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AUTHOR Edwards, Fern
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ABSTRACT

With the purpose of designing a learning center to fit the instructional programs of Gallaudet College, a review of the literature and visits to 20 schools and colleges were made and options considered for the provision of nonprint materials. The costs, advantages, and utility of various nonprint retrieval systems are analyzed, specifically videocassette systems, television, and dial access equipment. Library functions necessary in the support of a nonprint collection are defined, including selection of materials, with emphasis on faculty participation; organization and housing of the collection; personnel; dissemination; outreach to students and faculty; and evaluation. Recommendations are then made, in the form of performance objectives through 1980, for the development of the nonprint retrieval services at Gallaudet College Library. Cost estimates are provided for achieving these objectives. Because the provision of such a learning center has implications for the total program of the college, suggestions are made for increased coordination between the library and students, faculty and administration. (SL)

RETRIEVAL OF NON-PRINT INFORMATION

WITH

RECOMMENDATIONS FOR GALLAUDET COLLEGE

by

Fern Edwards

Funds provided by Council on Library Resources

August, 1974

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PURPOSE AND RATIONALE

In the field of education, change is the password. Terms such as innovation, open classroom, individualized learning, accountability, new media, learning centers, remote access, and cable television have rapidly become a part of the professional vocabulary. The impact of such changes has been felt more in the public schools thar in higher education, but the tide is rising fast. The question is no shall we change, but in what directions and at what speed. Will we reach out with eager expectation to the challenge before us, planning for optimum effectiveness, or will we just let it happen in a way that will persuade everyone that our ideas are ruining education. The choice is ours. Alfred North Whitehead said in his Aims of Education, "If we wait for the necessities of action before we commence to arrange our ideas, in peace we shall have lost our trade, and in war we whall have lost the battle."[1] It is essential that we plan now carefully and with as much understanding of the future as possible. Crash planning at the last minute could be fatal.

Marshall Gunselman has listed five potential influences on higher education in the 70s. (1) "A decelerating growth in student enrollment. (2) The general abandonment of highly selective admission standards. (3) A rededication of the members of the profession of education to their primary responsibility of nurturing efficient learning among their students. (4) ... No amount of formal education ... will prepare anyone to be for long an efficient practitioner of his calling. ... Continuing education throughout life is now as essential as eight years of schooling was considered adequate

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1. Ron J. McBeath, "Program Planning and Management in Audio Visual Services for Higher Education," Audio Visual Instruction, 16 (October, 1971), p. 62.

only fifty years ago. (5) A slowing down of the geometric increase in financial support of higher education from legislatures, corporate donors, and private philanthropists."[2]

Gallaudet College is already experiencing decelerating growth, which is pointing up the importance of serving a broader clientele. We are becoming aware of the need to serve the deaf community at new levels and have begun to do that through programs like the Prepartory Project and Continuing Education. We are assuming increasing responsibility for fulfilling the educational aspirations of the deaf by meeting them where they are and finding a way to satisfy their needs. Because of the necessity of meeting the needs of a wider range of abilities and the likelihood of a tighter budget, we must make the best possible use of people, buildings, and equipment through a constantly improving instructional program.

These trends have large implications for the library. It is only by taking full advantage of what technology has to offer that we can hope to meet the demands of the future. The idea of the library as a media center is here to stay. Change will come. "If we in the library profession permit change to happen without being informed and active participants in it, we are derelict in our professionalism."[3]

The book has been and will continue to be a vital, fundamental tool in the educational process, but for some purposes other media are more effective. For example, they can provide an "experience" quality for drama, arts and crafts, as well as for travel and other cultural experiences which have not been available first hand. Experience, even when second hand, is a vital part of learning.

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2. Marshall Gunselman, ed., What are We Learning about Learning Centers? (Oklahoma City: Oklahoma Christian College, 1971), p. 6-7.

3. Anna Mary Lowrey, "Staffing Patterns and Education for Media Center Personnel: Relevant or Regressive?" Library Trends, 19 (April, 1971), p. 509.

