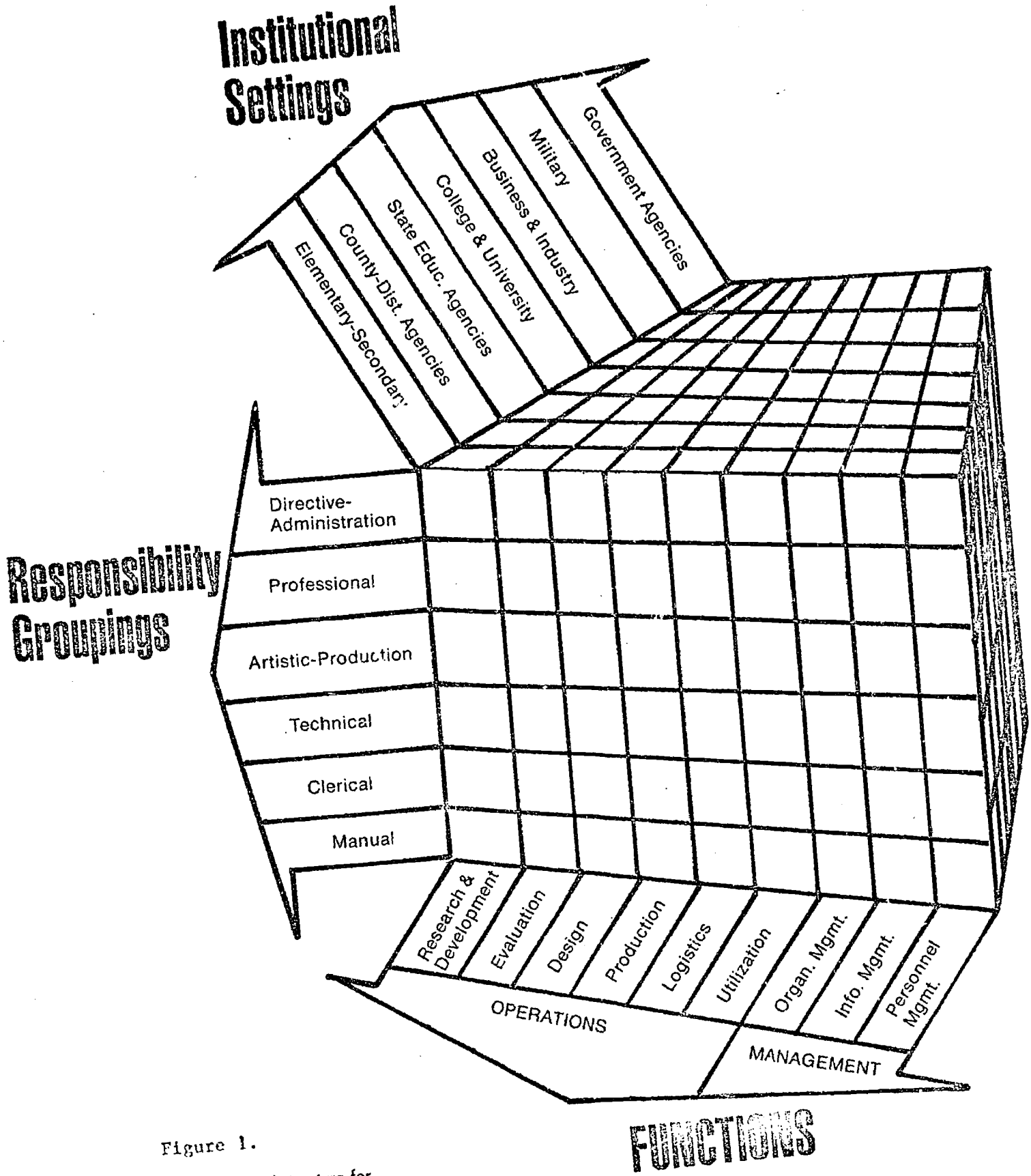


Figure 1.

Three-dimensional structure for organizing media-related training requirements.

professional grouping includes job activities that are responsible to work directly in the use of media with learners and learning problems, e.g., teachers, instructional designers, etc; the artistic-production grouping represents job activities that are responsible to work directly in the creation and production of media in support of professional type activities, e.g., graphic artist, photographer, etc.; the technical grouping represents job activities that are responsible to work directly with the design, fabrication, technical adjustment, and operation of mediating devices required in instruction in support of the professional type activities, e.g., TV cameramen, technical processor, etc. (the above responsibility distinctions are not intended to argue that artistic-production and technical types are or are not professionals in their jobs); the clerical and manual groupings refer to job activities that are necessary to support all other media-related type jobs. These two groupings perhaps do not come under direct concern for media training requirements, but currently have such a high degree of relationship to other media-related jobs, that it was felt their inclusion could at least provide help in planning on-the-job training.

The functions and responsibility groupings dimensions of the map form a matrix that can generate a series of useful questions for study. For instance, what is the evaluation function of persons responsible for directive-administrative activities as compared to professional activities (two adjoining cells in the evaluation row)? Or what should it be, and how should we prepare people to perform these particular functions? The map does not presume that every function must be performed in every responsibility grouping, i.e., at this stage equally meaningful questions are not able to be generated in all cells of the matrix. But casting functions and responsibility groupings into such a matrix provides a helpful means to define and differentiate an otherwise bewildering array of job activities, whether for the purpose of training, planning or operating.

The institutional settings dimension in Figure 1 identifies agencies in which media-related jobs are found. When institutional settings are specified for any combination of function and responsibility grouping the map becomes three dimensional. Obviously, additional degrees of refinement in institutional settings are possible, e.g., sub-division, size, location, etc. However, at this early stage in attempting to organize training requirements in the media field and because of the technical and financial limitations in collecting and distinguishing manpower data, the above limited structure was selected.

Finally, it is suggested that there are mediating components to be identified in any instructional media undertaking. These components can be specified by answering the questions listed below. The way educators might answer the associated questions, underlies the three dimensions of the map.

The media components include:

1. Message -- What information is being transmitted?

2. Man
   Material -- Who or what is storing or transmitting?
   Device

3. Technique -- How it is being transmitted?

Media components was not eliminated from the model, it actually creates a fourth dimension; but since a fourth dimension defies simple graphic display it was not illustrated. It is considered an important element of the total map, however, and should be visualized as providing a level of detail within the content level of planning for training.

In summary, the map provides a strong basis for planning and/or evaluating training programs. By analyzing the needs for training initially along the three dimensional map allows decisions to be made regarding the type of institutional setting to be included; the type of job responsibilities within the setting to be focused on, and the specific functions to be emphasized.

In addition, a set of priorities can be determined. For example, is it possible to cope with all functions in a training program for a specific responsiblity? Are the competencies available in the training staff sufficiently comprehensive to handle all functions? Do the needs for training warrent giving attention to all functions? Or are a limited set of functions more important across one area of responsibility?

Questions such as these are necessary to answer before training program plans can be realistically approached. The detailed model on page II-3 of Media Guidelines: Development and Validation of Criteria for Evaluating Media Training, Volume II - Guidelines Manual, allows such analysis to be systematically carried out.

Finally, after initial screening decisions such as the above have been reached regarding the setting, responsibilities and functions to be included in training, then details regarding the media components, the fourth dimension, are appropriate; i.e., what types of software and/or hardware should be employed in training, and what techniques are necessary to include.

During the conceptual development of the Domain of Media the map had a disturbing way of changing configuration. Refinement changes are still taking place at this writing. What this means is that greater understanding of the media field is continuing to emerge. The "makup" of the media domain continues to become more clearnly understood. Obviously the task has only begun and much more effort remains. However, at least an organized basis for systematically planning and evaluating programs of training in media, whatever its ultimate worth, has been provided.

A detailed discussion of the conceptual organization of the media domain is provided in Part II of Media Guidelines Volume II --Guidelines Manual.

PART II: TASK ANALYSIS AND CLUSTERING METHODOLOGY

While the mapping effort of the domain of media was progressing, actual job settings in which media work occured were being studied. Contact was made with individuals who where employed in various media related jobs for the purpose of obtaining detailed descriptions of what they did in their work. Eventually, these descriptive data were converted into coded data and processed through the computer. Clusters were formed to determine what simularities and differences existed among the several types of jobs in the various settings.

Conceptual Framework

The classification of occupations and jobs has received considerable attention in recent years, partcularly that supported by the Bureau of Employment Security and the U. S. Department of Labor. The problem of grouping like jobs togehter has been approached in many ways. For instance, the Dictionary of Occupational Titles emphasizes categories that group jobs on the basis of characteristics identifying traits and abilities required of the worker; and on the basis of a combination of work field, purpose, materials, product, subject matter, and/or industry (1965). For demographic purposes, the Bureau of the Census classifies occupations into eleven major groups by title only without definition (Shartle 1959).

These approaches to grouping jobs and occupations conceptualize the job as the basic unit for analysis rather than the tasks actually performed on the job. In classifying occupations at the job level the underlying assumption is that the task patterns related to certain job titles are fundamentally the same and constant, thus permitting the job to be the basic unit of analysis.

The above assumption was not appropriate to the needs of this project. It was discovered that media jobs are unique to the setting in which they are found. For example, two media center directors both titled the same but located at different institutions might perform several job activities different from each other. The job title proved to be very unstable in describing a media persons job. In order to achieve a level of classification permitting translation to media oriented instructional programming it was necessary therefore to approach the problem at the level of task analysis.

Although a number of techniques are available for classifying and grouping tasks, the restrictions imposed by the purposes of this research limited the technique to be used. For example, classification of task has been attempted as stimulus-response events (Cotterman, 1959), as man-machine elements (Stolurow, 1960) and in terms of their pattern of technical performance (Silverman, 1966). In this research, tasks were classified according to functional performance behaviors and mental processes patterns. These classifications were then coded and clustered according to their similarity. This classification scheme imposed particular constraints upon the analytical procedures that could be used.

A second constraint was centered on the requirement of eventually clustering jobs by means of a system which was operationally simple and adaptable to computer processing. The methodology has been adapted from a technique developed by Silverman (1966) for clustering tasks using an iterative computer clustering technique.

The central concept of the clustering system used in this research is that the tasks performed by a media person in a given job involve both a physical and mental function, i.e., what a worker does to or with things, data, and people (to be referred to as classes of actions) and what mental processes he engages in while working (to be referred to as processes). Accordingly, the primary emphasis in the study has been placed on the elaboration of the requirements of the work in terms of these classes of actions and processes dimensions. This research proceeded on the belief that different media job clusters exhibit characteristic patterns of what workers do with things, data, and people and what mental processes are engaged in each.

Work Description and Data Collection

Although there is considerable agreement that some type of work description is essential to a rigorous derivation of job clusters, there is little agreement concerning the best technique for such description. What elements in the job should be described? How detailed must the description of each be? How should contingencies be handled that impose variation upon various performances of the work? These are representative questions for which definitive answers were not readily forthcoming. This is not to say that considerable advance in techniques of work description has not been made. Efforts of Miller (1956, 1962), Smith (1964), Snyder (1960), and others have contributed significantly to our present understanding of problems.

For purposes of the present study, the most appropriate approach to work description seemed to be one which detailed the interactions of men, equipment, and information in a work context. Essentially, the approach was patterned after the method prescribed by Smith (1964).

The intial effort called for interviewing incumbents on the job and was made in County Instructional Media Centers. Typical of this type of organization was the Lane County IMC which employed twenty-two people, representing twelve distinctly different jobs. Prior to the actual job interviewing, an informal meeting was held with the director of the organization to discuss the objectives of the study and to insure that the director fully understood the impact of lengthy interviews in terms of man-hour losses to the organization. For the most part, directors enthusiastically rescheduled their employee's work time and cooperated fully in the investigation.

A second task of the interviewer was to record the basic tasks which a job incumbent performed. An example of the outcomes of this effort with the Lab Manager at Teaching Research is included below as Figure 2. Here the focus was limited to that of identifying which basic tasks constituted his operational job.

Figure 3 below provides an examplar of the level of detail needed for effective task action descriptions. One of the tasks of the lab manager (sound recording) has been recorded in language which is quite amenable for classifying, coding and future referencing. Each job interview averaged two and one-half hours with the extremes running from one to ten hours. The approach taken by the interviewer was to prompt the job incumbent with the following basic questions:

1. What do you do on your job?
2. What do you do it with?
3. How do you do it?
4. How do you know when it is completed?

All recording of answers was done as nearly as possible in the incumbent's own words. Cassette tape recordings were made as a cross check on the accuracy of the written responses.

After review of the handwritten interview work sheets and the tape recordings, the worksheets were edited and rough-typed in two copies. One copy was filed with the original handwritten worksheets for permanent retention. The second was sent to the interviewer for approval, modification, or additions. When returned, this copy was coded for computer clustering, and final typing was completed.

It was important to distinguish between tasks and task actions. As used here, each a media job is composed of several tasks. A task is defined as a major segment of responsibility of a job assigned to an individual. For example, a particular job might consist, in part, of the following tasks: (1) taking motion pictures, (2) taking still pictures, (3) duplicating slides, and (4) developing film. Task actions,

Tasks Basic to Job

NAME Mil Jones

JOB TITLE Laboratory Manger

BASIC TASKS:

1. Sound recording

   Conventional tape audio
   Sync Slides with audio
   Motion pix audio
   Edit tape
   Dub. tape

2. Equipment maintenance

   Conventional audio visual, 1/4" recorders, 16 mm projectors etc.
   Video tape equipment
   Teaching Research's built equipment
   Keep maintenance records

3. Design unique research equipment, order necessary parts

4. Draw schematics

5. Construct research equipment

6. Consult with staff on equipment needs, order equipment.

7. Inventory equipment, all Teaching Research furniture etc.

8. Supervise Technician, work study personnel

9. Schedule laboratories

10. Catalogue tape recordings, motion picture films

11. Operate audiovisual equipment, tape recorders, 16 mm projectors etc.

12. Maintain files on equipment, films, catalogues etc.

13. Move furniture.

FIGURE 2.
Basic Tasks Recording Form

Task Description

Job Title Lab Manager

Task Name Sound recording

Object Acted Upon Tape recorder, mike, tape

Information Guiding Action Purpose of recording, own judgment

Tools None

Actions Standard procedure

1. Discuss job with person requesting recording to determine the need-set time, purpose of tape, no. people, special effects.

2. Form a plan to carry out #1: type equipment, facilities, support people.

3. (In some instances, script analysis gives input information for determining the plan for recording)

4. Assemble necessary equipment to make the recording: recorder, tape, mike(s), special cables, mick mixer, adjunct equipment.

5. Acquire script, if available, from person requesting recording.

6. Schedule facility (room); might include need to get authorization for use (campus school, special ed. sound booth)

7. Set up equipment and prepare facility to carry out recording (includes alerting general area that recordings will be made).

8. If inexperienced narrator, give instruction on how recording is conducted.

9. Pre-check of equipment made to determine operability and to set critical recording levels - levels determined by regulation against V.U. meter. (If multiple persons involved, multiple pre-settings required to approximate a common level.)

10. Determine all factors considered (room location, no. people, furniture etc.) Whether pre-plan is adequate to carry out recordings or whether plan requires modification.

11. Modification of plan made and adjustments made.

FIGURE 3.
Task Action Description Recording Form.

on the other hand, are concerned with describing all of the sub-elements constituting any one task. Thus, several task actions for the basic task "takes motion pictures" might include (1) meets with customer to understand nature of the problem, (2) operates motion picture camera, (3) determines diaphram opening with exposure meter, and (4) sets up and adjusts lights.

In this study the incumbent was instructed to first identify the several tasks which combined to make up his total job responsibility; then to describe, for each task in turn, all the actions required in completing the task.

Standards for describing task actions were:

1. Fidelity in generation and translation of task information.
2. Sufficient detail to include all important worker functions and processes.
3. Descriptions of the worker requirements in a form translatable into the two dimensional classification scheme developed for classifying task actions.

Analysis and Classification of Task Descriptions

A basic point of view underlying the present research was that every job requires a worker to function with things, data, and people in various ways and that while so functioning the worker is simultaneously engaging in mental processes. In order to express what a worker does, functional terms (verbs) were used specific to each of the things, data, and people.* These functional terms were arranged in hierarchies with about eight functions in each category. The first numbered function in each hierarchy was considered the simplest and the last numbered function the most complex.

The category of things is defined as inanimate objects, materials, machines, tools, equipment, and products--a thing is tangible and has shape and form. Functional terms for things include handling, feeding-offbearing, tending, manipulating, driving-operating, operating-controlling, precision working, and setting-up. Table 1 presents the terms and definitions for things. Data is defined as information, knowledge, and conception related to data, things, or people, either written or in idea form. Terms used to express worker functions with data include comparing, copying, computing, compiling, analyzing, coordinating, and synthesizing. The functional terms for data are presented and defined in Table 2.

The third category of people is defined simply as human beings. Functional terms for people include taking instructions, serving,

*The categories and definitions that follow for things data and people have been adapted from The Dictionary of Occupational Titles, 1965, Vol. II, pp. 649-650.

TABLE I

Functional Terms for Things

	Functional Terms	Definitions
1.	Handling -	Using body, handtools, and/or special devices to work, move or carry objects or materials. Little judgement required.
2.	Feeding-Offbearing -	Inserting, throwing, dumping or placing materials in, or removing them from machines or equipment.
3.	Tending -	Starting, stopping and observing functioning of machines and equipment. Low level judgments required in making adjustments.
4.	Manipulating-	Using body, tools or special devices to work, move, guide or place objects or materials. Requires some judgment.
5.	Driving-operating -	Starting, stopping and controlling machines or equipment in which a course must be steered to fabricate, process and/or move things or people. Includes estimating distance, determining speed and direction of other objects.
6.	Operating-Controlling -	Starting and stopping, controlling and adjusting machines or equipment designed to fabricate test, monitor, and/or process materials or objects. Controlling involves temperatures, pressure, flow of liquids and electrons, speed of pump, and reaction on materials.
7.	Precision working -	Using body members and/or tools to work move, guide or place objects or materials in situations requiring considerable judgment and low tolerance limits.
8.	Setting-Up -	Adjusting machines or equipment - replacing, altering and/or aligning jigs, fixtures and attachments, to prepare, change or restore functions.

TABLE 2

Functional Terms of Data

	Functional Terms	Definitions
1.	Comparing -	Judging degree of congruence of data, people or things.
2.	Copying -	Transcribing, entering or posting data, duplicating with a like kind.
3.	Computing -	Performing calculating operations--with data supplied.
4.	Compiling -	Gathering, collating, classifying information about data, people or things.
5.	Analyzing -	Examining and evaluating data--often results in alternative action choices--often includes compiling, computing and comparing.
6.	Coordinating -	Determining time, place and sequence of operations or actions re analysis.
7.	Synthesizing -	Integrating analysis of data to discover facts and/or develop knowledge or interpretations.

speaking-signaling, persuading, diverting, supervising, instructing, and negotiating. Functional terms and definitions for people are shown in Table 3.

TABLE 3

Functional Terms for People

	Functional Terms	Definitions
1.	Taking instructions -	Helping.
2.	Serving -	Attending the needs of people--immediate response involved.
3.	Speaking-signaling -	Talking or signaling to exchange information.
4.	Persuading -	Influencing others in a product, service or point of view.
5.	Diverting -	Amusing others.
6.	Supervising -	Interpreting work procedures, assigning duties and promoting efficiency among workers.
7.	Instructing -	Teaching or training others.
8.	Negotiating -	Exchanging ideas, information and opinions to determine policy and programs and/or decisions.

Mental processes are considered to be the modes by which the worker translates input information into functional responses. The categories used to express processes, from simple to complex, include chaining or rote sequencing, discriminating or identifying, coding, classifying, discrete estimating, continuous estimating, logical manipulation, rule using, decision making, and problem solving. Table 4 presents the categories and definitions of mental process.

TABLE 4

Mental Processes Categories

	Mental Processes	Definitions
1.	Chaining or rote sequencing -	Following a pre-specified order of verbal and/or motor acts in carrying out an action or procedure.
2.	Discriminating or identifying -	Perceiving the appearance of a target as distinct from other targets.
3.	Coding -	Translating a perceived stimulus into another form, locus or language; not necessarily involving the application of a sequence of logical rules.
4.	Classifying -	Perceiving an object or target as representative of a particular class, where the objective characteristics of targets within the class may be widely dissimilar.
5.	Discrete Estmating -	Perceiving discontinuities in changes of distance, size and/or rate, with discrete recording or responding.
6.	Continuous Estimating -	Perceiving discontinuities in continuous fluctuations of distance, size and/or rate with continuous responding.
7.	Logical Manipulating -	Application of formal rules of logic, rules established through job routines, and/or computation to an input as a basis for determining the appropriate output.
8.	Rule Using -	Executing a course of action, including one or more contingencies, by the application of a rule or principle.
9.	Decision Making -	Choosing one out of a field of alternative actions.
10.	Problem Solving -	Resolving courses of action where routine application of rules for logical manipulation and decision making would be inadequate for optimum choice. This would seem to imply the integration and adaptation of existing principles into novel, specialized or higher-order rules.

In order to illustrate how the two dimensions of the classification scheme are oriented, a function by processes matrix is shown in Figure 4.

The classification of task descriptions was accomplished in three stages: (1) to analyze and classify elements of descriptive statements in terms of the categories of things, data, and people; (2) to analyze and classify elements in functional terms; and (3) to analyze statements to determine mental processes engaged in while performing the functions.

A simple example dealing with taking motion pictures might clarify these stages. Employing the letter and number format of the function by processes matrix (see Figure 1) as a coding system, analysis of the descriptive statement, "Meets with customer to understand nature of problem," indicates that it should be classified according to both Data B and People C categories. Analysis of the statement of data functioning places it in the category of Compiling B4; analysis of the statement for people functioning places it in the Speaking-Signaling C3 category. When the Compiling function of the statement is analyzed for processes, a mental process of Coding 3 can be identified; when the people function of Speaking-Signaling is classified it demands a process of Discriminating or Identifying 2. Thus, according to Figure 4, the total classification of the statement "meets with customer to understand nature of problem," in terms of data and people function and mental processes results in a B4-3 category loading and a C3-2 loading.

When all task description statements had been classified and coded according to the function-process matrix the next step was to cluster the total codings to determine commonalities.

Method of Clustering

The inital step centered around the grouping of task action descriptions so that clusters of common tasks and task patterns would emerge. This was accomplished in several steps. First, each basic task was compared with all other basic tasks to determine an index of similarity. Next, the variance of all task similarity indices was computed. Third, tasks which would serve as rotation points, i.e., points around which other tasks naturally grouped themselves, were determined on the basis of variance and similarity values. Fourth, tasks were formed into clusters around rotation points.*

A complete discussion of the mathematics involved in this clustering technology can be found in "Oregon Statewide Study of Systematic Vocational Education Planning, Implementation, Evaluation," Hamreus and Langevin, September, 1967.

The job clustering program which was written in FORTRAN IV for the Control Data 3300 at Oregon State University read in data for up to 300 jobs, computed job similarity values for each job with every other job and then choose jobs as rotation points and the jobs which "clustered" about each rotation point.

The first section of the program read in the data which consisted of a five digit identification number assigned by the user, a two digit number indicating the number of task-actions to follow, a one

*The clustering technique described in this report is an adoption of a computerized system developed by Silverman (1966) for determining the basic technical skills required by naval weapons operation and support.

MENTAL PROCESS	What Workers Do (Function)																			
	Things A								Data B							People C							
	1. Handling	2. Feeding-Offbearing	3. Tending	4. Manipulating	5. Driving-Controlling	6. Operating-Controlling	7. Precision Working	8. Setting Up	1. Comparing	2. Copying	3. Computing	4. Compiling	5. Analyzing	6. Coordinating	7. Synthesizing	1. Taking instructions-Helping	2. Serving	3. Speaking-Signaling	4. Persuading	5. Diverting	6. Supervising	7. Instructing	8. Negotiating
1. Chaining or rote sequencing																							
2. Discriminating or identifying																							
3. Coding																							
4. Classifying																							
5. Estimating - Discrete cases																							
6. Estimating - Continuous																							
7. Logical Manipulation																							
8. Rule using (if such & such, use--)																							
9. Decision Making																							
10. Problem Solving																							

Figure 4. Function by Processes Matrix.

digit number indicating whether the data referred to PEOPLE, DATA, or THINGS, and then the task-action codes were put into descending numerical order. After each record had been sorted, it was rewritten back onto the scratch file.

The second section of the program computed the number of matches between the task-action codes for every possible pair of jobs within each scratch file and these "match" values were written onto another scratch file.

The third section of the program computed job similarity values for every possible pair of jobs and stored these values on a scratch file. The job similarity index values ranged from zero, where there were no matches between the task-actions for a pair of jobs, to three hundred, where each task-action in one job matched a task-action in the second job. Mathematically, the job similarity value was defined as follows:

$$S_{ij} = 100 \left(\frac{MP_{ij}}{NP_i + NP_j - MP_{ij}} + \frac{MT_{ij}}{NT_i + NT_j - MT_{ij}} + \frac{MD_{ij}}{ND_i + ND_j - MD_{ij}} \right)$$

WHERE:

MP_{ij} number of matches between job i and job j, People task-actions

MT_{ij} number of matches between job i and job j, Things task-actions

MD_{ij} number of matches between job i and job j, Data task-actions

NP_i number of People task-actions for job i

NT_i number of Things task-actions for job i

ND_i number of Data task-actions for job i

The fourth section computed means and variances for the job similarities of a specific job in combination with all other jobs. The sequence number assigned by the computer, the identification number supplied by the user and the mean and the variance were then printed for each job in the data set. The job variances which exceeded 1000 were placed in descending order for use in choosing the rotation points.

The fifth and last section of the program selected the rotation points and picked the jobs which satisfied the clustering criterion. The first rotation point chosen was the job with the highest variance of those jobs whose variance exceeded 1000. The jobs which "clustered" about that rotation point were those whose similarity index values exceeded 150. Each job which appeared in that cluster was then checked and if its variance exceeded 1000 it was deleted from the list of possible rotation points. Therefore, if a job had served as a rotation point it would not appear in subsequent clusters and when a job first appeared in a cluster it could not later become a rotation point, but a job might appear in more than one cluster. A list was printed which gave the rotation point number, the computer assigned sequence number, the user assigned identification number, and for each clustered job the similiarity value.

The program accepted up to 300 jobs with not more than 85 task-action codes for each People, Data, or Things record. The equivalent of six magnetic tape units and a line printer were needed to execute this version of the program. The program required approximately 32K works

of core on the CDC 3300.

Results

A total of 94 individuals employed in media or library related jobs were interviewed according to the procedures and rules set forth above. Of this number 77 were from institutions in Oregon and the remaining 17 from various other parts of the country. The distribution of these people by job titles across institutional setting and in order of their interview was as follows:

County IMC

1. Scheduling Coordinator
2. Maintenance Technician
3. Assistant Director
4. Shipping Clerk
5. Production Supervisor
6. Photographer
7. Graphic Artist
8. Secretary (lib.)
9. Secretary to Director
10. Clerk Typist
11. Secretary
12. Director
13. Production Technician

University AV Center

14. Receptionist
15. Clerk
16. Film Order Clerk
17. AV Technician
18. AV Coordinator
19. Photographer
20. Typist
21. Head, graphic art
22. Senior AV Instructor
23. Director

College of Education A-C Center

24. Instructor Intern
25. Assistant Professor
26. Graphic Artist
27. Program Manager
28. Director Comm. & Dissem.
29. Instructor

Community College LRC

30. Secretary (lib.)
31. Secretary to Director
32. AV Coordinator
33. Technical Processor
34. Acquisition Clerk
35. Tech. Processing Clerk
36. Acquisition Librarian
37. AV Secretary
38. Graphic Artist
39. Director

School District Department of Instruction Msts.

40. Chief Clerk
41. Equipment Clerk
42. Head Clerk
43. AV Materials Processor
44. Shipping Clerk
45. AV Materials Booking Clerk
46. Curriculum Librarian
47. Graphic Artist
48. AV Librarian
49. Order Clerk
50. Photographer
51. Offset Press Operator
52. Library Shipping Clerk
53. Materials Processor
54. Catalogue Librarian
55. Acquisitions Librarian

56. Librarian
57. IM Coordinator
58. Catalogue Librarian
59. Acquisition Librarian

County IMC

60. Director
61. Assistant Director
62. AV Coordinator

Instructional Research Agency

63. Evaluation Director
64. Evaluator
65. Associate Director
66. Research Instructor
67. Simulation Systems Director
68. Research Professor
69. Research Professor

Public Broadcasting Agency

70. Radio-TV Technician
71. R & D Specialist
72. Engineer
73. Chief Engineer
74. Production Manager
75. TV Producer-Director
76. Operations Coordinator
77. Floor Director

Private Media Research Agency

78. Field Operations Director
79. Senior Research Scientist
80. Research Associate
81. Field Consultant

Other Media Related Jobs

82. Building Coordinator
83. Educational Media Director
84. Educational TV Consultant
85. Elem. Sch. Media Consultant
86. Ratio/TV Consultant
89. Computer Program Analyst
90. Asst. Manager Educ. Systems
91. Senior Human Factor Scientist
92. Associate Professor
93. Vice President for Research

87. Sec. Sch. Media Consultant 94. Director Instructional Tech.

88. Human Factors Scientist

The individuals representing the above 94 job titles provided the study with 297 major tasks which are listed in Appendix 1. It should be realized, however, that the major tasks listed did not include all tasks for which the various incumbents were responsible. They did include those which were considered most important or primary by the incumbent and which could be obtained from the incumbent during the time available for that purpose.

From the 297 major tasks, listed in Appendix 1, a total of 2,608 task actions emerged. These task actions constituted the incumbents' descriptions of the detailed activities they engaged in to carry-out their work assignments. Task actions were the elements that were coded in the matrix shown in Figure 4 and then subjected to the computer clustering described earlier.

The clustering procedure worked on the basis of grouping arrays of tasks around certain tasks which had been selected as rotation points (RP). Rotation points were identified on the basis of the particular value of variance generated by a task and its intendent array of task actions in conbination with all other tasks and their task actions depending upon the degree of similarity each exhibited.

The difficulty in utilizing the clustering procedure was in assigning the variance limit to the computer. For example, by placing a variance limit of 300 in the computer, tasks with a variance below 300 would not be selected as a RP. No existing guidelines were available to assist in making the judgement in setting RP selection limits. Therefore, a certain amount of trial and error was necessary to observe the effects of various limits.

A second point of difficulty in employing the clustering procedure regarded setting the limits on the similarity index which regulated the size of clusters. Each major task was assigned an index of similarity by comparing its task action array with each other task and its task action array. Similar to the RP, by setting a certain limit into the computer on the similarity index, all tasks with that valve and over would cluster around an appropriate RP. The problem was in determining the limit. If it was set too high, too extreme descrimination of the degree of similarity between tasks would occur resulting in only a few tasks being clustered around a RP. On the other hand, if it was set to low too many tasks of very weak similarity would be grouped together. Again, a certain amount of trial and error was needed to determine the appropriate limit. The complete listing of similarity index and variance values for each task is contained in Appendix 2.

Clusters Produced

Several sets of variance and similarity index limits were tried with the final variance limit being set at zero to insure that all tasks could be selected as a RP, and the similarity index limit being set at 120 to provide workable sized clusters.

With these limits, twelve clusters were formed which could be quantilatively identified and described. In addition to the twelve

clusters, 16 tasks were identified as RP's, however, these 16 RP's either contained only a single task or no associated tasks to form a cluster. This was possible in view of the fact that after a task had once been selected as a RP its variance valve was set to zero so that it could not again appear in a different cluster. Similarly, all tasks when clustered were set to zero so that they would not appear in more than one cluster. The 16 RP's that failed to form clusters were then visually compared to the tasks within the 12 clusters and fitted into the most logically appropriate cluster.

The twelve clusters were uniquely identifiable upon close study of the codings of the task actions. However, in some situations the uniqueness could be found only be examination of the degree of wental process involved. Obviously, a much too subtle level of difference to attempt to realistically deal in suggesting different clusters of media work.

Five of the twelve clusters showed such minute differences that they were more easily discussed as a single group. This grouping of tasks combined performance of similar actions with people, data and things, and in so performing used similar mental processes. Visual study of this composite grouping, however, revealed that two major work responsibilities appeared to be combined, both requiring similar capabilities. One aspect was obviously depicted as Administrative and/or Directive types of responsibilities. The other indicated application of talents in other areas which were much more easily labelled as Professional in character.

Two of the twelve clusters merged together very nicely into what has been termed the Artistic Production type responsibility. Two other clusters were combined to form the Technical area of responsibility. Of the final three clusters, two more joined to be called the Clerical responsibility and the final clusters easily was identifiable as Manual responsibilities. The six resulting responsibility clusters or groupings were listed as follows:

Directive-Administrative
Professional
Artistic-Production
Technical
Clerical
Manual

The complete listing of rotation points, each with its cluster listing of tasks, is contained in Appendix 3. Persons so interested might wish to compare information on tasks among Appendices 1, 2 and 3. Task I.D. Number is provided in each display for such purpose.

Job Activity Description

The clustering procedure provided six responsibility groupings as listed above. A sorting of task actions into these responsibilities as a result of the way tasks clustered helped to clarify the work that is done in the Domain of Media; however, if left at this gross a level such information would be of little value to planners of media programs. Therefore, further deliniation of task actions along functional categories was attempted.

It became apparent through analysis of the clustered data that various "kinds of actions" were performed by media people and that

by sorting task actions on the basis of functional definitions produced functional listings of task actions. In many cases the functional heading was included in a task action statement to assist such sorting; e.g., "Designs multi-media presentation." In other cases the function was readily implied by the wording of a task action statement; e.g., "Reviews material labelled urgent-to-purchase to confirm evaluators report;" judged to be an evaluative type action.

It was apparent, however, that some kinds of actions were performed for various purposes. For example, to "select periodicals to be maintained on microfilm" connotes an evaluative activity, but for the purpose of supplying periodicals for school reference use. In this instance the evaluation action appears to be for the purpose of providing logistical support.

Each of the 2,608 task actions were analyzed in three ways: first in terms of the kind of functional activity represented, second in terms of the purpose for which the activity was performed, and third to identify and reduce redundant statements.

The combination of these analyses produced 1,601 job activity descriptor listings in three different ways?

1. Job activity descriptors by Responsibility grouping.

2. Job activity descriptors by Functional listing.

3. Responsibility grouping activities performed for the purpose of a function.

The following graphic representation might help to clarify the three different listing ways.

Responsibility Groupings	Research	Evaluation	Design	Production	Logistics	Utilization	Org. Mgt.	Info. Mgt.	Pers. Mgt.
Directive Admin.	1	2	3	4	5	6	7	8	9
Professional	10	11	12	13	14	15	16	17	18
Artistic-Prod.	19	20	21	22	23	24	25	26	27
Technical	28	29	30	31	32	33	34	35	36
Clerical	37	38	39	40	41	42	43	44	45
Manual	46	47	48	49	50	51	52	53	54

Functions

First, task actions were grouped and listed by rows. For example, cells 1-9 were grouped under the Directive-Administrative grouping. Second, task actions were grouped and listed by columns. For example, cells 1, 10, 19, 28, 37 and 46 combined to produce job action listings for Research. Third, each cell produces the listing of a particular responsibility grouping for the purpose of a particular function. For example, cell 1 produces the listing of directive-administrative task actions for the purpose of research.

All cells in the above graphic representation did not produce task action listings nor was there an equal distribution of task actions among cells that did have listings. The matrix in Figure 5 illustrates the numbers of task actions produced by each cell.

Responsibility Groupings	Research	Evaluation	Design	Production	Logistics	Utilization	Org. Mgmt.	Info. Mgmt.	Pers. Mgmt.	
Totals	78	87	76	388	393	67	211	249	52	1,601
Directive-Admin.	35	30	20	43	85	0	185	113	0	563
Professional	43	52	56	55	23	67	19	129	0	444
Artistic-Prod.	0	0	0	103	0	0	0	0	0	103
Technical	0	5	0	158	92	0	0	0	0	255
Clerical	0	0	0	10	148	0	7	7	0	172
Manual	0	0	0	19	45	0	0	0	0	64

Functions

Figure 5. Numbers of Task Actions within cells of the Responsibility Grouping by Functions Matrix.

It is readily apparent from Figure 5 that of the 94 individuals sampled in this study, the greatest number carried out job responsibilities involving directive-administrative and professional type activities. On the other hand, these same individuals were primarily concerned with job actions related to production and logistics. Other areas show a declining level of inclusing.

The absence of task action listings within several of the cells might be attributed to several things: (1) the sample was not sufficiently large and representative to include media work involving actions in those areas, (2) some responsibility groupings, by definition, preclude job involvement in certain functional categories, or (3) the system of classification and coding of task actions employed in the study was too limited to permit inclusion in some cells.

It is the writers judgement that the primary reason for the absence of task action listings in some cells was primarily the results of (2) above; while the secondary reason would be (1) above.

The complete listing of task actions under each of the responsibility groupings headings and functions contained in Figure 5 has been organized and presented as a major part of the second volume of this report (see Part III, Media Guidelines--Volume II). These listings are considered to be central to the task of planning for the training of media personnel. When these task action listings are considered in concert with other parts of this final report, particularly Future Job Descriptions and Media Training Requirements, planners of media training programs have available to them a broad and comprehensive basis for decision.

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for

Part II: Task Analysis and Clustering Methodology

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PART III: FUTURE JOB DESCRIPTIONS

Projecting what media related jobs will be like five and more years into the future is critically needed if training programs are to have any chance of being changed in time to prepare persons qualified to meet the future needs. The trick, of course, is to come up with projections of future job descriptions that are valid. In addition, a methodology must be established for making media-related job projections that can be systematically replicated and improved upon.

The methodology used in this project for making future job projections and the rationale for such an approach follows.

It is argued that only as future job descriptions approach the task action level of detail will sufficient information be available to determine what type skills and compentencies are called for in training. Stopping short of this level of detail would result in such general job descriptions that determining training curriculum changes would be at best vague.

INTRODUCTION

How does one generate task action descriptions of future jobs yet unknown? The answer must center around the degree to which future jobs can become known. The rationale that guided the approach taken in this study for projecting future job descriptions follows. The means for achieveing future job knowledge calls for comprehensively combinging outputs derived from (1) descriptions of current jobs, (2) recognized scholars and/or their writings that have a reputation for excellence in making future projections, (3) technical specialists who are experts in their field and well read in the future trends of their technology, and (4) behavioral scientists who are qualified in translating the formal and technical language of the scholars and technicians into operational task action terms.

1. Current Job Descriptions

The position taken here was that knowledge of current job descriptions would provide possibly 80 to 90 per cent of the information needed to make five-year projections. In other words, although changes in media-related jobs will occur in the next five years, these changes will not be different in any great degree from various combined aspects of our present jobs. It seems quite apparent that the creation of new jobs due to advancements in technology seldom, if ever, calls for a completely new set of skills and competencies not previously known. What appears to take place is that new jobs call for a rearrangement of various current job skills and competencies into a new configuration, plus possibly the addition of something uniquely new. For example, the creation of new job Z might combine portions of tasks performed in existing jobs X and Y, but never before combined; in addition to requiring a particular new set of actions never before known. Therefore, the new job actually requires an individual to acquire portions of skills already learned by several persons but in different jobs. Therefore, in order to be able to project what new job Z might be like, it is essential to have accurate descriptions of the tasks required for current jobs X and Y.

It follows then, that the chance of planning for changes in present training programs in order to prepare individuals for Z type jobs becomes reasonably good given that good guesses can be made about jobs X and Y.

Admittedly, some error in predicting the description of future jobs will occur, which when combined with the new unknowns will result in some wrong guesses in planning future training programs. However, at worst, the error will be no greater than is presently the case in planning training for future needs without any knowledge base, and as experience is gained in projecting existing tasks to the new, the degree of effective program planning will increase.

2. Projections of Scholars

In addition to current job descriptions, the means for generating projected job task descriptions can most likely occur in combining the insights and skills of various types of people who are brought together by design. First, recognized scholars who have demonstrated a high degree of skill in projecting general future trends in education, and particularly with reference to instructional media, must be identified. These are the persons who are able to project the implications of social trends and technological developments to education. For example, what implication does computer technology have for instruction in the near future; i.e., what might it call for in terms of the applications of media in instruction. As long as future projections are limited to a five to ten year lead time, it seems reasonable to assume that, given wise scholars experienced in tracking the trends, few major new innovations would emerge during this interim that were not anticipated. Obviously, error in projection would be present; however, if these projections were paralleled by longitudinal research studies that attempted to isolate the factors which appeared to enhance them, then continuing efforts to make projections could by systematically improved.

A complex industry, such as education, including its support systems, which include instructional media programs, does not change overnight.* In a general sense, education five to ten years from now will look more like it does today than different. Furthermore, it is highly unlikely that impending changes in technology will radically alter this trend very rapidly.

3. Projections of Technical Experts

In addition to the scholars, a second type person needed in making projections is the technical expert. This is a person who has an extensive knowledge of a particular technology such as computers or electronics. Although the scholarly types will be able to point to general trends of new technological applications in education they will not be able to describe what new basic tasks these trends call for. However, given some approximation as to the manner in which his particular technology might be utilized in the educational industry, a technical expert should be able to specify with considerable detail some of the

*The interpretation of education as a social institution lends further weight to the relative stability of existing practices and commitments.

basic tasks called for and the likely nature of the actions in those tasks. The technical expert must be fully aware of the emerging trends of this technology as represented in the leading trade journals and expressed personally by his peers. The input from this source will provide a critical linkage of current job descriptions to future situations.

4. Behavioral Scientists

A third type person is required in making projections: a behavioral scientist. This type person is able to both solicit and translate information from scholars and technical experts into a common language amenable to curriculum planning. He must be generally well informed of the current state of instructional media as well as in possession of and readily able to translate current job task descriptions. It is his responsibility to bring the scholar and technical expert together at a critical time for combining insights.

The three types of persons discussed above must operate as a team in developing the projections. The general projections of scholars will be useful for interpretation by technical experts only as they are able to clearly perceive their meanings. This calls for interaction between the two types for maximum clarification. The behavioral scientist can increase communication by translating projections terms into operational definitions that have been validated by scholars. When projection trend information has been sufficiently clarified the behavioral scientist can then interview technical experts as if they were job incumbents in new projected jobs. Current job descriptions would provide a foundation for developing specific future task action statements.