The faculty has always been an important link in library development. Because the new type of learning center will be even more closely integrated into the instructional process, it will be required to respond to changing needs of students and faculty. No plan can ever be final because the program is constantly changing. Better ways must be found to involve both teachers and students in the planning, development, and use of the learning center.

Emphasis in this paper is on non-print materials. That is not to say that they are replacing the book or even that they are an alternate path. They are supplementary to books and books to them. The most appropriate program does not concentrate on one medium as opposed to another, but seeks to find the best medium for each purpose. There is a particular significance for the deaf in a non-print approach. As the Director of the Northeast Regional Media Center for the Deaf says, the deaf are primarily dependent on eyes for communication. Therefore, we must provide the very best visual stimuli for students, accompanied by the best sound for whatever residual hearing they may have.[4] The right question is not "What is there in technology that we can use in education?" but "What are the fundamental needs of education now, what are the demands being made on the system, what is it we would like to do but can't in the present arrangement - and can educational technology help in meeting any of these needs, desires, and demands?"[5]

I feel that our goals are as follows:

1. To develop a learning center which will best serve the needs of the instructional program at Gallaudet College.

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4. Raymond Wyman, "An Optimum Interaction Learning Laboratory," Educational Technology, 13 (August, 1973), p. 40.

5. James Koerner, "Educational Technology, Does It Have a Future in the Classroom?" Saturday Review of Education, 1 (April 14, 1973), p. 44.

2. To promote individualized study, both as an integral part of the instructional process and as an open door to students for independent exploration.

3. To develop a greater degree of coordination with faculty and students in the planning and execution of the above goals.

My hypothesis is that non-print materials will play an increasingly important role in the library of the future, and that the library will play an increasingly important role in the instructional process. My conclusion is that we need to provide a retrieval system for non-print materials which will function efficiently to this end. The following questions will be considered as contributing elements of the retrieval system:

1. What retrieval systems will best serve our needs?

2. What are the implications of the retrieval systems for library functions?

3. What are the implications of the retrieval systems for physical facilities?

4. What are the implications of the retrieval systems for personnel?

5. How much will the retrieval systems cost?

Other implications not so directly related to the subject at hand but strategic in the overall picture will be considered in the chapter on "Implications."

There are several factors that contribute to the urgency of this study:

1. Space in the library is extremely limited. Whatever is done about this problem demands careful attention to the subject of this paper.

2. Faculty members are beginning to reflect the needs for new kinds of services from the library which we are already trying to meet.

3. It is important that we do systematic planning now rather than crash planning later, if we want to be sure to have what we need in the future.

Before dealing with these questions, I would like to further define a learning center.

THE LEARNING CENTER

In the statement of purpose I have indicated the intention of the Library to function as a Learning Center. More needs to be said in this regard. Just what is a Learning Center? Should it be a part of the Library or a separate program?

What is a Learning Center? Sometimes it is called a Learning Resource Center, a Media Center, a Multi-Media Center, a Materials Center, an Instructional Media Center, a Resource Center, an Instructional Resource Center, and other terms. Basically they all refer to a place where information in all media formats is collected, used, and distributed. It "helps the learner to learn, and the teacher to teach, through provision of learning materials of any type as demanded."[1] The validity and demand for such a place have been highlighted by growing emphasis on individualized instruction, which "has made educators aware of the fact that all students need access to a wide range of media. Neither the typical classroom nor the traditional library can fill this need."[2] More important that what is in the Learning Center is what happens there. "Educational technology, when it is used effectively in support of good teaching, offers potential benefits: more individualized, self-paced instruction, the possibility of applying research findings to improve teaching and learning, more access to rich learning environments, and the possibility of greater productivity."[3]

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1. Henry C. Ruark, "The IMC: a Systematic Approach," Library Trends, 19 (April, 1971), p. 522.
2. Harold S. Davis and David J. Crotta, Instructional Media Center; an Annotated Bibliography (Cleveland, Ohio: Educational Research Council of America, 1971), p. 1.
3. Diane D. Henderson and others, What a Learning Resource Center Could Mean for Georgetown University (Washington, D.C.: Georgetown University and Mitre Corporation, 1971), p. 5.