Once new job task descriptions had been generated they could then be clustered in the same manner as current job descriptions and translated into behavioral statements of skills and competencies. The translation process could employ techniques of defining behavioral objectives such as those developed by Bob Mager, Robert Smith, James Popham, Casper Paulson and others.

FUTURE DATA COLLECTION ACTIVITIES

The techniques employed in the study for collecting future projections included (1) a semi-structured interview with scholars, (2) a modified Delphi with technical experts, and (3) a literature search and annotation process.

1. Semi-structured Interview Technique

To maximize the contribution of a select group of resource scholars, semi-structured personal interviews were conducted at the interviewees setting. Interviewees were asked to respond to a series of open ended questions while their remarks were recorded on tape. Respondents were instructed to reference their remarks against what education, and particularly instructional media, would be like in five to ten years. The following list contains the area which respondents were asked to project what they felt this situation would be like within five to ten years.

Education:

Curriculum and goals

Organization and functions

Innovation

Change

Instructional techniques and methods

Instructional Media:

Developments

Adoption of developments

Media personnel functions

Media personnel training

A listing of the interviewees follows:

Interviewee	Institution
Dean Brown	Project Leader, Stanford Research Institute, Menlo Park, California
Robert de Kieffer	Director, Bureau of Audiovisual Instruction, University of Colorado, Denver, Colorado
Theorwald Esbensen	Professor, School of Education, Florida State University, Tallahassee, Florida
Eli Ginzberg	Director, Conservation of Human Resources, Columbia University, New York, New York
Mary Alice Hilton	President, Institute for the Study of Cyberculture, New York City, New York
Arthur Lewis	Chairman, Educational Administration, Columbia University, New York City, New York
Margaret Mead	Curator of Ethnology, New York Museum of Natural History, New York City, New York

Interviewee	Institution
Wesley Meierhenry	Ass't. Dean, Teachers College, University of Nebraska, Lincoln, Nebraska
Del Schalock	Director, Instructional Unit, Teaching Research, OSSHE, Monmouth, Oregon
Westly Sowards	Chairman, Elementary Education, Florida State University, Tallahassee, Florida
Ralph Tyler	Director Emeritus, Center for the Advanced Study of the Behavioral Sciences, University of Stanford, Stanford, California

The remarks of the eleven interviewees were analyzed and statements grouped according to similarity of views. Statements expressing completely opposing views were deleted for two reasons: first, since the intent was to gain a step forward in the means of projecting media jobs into the future, only information of general agreement were used to remove the confusion resulting from controversial thinking from the methodological problems. Second, the volume of material obtained having general agreement was almost more than could be handled without the added stress of the controversial statements.

Eighty-seven statements representing general agreement between two or more of the interviewees were ultimately grouped under the nine areas listed above. After all statements had been compressed and edited for Delphi use, each respondent was sent via mail a listing of his own and requested to check the accuracy of the statement. Minimal changes resulted. The final form of the 87 statements is listed in appendix 4 .

2. Modified Delphi with Technical Experts

The composite set of statements assembled from the interviewees was administered to a group of nationally recognized leaders in the media field for their reaction. A modification of the Delphi Technique developed by the Rand Corporation was employed in this process.

The Delphi basically is a means of elliciting, via questionnaire, the position of a group of experts on a series of issues. This is followed by each expert being informed of the composit position of the group on each issue and being asked to reconsider his initial position. All identification of experts is removed so that individuals are not placed into making a public statement nor are they influenced because of knowledge that a particularly influencing individual had taken a particular position. The subsequent composite position of the several judges typically results in a convergence of opinion and offers a positive position for taking action.

The modification employed in this study in the application of the Delphi was to first elicit the basic issues from resource experts: then to obtain, via questionnaire, from a small group of recognized leaders in the media field agreement-disagreement responses to the several issues along with a rationale for taking that position. It was felt that in dealing with projections into the future, agreement-disagreement positions without a rationale would be of little worth. A listing of the Delphi participants follows:

Participant	Institution
Dr. Donald Ely	Syracuse University
Dr. Robert Gerletti	Los Angeles County Schools
Dr. John Haney	University of Illinois
Dr. Herbert Hite	Western Washington State College
Dr. Grace Lacy	New York State Department of Education
Dr. Phil Lange	Columbia University
Dr. L. C. Larson	Indiana University

The results of the Delphi procedure are contained in Appendix 4 as interspersed segments of the composite statements of the interviewees.

4. Literature Search and Annotation Process

A limited search of the literature directly related to future predictions in the field of media and technology was undertaken. Those references having specific utility for planners, directors and evaluators of media training programs were annotated and listed in the Annotated Bibliography (See Volume II--Guidelines Manual Part V of this report).

FUTURE PROJECTIONS

Projections regarding the future training requirements of media personnel resulted in the definition of light broad predictions for education over the next ten years along with statements of contributing forces. These eight projections were derived from the total future-oriented collected data and are acknowledged to be subjective and therefore obviously biased in favor of the project staff. No intentional bias was exerted, however.

The means of translating the data into projections followed a four-step process. Step one involved analyzing the total data collected for the purpose of isolating major trends commonly recognized by several sources. This effort resulted in the following eight projections:

1. Change and challenge will be the dominant characteristics of a society in the 1970's.

2. Computers will be increasingly used to manage information, facilitate research, and provide instruction.

3. The systems approach will be a significant methodology employed in identifying problems and organizing resources for their resolution.

4. Educational programs will be reconceptualized, expanded, and developed at all levels.

5. Educational coalitions and collaborations will increasingly form to promote common goals of two or more groups, agencies or institutions.

6. Those who are affected by a given program will increasingly be represented in judgments regarding its direction and process.

7. Individualized instructional programs will increasingly emerge to meet the needs of learners at all levels.

8. Technology will be increasingly used to transmit messages to specific learner populations.

Step two required analyzing the data again but with a different perspective: identifying the elements that provided evidence of the contributing forces which supported the eight major projections. The contributing forces were primarily derived from the statements provided by the resource scholars. This was accomplished by re-reading the random statements in the perspective of one of the eight major projections identified earlier. The scholars, of course, cannot be held responsible for the interpretation given by the project staff.

Step three involved the identification of implications for manpower training for each major projection. This was perhaps the weakest link in the total future projection process since it called for the project staff to translate, from their perspective, what appeared to be the most likely implications for training, given the major projection and derived contributing forces.

Some referencing of translation was attempted against outside consultants; however, the lack of fluency on the consultants' part with all that had preceeded in the future projection effort resulted in major communication problems. It occurred to the writer that this might be another situation where application of a modified Delphi approach would be very valuable, given that the participants had been fully informed of all the preliminary data.

Step four consisted of identifying suggested job activities from the above three steps. These judgements, similar to step three, were solely those of the project staff. However, given the statements of implication, suggested job activities were fairly readily derived.

In order to provide a structure which would parallel the current job activities specifications presented in the study and provided the most useful information for planners of media training programs, job activities were listed under the functions which had been identified in the study. The functions included: research, evaluation, design, production, logistics, utilization, and management (no further breakdown of management was attempted).

The completed projections including major trends, contributing forces, implications and suggested activities from Part IV of Volume II--Guidelines Manual of this report.

PART IV: MEDIA TRAINING PROGRAM REQUIREMENTS

Introduction

The "Media Guidelines Questionnaire" was developed as a means for gathering information on training needs for media personnel. For the purposes of this particular instrument, "media personnel" were defined as individuals who performed some media-related function in the public school, college, or university. The term did not refer to clerical level personnel nor to persons who performed single and highly specialized functions in large production centers. In the instructions to the questionnaire, "training" was defined in quite broad terms to include "undergraduate and graduate-level programs (in all their diverse forms), with emphasis on post baccalaureate preparation."

The questionnaire itself consisted of ten "open-ended" questions, intended to elicit divergent responses on a number of

topics and issues which pertained to the training of media personnel. Self-administering, the questionnaire requires less than 50 minutes to complete. A somewhat unusual feature of the instrument was that responses to all items were recorded on sound tape, permitting in-depth reactions to questions with a minimum of time and effort expended by the respondent. This technique was found to be both flexible and convenient, while the information-yield obtained from the instrument proved to be very high.

The ten questionnaire items were intended to elicit two basic kinds of information. One type related to the identification of training needs, while the other had to do with characteristics of training programs which could meet these training needs. The ten questions to which participants responded are as follows:

A. Training Needs

1. For which positions or roles in the media field is there currently the greatest need for training?

2. Where should the emphasis be placed in terms of time, effort and financial resources for training media personnel?

3. In reference to the preceding question, do you feel that this emphasis should be changed to any great extent within the next five to ten year period? If so, in what ways and to what extent?

B. Training Program Requirements

4. What kinds of training will be necessary in order to meet these personnel need? What knowledge and skills will need to be taught, and by what means?

5. In planning training programs for media personnel, what do you consider to be the most important factors which must be reckoned with? What essential decisions must you make, and on what basis?

6. What information do you seek most in planning a training program? Why? What sources do you most frequently use to gain this kind of information?

7. What criteria would you consider most important in evaluating training programs for media personnel? (In terms of relative priority.) Your rationale?

8. What do you see to be the chief limitations of current training programs for media personnel? In what ways would you wish to strengthen or improve existing programs?

9. What do you consider to be the chief advantages or value of each of the following kinds of training programs? What are the main drawbacks or limitations?

How could they best be employed for the training of media personnel? (Overlap here with items above, particularly item 3.)

a. Short-term institutes (e.g., summer);

b. Academic year institutes;

c. Inservice workshops;

d. Extension courses;

e. Fellowship programs;

f. Masters degree programs;

g. Doctoral degree programs;

h. Post doctoral programs or institutes.

10. What trends do you see in education that will significantly affect the future of educational media? How will these influence future training programs for media personnel?

Sample

Twenty-five leaders in the educational media field were invited to respond to the questionnaire. Of these, twenty individuals returned their taped reactions to the ten questionnaire items.

The persons invited to participate included primarily trainers in graduate programs responsible for the preparation of professional media personnel, and others who maintained key positions through which they might influence future directions in the field. Many important persons were not able to be included as part of the sample due to project limitations; however, this should be seen as a limitation to the procedures rather than a reflection on the stature and capabilities of persons excluded.

The list of respondents follows. Since the results were intended to be reported as group trends, specific reference to individual contributions have been omitted. The generalizations made from the thoughts expressed by the sample represent interpretations of the project staff and do not necessarily express the thinking of any one of the respondents.

Questionnaire Respondents

Name	Location
Dr. John Barson	Michigan State University
Mr. Charles Betts	Alhambra City Schools - California
Mr. Robert Case	American Library Assoc. - Illinois

Name	Location
Dr. Donald P. Ely	Syracuse University
Dr. Phillip Essman	Los Angeles, California
Dr. Vernon Gerlach	Arizona State University
Dr. Howard B. Hitchins	U. S. Airforce Academy
Dr. Robert J. Hunyard	Northern Illinois University
Dr. Harry Johnson	Virginia State College
Dr. Bert Kersh	Oregon College of Education
Dr. Frederick G. Knirk	Syracuse University
Dr. Curtis Ramsey	George Peabody College for Teachers
Dr. Paul Robinson	University of Southern California
Dr. Charles Schuller	Michigan State University
Dr. Gerald Torkelson	University of Washington
Dr. John P. Vergis	Arizona State University
Mr. James Wallington	Washington, D.C.
Dr. Desmond Wedberg	University of Maryland
Dr. Paul Witt	Michigan State University

Procedures

Each participant was contacted by telephone and letter, appraised of the purpose and methods underlying the Media Guidelines Project, and invited to respond to the questionnaire. A copy of the questionnaire, including instructions for use, and an empty sound recording tape were then sent to each person immediately following the initial contact. Participants were encouraged to make phone contact after receiving the materials if they had questions or were in any way confused in the task.

Completed tapes were subsequently returned, transcribed to written forms, and submitted for analysis by project staff. In this analysis an attempt was made to synthesize the major ideas expressed among respondents. The results were then reviewed by the following consultant group.

Persons Consulted

Name	Location
Dr. John E. Dome	Miami University
Dr. Jack V. Edling	Teaching Research

Name	Location
Dr. Robert C. Gerletti	Los Angeles County Schools
Dr. John B. Haney	University of Illinois
Dr. Herbert Hite	Western Washington State College
Mrs. Grace Lacey	New York State Education Department
Dr. Phil Lange	Columbia University
Mr. L. C. Larson	Indiana University
Dr. L. Clinton West	Department of HEW, Washington, D.C.

Results of Questionnaire

A. Training Needs

Question 1: For which positions or roles in the media field is there the greatest need for training?

The respondents approached this question from two viewpoints: (1) setting or institutional level, and (2) function performed where futher training is required.

With few exceptions, the greatest need indicated was for positions in college and university settings, primarily for persons with broad backgrounds in curriculum development, educational psychology, and media-related knowledge, who could staff graduate training programs. The primary need, then, was for trainers, or for trainers of trainers at the college level. Such persons were most often perceived as filling a dual role in the college setting, not only serving as media trainers, but also as consultants in instructional design for the improvement of college-level instruction.

Perhaps of equal importance was the perceived need for "media generalists" (i.e., curriculum specialists, and instructional designers) in elementary and secondary school settings. However, the concensus seemed to be that graduate programs must first be adequately staffed in order to offer programs of sufficient quality to prepare elementary and secondary school media personnel. It is interesting to note that emphasis was placed on the need for high level persons in the public schools, more or less "middle management" individuals, who could coordinate large programs or projects which would require the combined efforts of various "specialists." In light of the recent DAVI-AASL standards, and current literature in the field, this "generalist" role should be filled by individuals having educational background in both library sciences and the nonprint media.

The third major focus of training, according to our findings, should be on the training of teachers to effectively use the media resources available to them in the schools. This would involve both training of prospective teachers at the undergraduate level, and the training of experienced teachers through inservice programs. Without doubt, the successful application of media and instructional technology will depend on the receptivity and expertise of teachers who control the learning environment.

In response to question number one, less recognition than anticipated was given to the need for training "specialists" or support personnel, although this may be an artifact of our procedures, due to the mental set created by the questionnaire instructions. However, several respondents indicated that many of the support personnel could (and should) be trained on the job through inservice workshops and experience.

The picture emerging from reactions to our first question appears to this writer as a rather simple heirarchy, with priority ratings specified by institutional setting and function or role. Figure 1 represents such an heirarchy for this data.

Question 2: Where should the emphasis be placed in terms of time, effort and financial resources for training media personnel?

Again, in response to this question, the majority of leaders felt that emphasis should be placed on the training of "top level" personnel in the field, on the preparation of "broad-gage specialists" at all levels, with greatest emphasis in higher education.

A broad background in other disciplines continued to be a recurrent theme. Some respondents recommended that we might profitably train specialists in academic disciplines who are first and foremost academicians, and who, secondarily, have training and expertise in the media field.

Another important consideration was the "early" preparation of media personnel at the undergraduate level, particulary in teacher-training programs but also in other fields or disciplines as well. Many of those receiving such early training could then move on into high-powered graduate programs in media, while those remaining in other disciplines would have gained valuable background in media which might facilitate communication and make for more productive "interdisciplinary" team efforts in the solution of instructional problems.

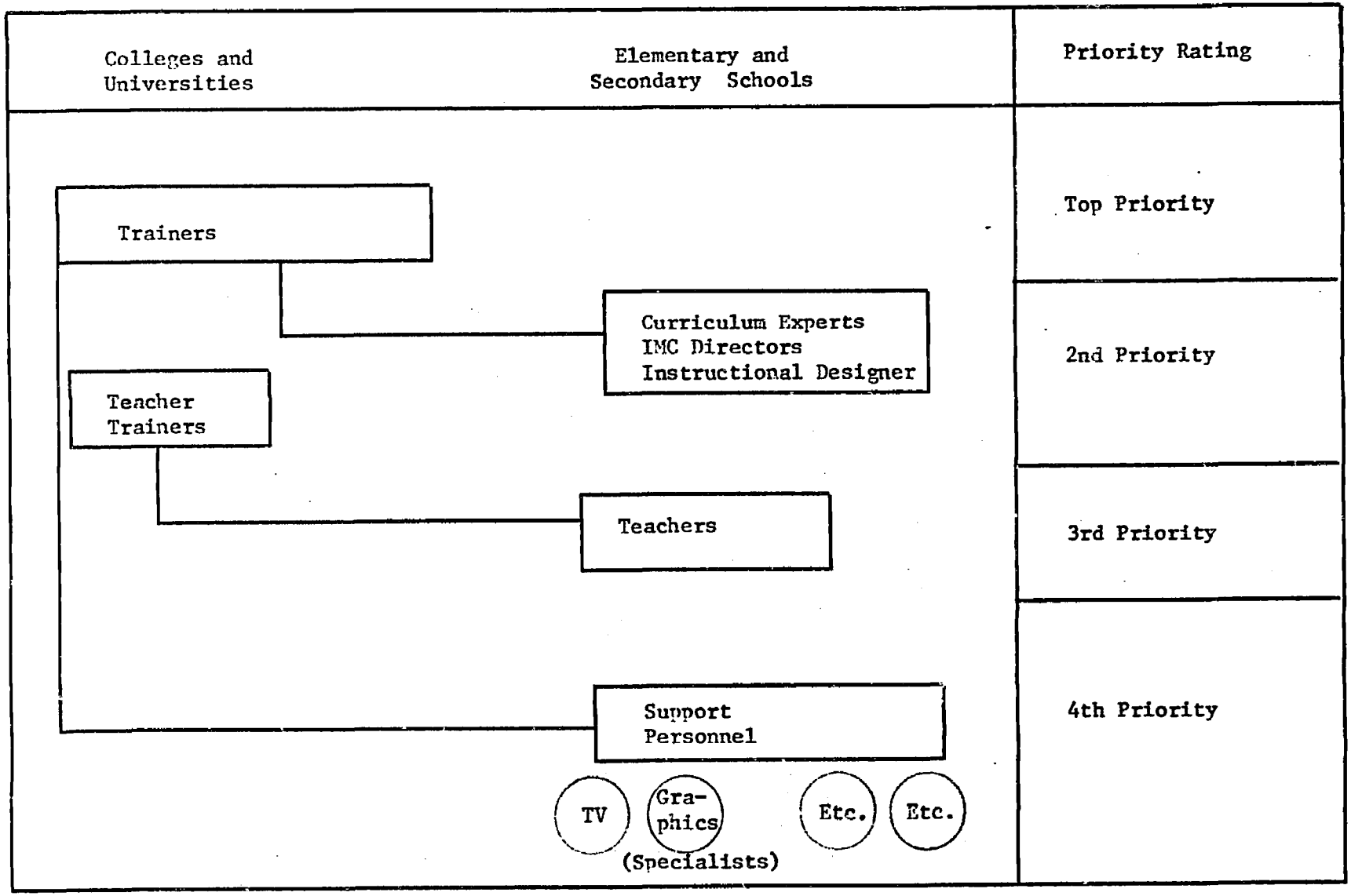
Several individuals mentioned the possiblity of "losing" a large number of specialists (i.e., film producers, graphic artists, technicians, etc.), to industry, so that a shortage might occur in this respect within the not too distant future. Others cautioned that we should not place our emphasis exclusively on the training of "generalists" and "top level" personnel, but that appropriate support personnel will also be necessary in the practical solution of instructional problems.

However, if there is to be a "temporary" focus on training for any particular role or function, most observers lean toward the idea of training trainers first, then training high level school personnel with expertise in instructional design, evaluation, and research methods. Each of these types would then be involved in training support personnel, including teachers as well as production experts.

Question 3: In reference to the preceding question, do you feel this emphasis should change to any great extent during the next five to ten year period? If so, in what way and to what extent?

The majority of respondents indicated there will be an increased

Figure 1. Heirarchy of training needs for media personnel, based on reactions to the Media Guidelines Questionnarie.



need for more "specialists" such as film-makers, and production personnel, to meet increasing demands for high-quality instructional materials, and to replace the thinning ranks among these specialties (due to retirement, loss to industry, and so forth).

There will be a growing demand for instructional designers, programmers, and researchers, as well as for top-level management types.

Individuals with competencies in media and message design will be in great demand as increased emphasis is placed on course and curriculum development at all levels of the educational system.

Mid-career training will be necessary in order to improve professional skills and knowledge, and to keep pace with typically rapid changes in the media field.

Many technical jobs will be handled by "semi-trained" persons, or by individuals who have received primarily on-the-job training. Junior colleges and vocational-technical schools will help to meet much of this demand.

Greater emphasis will be needed on undergraduate training, particularly in teacher education programs.

A continuing need will exist for competent trainers, both in graduate schools and in teacher education programs.

B. Training Program Requirements

Question 4: What kind of training will be necessary in order to meet these personnel needs? What knowledge and skills will need to be taught, and by what means?

Reactions to this item appeared to be more diverse than those for the preceding question. However, certain trends were clear from the data.

Repeated emphasis was placed on the necessity for practical experience as an integral part of training programs, not only in terms of developing familiarity with various forms of equipment and technical aspects of the jobs, but for the purpose of acquiring skills in interpersonal relations. Human relations was seen to be an essential aspect of the roles performed by media personnel at all levels, but particularly for the "managerial" position which involves coordinating large staffs and dealing with diverse groups within the school system. On-the-job training, internships, and other practicum experiences were highly recommended as necessary features of training programs for higher level media personnel.

The "team approach" to the solution of instructional problems was regarded as an inevitable development in education, a situation which creates a seeming paradox. This suggests not only that we must have more intensive, specialized training for media personnel, but that the "specialist" (e.g., instructional designers, production persons) must be familiar with a broad range of disciplines if he is to communicate and work effectively with other members of the instructional "team." Paricular emphasis was placed on the need for background in psychology, communications theory, educational philosophy, and curriculum development.

Historically, media training programs have prepared "managers" and "production" personnel, and this trend will no doubt continue for some time. However, the respondents repeatedly indicated the need for greater emphasis on instructional design, research and

evaluation functions. High priority was given to the development of "problem-solving" skills for the solution of practical instructional problems. Several individuals mentioned the need for problem-solving in terms of the "extraneous factors" which influence the acceptance and use of media. This implies training in public relations, and a broad-based understanding of the behavioral sciences.

These statements represent the major trends and ideas expressed by our sample of leaders.

Question 5: What do you consider to be the most important factors to consider in planning training programs for media personnel?

Greatest emphasis was placed on selection of participants, their backgrounds and personal characteristics. Individuals with high intellectual ability, broad backgrounds, and well-developed interpersonal skills were most in demand. Candidates "should have enough basic brains to benefit from the training program." The "image" they project was seen as a crucial selection criteria, "without which the technical skills they acquire may have little opportunity to operate effectively." The development of practical and effective selection criteria, then, appeared as a high-priority need among trainers in planning future training programs.

Another important consideration mentioned by most respondents was the need for appropriate evaluation criteria, lacking at present in most media training programs. Among other things, programs must be relevant to the needs identified in the field. Typical statements were that: "Our greatest difficulty arises in trying to identify the needs for which training is necessary;" "Priorities must be established in light of appropriate behavioral objectives."

Provision for practicum experiences was regarded as an extremely important consideration in media training programs, coupled with the need for individual study and close faculty-student relationships.

The staffs of these programs must be active in retraining themselves, have broad backgrounds, as well as be up to date on recent theoretical and practical developments in the field.

The media program should include participants who either have certain basic abilities, or who can acquire them through experiences in the program. Mentioned most frequently were: "The ability to write," to "produce media," to "handle hardware," to "use research and evaluation skills," and "to work effectively with others." Further requirements emerge in response to other questions in this paper.

Question 6: What information do you seek in planning training programs? What sources do you most frequently use to gain such information?

A good deal of imitation or modeling appears to underly the development of media training programs. Frequently mentioned as a primary source of information in planning training was "finding out what the leading schools are doing." A second major source of guidance is the professional literature, particulary the writings of leaders or prominent figures, but also the reports of relevant research findings.

Business and industry were also seen as being quite potent in terms of influencing the planning of training programs for media personnel. Not only were the newer technological innovations of commericial groups viewed as affecting the content or focus of program coursework, but the training programs of business and industry were also regarded as forward-looking models which will frequently be emulated. Perhaps of equal importance, according to our respondents, are the training methods employed in the military.

Other sources mentioned as a prime determiner of the media training program were the current trends in the public schools. Included here is the simple supply-demand situation for media personnel; what jobs are available, and for which roles is there greatest demand. But even more fundamental were such things as changes in school design, curricular organization, and administrative practices. Individualizing instruction, and decentralization of school facilities, for example, would be included here.

Still other sources of influence which shape training programs are state certification requirements and professional standards such as those recently published jointly by AASL-DAVI. These, however, were not mentioned as very potent sources.

Finally, many respondents felt that trainers should be alert to developments in diverse academic disciplines, particularly the social and behavioral sciences, but also development in the rapidly expanding fields of electronics and communications.

In summary, practical considerations rate high in terms of influencing the content and focus of media training programs, according to our sample. Business, industry, and the military appear very influential, while leading schools tend to set pace for others in the field.

Question 7: What criteria do you consider to be most important in evaluating training programs for media personnel?

This question, quite obviously, is one of the most crucial in terms of the Media Guidelines Project objectives, and it is one which elicited a wide range of reactions from questionnaire respondents.

Two fundamental criteria were frequently mentioned. These included the degree to which the training program is responsive to the needs of the field, and the quality of the graduates who complete the program. By these criteria, a program is successful if it produces graduates who possess the competencies which are most in demand in the field. These presuppose, of course, knowledge of the supply-demand situation in the job world, as well as knowledge of the competencies required among a broad range of media-related jobs.

The "quality" of graduates who complete training is, without question, the single most important evaluation criteria, and a number of approaches might be employed as a means of judging the quality of program graduates. A variety of on-the-job measures are possible, including evaluations by both employers and fellow employees, or perhaps self-evaluation by the graduate himself. However, this form of feedback is often too late in the game to be of any real value to program planners, particularly for institute programs, if evaluation is to be used as a basis for improving the program content, structure and procedures. This problem will

not be resolved here, except insofar as the other criteria mentioned by the respondents reflect on it indirectly.

Related closely to the "quality of graduates" criteria is the quality of the participants at the time of their entrance into the program. As we quoted earlier: "The candidate must have enough basic brains to benefit from training." It goes without saying, that the candidate for a media training program should also possess other important qualifications if he is to emerge as a "quality" graduate, including personal and social abilities which would permit him to successfully perform in the job world. Poor quality fabrics are not used to produce clothing of good quality. In training programs the potential must be there in the raw material at the start.

A third criteria, regarded by many as being equal in importance to those preceding, was the quality of the training staff. The director in particular was viewed to be a crucial variable in determining the success of a training program. He should ideally have proven ability as a trainer, have broad experience as a professional educator, and have made significant contributions to the field. In selecting his staff he should ensure that they combine skills and knowledge in the development of instructional materials, and in research and evaluation skills, in addition to having competency and background in subject matter or content areas included in the program. Proven ability ranked highest among the requirements perceived to be necessary in staff selection.

Adequate facilities and resources ranked extremely high as a basis for evaluating media training programs, although not as high as criteria which dealt with the quality of participants and staff. As should be expected, people were seen to be the most essential ingredient of the training program, so that the primary focus of evaluation should be directed to them. However, facilities and resources must also be equal to the demands implicit in the program objectives. This means more than simply meeting space requirements. Provision should be made for creating favorable learning environments, for the availability of appropriate equipment and learning materials, and for the conduct of program activities required by training objectives. Rated highest among the resources needed for a successful program would be the quality and suitability of learning materials employed. Also rated as extremely important are the procedures, techniques, or methods employed to achieve program objectives. For these reasons, it is essential that staff members possess demonstrated expertise in the development and/or use of learning materials. It is vitally important that the staff and participants have available the necessary physical materials and resources with which to work.

Cost-effectiveness appeared frequently as a major concern in evaluating training programs, although no specific guidelines emerged from the data.

Provision for evaluation as an integral part of the training experience was mentioned recurrently by questionnaire respondents as an important criteria.

The degree of emphasis placed on innovation and more advanced forms of knowledge and technology was seen as a possible evaluation criteria by many of the leaders.

Depth and breadth of program offerings was considered to be

another criteria. Many emphasized the need to relate all media training to broad educational concerns and issues, and in particular to present "media" as an integral element in the school curriculum. "Media" should not be considered in a void, or training will be superficial and inadequate.

Adequate opportunity for practical experience was repeatedly mentioned as an essential feature of media training and, therefore, should be viewed as an evaluation criteria.

Additional concerns worth mentioning include the geographic location of the training program. This is seen to be important not only for the convenience of the participants who may come from diverse locales, but also in terms of the availability of facilities in the area which might be used as visitation sites, and in terms of how attractive (or unattractive) the particular training site is as an incentive for the participant who is deciding whether or not to attend.

The incentives provided in the program are extremely important, not only in attracting the participants (and staff) but in creating favorable learning conditions throughout the period of training. Provision for incentives should, therefore, be regarded as an evaluation criteria.

These categories of evaluative criteria certainly do not exhaust the list of possibilities which could be mentioned, but they do represent rather well those identified by our questionnaire respondents.

In summary, relevance of the program to the needs of the field, and the people involved in the program were seen to be the most important considerations in evaluating training programs. However, the answers to practically all questions in this paper will reflect on other criteria which will need to be considered in the planning and evaluation of media training, particularly the responses to the following question.

Question 8: What do you consider to be the chief limitations of current training programs? In what ways would you strengthen or improve existing programs?

The chief criticism of current training programs was over-emphasis on hardware and equipment, a preoccupation with "things" rather than ideas. These programs were characterized generally as being narrow in scope, often fragmentary or lacking in continuity, and not being sufficiently integrated with course content in related fields. The emphasis has not been where it should be, according to most respondents, "on the process of teaching and learning."

A recurrent criticism was the seeming lack of "social awareness" on the part of graduates from such programs, and their apparent insensitivity to broad curriculum concerns. The social awareness factor related more to familiarity with current thoughts and trends in society, rather than to sensitivity in interpersonal relations with others. However, as has been stressed previously, human relations also represent a crucial area to be considered in media training programs. An understanding of curriculum development, and a grasping of the relevance of "media" to the curriculum and to teaching-learning processes, all within a broad social context, were viewed as essential to the success of media personnel in the school system. If

possible, such a background must be provided for within the media training program.

More careful selection of candidates was mentioned frequently by questionnaire respondents. Persons having some form of experience prior to entering training, such as teaching, administrating or supervising, were seen to be highly desirable. This would hopefully make training more meaningful to program participants, and it would tend to ensure far more mature and experienced trainees.

Greater emphasis on instructional design, learning theory, and curriculum development were considered to be crucial in future training efforts. The development of competency in research and evaluation was also viewed as extremely important.

Accreditation of media training programs was proposed by several respondents as a neccessary step to the improvement of future training in the field. Criteria would need to be established, based on studies similar to the Media Guidelines Project, of which this paper is but a part. The DAVI-AASL standards represent a positive development in this direction.

In summary, major themes appearing in the data as a basis for improving media training programs were: (1) greater emphasis on software, particularly on instructional development skills; (2) broader background in social and behavioral sciences; (3) greater concentration on curriculum design and development; (4) more intensive training in interpersonal skills; (5) more background in theory, with appropriate opportunities for practical application of newly acquired knowledge in realistic settings as an integral part of the training program; (6) more individualized instruction to meet the needs and varied backgrounds of trainees; (7) more careful selection of participants in terms of ability and personal characteristics; (8) increased opportunity for practicum experiences; and (9) broader background in terms of social issues which relate to media applications in the schools.

Question 9: What do you consider to be the chief advantages and limitations of the following kinds of training programs?

a. Short-term institutes. This form of training was regarded as having only limited value. The chief danger was seen to be that too often people who attend such institutes become "experts" and move into the field as "pseudo professionals." This, of course, relates to the problem of accreditation and certification alluded to earlier in the paper.

For the majority of respondents the short-term institute was perceived as an effective way of generating enthusiasm among participants, or as a means of providing an orientation to the field, but the long-term value of this approach was seriously questioned. When the objectives of such institutes remain limited in scope, it is possible to achieve modest returns from them, but all too frequently attempts are made to cover an unrealistic amount of material in too brief a period of time.

However, when appropriate follow-up activities are included as part of the training program, the effect of these institutes may be enhanced considerably. Unfortunately,

this is the exception rather than the rule.

Another value of the short-term institute, according to our respondents, is for highly specialized training. These are thought to be most effective for mid-career persons who possess the necessary background to benefit from this type of training experience.

Mentioned also was the need to have "teams" of participants from single schools or organizations, in order to insure greater impact following training.

b. Academic year institutes. These were regarded highly by the majority of respondents. Their main advantage, of course, over the short-term institutes is that they allow for both greater depth and breadth in content covered. Academic year insitutes are questioned, however, if they are to provide the sole source of training in the preparation of media specialists.

This type of training often involves persons who hold down either full or part-time jobs in the media field, individuals with some form of prior training, who participate in the institutes intermittently throughout the year, perhaps on a weekend or evening basis. It is in this form that the academic year institute was regarded most highly by questionnaire respondents. Again, the "team approach," where more than one person from a school or institution attended was seen as extremely valuable.

Concentrated training in a specialized area (e.g., T.V. productions, learning theory, evaluation, etc.) was viewed as the best use for the academic year insititute, particularly when coupled with relevant practicum experience, and when provided for persons who already possess background in the field. Alternately, this type of program might profitably be used as a basic orientation to the field for persons who plan to continue their education further, perhaps in a graduate degree program.

c. Inservice workshops. The chief advantage of workshops is their convenience, and the fact that they usually are part of an on-going school program. Like the short-term institute, they have limited value if offered as "one shot" affairs, but their effectiveness is considerably enhanced if offered in series, or if appropriate follow-up measures are included as an integral part of training. Single inservice workshops are often useful for generating enthusiasm for a subject, or for simple orientation purposes. The failure of many workshops lies in the director's attempt to cover too much content in too brief a period of time.

d. Extension courses. Extension courses provide an opportunity for a great number of potential media personnel to acquire basic knowledge and entry behavior which could serve as the basis for future training in greater depth. They permit, to some extent, for individualized training, and they allow the student to take coursework at his own convenience according to his interests and motivation. Individual courses are obviously of limited value, and their effectiveness will vary (like that for other types of training) from institution to institution. Extension courses are recommended for persons who lack the necessary background and who wish to pursue

graduate training at a subsequent time, or for individuals who hope to develop skill in a specialized area where other forms of training are not available.

e. Fellowship programs. These were esteemed perhaps more than any other type of training opportunity, since their chief value lies in their potential for attracting outstanding candidates into the field. The fellowship experience often meets the individual needs of more advanced students to a degree which is usually not possible in traditional programs.

The chief drawback of fellowship programs, however, is that relatively few may be offered at a time, due to the lack of staff and facilities available to meet the needs of this type of training. Cost-effectiveness represents a primary concern, since it is far more expensive to train individual fellows of high quality than it is to train larger numbers of less capable people in traditional programs. This fact tends to underscore the need for greater numbers of competent trainers at the graduate level, a priority-need mentioned earlier in the paper.

Several respondents felt that post-doctoral fellowships represent an important need, particularly for the teaching staffs of graduate programs. These persons must continually upgrade their competencies and teaching skills if they are to perform well in their jobs.

f. Masters degree programs. At the present time there are approximately fifty-two masters degree programs in the country which prepare "media specialists." This type of training program was seen as an increasingly important way of meeting the manpower needs of the field.

With respect to this question and the question dealing with doctoral programs, the general feeling among respondents was that such programs must receive the greatest support in the future, since it is only at the graduate level that the required personnel can be trained adequately in advanced theory and technique.

Responses to other questions, particularly items 1, 2, 3, 4 and 8, should be reviewed for further information on the subject of graduate training.

Question 10: What trends do you see in education that will significantly affect the future of educational media? How will these influence future training programs for media personnel?

Economic and political pressures are regarded as the most significant forces which will affect the future of education, and which will influence future applications of media and instructional technology. If less money will be available for educational purposes, which most respondents assert, then there will in all probability be an increased need for more economical means of educating larger numbers of students. This suggests very strongly that "media personnel" will be in greater demand in the design and development of more efficient and effective instructional materials, procedures, and systems.

It appears also that teachers, particularly through teacher organizations, will be assuming an increasing role in school policy decisions and practices which affect the use of media in the schools.

This is perhaps as it should be, in the light of the central role which the teacher plays in the learning process within the school environment. It means, of course, that teachers must be appropriately educated so they can make intelligent decisions concerning media selection and applications. Greater emphasis will need to be placed on media training in teacher education programs, but at a level infinitely more sophisticated than is presently the case in the majority of college and university programs. The relationship of media and newer techninology to broad curriculum concerns will need to be a central focus of such programs for teachers.

If the media field is to expand, as most persons seem to believe, then there will obviously be an increased need for "media personnel" at all levels of the educational system. As was stated earlier, this has direct implications for media training programs. It immediately points to the present lack of qualified training personnel in sufficient numbers to meet the potential demand. The need for more trainers, therefore, represents a first-priority concern which must be reckoned with.

Another major trend noted by respondents is in the direction of "team" efforts for curriculum design and instructional development. This will require highly developed interpersonal skills on the part of media personnel, sensitivity to broad curriculum problems and issues, as well as knowledge and competency in the field of media and instructional technology. The media specialis must be familiar with the most recent theory and techniques available in the field, and he must be able to bring to bear available personnel and resources within his sphere of influence for the solution of complex and varied instructional problems.

Individualized instruction is evolving as a primary focus in education at all levels, and this will continue as a major trend in the future according to our respondents. The media specialist will have to seek effective ways of applying media, and of designing and developing instructional materials in order to meet individual student needs. Learning environments will change drastically, and the requirements for instructional materials and procedures must change accordingly.

If the media specialist is to become an instructional designer he will need to develop a different set of skills than has traditionally been provided through graduate programs in the field. This will require background in behavioral sciences, communications theory, research, and evaluation. The growing emphasis on affective learning in the schools suggest even more that the media specialist will need a behavioral science background, with in-depth knowledge of attitude change and affective processes.

Knowledge of computers and advanced electronic systems of communication will be an essential part of training in future graduate programs.

These are but a few of the trends. Still others are discussed at greater length in the final report of the Media Guidelines Project.

Training Requirements

The implications of this aspect of the study were combined in Part two of Volume II--Guidelines Manual of the report under the headings of "The General State of Current Media Training," "Current Demands for Media Personnel Required to Support Classroom Instruction," and "Recommendations for Media Training Priorities."

PART V: ANNOTATED BIBLIOGRAPHY

The conceptualization of the Domain of Media demanded considerable review of relevant literature by all staff members. So much of this literature was found to be of potential value to trainers of media personnel that a means was sought of including a selection of these references. It was felt that a simple bibliographic listing would be of relatively little use, and space and limited funds prohibited inclusion of complete writings. An annotated biblography was therefore selected as a means of providing both a reference list and some of the flavor of the previous work in the field.

The scope of the bibliography, for the most part, was limited to the literature of the previous ten years, with emphasis on more recent writings. The bibliography was not intended to include all available literature related to the training of media personnel; however, it was designed to provide a reasonably comprehensive and systematic view of carefully selected writings. Paricular attention was given to articles, reports and other published documents which would provide information on the competencies and tasks required of persons in their jobs.

The annotated bibliography was organized under the following headings:

1. Functions of the Audiovisual Center, and the Relationship of Audiovisual and Library Services.
2. Educational Technology and Instructional Systems.
3. Media Personnel: Functions and Competencies.
4. Training of Media Personnel.
5. Future Directions in Media and Instructional Technology.
6. Selected Proposals for Media Training.
7. Media Competencies for Teachers.
8. General Literature on Media Research, Selection, and Evaluation.
9. Certification Requirements for Media Personnel.
10. Further Information Relating to Media Certification and/or Standards.

Two hundred and thirty writings were selected, abstracted, and categorized under the ten major headings. In some cases reference was made to additional sources which covered similar subjects in a less direct manner, but which were felt to contain information of significance. Frequently, references were found to contain information related to more than one subject heading. Those references were listed under as many separate headings as appeared appropriate. For convenience, a cross referenced author and subject index was included.

The complete annotated bibliography is contained as Part V, Volume II--Guidelines Manual, of this report.

PART VI: GUIDELINES MANUAL

The primary findings and the interpretation of those findings of this study have been formed into a set of guidelines for media training programs and are presented in Volume II--Guidelines Manual, of this final report. The Guidelines Manual of the Media Guidelines Project was created to be of specific use to two main audiences: trainers of media personnel and those who judge the worth of media training proposals.

The Manual represents a synthesis of the various forms of data gathered throughout the project. Since its useability was the primary consideration in its creation, the criterion of utility was used to determine what would be included as well as the format for data presentation. To achieve this desired utility, the Manual was organized in five parts:

1. Guidelines Checklist.

2. Conceptual Organization of the Media Domain and Training Program Recommendations.

3. Job Activity Descriptors.

4. Media Training for the Future.

5. Annotated Bibliography.

The Annotated Bibliography, having proved its utility within this project and being designed with utility in mind was included as the final part of the manual. The influence of this bibliography was instrumental in the creation of the basic concept of the media domain. This basic model coupled with the training program recommendations and resulting priorities for media training provided the substance of Part II of the Manual.

Part III of the Guidelines Manual (Job Activity Descriptors) displayed the job activity data in two ways:

1. A listing of job activities performed by people whose jobs were classified under six responsibility groupings (these groupings resulted from the computerized clustering--see Parts II and IV of this chapter). Activities performed in each of these clusters were further displayed within the nine functions (see Part 1 of this Chapter).

2. A listing of job activities performed in the media field arranged by functions. That is, a grouping of activities one might have to be trained to perform if he were to be a media evaluator, for example. This listing included all activities found within a function regardless of responsibility emphasis.

These activity descriptor lists provide to the media trainer a subject matter basis for planning the media training program content.

Part IV of the manual was prepared by studying the literature, the responses of various experts in the field, and the activity descriptors, then visualizing or conceptualizing the impact of trends. The resulting predictions were intended for use by the media trainer to assist him in making his training program relevant for the student upon graduation.

The Guidelines Checklist (Part V of the Guidelines Manual) synthesized all the data and insights gathered by the project staff into a checklist of criteria related to media training programs for both planners and reviewers to consider, remember, gather information about, develop specifications around, and to judge against.