All this adds up to an environment which will help to encourage initiative and stimulate a desire to learn. If, on the other hand, we define our purpose in terms of "a fixed body of information, ... a few highly developed skills, or ... indoctrination to a single view, there is little need for an instructional media center."[4]

If our goal is to stimulate a desire to learn through exposure to the widest range of opportunities and experiences, then the Learning Center, "instead of having a passive, supportive role, assumes an active, moving, dynamic teaching function."[5]

Should the Learning Center be a part of the Library or a separate program? "At one end of the spectrum the multi-media center may be viewed as a collection of audiovisual materials and associated equipment localized in an area designed to facilitate their use by individuals or groups desiring to view films, listen to records and tapes, or study filmstrips and mediated instructional packages. At the other extreme is the total concept of the library as a learning resources center which accommodates all materials and equipment that contribute to learning, local production facilities for the preparation of software in any format, modern self-study stations and electroni. networks to service a building, a campus, a community, or all of these."[6]

The trend seems to be toward integration of library and learning center. "Concepts of media centers as discrete and different from library are everywhere breaking down, largely at the behest of financial imperatives. ... The movement of media centers into, and finally their amalgamation with,

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4. David W. Beggs, "Storehouse and Laboratory," in Instructional Media Center, Bold New Venture, ed. by Harold David (Bloomington, Indiana: Indiana University Press, 1971), p. 5.

5. Alfred G. De Los Santos, "Rationale for the Learning Resource Philosophy at the Community College," in The Learning Resource Center of the Two Year College (Boone, N.C.: Appalachian State University, 1970), p. 15.

6. Philip Lewis, "Introduction, New Dimensions in Educational Technology for Multi-Media Centers," Library Trends, 19 (April, 1971), p. 399.

libraries as we know them is as inevitable as the rising of the moon."[7] Others say, "It can be shown that bringing all communications media together achieves improved efficiency and greater effectiveness."[8] "A one-stop total service ... will more effectively permit new techniques and approaches to reach all faculty."[9] "The fusion of all of these learning resources and the services required to make them available to students and faculty is the only means of making these available effectively and efficiently."[10] "The responsibility for housing and distribution of print and nonprint materials is clear - it rests with the librarian."[11]

The other side of the coin is whether or not the library is ready to accept this responsibility. This new synthesis of print and nonprint "can happen only if the library profession can make a quantum jump in its goals and in its abilities."[12] "Library leadership should be active, not passive; and ... when it is active it should be proactive, not reactive."[13] This new organization implies change both of function and of attitude on the part of librarians, faculty, students, and administrators. I believe this is happening at Gallaudet College.

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7. George N. Gordon and Irving A. Falk, Videocassette Technology in American Education (Englewood Cliffs, N.J.: Educational Technology Publications, (1972), p. 53-54.

8. David A. Humphrey, Program Budgeting and Educational Communications Centers (Grossinger, N.Y.: New York State Educational Communications Association, (1972), p. 3.

9. Richard Ducote, The Learning Resources Center: Concepts and Designs (Boone, N.C.: Appalachian State University, 1970), p. 22.

10. Ibid., p. 8.

11. Melvin C. Shaffer and Carol L. Hampton, "Some Experiences with a Self-Study Center," Drexel Library Quarterly, 7 (April, 1971), p. 150.

12. Robert S. Taylor, The Making of a Library: the Academic Library in Transition. Final Report (Amherst, Mass.: Hampshire College, 1970), p. 7.

13. Louis Barrilleaux, "Library Leadership and the Future of Independent Study," Learning Today, 5 (Fall, 1972), p. 33.

SYSTEMS

The rapid changes and numerous innovations which have so extensively affected the process of education in the last few years have not gone unnoticed in the educational world of the deaf. One of the most important factors contributing to greater awareness and use of non-print materials in educating the deaf has been Captioned Films for the Deaf in the U.S. Office of cation. That program has placed 16mm films within reach of all schools for the deaf, operated Regional Media Centers, conducted summer media institutes for teachers of the deaf, and supported a series of annual Symposia on Research and Utilization of Educational Media for Teaching of the Deaf. A new approach includes a National Center for Educational Media for the Handicapped, an office dedicated to the development of teaching materials for the handicapped, including the deaf, and a depository for all such materials. Although these programs have had a significant impact on elementary and secondary education for the deaf, there are no plans for enlarging the scope to include post-secondary education in any major way.