APPENDIX I

Job Titles with Major Tasks

Number	Job Title	Task	Task I.D. Number
1	Scheduling Coordinator	Scheduling Distribution of Educational Materials	167
2	Maintenance Technician	Maintains AV equipment for schools and shop. Repairs AV equipment.	166
3	Assistant Director	Supervises employees who circulate materials.	196
		Catalogues all materials, books, films, etc.	164
		Replaces and maintains instructional materials in the library.	163
		Budgets circulating operation and maintenance of materials.	292
		Supervises in-service training and the promotion of the media center.	238
		Acts as editor for the IMC newsletter.	237
		Selects new materials for evaluation.	162
4	Shipping Clerk	Distributes educational materials.	161
		Handles incoming and outgoing mail.	160
5	Production Supervisor	Supervises production staff.	195
		Designs materials	104
		Evaluates and selects materials.	60
		Accomplishes inservice training for teachers and aides.	236
		Does production budgeting.	291
		Video Tape records.	239
		Writes Scripts.	9
		Writes for publications.	103
		Produces films and filmstrips.	11
6	Photographer	Does photography for motion pictures.	12
		Takes still pictures.	13
		Does process camera work.	10

Number	Job Title	Task	Task I.D. Number
6	Photographer (cont.)	Reproduces slides and filmstrips.	14
7	Graphic Artist	Produces visuals for teachers.	15
		Does layouts for publications.	16
		Designs promotional and print materials.	102
		Conducts training for teacher aide programs.	233
8	Secretary - Librarian	Catalogues books.	159
		Stores and distributes periodicals.	158
9	Secretary to Director	Arranges for conferences.	176
		Files and loans Thermofax masters.	157
10	Clerk Typist	Obtains materials for preview.	156
11	Secretary	Obtains AV materials.	155
12	Director	Supervises staff.	194
		Administers financial matters.	290
		Designs and teaches in-service programs.	232
		Selects and purchases materials and equipment.	154
		Negotiates contracts and schedules for the maintenance of electronic and projection equipment.	289
		Prepares proposals and directs funded projects.	288
		Maintains cooperative purchasing program for county.	153
13	Production Technician	Tapes records from discs to produce masters.	17
		Duplicates tapes.	18
		Laminates materials.	19
		Dry-mounts materials.	20
		Assists in printing department.	21
		Inspects and repairs films.	152
14	Receptionist		

Number	Job Title	Task	Task I.D. Number
15	Secretary	Bills campus organizations for use of services.	287
16	Film order Clerk	Orders new film.	151
		Books film usage and studios.	150
		Maintains film catalogue.	169
17	AV Technician	Maintains equipment.	149
		Installs sound systems.	168
		Trains operators.	234
18	AV Coordinator	Coordinates selection and loan of equipment operators and materials.	286
		Trains operators.	230
19	Photographer	Does portraiture.	22
		Shoots publicity pictures.	24
		Processes films.	23
20	Typist	Makes zerox copies.	148
		Maintains files of photographic negatives.	147
21	Supervisor Graphic Arts	Teaches Short AV Courses.	229
		Laminates and mounts.	26
		Produces overhead transparencies.	27
22	Senior Instructor	Designs media courses.	100
		Teaches media courses.	228
		Produces instructional materials.	101
23	Director	Supervises staff.	193
		Prepares budgets.	285
		Plans improvements in service and space.	284
		Interviews job applicants.	192
		Conducts research.	1
		Consults with faculty and students on selection and use of materials.	146
		Delivers addresses to various audiences.	247

Number	Job Title	Task	Task I.D. Number
23	Director (cont.)	Plans and teaches media related courses and acts as resource person.	99
24	Instructor Intern	Trains student crew in production techniques.	226
		Evaluates media equipment.	61
		Teaches audiovisual classes on a substitute basis.	225
		Produces filmstrips.	28
		Consults with and advises faculty members or potential customers for the center.	105
25	Assistant Research Professor	Conceptualizes theoretical models.	97
		Designs multimedia presentations.	98
		Writes professional papers.	96
		Produces multimedia productions.	29
		Presents multimedia productions.	145
26	Graphic Artist	Designs and produces visual illustrations.	30
27	Program Manager	Selects and schedules outside programs.	62
		Evaluates locally produced and outside programs.	63
		Designs programs.	95
28	Director, Communication and Dissemination Division	Plans and administers promotional program.	283
		Supervises marketing of products.	94
29	Instructor	Teaches academic training in Aircraft controller school.	66
30	Secretary	Circulates materials.	144
31	Secretary to Director	Handles acquisitions.	143
32	AV Coordinator	Guides faculty in selection and use of materials and equipment.	282
		Assists in design of media systems.	93

Number	Job Title	Task	Task I.D. Number
32	AV Coordinator (cont.)	Produces motion picture and tape-slide packages.	31
		Acts as consultant.	223
		Prepares yearly budget.	281
		Does in-service training.	222
		Video tapes.	142
33	Technical Processor	Designs and adapts systems within library.	280
		Maintains vertical file.	140
		Maintains serials and periodicals.	141
34	Acquisitions Clerk		
35	Technical Process Clerk	Does technical processing.	139
36	Acquisitions Librarian	Handles faculty-library relations.	231
37	AV Secretary	Orders films.	138
		Circulates AV Equipment and materials.	137
38	Graphic Artist	Produces overhead transparencies.	32
		Mounts and Laminates.	33
		Illustrates	36
		Does process photography.	35
		Supervises personnel.	191
		Produces 35mm. slides.	34
39	Director	Supervises personnel	279
		Designs and implements new media systems.	92
		Develops budget.	278
		Plans for long range goals and objectives.	277
40	Chief Clerk	Supervises personnel.	190
		Inventories AV equipment.	136
		Prepares school delivery schedules.	172

Number	Job Title	Task	Task I.D. Number
41	Equipment Clerk	Distributes instructional materials.	173
		Duplicates tapes.	37
		Drives relief truck.	135
42	Head Clerk	Distributes AV equipment.	134
		Instructs in equipment operation.	219
		Operates projector.	133
43	AV Materials Processor	Inspects and repairs film and other AV materials.	132
44	Shipping Clerk	Handles overseas distribution operation.	131
		Assists teachers.	130
45	AV Materials Booking Clerk	Schedules AV materials for use.	129
		Assists teachers.	171
46	Curriculum Librarian	Circulates library materials to teachers in district.	128
		Manages ERIC clearing house microfiche.	175
		Conducts reference work as service to professional personnel.	127
		Makes accommodations for meetings held in library center.	126
		Assists with general work of the center.	125
47	Graphic Artist	Produces overhead transparencies.	39
		Produces posters and signs.	38
		Illustrates workbooks.	42
		Designs covers and letterheads.	40
		Produces graphs, maps and charts.	41
		Produces TV visuals.	44
		Does dry mounting and laminating.	43
48	AV Librarian	Catalogues and processes materials.	124
		Selects and acquires materials.	170
		Conducts tours of center.	235
49	Order Clerk	Assists with checking in of books.	123

Number	Job Title	Task	Task I.D. Number
50	Photographer	Photographs and edits motion pictures.	49
		Produces still pictures and slides.	45
		Copies halftone and line.	46
		Produces black and white film, slides, and prints.	47
		Does process photography.	48
51	Offset Press Operator	Operates offset press.	50
52	Library Shipping Clerk	Distributes printed materials.	122
53	Materials Processor	Processes books to be sent to other libraries.	121
54	Catalogue Librarian	Supervises staff.	189
		Catalogues and adapts.	120
55	Acquisitions Librarian	Acquisitions reviewing materials.	118
		Orders periodicals for school districts.	119
56	Librarian	Supervises staff.	188
		Administers purchasing of instructional media.	117
		Prepares and administers instructional materials budget.	276
		Teaches library science.	218
		Designs facilities for media use.	90
		Prepares proposals and administers expenditure of federal funds.	275
		Administers branch libraries.	274
		Designs resource centers for other departments.	89
57	Coordinator of Instructional Materials	Supervises personnel.	187
		Administers purchasing of AV instructional equipment.	116
		Teaches in-service AV courses for college staff.	217
		Administers instructional aide program.	216

Number	Job Title	Task	Task I.D. Number
57	Coordinator of Instructional Materials (cont.)	Designs instructional materials with teachers to solve specific problems.	88
		Administers summer programs for Bureau of Indian Affairs.	273
		Designs instructional materials facilities.	91
		Prepares AV budget.	272
		Administers materials production.	115
		Administers outside printing requirements.	271
58	Catalogue Librarian	Supervises student assistants.	186
		Does original cataloguing of all materials.	110
59	Acquisitions Librarian	Orders materials.	114
60	Director	Prepares center's budget.	270
		Supervises staff.	185
		Administers cooperative buying of AV equipment.	113
		Advises schools on media developments.	215
		Teaches in-service courses for college credit.	214
		Consults for workshops.	224
		Supervises printing of materials catalogue.	51
		Supervises courier service.	269
		Supervises maintenance dept. and production department.	268
		Supervises total program.	267
61	Assistant Director	Administers AV materials evaluation program.	266
		Evaluates condition of current materials.	112
		Conducts tours of facility.	213
		Teaches for workshops.	212
		Catalogues all materials for library.	111
		Assists in preparation of catalogue.	52
		Supervises staff.	184
		Compiles field trip guide.	87

Number	Job Title	Task	Task I.D. Number
62	Librarian-AV Coordinator	Supervises staff.	183
		Tutors teachers.	211
		Selects and purchases media materials and equipment.	106
		Catalogues and processes media materials.	109
		Assists students in using library facilities.	265
63	Evaluation Director	Participates in policy-setting meetings.	264
		Supervises staff.	182
		Prepares proposals and final reports.	86
		Acts as consultant.	210
		Writes professionally.	85
		Directs and teaches in institutes.	209
		Designs evaluation models and techniques.	2
		Negotiates contracts.	263
		Interprets proposals and projects by site visits.	84
64	Evaluator	Develops evaluation instruments.	82
		Analyzes data and applies models.	3
		Designs instructional packages to teach evaluation.	83
		Teaches-using instructional package.	208
		Designs evaluative procedures.	81
		Designs media courses.	80
65	Associate Director	Organizes and reorganizes structure of division to meet goals and objectives.	262
		Works with directorate to specify and implement operational policies, goals and objectives of division.	261
		Supervises unit directors.	181
		Directs research projects.	293
		Coordinates facilities planning.	294
		Makes final decisions in contract negotiations.	295
		Negotiates any inter-agency consortia or liaison.	296
		Negotiates contracts-liaison and consortia with chancellor and State Department.	297

Number	Job Title	Task	Task I.D. Number
66	Research Instructor	Designs computer systems for utilization of instructional materials.	79
67	Simulation-Systems Director	Plans and conducts simulation workshops and institutes.	78
68	Research Professor	Organizes unit structure, policy and operations.	260
69	Research Professor	Develops policy, organization and administrative programs for clients.	77
70	Radio-TV Technician	Puts programmed sequence on air.	108
71	Research and Develop Specialist	Designs dissemination strategies for states and sub section.	76
72	Engineer	Maintains all studio equipment. Assists in planning equipment needs for studio.	107 259
73	Chief Engineer	Develops and implements a system's concept for maximum equipment utilization. Runs "Proof of Performance" tests to meet FCC requirements.	258 64
74	Production Manager	Schedules personnel and studio time.	257
75	TV Producer-Director	Produces and directs TV programs.	53
76	Operations Coordinator	Coordinates station operation. Supervises video-tape and slide library.	256 174

Number	Job Title	Task	Task I.D. Number
77	Floor Director	Directs studio floor operation.	180
		Operates audio board.	54
		Operates video console.	35
		Lights sets.	56
78	Field Operations Director	Coordinates operational aspects of Project Plan schools.	255
		Supervises staff.	179
		Designs research projects.	75
		Formulates policy for projects.	254
		Hires and fires own staff.	178
		Trains personnel who work with people in the schools.	227
79	Senior Research Scientist	Conceives research and development projects.	4
		Carries out research and development projects.	5
80	Research Associate	Develops detailed training program to train trainers to administer assessment exercise to students.	206
		Trains people to administer assessment exercise to students.	205
		Writes test items in terms of objectives.	74
81	Field Consultant	Consults with project PLAN teachers to analyze and change teacher behavior.	253
		Develops teacher training materials.	204
		Acts as liaison with school districts in arranging for cooperation in research projects.	252
		Trains teachers for involvement in research projects.	220
82	Building Coordinator	Develops workshops in individualized instruction.	73
		Explains project PLAN to visitors.	203
83	Division of Education Media Director	Plans, organizes and conducts in-service education programs for staff of the division.	221

Number	Job Title	Task	Task I.D. Number
83	Division of Education Media Director (cont.)	Prepares annual budget.	251
		Works with others to assist in planning facilities.	202
		Develops and conducts countywide teacher institute programs.	250
84	Educational TV Consultant	Coordinates all aspects of production.	249
		Publishes study guides for teachers.	57
		Holds and coordinates conferences on utilization of ETU.	248
		Handles public relations aspects.	200
		Coordinates evaluation of TV programs.	240
85	Elementary School Media Consultant	Edits filmstrips.	65
		Coordinates the dissemination of best practices found in the county schools.	199
86	Radio TV Consultant	Produces educational radio programs.	59
		Organizes, produces, moderates, TV public service program.	58
87	Secondary School Media Consultant	Serves as coordinator of information on best practices found in county schools.	201
		Edits filmstrips.	65
88	Human Factors Scientist	Designs instructional management systems.	246
		Designs and performs feasibility studies.	72
89	Computer Program Analyst	Interfaces between education theoreticians and computer realizers in terms of translating and solving system design problems.	245
		Coordinates training program on instructional management systems.	198
		Designs form of in-put from schools for instructional management system to go on optical scanner.	71
90	Assistant Manager Education Systems	Directs projects.	244
		Plans, with department managers, objectives for the departments.	243

Number	Job Title	Task	Task I.D. Number
90	Assistant Manager Education Systems (cont.)	Negotiates on contracts.	242
		Works on substantive parts of projects.	6
91	Senior Human Factors Analyst	Designs learning strategies for CAI systems.	7
		Designs CAI author's System manuals.	70
		Prepares curriculum materials to use in CAI.	69
92	Associate Professor of Education	Teaches classes.	197
		Conducts research.	8
		Writes instructional programs.	68
93	Vice President of Research	Develops instructional packages for individualized instruction.	67
		Arranges for relationships between company technical people and client's subject matter experts.	241
94	Dir. of Dept. Inst. Tech.	Writes reports.	177

APPENDIX 2

VARIANCE AND MEAN/SIMILARITY INDEX VALUES OF TASKS

Task I.D. No.	Mean Similarity Index	Variance	Task I.D. No.	Mean Similarity Index	Variance
1	117.034	987.592	26	83.307	1288.661
2	98.581	1699.844	27	66.655	460.586
3	119.328	2160.791	28	75.267	660.000
4	99.527	2416.738	29	79.750	994.758
5	123.466	1620.779	30	89.780	1079.718
6	91,547	1317.096	31	89.824	810.762
7	116.574	2025.337	32	97.493	726.942
8	112.193	2108.678	33	76.115	2181.092
9	102.088	988.663	34	99.443	747.353
10	93.851	807.713	35	79.662	2186.543
11	13.253	1302.339	36	97.970	1159.501
12	107.057	646.739	37	79.500	2053.424
13	91.865	1313.785	38	86.108	924.558
14	67.841	1783.375	39	98.064	566.657
15	65.324	302.362	40	74.865	749.521
16	93.757	578.612	41	81.081	873.492
17	76.598	1840.919	42	88.402	805.231
18	67.909	1915.209	43	69,287	1615.921
19	76.953	2413.340	44	94.642	837.268
20	72.375	2694.018	45	86.520	1438.000
21	63.615	2496.658	46	65.486	2664.840
22	71.774	620.277	47	35.493	851.586
23	69.720	1267.463	48	57.997	497.827
24	92.865	643.785	49	94.882	497.827
25	46.926	501.588	50	80.119	1191.069

Task I.D. No.	Mean Similarity Index	Variance	Task I.D. No.	Mean Similarity Index	Variance
51	114.162	787.730	76	111.166	1665.935
52	100.959	982.792	77	98.037	1865.751
53	78.851	1060.846	78	76.787	1569.470
54	62.443	1399.414	79	76.297	1356.976
55	27.007	219.980	80	126.061	2506.884
56	86.936	851.294	81	125.257	2822,863
57	124.926	3133.045	82	122.169	2708.622
58	78.845	1793.040	83	116.098	1811.241
59	119.686	2548.040	84	114.395	2549.101
60	93.301	989.594	85	113.503	1923.125
61	105.223	1193.035	86	101.892	1829.765
62	124.111	1012.018	87	111.030	2142.097
63	87.868	1175.322	88	87.774	1435.511
64	72.280	704.582	89	123.490	3302.902
65	80.382	1299.172	90	117.091	2712.117
66	59.588	307.701	91	77.807	997.539
67	59.135	984.043	92	114.605	2327.711
68	100.446	1582.702	93	102.389	2480.46
69	111.973	1570.338	94	103.372	1199.685
70	115.236	1873.707	95	99.399	2121.196
71	118.970	1774.470	96	114.618	1926.515
72	97.868	1357.437	97	118.392	1778.680
73	120.145	2155.704	98	121.449	2494.960
74	116.929	1917.883	99	105.456	752.913
75	110.807	1933.295	100	107.125	1659.730

Task I.D. No.	Mean Similarity Index	Variance	Task I.D. No.	Mean Similarity Index	Variance
101	104.314	1002.379	126	90.652	1011.414
102	80.189	557.279	127	111.645	971.050
103	94.568	1078.856	128	106.277	1074.120
104	111.118	2022.627	129	79.378	2069.185
105	82.236	964.242	130	89.909	912.924
106	111.507	1183.952	131	65.946	686.987
107	51.098	1652.089	132	51.676	1971.474
108	86.916	592.918	133	67.963	1883.622
109	109.334	849.288	134	85.716	1649.675
110	107.274	947.047	135	56.230	1728.456
111	110.226	1163.199	136	100.328	1103.760
112	101.534	782.473	137	90.723	1459.767
113	115.514	1611.742	138	70.301	981.886
114	111.895	774.589	139	76.274	1793.013
115	122.709	2849.332	140	92.797	1242.881
116	117.544	2529.083	141	99.078	936.079
117	110.605	888.477	142	81.635	610.497
118	95.527	884.603	143	101.132	1220.637
119	105.834	654.444	144	77.314	1747.613
120	96.291	998.817	145	93.821	1245.449
121	71.858	1952.522	146	117.422	1446.475
122	69.051	2500.658	147	70.257	2256.049
123	80.666	2195.139	148	94.872	1528.139
124	116.706	1013.083	149	90.696	1395.765
125	81.696	640.809	150	95.797	1372.793

Task I.D. No.	Mean Similarity Index	Variance	Task I.D. No.	Mean Similarity Index	Variance
151	81.486	1261.349	177	112.818	1963.573
152	63.152	1805.343	178	117.426	1869.039
153	95.250	1605.829	179	93.574	2641.954
154	111.196	1550.124	180	82.253	967.953
155	62.527	1084.792	181	106.443	2387.353
156	71.291	1699.061	182	91.054	2007.360
157	61.291	772.959	183	119.932	2759.962
158	62.686	2005.789	184	101.301	2754.713
159	61.811	2378.730	185	127.804	2509.928
160	62.280	2424.243	186	115.115	2570.875
161	63.554	2204.248	187	122.686	2237.959
162	111.115	988.997	188	114.517	3005.186
163	89.311	1119.910	189	105.233	1964.749
164	92.858	884.102	190	91.490	967.891
165	77.243	1712.625	191	93.557	1130.932
166	73.466	1985.714	192	81.497	1365.498
167	63.439	1621.691	193	116.101	2287.841
168	79.139	895.767	194	109.179	2131.402
169	81.797	891.152	195	90.679	1816.775
170	110.831	1233.843	196	75.142	677.654
171	74.095	1370.967	197	109.264	2248.269
172	93.128	731.258	198	119.500	2543.661
173	85.929	1601.300	199	92.247	2537.522
174	78.574	1479.066	200	108.946	1326.411
175	78.689	663.252	201	108.851	2515.964
	59.409	383.714	202	120.524	2227.782

Task I.D. No.	Mean Similarity Index	Variance	Task I.D. No.	Mean Similarity Index	Variance
203	99.057	2004.814	229	92.159	1050.331
204	117.544	2120.330	230	90.959	1393.395
205	104.605	787.040	231	81.385	906.041
206	118.277	2034.187	232	98.564	1746.850
207	95.858	2810.109	233	91.152	931.804
208	101.456	2142.785	234	86.909	1485.405
209	73.635	1227.134	235	85.334	1427.735
210	122.613	1908.006	236	87.517	1580.922
211	104.010	1881.054	237	98.676	1114.918
212	95.378	2519.185	238	87.818	1587.987
213	74.233	2678.166	239	66.334	439.789
214	100.568	2209.345	240	83.605	1705.094
215	105.497	2419.593	241	70.422	1137.391
216	88.193	2331.614	242	73.510	2067.288
217	92.277	3321.815	243	102.966	1840.989
218	100.503	3112.685	244	96.872	2197.733
219	91.520	1579.579	245	87.304	3355.887
220	65.422	2019.499	246	67.537	1837.680
221	74.584	1851.525	247	72.912	2135.416
222	86.811	2380.479	248	105.084	1425.000
223	93.649	2102.934	249	91.047	2024.771
224	81.030	3011.263	250	98.912	1868.745
225	78.236	716.283	251	101.470	2140.935
226	75.791	790.532	252	90.476	1970.542
227	98.882	2358.945	253	92.466	2985.551
	98.909	2260.876	254	82.142	3085.688