As the number of post-secondary institutions serving the deaf increases, it seems appropriate, even critical, that the Gallaudet College Library accept a leadership role in promoting the use of non-print resources at that level. The best way to do that is to provide a workable system, or set of systems, which can be used as a model.

Retrieval of information is impossible without the necessary pieces of equipment - hardware - required for its use. This brings up many questions. Which media should we use? Should we use one or many? Should we use only the simple, less expensive media or should we make use of the newest electronic techniques? Will the cost of the hardware be prohibitive?

There is already considerable use of non-print media on our campus. The Library is most recently expanding its use of video cassettes. The College has a fully equipped TV studio and cable TV system. There are numerous uses being made by various departments of super 8mm and 16mm films, transparencies, filmstrips, slides, and CAI. All these uses involve equipment. The various components required for a common purpose are called a system. Sometimes a system is very simple, e.g. slides and a slide projector. Other times systems are complicated and expensive, as in the case of TV, with its expensive recorders, players, monitors, studio, and cable hookup.

There is a cartoon going the rounds which shows a wise old owl perched on a limb, saying, "Technology is the answer ... but what was the question?" The question of which systems we should adopt is very closely tied to the basic question of purposes and objectives. Dr. Cooley of Dallas Baptist College says, "Too often innovations in higher education have failed because they represented improved ways of reaching unimproved objectives."[1] It is very important that the Library develop and promote those systems that meet its objectives and those of the academic departments. Each medium has special strengths. We must seek the systems which fit our needs rather than seeking uses for systems. Sometimes the existence of a sophisticated system draws out from the faculty creative uses for it, but that is a costly and risky approach. When considered from the standpoint of Library retrieval service, however, we must not lose sight of the need to be a catalyst, to create a demand for good service by providing it.

Some systems adapt themselves better to certain functions than others. It is important to make appropriate use of each system adopted. "There are

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[1] C. Ewing Cooley, "A Technical Summary: The Developmental Approach to Learning," in What Are We Learning About Learning Centers? ed. by Marshall Gunselman (Oklahoma City: Oklahoma Christian College, 1971), p. 134.

possibilities for misuse of every expensive and complex communication apparatus ... Closed-circuit TV systems, radio facilities, and computers may be committed to teaching tasks for which they are not appropriate or which use only a fraction of the available information-processing capacity of the equipment. ...

"A general prescription for avoiding serious misuse of instructional facilities has two parts: the materials and equipment should be designed, selected, and used to serve specific functions of teaching and to provide the best possible conditions for learning. Second, there should be a close matching of capacities of the technology with instructional requirements. Furthermore, regardless of the fashions and fads in educational facilities the simplest and most economical equipment that will perform well the defined and required instructional functions should be employed. In brief, solving the problem of determining the most appropriate uses for equipment requires the best matching of functions and capacities with the demands of instructional tasks."[2]

Mr. Carpenter says here that "the simplest and most economical equipment that will perform well the defined and required instructional functions should be employed." Some of the old "AV media" tend to be lost sight of in the full brilliance of the "new media" - TV, CAI, dial access, etc. There is sometimes the temptation to make use of exotic, new systems simply because that is "the thing to do." But if the instructional need does not require the capacity of that system, it may be that slides or graphics will actually do the job better, as well as cheaper. Following is a list of media formats to be considered when making a choice of systems:

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[2]C. Ray Carpenter, "Instructional Functions of New Media," in New Media and College Teaching, ed. by J.W. Thornton, Jr., and J.W. Brown (Washington, D.C.: Department of Audio Visual Instruction, National Education Association, 1968), p. 9.

1. Projected materials

   a. Still pictures

      Opaque materials

      Transparencies

      Slides

      Filmstrips

      Microforms

   b. Motion pictures

      16 mm

      8 mm (standard and super 8 - sound and silent - open reel, motion picture loops, cartridges.)

Advantages: Individual control

Sequential order

Substitute for domonstrations or direct experience.

Creates interest and extends range of experience.

2. Recorded materials

   Phonodiscs

   Phonotapes (open reel and cassette)

   Video recordings (open reel and cassette)

3. Graphic Materials

   Study prints

   Art prints

   Charts

   Pictures

   Maps

High potential for individual study

Readily available

Low in price

No equipment necessary

Individually controlled

Can be combined with other media

4. Three-dimensional materials

   Dioramas

   Models

   Realia

5. Kits

Games

Kits (combinations of two or more media)

Laboratory kits[3]

A media system will be more productive the more closely it meets the following criteria:

1. user-controlled scheduling
2. a large store of programs
3. convenient access to programs
4. adequate supply of requisite hardware
5. mechanical ease of use
6. consistently high level of technical performance
7. previewing capability
8. adaptability of the system to diverse learning situations[4]

Mr. Vernon Bronson gives us some pertinent criteria to consider before adopting a new electronic instructional device. He says, "The evaluation of a new teaching device ... must be accomplished within the total context of the teaching-learning process. No educational technology, and certainly no electronic instructional technology, can be evaluated in a vacuum or in isolation." The most significant criteria of evaluation for electronic instructional devices are:

1. Does it serve a need? We should approach this question with the sophisticated attitude of an instructional technologist, rather than with the naive eye of a media enthusiast. "Needs exist in direct

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3. Paul T. McNally, Guide to the Practice of Non-Book Librarianship (Canberra, Australia: Commonwealth Advisory Committee on Advanced Education, 1972), p. 1-2.

4. Maris M. Gailitis, The Costs of Information Retrieval Television (Toronto: Ontario Institute for Studies in Education, 1972), p. 45.

relationship to the learning objectives multiplied by the instructional problems and divided by the available resources." Will the new instrument serve more effectively than existing ones?

2. Compatibility with other instructional technologies in use.
3. Technical stability and operational efficiency.
4. Software: strength, immunity to damage, reproductive quality, replication characteristics, allowable number of operational passes, production, modifying or up-dating.
5. Cost. Will it do something that isn't being done? Will it do something that is now being done but do it better for less or an equal amount of money? We should relate the potential operational life of the equipment with the initial cost, its normal recurring costs, its projected maintenance and replacement cost, and the special costs of operation, if any. Then we can compare these costs with the probability of affecting the same results with other devices or equipment. The results will produce a valid cost effectiveness schedule.[5]

Is it not true that the "old media" can do everything that the "new media" can do cheaper? Not really. There are some capabilities that have become a reality only in the new era. For example, TV provides these advantages:

1. Ubiquitous - accessible not only in the Library, but other places.
2. Ease of retrieval without "hands on" operation of equipment by the user.
3. Two-way communication possibility.

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5. National Association of Educational Broadcasters, Television Cartridge and Disc Systems: What Are They Good For? (Washington, D.C.: NAEB, 1971), p. 54-55.

4. Can be expanded with the addition of equipment at a central location.

5. Of particular importance to a retrieval system for the deaf is the self generation potential. Films and TV programs which are unintelligible to deaf audiences may be adapted to TV retrieval with the addition of captioning or manual communication, thus making feasible a motion picture approach to education of the deaf for the first time.