Task I.D. No.	Mean Similarity Index	Variance	Task I.D. No.	Mean Similarity Index	Variance
255	80.571	2236.449	280	85.740	1637.305
256	119.324	1881.752	281	111.223	1690.174
257	105.284	2765.906	282	85.568	1102.843
258	89.774	1289.396	283	104.547	1942.337
259	92.686	968.304	284	118.946	1978.790
260	94.189	1753.239	285	118.395	2136.477
261	102.618	1950.949	286	109.314	1081.748
262	97.919	2541.349	287	79.872	2176.539
263	104.956	2756.300	288	114.037	1193.514
264	118.764	1824.798	289	77.216	1086.177
265	81.274	1667.827	290	67.946	1248.851
266	114.142	2144.298	291	112.220	2115.419
267	100.071	2696.561	292	117.395	1371.758
268	114.902	2150.394	293	67.166	1225.115
269	120.598	2009.950	294	81.307	1469.881
270	124.162	3007.445	295	107.625	1707.706
271	113.814	1946.240	296	116.132	1789.233
272	112.355	1878.406	297	91.047	2428.445
273	100.868	2317.016			
274	110.878	2049.000			
275	126.375	1347.123			
276	124.581	1748.875			
277	112.676	1682.308			
278	122.804	2530.965			
279	86.936	2111.592			

APPENDIX 3

Cluster Number, Rotation Points and Cluster Listing of Tasks

Cluster	RP	Task I.D. No.
1	245	1,2,3,4,5,6,7,8,9,11,28,53, 57,58,59,60,61,62,63,65,66, 67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84, 85,86,87,88,89,90,91,92,93, 95,96,97,98,99,100,103,104, 105,109,111,112,124,145,146, 154,162,170,177,197,198,199, 200,201,202,203,204,205,206, 207,208,209,210,211,212,213, 214,215,217,218,219,220,221, 222,223,224,225,226,227,228, 229,230,232,233,234,236,237, 240,243,244,246,247,248,249, 250,252,253,254,258,260,265, 280,282,288,293
2	270	51,94,106,113,15,116,117,131, 153,174,176,178,179,181,182, 183,184,185,186,187,188,189, 190,191,192,193,194,195,196, 216,231,235,238,241,242,251, 255,256,257,261,262,263,264, 266,267,268,269,271,272,273, 274,275,276,277,278,279,281, 283,284,285,286,289,290,291, 292,294,295,296,297
3	20	12,13,15,16,22,24,25,27,29,30, 31,32,33,34,35,36,38,39,40,41, 42,43,44,45,46,47,48,49,101, 102,165
4	54	10,14,17,18,21,23,37,50,55, 56,64,107,108,110,120,127, 132,133,136,137,139,141,142, 147,149,152,164,166,168,180, 239,259
5	155	52,118,119,121,122,126,128, 129,130,138,140,143,150,151, 156,157,158,159,163,167,169, 171,172,175,287
6	173	19,26,123,125,134,135,144, 148,152,160,161,173

APPENDIX 4

Interviewees Statements of Future Projections

and

Modified Delphi Reactions

APPENDIX 4

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EDUCATION

I. CURRICULUM AND GOALS

Quoted Comment	Reactions

1. The primary projected goals will be mass education and individualized instruction, with the outcome being a mix of both. The key questions guiding instruction will be: what is to be taught, to whom, how, and with what effect?

2. We should recognize that the new technologies have some dangerous implication for the curriculum: (1) a subject-dominated curriculum where content is in water-tight compartments. Technology has the tendency to focus in on a particular area rather than give a groad overview; (2) Macine control of the curriculum. I would hate to see the machine control the curriculum as the textbook has for the last 200 years; (3) Curriculum control of the students, where all come out stamped like ginger-bread men, i.e., where all go through the same operations and thereby think alike, dress alike, and so on; and, (4) the dependency upon gadgets. If we can recognize that these are some of the things that have to be watched, I believe that we can, with this kind of background, start now to carry out more comprehensive research on human learning.

3. We cannot allow automation and technology to dictate the curriculum, because teaching is essentially a creative business, and with technology we're now in a position to maximize creativeness in teaching and learning.

4. I think we will increasingly bring to bear in the definition of curriculum that which we know about the nature of the human creature so that what happens to people as they move through time in education is very much shaped by how they are as people and what they need as people, at critical times in their development.

5. We will become more sensitive to the demands of the immediate and projected context in which people live and the utilization of that awareness for the design of curriculum. The business of education has got to make sense in terms of the context in which that individual is living, now and in the projected future. Out of that will come, I think, a myriad of things which have the words like relevance to learners and relevance to the people who are running the social system; so, somehow, if all of this is carried off, things should get a bit more in phase for everybody than they are now.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
1.	Agree; Add: why? to questions guiding instruction	Disagree; The instructional questions should be: (1) what kind of people do we want? (2) What kinds of goods do we want? The answer to these will specify content, etc.	Agree; Add: for what purpose? to the questions guiding instruction	Agree	Agree	The primary goal will be mass education through the method of individualized instruction.	Agree;
2.	Although the new technologies have some dangers. I feel we are intelligent enough to see them and overcome them.	The new technologies open up new options; therefore, producing identical student outcome behaviors will never happen.	Technology is the process of employing resources, not hardware.	Disagree; The new technology only implements and makes visible the behavioral objectives stated or implied by the evaluation techniques used; leads to definition of significant and varied behaviors.	Mild Disagreement-media presentation congere broad overviews and multi-media can promote divergent thinking based upon responses involving the student. Because the machine is a product of human creativity, the job ahead is to interrelate it with what we know and will learn about learners.	Strongly agree.	The threat of the new technologies to the curriculum, represents perpetuation of the status-quo and an insecurity with respect to the future.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
3.	Agree	Agree-automation and technology are means to an end; the referent of teaching should be learning.	Technology aide in fostering student creativity.	Behavioral objectives will describe creative behavior.	Agree	Agree	Learning rather than teaching is the creative process.
4.	Our goal should be a curriculum which is sensitive to people and one which helps learner to be sensitive.	Agree	This distinction between what people are and what people need has hampered both "training" and "education"	Agree - stated another way, it is essential to adopt objectives to learner characteristics.	Agree - The curriculum must be taught and learned.	Agree - In other words, tie the nature of the human learner to the nature of the human learning; our learning theories have too much based on conditioning or association families of learning.	(over-verbalized: make your point explicit)
5.	Agree	Agree	School itself can be a hostile environment.	Relevance usually refers to technology which maintains the educational establishment, rather than relating changes in the behavior of individual learners. Strictly speak-	Agree - Student often fails to see relevance of the curriculum because the causes are fragmented. The need is to see the relationship of the fragments to each other or	The classic consideration in curriculum development have been the nature of (1) learning, (2) the learner, and (3) society. Research adds the 3rd of these three	Agree

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
5. cont.			learners must	ing, change in same subject be relevant.	to life. The curricular matter may be dull or interesting, depending upon how it is communicated.	these three considerations.	

6. We will have a much broadened range of learning experiences and instructional events and a broader learning experience base on which to draw if we are going to broaden the range of things to be learned. If you have got to learn some things about how businesses work or how chefs work, or how it feels to live iwth racial differences, or whatever they are, you have got to have a base of experiences that lets the learners interact reasonably with whatever they have to interact with to get those things under their skin. You can increase the range of experiences in sort of a variety of ways, but they always range on a continuum of reality so that you have experiences being terribly concrete, in a real-life setting, like smelling and working in a foundry, or flying a rocket to the moon, or having to live in a ghetto neighborhood, or something like that. On down the continuum of abstractions is that which you can get into a simulated context of that to a very abstract kind of ideational level of operation. I anticipate that as we learn more about learning, particularly as new kinds of learning outcomes are being pursued, we are going to find that an awful lot of basic learning experiences have to be real close to the reality base. But, we are going to find also, that an awful lot of them can be taught to a reasonable level of mastery by simulated experiences, and then a bunch of things we can handle at the ideational level.

7. We will become more systematic in the business of education. By that I mean you specify what it is that you want to happen and all the rest that goes with it.

8. We must make the educational experience more personally relevant to those who are int it. It has to do with designing a circumstance in which learners can contribute to the overall curriculum design, a chance to negotiate that which is most relevant to them, etc.

9. There is an increasing vocal commitment to process outcomes versus content outcomes. Now that is still in the cognitive area, but it is still a different kind of outcome than we have been used to dealing with historically in education, for, we have been historically more content-oriented.

10. The younger the learners, probably the more concretization you are going to have. But, my guess is that any learner, when he moves into an area without a lot of experience under his belt, is going to have to start with concretizing some concepts or whatever they are. I really think there are huge domains that need to be attended to in human development that get attended to by experience which looks different than learning experiences, as we traditionally think of learning in a classroom or through instructional

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
6.	Agree - Definitely a direction for the future.	Agree - But this discussion oversimplifies the issue.	Agree - Simulation assists in vicarious as well as direct experiences.	Strongly agree. The learner must be able to practice the specific new behavior in the appropriate context.	Strongly agree. I have supported this position in my paper The Image Curriculum.	Agree - This position reflects quite nicely Edgar Dale's "Pyramid of learning"	Strongly agree.
7.	Agree - We must specify in all of the domains: cognitive, psycho-motor, and effective.	Agree - Within the systematation of learning we can teach for divergent behaviors.	Agree - We all should become more systematic, but who will?	Agree	Agree	Agree - We, additionally, must look for "trade-offs" in the accomplishment of our objectives.	Agree
8.	Agree	Agree	Agree - This is the key to working with "disadvantaged students", but we must also seek relevance to certain outcomes too.	Agree - "Personal negotiation" is a function of learning any new behavior; the establishment must provide for this	Agree - But, a few students know whats good for them. Although we fasten individualism, the individual must live within the confines of a peaceful society.	Agree - Dewey has suggested this as the base for communication; i.e., to have an investment in it.	Strongly agree.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
9.	Agree - To move the vocal commitment to action is a difficult step, but it must happen.	Agree - I think and hope so.	?	Depends upon the nature of behavior specified in objective.	We need both process and content objectives. It's stupid to teach kids to think when they have nothing to think with.	Agree, but we need to know what this means for the teaching of reading, writing, speaking, listening, etc., which are all process skill areas.	Agree
10.	Agree	Agree	Agree - Young people demand this.		Agree - We are only beginning to learn how to deal with the affective domain.	Again, this supports Edgar Dale's pyramid and Dewey's progmatic idealism.	Appraently means that abstractness must be based on experience.

systems that we build. Developing the capacity to love, or to trust, or to hate, or to be appropriately aggressive, or to fight, or to feel deeply, or to come to peace with oneself, or whatever those things are, are things of a different order than those that shape math, or learning theory, or learning how to run and jump. If we are serious about those classes of outcomes, we will develop systems of experience which will nurture those.

11. The elementary school curriculum is about to equal itself from the heavy emphasis of subject-centered curriculum to both a child-centered and subject-centered curriculum. The curriculum itself will be more relevant to the child than it has traditionally been.

12. Traditional subject matter lines will be broken down into primary and secondary life skills: a primary skill is transferable to a wide range of applications, e.g., critical thinking; a secondary skill is quite situation specific, e.g., lacing one's shoes. Factors which will provide impetus for a skills development approach are: performance objectives, team teaching (staff differentiation by function), " open space" schools (as predicted by Marshall McLuhan), and the impact of the knowledge explosion.

13. The conceptualization of what multiple media are and how they can be used in the expansion and enlivement and penetration of curriculum in more significant ways for the learning process is essential. I think it's a question of educational leadership taking the lead here and trying to really understand the potentialities that the multiple media have opened up beyond the book, and then to learn how to link what goes on in class with all potentialities that could exist in and outside of class.

14. I suspect that kids will push for an insistance on higher orders of relevance with educational isolation, as experienced, being under very heavy pressures, for the first time in the educational system, for performance, as well as relevance. No question that in the cities the Black Revolution means that the parents will insist that there be some delivery, finally, for their kids on their ability to perform. The school, the way it is now structured, cannot deliver. I do expect and I look with some degree of positiveness on the media developments in the last decade in terms of the general revolution and the question of the Negro Revolution.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
10. cont.	Agree - We will, but it isn't going to be easy.	Agree	I don't think all of these outcomes will be learned in the formal school setting.	This points up the complex objectives and the strategies for implementing them.	The main aim of education for the new reality is to develop the optimum of the individuals potential. This means attending to emotions as well as intellect.	The schools have no evaluation system for systematically rewarding the production of outcome behaviors. This will not happen until there is a breakdown and need for remediation.	Agree.
11.	Agree	Hopefully	From a subject-centered to a society-centered curriculum.	The focus will change to individual learners.	Agree	Wishful statement.	Agree
12.	Agree	Agree - This is partly coming now. However, techniques in addition to staff differentiation will be used.	Agree	Seems confused. The inference is that all performances are relatively simple and concrete and cannot be transferred. Non sequitor.	Agree - Subject diciplines will be aimed at one kind of learning intellectual skills; motor skills, or value skills. The valuing process will be in light of the culture. Humanities orientation involves new concept of man.	Idea is too pat and too optimistic about the manipulative techniques used as exemplars.	Agree

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
13.	This is a developmental task with research dimensing which is definitely desirable.	Multi-media arrays may help solve some educational and societal problems, but let's not be overoptimistic about extensive home use.	?	Media are used because they work, i.e. they bring about desired change. Different media working together help.	Strongly agree. This is a new conception of the role of media in education.	A truism worthy of attention.	Agree.
14.	Non-schools will be developed to achieve these kinds of outcomes. Present schools are not adaptive to these gross changes.	The credibility gap is closing Media aren't the salvation of the world, but they can help. What seems more in order is the conceptualization of our problems and alternative solutions.	Time - schools push kids out. Will society (or legislation) demand results for money expended? This is a pressing question.	Mass approaches, work exams, assumptions about what all youth need all raise the question of relevance. If objectives focus on learning rather than on teaching, this will automatically accommodate "relevance" for individual learners.	The economic aspects of media are relevant here. We also need a reeducation of parents on the definition of what constitutes a good education. For example, reading is the key hang-up for most center city kids. The shift to multiseasory education will help this problem along with the humanities, e.g., acts, trips, museums, films, etc.	"Performance" implied here means "success" It is only relatively recently that the schools have failed to show "performance" Legally enforced attendance, absence of labor market for drop-outs, failure to provide upward mobility, etc. are different from previous generations, where an education was a sure road to success. Furthermore, academic school success does not mean solution of social problems.	Agree.

15. If you don't learn how to learn with books you are going to be in trouble in this world. It's perfectly clear that I don't happen to be a television viewer, but it's also perfectly clear to me that it's a potent instrument. It hasn't really paid off at all because it hasn't been linked in to the curriculum to any great extent.

16. The state of the American School is such for it is so narrowly defined, so unreal, with respect to the lives of the human beings that go through its' doors.

	Ely	Cerletti	Haney	Hite	Lacy	Lange	Larson
15.	Books are not best learning for all. Television needs to be linked into the curriculum.	Disagree	We need to learn how to learn from pictures. We need to see the relationship between home and school learning.		Books are not necessarily essential. So far ETV hasn't paid off because of program quality, scheduling, equipment, and facilities. This will change with better production and VTR.	Agree. Especially, if you can't read by third grade. The TV hasn't been linked to curriculum except for emotional learnings that schools and society can't handle (Ala McLuahn)	One needs to be able to learn from all modes of communication, including book.
16.	Unfortunately true.	Overgeneralization.	Agree.		Strongly agree.	The unreality of the American school may stem from the unfeasibility of the social problems it is asked to solve without the resources or systematic integration with society's total resources for resolution.	Agree.

Summary Comments

Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
Learners will have to know whay they are undertaking tasks. We will increasingly let them in on the "secret" of where they ought to be going and permit them to "branch" if the goals seem inappropriate for the individual.	The key question seems to be: Where and why does society, or parts of it, want to go? If we goal-orient (with a system to modify goals as societal needs demand) then we spend our time on means and ways. Content and method, thus, become means to ends, not ends. How an educational system conceptualizes its process seems to be most important. We must be able to answer <u>why</u> the trainee (learner) is doing whatever he is.		Disagree with the assumption that technology implements trivial or irrelevant goals. Technology for learning, as much as any other development in education, is humanizing instruction. Concern for the individual learner is a dominant key for the future. An appropriate direction for media training, therefore, would be to develop competencies for designing media which implement changes in individual learners.			

II. ORGANIZATION AND FUNCTIONS IN EDUCATION

Quoted Comment	Reactions

17. The teacher's role will change from a fountainhead of knowledge to one whom employs instructional systems analysis. Although the teacher will remain the heart and soul of the program, she is not going to be responsible for nose-blowing, play-ground supervising, putting on rubbers, cafeteria checking, room-monitoring, and these kind of things. She is much too valuable a resource to spend on these kinds of activiites.

18. The teacher of the future will be the knowledgeable one to develop learning experiences utilizing various teaching strategies to communicate various ideas. The teacher will also be an integral part of a teaching team. She will have available to her personnel resources such as evaluation specialists, learning specialists, psychologists, anthropologists, sociologists, and the like. All of the individuals will make a contribution to the team.

19. A primary question will be: What is the best learning situation imparting this information with which people can learn? The teacher is going to have to create and do more research on how people learn and how they should be taught. We have not requested or required this kind of teacher-orientation because of their preoccupation with paper grading and this kind of thing. This is where I see the role of the paraprofessional as far as education is concerned. Their trust will be to free the teachers to be more creative and to utilize the teacher's creativity to the maximum.

20. The teachers in public and private elementary and secondary schools will have to be knowledgeable about the equipment, materials, and world in which they live. They must be able to utilize educational media centers, book and non-book materials, and programmed learning systems. Furthermore, a teacher must have capabilities in: (1) the selection of materials; (2) the operation of equipment; (3) communication theory and practice; (4) instructional systems; and, (5) materials production.

21. The elementary school will be organized by the differentiation of staff by function and training: (1) team leaders - career people who have college degrees and have registered a long-range commitment to education (these are mostly men); (2) short term professionals - college trained teachers who, for a variety of reasons, are not willing to make long-range commitments at this time;

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
17.	The teacher will be a coordinator of learning experiences.	The teacher will employ other means in addition to instructional systems. The teacher will not necessarily be the heart and soul of the program, but a member of a team doing the educational architectural planning. Means permitting the teachers role will change drastically.	The teacher will remain the fountainhead of knowledge, but won't have control of all the faucets of information dispersal.	Agree - We can now supply knowledge better with non-human resources.	Teacher preparation institutions will have to change considerably to accommodate for the changing role of the teacher. Let's also realize that present teachers do not have the top I.Q.'s. School boards must realize the resources invested in each teacher.	Agree - But the emphasis should be on the teachers instructional design functions, rather than the typical teacher's poor competence in message design.	Agree
18.	This will come, as seen by differentiated staffing in the advance guard.	This description reflects a teacher-centered and not a pupil-centered curriculum. I don't think the teacher will be the primary designer of learning	The typical middle-class female teacher is the problem for the disadvantaged Blacks.	Given explicit objectives and alternative strategies, the teacher will apply them appropriately on a particular set of learners.	Agree - But a remaining question is how to differentiate staff and pay each what he is worth.	This is an idealized picture. I don't think it will come this way, but a vision helps.	Some teachers will do this, but not all.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
18. cont.		experiences. She may be a team member.					
19.	Agree - Teacher's will do research of a sort, but not the kind being performed by educational researcher at present.	This is too narrow of a view.	Most teachers do research themselves? Can systems be developed which are teacher proof?	Given explicit objectives and alternative strategies, the teacher will apply them appropriately on a particular set of learners.	Research will be done only by master teachers, for most teachers are not qualified.	I doubt if teacher's will do research anymore than we want our doctors to do their own chemistry with medicines.	With differential staffing, some teachers will perform at this level.
20.	The teacher will utilize media and direct product; the paraprofessional will operate equipment, etc.	Agree	Agree	Teachers should manage and implement learning systems and use learning principles to solve specific learner's problem.	Most of this refers only to master teachers. Also most programs should be beamed at learning environments. The teacher will be a diagnostician who prescribes learning modules for students on the basis of need, ability, learning style, etc.	Strongly Agree	With an instructional team, specific responsibility will be performed on assigned basis, depending upon experience.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
21.	Agree	This sounds good if the concept of learning is changed also.	Agree	Agree	Agree, except the team leaders will also be women.	Differentiated staff is undoubtedly a fad and will catch on, but the real essence is to identify and interweave the functions to insure they are operable, no matter what the teaching technique be.	Agree

and, (3) teacher aides - junior college trained personnel who function in the support staff of the classroom teacher.

22. The school building will be organized as an autonomous operating system. At the individual school level these functions will be served: (1) promotion of group process skills; (2) design of instructional systems; (3) development of evaluative measures; (4) establishment of performance objectives in different areas; (5) parental relations; (6) coordination of team efforts; and, (7) analysis of what function can be best performed by human and nonhuman resources.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
21. cont.			Making the three kinds of people work this way is the hard part.				
22.	This seems to be beyond one teachers ability.	The individual school will be part of a complex learning environment, which will also include settings like home, airport, market places, and recreational areas surrounding the learner and the learning process.	All organic systems must discharge wastes, How will a school do it?	The school building may not be synonamous with school. But I agree with emerging these functions of school.	Agree	The need of the individual school is to lock into regional or national system of production and accessing than ever before to meet the differentiated needs.	Very questionable at school level for many of these functions i.e., 2,3,4, and 7. At the school level will be 1,5, and 6.