Because of the rapid changes in educational systems today, and because of the state of flux of library thinking, any decision made regarding the use of sophisticated systems should "leave as many options open in the future as are feasible, economical, and practical"[6] "Fortunately, technological facilities can be installed on a modular plan. It is not necessary to make huge capital investments at the outset accompanied by the fear that new developments will very quickly dilute the value of the acquisitions."[7] It is necessary sometimes, however, to make a commitment to a system in the face of rapid technological changes and to hold steady with that decision for a few years. This sort of decision has been made at Gallaudet College regarding video cassettes and television. It is necessary to live in the tension between the need to stabilize and formalize operational systems and the need to innovate and therefore remain flexible.[8] Since a major technological innovation can never be adopted in isolation, "implementation requires parallel effort in defining goals and purposes, in redeploying and retraining staff, in learning to employ different methods for storing and retrieving information, and in expanding service in areas never before covered.[9]

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6. Roberts S. Taylor, The Making of a Library: the Academic Library in Transition. Final report (Amherst, Mass.; Hampshire College, 1970), p. 8.

7. Philip Lewis, "Introduction, New Dimensions in Educational Technology for Multi-Media Centers," Library Trends, 19 (April, 1971), p. 400.

8. Taylor, loc. cit.

9. Lewis, loc. cit.

As the Library stands at the brink of commitment to extensive use of non-print materials, with their supporting systems, let us remember that the system itself requires evaluation, quite apart from whether a specific program used on that system is good or bad. Unless there is evidence that the instructional program is better and/or cheaper because of its use, it cannot be justified. Research done to date is quite inadequate.

> What is most impressive about the formidable body of literature surveyed ... is that it shows that instructional media are being used extensively, under many diverse conditions, and that decisions as to which audio-visual devices to purchase, install and use have been based on administrative and organizational requirements and on considerations of cost, availability and user preference, not on evidence of instructional effectiveness ... and no wonder. To date, media research in post-secondary education has not provided decision-makers with practical, valid and dependable guidelines for making these choices on the basis of instructional effectiveness.[10]

In evaluating systems we need to be constantly considering the use of one in relation to the other, e.g., CAI programs coordinated with the use of videotapes, or graphics used to support films or slides. We need

> ... more multi-media studies based on rigorous analysis of the design elements in the instructional systems to be compared. That is, analysis of media, learner, subject matter and situational factors ought to form the basis for selecting media combinations which comprise the experimental treatments. The important point is that if multi-media studies are conducted within some theoretical framework, and if these studies meet the requirements of sound experimental design, more solid evidence will be obtained as to the manner in which several media can be combined to produce the maximum impact upon learning. This evidence cannot be provided directly by research which simply pits one medium against another medium.[11]

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10. Peggie L. Campeau, Selective Review of the Results of Research on the Use of Audio Visual Media to Teach Adults (Strasbourg, France: Council of Europe, 1971), p. 19.

11. Ibid., p. 22.

No system, and particularly no sophisticated, expensive one, can be justified on the basis of rhetoric. It must be justified in hard-headed experimental terms. The Library must cooperate with faculty members and the Office of Educational Technology in every way possible to collect evaluative information regarding our retrieval systems.

What about the cost of new systems? Is educational technology prohibitively expensive? Can we afford a multi-media approach to instruction?

Educational technology is the application of scientific principles to the solving of educational problems. It is possible to follow educational technology principles for a given instructional unit without making use of any non-print materials. It is also possible to emphasize the less expensive non-print media with very satisfactory results. Mt. San Jacinto College in Hot Springs, California, encourages the development of multi-media presentations instead of routine lectures. Teachers meet students individually or in seminars instead. But the media used are audio tapes, filmstrips, student response sheets and other printed materials.[12] The media are traditional and inexpensive. It is the approach that is innovative. One of the conclusions of the Commission on Instructional Technology in their study of "Cost and Costing of Instructional Technology" was that "The costs of instructional technology vary widely, depending upon the range of equipment and services."[13] As we talk about retrieval systems, we should not lose sight of the fact that there is a wide choice of approach which reflects a wide range of cost.

However, if we intend to move beyond the basic "old technology," if we wish to take full advantage of the capabilities of the new, money is a vital

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12. Richard E. Banister, "Low-Cost Technology in Higher Education, in Audio-Visual Technology and Learning (Englewood Cliffs, N.J.: Educational Technology Publications, n.d.) unpaged.