Summary Comments

Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
We will have to throw out schedules by the clock and uniform spaces in which in learn. We must change the concept of teacher.	Form must follow function. Therefore, we apparently need to be sitting loose to change any pattern if our goals so determine. Our big problem is that our path and where it is going are not at all well-defined. To beg for organization before we know is foolish and wasteful. Putting patches on an outworn model is not a solution.		"School" becomes something quite different from a collection of all-purpose classrooms and all-purpose teachers. The indication seems to be a laboratory with many different kinds of personnel. The stress is for a systems approach to learning.			

III. INNOVATION

Quoted Comment	Reactions

23. We will experience changing facilities, departing from the self-contained classroom to more flexible construction to allow for individual student space which is equipped to use a wide variety of materials. Changing facilities are going to include: electronic classrooms, connected with regional, national or international computer banks from which information may be retrieved; large teaching auditoria equipped with the works, having available at the teacher's fingertips all the media to complement instruction; a variety of learning laboratories, for example, that initiated by the language labs and the audio-lingual approach.

24. We are going to see a changing school day. The current school day, from 8:00-5:00 or 8:30-3:30 has been an administrative day and not based upon the learner at all. We are going to find a flexible student schedule, so that we can make use of the alternative resources and meet with small and large groups, depending upon the nature of the context.

25. The new technologies will greatly influence the direction of education in the next ten years. First, the new technologies will free the teacher from drill, repetition, etc., and thereby free him for more creativity. Second, it will free the curriculum from the stereotype it has had for the last half century. Third, the new technologies will raise the quality of education by providing more and better education than we have had in the past.

26. Our school systems will become larger and larger. Through consolidation, re-organizaation, ESEA funds, etc., new, better, and more resources will be brought to bear on the educational setting.

27. There have been islands or pockets of innovations, but what we must do is to generalize and utilize all possible innovations in the furtherance of the quality of education.

28. We are going to have instructional materials centers in the schools to produce the necessary materials to meet the local instructional needs and complement and adapt the commercially-produced materials. The centers, additionally, are going to have the capabilitites to provide students information in a variety of formats, e.g., video, audio, hard copy, or whatever the demands are, based upon the learning situation.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
23.	This projection is 15-20 years in advance before it will be adopted by any sizeable number of schools.	Agree		The major change will be toward an informal learning environment with many resources to which a learner may be directed. Most of these resources will be human.	Agree - Environmental change is the best way to get educational change in teaching.	Agree - Undoubtedly.	Agree
24.	Agree	Agree		Most formal learning will be at school rather than at home.	Agree - some will use the contract method, choosing their own curriculum within a framework set up by the school.	The decision will still be administrative and the determiners will look more to social/ community/ financial realities than learning gain.	Agree
25.	This is widely accepted and appears to be assured.	Agree, if used wisely.	Teachers, therefore, must be re-educated to serve a productive a role in the new systems.	The influence of the new technologies will depend upon better objectives, i.e., more carefully stated, describing more significant and meaningful learner behavior.	Agree - The new aim is for quality education, i.e., developing human potential (ala Shell curriculums)	This is our "sales pitch' for technology Not everyone will buy it. (See Phil Jacksons critique in Teacher and Machine.	Agree

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
26.	Agree	The trend is toward de-centralization.	We must specify the things a large school (or district) can do that a small one can't.	More and better resources will be available to schools, both large and small.	Agree - But, controls should be built in to prevent de-humanizing bureaucracy and rigidity.	Agree	Yes for some purposes, but decentralization with more local control and participation by both parent and pupil.
27.		Agree		Innovation should be directed by more viable objectives. If reason is clear, innova-tions will follow.	Agree - Individual areas will continue research, but it should be disseminated so all can profit.		Agree
28.	Agree	As a trans-itional phase, centers will have these functions. How-ever, there is nothing magic in a center. The basic ques-tion is still why?	We have no local needs, only local teachers. The needs are re-flected in the range of national situations.	Media used to accomplish learning objectives.	Local pro-duction is expensive. It should be dis-couraged if adequate com-mercial mater-ials are avail-able.	Agree	Agree

29. There is nothing new in the idea of individualiztion. There is nothing new in the idea of systems. There is nothing new in attending to human development. It is just that as we move through time and get better strategy and better knowledge on which to act and build, we can do it in a more refined way.

30. Increasingly, media are going to come to bear to simulate the pieces of reality that need to be encountered in the process of learning.

31. As we break out increasingly broadly, the range of human outcomes to be pursued in education and as we become more systematic about our pursuit of those outcomes, we design instructional experiences that have some attested validity, i.e., they have a known degree of reliability in producing outcomes.

32. The development of a self-contained elementary school will be a reality in the next ten years in education. All operational functions will be contained within the school, promoted by a team of specialists and not having to rely on district personnel for vital services.

33. I think we need to consider much more broadly the idea of the school day. To consider the learning day to extend from period nine to three is obvious nonsense.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
29.	The ideas are not new, but the technology for implementation is new.	We have never been this way before. Kids aren't new, but the parents are and they have to learn how to raise children. We are learning to meet new demands constantly, but we do so without thinking sometimes.	What is new is the way we use a thing	Agree	Agree - as our sciences develop and our perceptions sharpen, we can do all these things.		Agree - Knowledge is accumulated in all areas.
30.	Agree		We must simulate the process of <u>living</u>.	Follows logically from system design.	Agree - Also included will be simulated thought creativity by juxtaposition of images, etc.	Agree	Agree
31.	Agree - in 15-20 years.	Agree	We must change our objectives and target population.	This means the re-design and re-testing of strategies and media.	Agree - We must design better measuring tools to check on the validity of what we are doing.		Agree

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
32.	Agree - But, connection to data banks will relate the individual school to the larger region.	Disagree - too narrow a view; will never solve our problems.	The self-contained school may be as bad as self-contained classrooms, depending upon what it contains.	Maybe, but I don't see the self-contained school as a basis for training evaluation.	Disagree - Not economically feasible! Schools may be located near an educational media park. Young people may be educated at home or in apartment schools. Information will be piped in for part of it.		Disagree
33.	Agree - Perhaps the extension of the school day will occur in the home, not the school building.	Agree	What pupils need to do <u>in groups</u> may be one basis for determining the new for a school day.		Agree - learning goes on all the time, formally or informally, via T-V or film. More good ETV will be piped into the home for both students and adults. CBS-VTR will bring good film into the home.		Agree

Summary Comments

Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
Innovation is an "in" word It means different things in different parts of the country. It means change for the sake of change in many instances. Until we ask <u>why</u>, innovation will be window-dressing.	Learning never stops. One of our jobs is to place the school in proper perspective with other facets of a learner's life. As T-V developed, it changed our perspective on radio, film, newspapers, books, etc. We need to be more attentive to these nuances.		Innovation is predicted as the norm rather than exception. In individualized learning the teacher will have to adapt and create media to accommodate different learner characteristics. Massive changes in hardware, building design, and schedule do not necessarily follow. I think they will occur, second only.			

IV. CHANGE

Quoted Comment	Reactions

34. In the past changes have been slow in education. It used to take 40 years to get new ideas adopted. The period to get a new idea adopted in education has shortened.

35. As a result of Sputnik in 1957 there has been more impetus in educational technology in America than anytime in the history of our nation.

36. We are almost at a breaking point in terms of taxation. I don't think that the public is going to stand by and give us all the money we want for a particular gadget. We must be cost-effective and cost-benefit in our analysis.

37. How rapidly technological developments in education are broadly practiced will probably be directly affected by how well people are trained in our colleges of education. Our teacher preparation institutions will have to evaluate what will happen in the next ten years, rather than for the last 100 years.

38. Currently there is very little interaction between the regional resource centers, the public school systems, the college/university system, and the departments of education; but, there is an interesting trend along this line. Over the last 20 years, the role of the state departments of education has changed drastically. Whereby in the past the state department had a one-man media representation, the current trend is towards more support with better qualified staffs. There are now over 28 states who have educational media bureaus, and in all states there is somebody in the state department who has educational media as his major responsibility. I foresee more and more strength lying in the state departments. The state departments will no longer be mere accountants and nose counters. They instead will be educational leaders who have the funds to do it through numerous federal grants to run educational programs. Once the state departments have the competencies and funds with which to move, they will feed the regions and locals with the same resources.

39. As far as the colleges and universities are concerned, I see less and less impact that they are making in terms of the state, local, or regional level, except in terms of their graduates. They have less impact on the kinds of programs which are developed.

IV. CHANGE - Reactions

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
34.	Will become increasingly shorter.	Agree	It also takes less time to get an idea dropped from education.	Agree	Agree - but, see Harvard report on Technology - it's depressing, but there is some speed up.	Less time taken to reject an idea in education.	Agree
35.	Add World War II; Crises breeds rapid change.	Agree	Agree	Agree - and in all kinds of changes.	Needs to be more.	Agricultural education and industrial training have also been land marks of influence.	On a superficial basis and on quantity rather than quality.
36.	This will be a major thrust in the next 5-10 years.	Agree	This should be true if defense funds are diverted to education.	We must evaluate effectiveness in terms of learning outcomes, and not insalient administration, data, e.g., attendance.	We must display funds presently used for teacher salaries into media. The Public must see the comparative costs and their respective effectiveness. There should be more use of less expensive paraprofessionals and media.		Agree - Thereby obtaining additional monies.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
37.	Our schools of education are the most needed area for charge at the present time.	The training of teachers must be relevant to get developments broadly practical.	Agree	Schools of education need to catch up with many in-service training programs.	Communication courses should be required for graduation.	There is too much an investment in this viewpoint, i.e., the teacher as technologists.	Agree
38.	Traditionally, state departments of education have not been able to bring about change, except by threat of withdrawing aid. Federal programs will be administered more thru the states; hence, state departments will exert more power. I am not an optimist about state department leadership.	I worry about the state de-state departments in education.	The state departments prime materparime materials developers at the elementary and secondary levels.	Interesting.	Centralized development of media knowledge, expertise and know-how is vital, media specialists should be concerned with learning theory, perception theory, communication theory, curriculum, and teaching strategies. Education communication should become a humanistic philosophy principally concerned with messages designed for transmitting meaning.	Strongly agree.	There is a question whether the state departments will probe the leadership directly. I think it will come from the district and regional centers associated with universities.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
39.	Federal legislation has taken the place of university leadership.	Agree	The discipline, and not the university, makes the determination of its impact, colleges and universities follow the disciplines.	Agree	Colleges and universities are entirely too remote from what is happening in the world and in the schools.	The money for innovation is now elsewhere.	At present yes, but will become, as schools of medicine have, research centers, development centers, innovation centers.

40. Over the past 20 years our colleges and universities have been radically affected and afflicted. Many times we had to scratch pretty hard to find a teacher who was doing something innovative or unique. However, today many of our younger faculty members are more critical of what they're teaching and how they're teaching it than their colleagues in the past have been. They have been surrounded by communication techniques and have felt the transferability of them into the educational setting. Secondly, many of the graduate students who are receiving their degrees in discipline areas are beginning to take courses in teaching and technology. In the past, they knew more and more about less and less until they knew a great deal about nothing and they had no experience in pedagogy. All they did was to watch their subject-speciality teacher, and if he was to watch their subject-speciality teacher, and if he was good they were that much better off. If he was poor, they carried on what he had done when they got a job as a college teacher. So, there is a revolution in college teaching. Some is brought about by college student riots and their demand for better instruction. Some of the good teachers are best with words; let them continue to act in this way. For those of them who are not so good with words, they will depend upon the newer technologies to make their instruction more effective. Faculties are being assisted by higher salaries, release time, knowledgeability, and professional help to improve the instructional/learning experiences.

41. There are several major forces which act as change agents operating upon the current scene: (1) disadvantaged groups - the largest single area of activity of this group, and accompanying change, will be in the urban school. This child needs reading, writing, and other basic skills. However, before he is ready for this instruction, he has other personal problems which need attention; (2) the educational industry - producers of equipment and materials are trying to make changes in instructional materials and methodologies. They, however, will not be very effective without the support of the schools; and, (3) education itself - privately funded schools on the outside, along with major changes from within, will have the potential to change the nature of the educational process.

42. One needs to make a separation between the innovative school and what the rest of the pack is doing. It might be misleading to project changes in education primarily from the viewpoint of the currently most innovative schools.

43. The educational establishment is a very, very slow moving structure. What it'll look like in ten years hence is pretty much determined by looking at the most advanced sectors today. If you look at the more advanced sectors today the only question that one has to worry about is the rate of penetration of those patterns in a larger sub-segment.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
40.	Where is the college teaching revolution?	Agree, at least the trends are in these directions.	The instruction function has to be managed in a college or university. It cannot be left to individual teachers.	The greatest change occurs among college teachers working with school teachers who are innovative. On-the-job training in businesses and industry seems to be affecting some college departments.	This desirable trend is not yet widely evident. Autonomy by college teachers prevents any worthwhile change to take place. Professors get their union card, the Ph. D., and then go and do whatever interests them; teaching rarely does.		Agree
41.	Agree	Agree	The educational industry is not as innovative or competent as early expectations.	One result of this is the need to specify objectives clearly. This sets off a chain of changes.	The greatest needs at present are: 1) for educators to collaborate with industry to produce good materials; 2) to develop instructional systems based upon the materials; 3) to educate schools to buy		Various pressure groups could insist on school support to extent of changing educational leadership of necessary.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
41. cont.					and use these materials, rather than the conglomerate they now have; 4) to remove media-utilization level from teachers to curriculum group; 5) to use mediated instruction and personal interaction with various grouping arrangements.		
42.	Agree	Agree	What are the characteristics of the innovative school.		Few schools are innovative; most of them are resistant to change.	Agree	Diffusion and adoption programs must be designed and supported.
43.	Agree	Maybe	Agree		No real change will occur until the school environment and system is changed. This present system discourages		I think the educational establishment will move faster than most believe.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
43. cont.					innovation. Society needs to understand the benefits that could accrue from change.		

44. I think that kids will push for more and more meaningful curricula, especially with more and more ability to complain.

45. If you asked me what I expect to see the schools like ten years from today, I expect to see them substantially as bad as they are today.

46. The great protection that the educational system has had is also a reason for its great ineffectiveness, for with no feedback--no consumer complaints--the establishment maintains its conservatism. We are really entering a new and very important and dynamic period which I think will make it possible for somewhat more radical and faster innovation, because I think there's a lot of restlessness.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
44.	Agree	Kids have a role in the educational system, but not the major one.	Kids will push for meaningfulness in terms of immediate relevance.		Some will, but the large part will go along with the establishment; it's easier.	Agree	Agree
45.	Disagree	Some improvements will take place.	Why not bypass school.		To make substantial changes, radical social and teacher training changes and massive use of technology is necessary.		Surprising changes will occur.
46.	This will come as cost/effectiveness is pushed.	Agree	The reward structure for teachers must be changed.		Agree	Agree	Agree

Summary Comments

Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
Schools are slow to change. Dollars have helped to bring about minor changes. The public is generally not active or concerned about change. Change will come on many fronts-all of which have to be moving simultaneously - teacher education, teacher groups, administration, government, and the public.			One can react to change in the social institution of the school or to change in the implementation of learning. The arguments about the institution are pessimistic; the arguments about implementing learning are more optimistic The school is in trouble; changes in bringing about learning are excitingly hopeful.	To effect change in schools there must be - large scale mass media instruction of the public to viant change; - cost/effectiveness must be worked out through sharing and cooperative research; - individual vested interests must be broken down in the curriculum, administration and schools to enforce such cooperation; - a new definition of what constitutes excellence in education must be related to the public; - systems must be employed for cost - and educational effectiveness;		

Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
				- more centralized control of funds, eliminating much choice and control by local tax payers.		

V. INSTRUCTIONAL METHODS AND TECHNIQUES

Quoted Comment	Reactions

47. During the next ten years, the prevalent instructional methods will include individualized instruction, small group instruction, large group instruction, and teacher-student conferences, all depending upon the nature of the materials or content being presented.

48. I believe there is going to be increasing dependence upon something called an instructional system. An instructional system, to me, is a collection of learning experiences that get tied together to do a thing, and there is empirical evidence that they actually do it.

49. Increasingly, there will be mediated representations of real-life events. The content of education will increasingly be instructional systems in this nature, and the content of instructional systems will be increasingly media-based representations of reality.

50. One of the real strengths and advantages that I see in instructional systems is the fact that they become transportable. So you build instructional systems that are appropriate for one set of learners, it has generic utility in a broad range of circumstances, probably always having to be adapted a little to fit the specifics, but it is a generic system for given kinds of learners.

51. Some of the kinds of instructional systems that I envision may be purely mediated. But, the vast bulk of them will have a terribly healthy kind of balance, depending upon the learning outcome, but which include teacher-pupil interchange and pupil-pupil involvement. My guess will be that peer group teaching will be a large part of the process. What I'm saying is that there is going to be a healthy dependence upon human interaction as an accompaniment to mediated instructional systems.

52. The inter-relatedness of teaching methodologies will be realized more consciously than it is now. Schools, instead of just embarking on a non-graded program, are going to realize the moment you do that you begin to embrace the concept of multi-age grouping, some form of teaming across teachers, and probably some sort of differentiated staffing plan. I think these together will make some variable differences in the next few years.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
47.	Agree	Agree	Idealistic in view of previous comments.	Instructional methods will depend upon the specified objectives. But, essentially the methods will be individualized.	Agree	Agree	Agree
48.	Agree	Agree	The information flow network must be able to adjust components in a system.	Agree	Strongly agree.	Although there will be an increasing dependence upon an instructional system, this is a better definition for the curriculum.	Agree
49.	Agree	Seems to be the direction.		Agree - The nature of the presentation will be different than previously.	Agree	Agree	Strongly agree.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
50.	Agree - adaptation of generic system is the key to adaption.	The variables may be too great for this to happen; however, the model may be generic.	This depends on how general the key characteristics of the target audience are.	Agree - Also, they can be repeated ad infinitum for one or many learners.	Through wide sharing, the cost benefits of mass production can be used to increase efficiency in education.	Agree	Agree
51.	Agree	Currently there is this kind of peer interaction; however, more will help.	This human interaction should be programmed or at least trained for. It cannot be left to chance.	Agree - More human resources will be employed both within and without instructional systems.	Staff should be differentiated so that media specialists construct persentations, those good with students interact with them, and the rest is done by paraprofessionals.	Probably	Agree
52.	Agree	Agree	Some schools are not going to realize the need for consistent organization and will go on with S graduations of non-grading using the same alignement.	For the first time, objectives must be specified in umbiguous terms.	Various groupings are necessary, depending on subject matter and individual differences.	Agree	Agree

53. Individualized instruction has come! The basic question remaining is: How do you want youngsters to interact with the learning environment?

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
53.	This is not a problem - balance will be achieved.	Not quite - I believe the possibilities are there, but the process is going to prove more complex than many believe.	The looming question is how to structure the learning environment for individual learning.	I don't think this is a basic question.			Agree

Summary Comments

Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
Emphasis on the individual in a society is dependent upon mass education; this is the direction we are going. The mix of individualized instruction, mediated instruction, face-to-face personal confrontation, and formal exposition will all be part of the design.	Methodology and technique will be the frontier during the 70's. A process-orientation will be much more imppor-tant than a content one.	The difference between dreaming and planning is not the nature of the projection state or situation, but the determination of steps to achieve it. We cannot say the projected situation (systematic individualized instruction with flexible scheduling and mediation with differentiated staffing) will come about until those steps are clearly worked out.	Methods will generally follow a systems model. The difference for teachers appears to be the center of the more diverse nature of an environment for individualized study and on a different sort of interaction among pupils and educators along with this will be different techniques of evaluating learning.	The main aim is to have the student learn how to learn and be enthusiastic about it. While there is much he can learn by himself, an adolescent or child needs guidance, both in content and process. The student should interact with programed materials, creative activities, cultureal resources, and contact. But, the teacher must monitor that he develops basic skills and chooses topics to pursue that add up to an education and esoteric dilletartism among things learned are:		

Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
				1) drill and practice learning programmed materials; 2) learning new skills via CAI or other programs; 3) individual pursuits through report work on contracts, etc.		

VI. DEVELOPMENTS IN EDUCATIONAL MEDIA

Quoted Comment	Reactions
54. In the next ten years, I don't think there is going to be a revolutionary change in what media do compared with today. I think we're going to run into a plateau, not by design, but by accident. There isn't much that we can't do through an electronic point of view. Our communication system is going to become more complex, but the basics are there. What we're going to have to do is to be more selective in terms of the utilization of those tele-communication systems to make education better.	
55. I think our job in the next ten years is going to be to crystalize some of the knowledge we have and apply it in more generalized terms than we have in the past.	
56. Given the transportability of instructional systems, it really means that an awful lot of experiences have to be packaged so there is another reason that says there is going to be an awful lot of translations of things into packagable media formats. As things are made transportable, and as packages are designed for individualization of instruction, it will mean that the things which get packaged to be transported will be dependent upon hardware to a very large extent for the transmission.	
57. Learners are increasingly going to interact with machines that will either present the mediated experiences of hard reality or retrieve information that gets stored so they can make decisions on the basis of that information at critical points.	
58. I don't believe that the older concept of programmed instruction is going to be rampant, for I don't think the human creature can function in that linear fashion.	
59. The most pressing problem in educational media today is to understand the nature and function of multi-media arrays. The trick of course is to begin to build curricula and have them mutually supportive and to give a lot of options to young people to let them find the kinds of media that they're most responsive to. I happen to be a reader, but somebody else may do much better by ear.	

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
54.	We will learn to better utilize what we have instead of depending on something new.	Mildly agree.	The reduction in cost and size will permit widespread use of mediation; not feasible with present technology. Instructional patterns will change accordingly.	Our combination of media will probably differ in the next 10 years; e.g., these will be more pupil-produced and -managed media.	We have to organize the basic elements into systems through packaging and guides. We must overcome present problems of scheduling, film delivery and retrieval by organizing better systems for these jobs.	It's hard to figure this one!	Mediated instruction will have an important impact over the next 10 years.
55.	Agree	This cannot be done, because we won't take the time.	We are going to systematize our knowledge into more specific applications.	Agree	Agree - Through systems.		We need new approaches with instructional strategies.
56.	Transported systems will also depend upon the validity of the software.	Agree, to a great extent.		The technology of media packaging has not advanced very far.	Agree		Agree

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
57.	Agree	Agree	Agree - CAI	Agree	Agree - Via T.V., telephone, ETVR, etc.	Agree	Agree
58.	Agree - but, it will not be lost either.	It's not going to be rampant, but not for this reason.	The older concept had small steps and copy frames.	The reinforcement didn't work; human learners seem to require human reinforcement.	The present book-type program is boring. Visuals will improve it.	The older concept of programmed instruction has been misconstrued.	These will be new approaches with programmed instruction.
59.	How to match learning styles with appropriate media is the key.	To continue to look at unique contributions with media make is the most important.	The heart of multi-media design is the match of media to: 1) subject matter and stimulus requirement; and, 2) a variety of learning modes.	I think the chief reason for multi-media is to provide palatable ways of repeating the same message.	The media specialist must be more aware of cognitive styles. The best way now is to use the multi-sensory approach and give students a certain amount of choice.		The curriculum must be a learner orientator with a deployment of media based on individual styles of learning.

60. We're in for a considerable experimentation with computers and the penetration of computers into all spheres of the educational process and its support systems. The computer sciences, supported by business and industry, are making contributions to the learning process which are much greater than most think.

61. The hardware is way in front of the software!

62. We will move ahead on program learning as we have in language learning.

63. My own view is that the role of the book remains by all odds the singular most important media for educational purposes.

64. Photo-offset and duplication systems are providing for what I call personally-manufactured books for classroom purposes. I could conceive of considerable motivation and initiative on the part of a third grade teacher who has, let us say, a certain type of youngster or at least a supervisor of a group of third grade teachers who could do much better from many points of view than the publishers can be by really putting things together materials that are applicable for rural areas, or city, or specific ethnic groups, etc. So I think we are going to have a large number of homemade books.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
60.	Agree - But, many of the educational questions have not been raised.	Agree		Not too worried!	Agree - CAI and information retrieval will do much to revolutionize educational procedures.		Strongly agree.
61.	Agree	Agree - and ahead of the process, too.			Agree - But, much hardware is still primitive, e.g., dial access.		Agree
62.	Disagree	We must establish ways to evaluate the materials.	Disagree		Agree		Agree
63.	Disagree	Disagree - goals and concepts are the most important.	Fortunately, these are better ways for writing, designing and using books.		Books will be one part of an orchestra of media. Media must educate students to the use of books, which are cheap and convenient.		Depends on the individual learner.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
64.	Agree - "underground" books as well.	Disagree - Teachers will not take the time.	Agree	We had homemade books very early in primary schools. I think we are going to have homemade films, TV programs, tapes, etc.	Agree - Teachers can choose facsimilies to be printed out and made into a book which satisfies their group's needs.		Very questionable.

Summary Comments

Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
Software is needed! Organization of software into systems will occur. Potentials for custom software is one of the most important new directions in this area. Inquiry - oriented media will be paramount.			The application of media to individualized instruction will radically change the way media are packages. Fewer long mediated programs, with average "bit" of mediated information only 2-3 minutes. Much more provision for learner response and learner manipulation of media. Also, media will be designed for specific learner responses, but responses meeting stated criteria. Very few current media can do this!			

VII. ADOPTION OF EDUCATIONAL MEDIA

Quoted Comment	Reactions

65. Much more systematic planning must be initiated before the publics and school systems are going to adopt educational media on a large scale. For example, the following questions need to be asked in reference to educational television, as a case in point: Who are the publics for education? What are their stated needs? What are the alternatives for accomplishing the various sectors needs who have been identified and described? Only with this kind of an approach can we expect to get maximum payoffs. To illustrate our current state of affairs, most enthusiasts for television ask how many channels they can get on the air before asking if there is a cheaper but yet productive medium, for example the U. S. Mail. We might be able to put a video tape in the mail to each school as opposed to transmitting from one channel and one tower only once at one particular time.

66. Media are going to become increasingly significant from a variety of viewpoints. First, the range of educational objectives is going to increase quite sharply. Second, the transportability of instructional systems will be constrained by the media elements within them. Third, the logistics of providing a broad range of instructional systems calls for effective, yet diverse, display forms.

67. If one is going to individualize and personalize instruction, the logistics of that just say that you are going to have to be dependent on information storage, retrieval capabilities, and display media.

68. There has been very little attempt made at the elementary schools to lock in its' curriculum the television at home. A very real opportunity is being missed to link what goes on in the classroom with what could go on at home in a much more meaningful and dynamic curriculum.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
65.	Agree - Particularly regarding T.V. We have a media myopia in regard to many media.	Agree - These questions are among the first which should be asked.	Strongly agree.		Agree - Too much money has been wasted on ETV, producing shows not appropriate for students or poorly scheduled. Local production is costly and should be stopped. A potentially powerful medium has accomplished little.	I think we should be more systematic in our rewarding of the utilization of educational media.	Requires a system approach with deployment of media and modes on a cost-effectiveness
66.	Objectives will be increasingly specific in the cognitive areas.	Agree	Agree - In all domains		Agree - Cooperation of larger groups will make more economically feasible.	Agree	Agree
67.	Agree	Agree - The forms are both the problems and the systems.	A book solves all these problems to some extent - especially the display problems.		Agree - To try to individualize instruction without the aid of the computer is wishful thinking.		Agree

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
68.	It will continue to be difficult, although it is desirable.	Agree	Agree - Including all levels, been adult education.		Attempts have been made to bring T.V. more into the curriculum, but the public is not willing to cooperate. It is too difficult to control the home situation.		Of more importance is the new approach of using video tapes on the home T.V. set.

Summary Comments

Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
			These comments do not seem to be directly related to the adaptation of educational media.			

VIII. MEDIA PERSONNEL FUNCTIONS

Quoted Comment	Reactions

69. The elementary and secondary schools are going to have instructional media centers, building coordinators (in a different than traditional context), and librarians of a new breed, who are oriented to book and non-book, A-V materials, learning and teaching experiences, and assistance to teachers. The new educational media personnel will have to be resource people, rather than screwdriver jockeys.

70. The AASL-DAVI Joint Standards will give the state departments some direction to programs in both library and audiovisual. There are two or three things which one must take a look at when exploring quantitative standards. One, for the schools that don't have a program, this gives them a shot in the arm and says this is what we should shoot for. Second, those who have very good on-going programs feel this a detriment to them, for it limits their ability to carry their program further, for they already meet the standards. Therefore, it has a leveling influence on the good systems.

71. All in all, there is something even more beneficial to the Joint Standards than equipment and nose counting facilities. Here are two groups which represent terrific powerhouses, and who are saying to their publics: "Here are some things you can shoot towards; if you're already at this point, keep going; if you're not at this point, at least here are some guidelines."

72. I consider the Joint Standards as a roadmap and not as a plan of operation. If one wants to get from point A to point B, there are many ways to go. The roadmap only akes you to a point, but after you've reached that point, the road goes on. If people want something in their hand so that they can shape their program to it, I think that they are limiting their point of view and therefore their horizons.

73. I hope the Joint Standards provide a bridge for the old philosophical point of view that A-V people had towards librarians to the idea that there are many resource people and all of them have to be called upon to furnish equipment, facilities, and materials so that they can give the best quality of education to the greatest number of students. I hope the Standards will provide a binding together, rather than a separation.

VIII. MEDIA PERSONNEL FUNCTIONS - Reactions

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
69.	Librarians will be resource people (not much background in learning theory) while media professionals will be instructional designers.	Educational media personnel have been and should be resource people.		The key point is what do media personnel do with resources?	Agree - Media personnel must be educators with a broad liberal education as well as knowledge of media and technology.	Agree	Most paraprofessional needs at the individual school level with professional responsibility for producing mediated instruction at system level.
70.	Agree	Disagree - standards should never control the instructional program. Materials should be a reflection of the instructional program.	Disagree - The schools that were ahead of the standards already will continue to lead.	My impression is that the standards reflect the certification practices most states have or hope to abandon.	Disagree - Most systems aren't up to the standards yet.	Disagree -	Joint Standards merely add to confusion in staffing for mediated instruction.
71.	Agree	Agree			Agree - Most present librarians are better educated and more knowledgeable culturally than AV people. Media people are progressive.		Joint Standards will have limited impact because neither AV or library groups has adequate training programs.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
71. cont.					but not very culturally knowledgeable, which inhibits professional growth and status.		
72.	Agree	Agree	The Standards are not a roundup, they are a packing list.		Most schools are so backward that anything which pushes them forward is needed. Further education, especially of administration, in media is needed.	Agree	
73.	Disagree - There is no rationale implicit or explicit in the Joint Standards which would bridge the gap between librarian and A-V personnel.	Furnishing ways of achieving goals is more important.	Agree		Agree - However, many A-V people are technicians, mental light weights.	Agree	

74. The media man at the top level will be a member of a team made up of learning specialists, system specialists, evaluation specialists, etc. He will be a media specialist, if you will. He will not be a specialist in the strict sense of the word. He will be an educator first, who is knowledgeable about media and their applications and implications. He will be a complementary member of the team and analyze the learning/teaching situation and give it some direction.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
74.	Agree	Agree	Remember to include the subject-matter specialists.		Strongly agree. This is the proper approach.	Agree - This is one of the few workable conceptions of a media person!	The media specialist must be an instructional systems specialist with knowledge of media.

Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
Let's get the library media dichtomy straight! The library-function is the acquisition, cataloging, storage, and retrieval of information, regardless of the medium in which that information is stored; The media-function is the design and use of messages which control (facilitate) the learning process.			I really don't know the Joint Standards very well. When I first saw them I was disappointed because they seemed to reflect the old kind of thinking about irrelevant criteria instead of describing performances. I hope I'm wrong. Most new certification guidelines for educational personnel - of all kinds - provide institutions with general statements describing ranges of behavior, facilities, etc. and a general description of an adequate program. The			

Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
			institution is then expected to develop its own specific standards. It is the institution and its graduates which are then approved.			

IX. MEDIA PERSONNEL TRAINING

Quoted Comments | Reactions

75. We're going to have to develop the breed of cat who has an open mind, that can make application of the new technologies and it may well be that some of our older (more set) media people will have to be replaced or rehabitated. The first group of guys who came out after World War II had three things going for them: Money, Motivation, and Manpower. These things are in sparse supply currently. These people, however, trained people in a pat format, i.e., specialization. I hope that this format hasn't solidified into a block of ice; for, it must again open up.

76. People must not be satisfied only with their job, but with a multitude of jobs and how they are interrealted, in addition to looking toward the application of the new technologies to meet new problems. One of the major problems may be to provide the kinds of media training programs which will prepare personnel to meet the challenges of the next ten years.

77. A necessary aspect of media training programs, whereever they occur, is to personalize the instruction. This is one of the hidden ingredients in every program. Whether one calls this individualiztion, personalization, independent study, or the like, what one must do is to open men's minds and not close them. Many people are quite satisfied, which might be the basic problem between the librarians and the media people. The media people don't fall into the same trap, e.g., threading a projector, viewing a film, etc., and to be so confined that it seems to be an exact science. This thing is too dynamic to ever become cast in a mold.

78. The number and types of programs at the graduate levels in 1967 were: Masters-407; Professional Certificate Holders-112; and, Doctorates-31. If these are realted to the lack of trained personnel to carry out graduate media programs, it means that we're just not supplying enough graduate students to meet the demands.

79. Three questions emanate from the above paragrpah: 1-How are we going to get the necessary people trained? 2-What kind of training should they have? and 3-Who is going to do it? There are only a small number of programs currently in operation which seem to have the capabilities to provide the kind of quality people needed in the field of educational media, especially at the doctoral level. Although there are quite a number of institutions operating at the master's level, the quality of some of htese programs is seriously doubted.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
75.	Agree - He is also an idea-man.	Agree	We need specialists at the technician level.	The new technologies are based upon some rather old principles of learning. It may be that principles to be applied are not likely to change sc rapidly, so these should be the focus of training, with many applications, of course.	Agree	Strongly agree.	
76.	Agree	Agree	We need to be able to deal with change.	Technology should implement specific behavioral objectives, which will undoubtedly change.	The "training" that goes on in most colleges and universities is too fragmented - training is for paraprofessionals. We should emphasize a broader education.	Agree	

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
77.	Agree	Agree	Agree	Agree		Strongly agree.	
78.	Strongly agree.	Agree	Agree	Few of the graduate students we do train are equipped to evaluate media application or train others to evaluate.			
79.	Strongly agree.	Agree	Agree		Agree		

80. Regarding the role of the military, business, and industry in the training of media-related personnel, their focus is slightly different. The military is training personnel in a mechanistic sort of way, and I differentiate between training and educating. If one wants to have specialists trained in operating something, fine; this is training, not education. The military, business, and industry can do a fine job in training someone to do something. As an example: One of the questions raised in reference to the military is: After Viet Nam, what? It may well be that the military's role after Viet Nam will be to give kids training in a basic skill. Furthermore, each of these three institutions can train paraprofessional personnel in media, e.g., photographers, television technicians, cameramen, etc., but this does not include education in my humble judgment.

81. In education, one can't count the number of cows in the barn, but instead the quality of the milk. This is very easy to say, but very difficult to do. Training is mechanistic, education is humanistic. At times it is very difficult to equate the humanistic element in the media field and profession.

82. In terms of what kind of a person we should be looking for in the media field in the next ten years: an innovator, a creator, and a person who works well with people, for we're in the people business more than we are in the hardware and software; but, basically its a people business. Once we lose sight of the fact that we are working with people and kids, we're going to lose our effectiveness. Being in the people business, then, How does one train a leader? What is a leader? A leader is a guy who recognizes other peoples points of view and then makes applications. You do it in different ways. In our graduate departments, we send our students out to departments and divisions so that they get to know people. Not so they get to know the hardware.

83. If you're going to train an educator and a leader, I can take any one of the best graduate students I have and within six months get him to be an educational media specialist. He doesn't need 19,000 courses on ohw to look at a motion picture. He needs these other ingredients so that he sees the insights in education and understands the problems and then he has the eligibility to make the application of technology to those problems.

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
80.	Agree	This may be a straw argument which dissolves when dealing with problems to solve.	This distinction is the trouble for most "educators"	What does one do when he is trained in media competencies? What does he do when he is educated in media competencies. What is the distinction in operational terms?	Paraprofessionals and those needing job skills can be "trained" - and training is needed. But, education has to do with enabling the individual to achieve his optimum potential.	Don't short-sell "military training"	
81.	Agree - But, training is one dimension of education.	Our job concerns itself with both aspects.	Isn't it just the reverse?		This is because the emphasis in A-V education has been on mechanics. Also, those who teach have been "trained" and not educated.		
82.	Agree - What are the implications for training programs.	Most leaders will know the grubbiest details of their field.	We work with people because we have to work through them.	Agree - But with specific use of media and people's use of media!	Agree - Also, they should have a knowledge of subject-matter.		

	Ely	Gerletti	Haney	Hite	Lacy	Lange	Larson
83.	Agree	This depends on the nature of the decisions to be made and the problems to be solved.	We should do this with the mediocre one's too. The worst thing is the mediocre one who his instructor develops when he is least suited for a technical operator.	What are the other ingredients?	Strongly agree.		

84. In almost any function of educational media you need to have a creative and dynamic individual. An interesting observation is that the leaders in the educational media field have their backgrounds in music. Almost all of them have this outgoing personality and a feel for the creative. You can have, for example, a researcher who doesn't have a creative fiber in his soul. But under the direction of a good creative guy he can perform fairly well. Management, for example is the one who pulls together the advantages and limitations of his staff. When he hits a sour note, he trys to do inservice training, if you will. A constant problem is how to maximize the capabilities and craativeness of each staff member, for we're a service organization. You're not going to have an effective support team unless you get people pulling together and exercising their creativeness.

85. What about the retraining of existing media-related personnel? This has at least two aspects. One, is related to leadership. Maybe they have to be made mad and uncomfortable about their current job that they must do something about it. To get new ideas and insights into their jobs that their educators and not pencil pushers. They must be concerned about the quality of their current productiveness and to seek further involvement at the state and regional level. A contribution to the field is equally important as having an exemplary program. This provides a great deal of self-direction. I think this is the primary responsibility of every educational media specialist in the country.

86. Graduate Programs in Higher Education: change from training only the educational media specialist to that of educational media generalist. At the masters level, I see three areas of graduate work: (1) educational media administration (e.g., head man for a school system); (2) educational media librarian and, (3) the media specialist (a split masters, distributive major or specialized areas e.g. photographers, television people). There will continue to be a need for these kinds of specialized areas and there are some very good institutions who are training these people. At the doctoral level, the main training will be for educational engineers, people who know how to interpret instructional systems in terms of curriculum, psychology, administration, and media. This kind of combination provides qualifications to interact with curriculum directors, teachrs, etc. This person is an educational person first, a media person second. This person will be qualified to assume a position in higher education as administrator of A-V center, developer of graduate programs to teach courses in the schools of education, member of a team of educators working in the

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84.	Educational media personnel are consultants as well as service-oriented.	Agree	Agree - We need media conductors. Music students are not only creative, but also performance oriented.	I don't think musicians are more creative than the general run of other people.	Creativity, liberal education, understanding of and interacted in people are the most qualitifications.	This is at the witch-doctor level.	
85.	Agree	On exemplary program may be a contribution, but self-direction is critically needed.	We need research, service, and dissemination of information about exemplary programs.	This suggests that media persons are not educated but passes the required characteristics as exposed to the problems in media, they become leaders.	Existing media personnel know the problems and know what they need. But, be careful to take only those with real potential.	It doesn't give anything to build on.	
86.	At the Master's level, library schools will train media librarians and paraprofessional and technical	Media specialists do not have to go through a graduate education program. At the doctoral level, many positions	Strongly agree - clear and comprehensive.	Not very useful for designing media training programs. Some sort of hierarchy of competencies would be appropriate,	Strongly agree. Stop driving away good people by research requirements.	I like the general idea of differeniations; but, the strategy descriptions need supportive statements.	

academic areas. By assisting these graduate students the quality of education will be improved across the board.

87. We have caught up a lot of elementary and secondary schools and school districts through the institute technique. I am sorry to see the lack of funds for continuing this particular emphasis. Last year there were 39 media institutes; this year there are only 14. The indication is that enough people have been trained and are aware of the implications of media in the schools that they can carry on their own programs. As the regional resource centers develop in school districts and regions, the leadership will be there, but we will have to continue to carry out in-service training. This is a never ending job. You just don't know where these people have been trained and educated. As more and more schools of education include the media area in their course work, this means these people will be better trained than in the past. However, they will have to be carried from that point forward in terms of more sophisticated utilization techniques and systems analyses. The role of in-service training in the elementary and secondary schools is the responsibility of the person running the media center, i.e., giving them insights that they couldn't possibly get in a college or university class. Our classes are always filled with teachers to get more credits and therefore a higher salary. Training must be an internal district situation where they have the resources, facilities, trained personnel, and back-up teams with which to implement this into action.

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86. cont.	programs will train the media specialist described above. Agree with description at doctoral level.	will be needed. Some will continue for a few years, others will fade away.		but in terms of specific competencies or behaviors.			

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87.	The institutes are a useful technique and will continue. They were cut back temporarily because Federal dollars were limited. Continuing education in media for teachers is a never ending job, no matter where it is done. It is probably more effective at the district level.	Teacher training will be partly district and partly institutional responsibility.	Can states support institutes better than universities? Should institutes be a regular part of the program of a state school?	The opinion of HEW is that the Institute concept has proven to be a failure, mostly because institutes were not designed to change the schools themselves, only the individual teacher or specialist. Their data seems to show that very little change resulted.	More institutes are needed. Constant re-education of personnel needed. District training very desirable.	Agree - More funds needed for institutes!	

Summary Comments

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What about the preparation of media professionals for higher education? He is the only curriculum specialist (in the public school sense) that is available. His preparation must include instructional developments (psychology, systems, evaluation) and human relations training (through sensitivity experiences, etc.)			There have been two general approaches to the evaluation of teaching historically: 1) teacher characteristics and 2) teacher performance. The second is much more highly considered today. It is much more possible to change performance than characteristics. Media training should follow suit, i.e., in operational terms and in some sequence.			