13. Marshall Gunselman, "Determining Cost of Learning Centers," in his What Are We Learning About Learning Centers? (Oklahoma City: Oklahoma Christian College, 1971), p. 121.

issue. The Commission also concluded that "most data on costs of instructional technology lack the necessary scope and depth to help education's managers make policy decisions."[14] Everyone agrees, though, that initial costs cannot be made cost effective. It costs more to design, erect, and equip individual learning places than to build bare classroom space, but the "cost of learning centers is approximately the same as any other classroom building requiring laboratories and equipment, such as science buildings.[15] It is possible that greatly enriched materials might increase the cost of instruction. But a note of warning--too much emphasis put on a cost-benefit figure may destory creativity and motivation. Innovators must be allowed some mistakes in this vast area where there are so many unknowns and unanswered questions. As the Commission on Instructional Technology concluded:

> The costs of instructional technology cannot be considered in isolation. They must be compared with the costs of other forms of instruction, as well as the real costs to society of an unproductive education system.[16]

In addition to the initial costs, maintenance costs must not be overlooked in the planning. "Equipment maintenance generally costs between ten and fifteen percent of the purchase price per year. Efforts to squeeze this mundane cost or to use the funds for more romantic endeavors have usually led to unreliable equipment, a frustrated staff, and a disgruntled clientele. ... Learning centers need a revised Boy Scout Motto - 'Be repaired.'"[17] Quality of the materials retrieved is of utmost importance. Mr. Boss, Director of Libraries at the University of Tennessee, is moving into limited, well defined areas of non-print service with a commitment in these areas to the best quality that

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14. Ibid., p. 122.
15. Ibid., p. 128.
16. Ibid., p. 122.
17. Marshall Gunselman, "Some Conclusions," in What Are We Learning About Learning Centers? (Oklahoma City: Oklahoma Christian College, 1971), p. 210.

money can buy. We must be very careful to avoid sacrificing technical quality to save money.

One further cost observation reflects a very basic decision of policy and commitment campus wide. It has to do with whether or not new systems are to be taken seriously as instructional tools and be fully integrated into the instructional program or whether they are to be used mostly as supplementary resources. As Dr. Gunselman puts it, "Certainly the cost is more if the use of a learning center is simply added to traditional methods. If an institution uses its learning center as supplementary to regular classroom instruction, the institution must be prepared to allocate more funds to the instruction budget. This is not necessarily bad if greater learning is the result."[18] The Gallaudet College Master Plan Program Summary states: "The student ... will be offered a wide variety of learning experiences and instructional options," and "Students will be given the benefit of mediated instruction."[19] The Library staff stands ready to exercise its responsibility not only to provide extensive non-print resources, but also to cooperate in the integration of these resources into the instructional program.

Having said that innovative technological systems are expensive, let us consider approaches to cutting the cost:

JUSTIFICATION
CENTRALIZATION
EXPERIMENTATION
EVALUATION

First, JUSTIFICATION. As was stated before, sophisticated systems should not be adopted until justified by demand. But even for less expensive equipment it is important to look at each purchase with a critical eye, to establish clearly its purpose, to prove to our satisfaction that it will be capable of

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18. Gunselman, "Determining Cost of Learning Centers," p. 122.
19. Master Plan, Gallaudet College, Program Summary, July 1, 1973, p. B-3.

producing the desired result, and to conclude that it is the least expensive item on the market which can give the quality and performance required. Our goal whenever possible should be to limit formats rather than to proliferate systems.

Following are some recent decisions made by the library regarding systems:

1. Videocassettes will be the standard format for moving pictures for library use.
2. Prefer audio cassette over record format when purchased instructional programs include audio.
3. Traditional, simple systems such as filmstrips and slides will not be discarded in favor of more sophisticated systems. They play a unique necessary role.
4. Automatic equipment for the presentation of filmstrip and slide sound programs is to be avoided. Sound cannot be depended on to communicate the message, and the advantage of user control is lost when the program is automated. The occasional filmstrip or slide program which needs to be used with sound will be adapted to videocassette format.

It is interesting to note from a 1972 survey of Education Materials Producers Sales conducted by the Educational Media Producers Council, Fairfax, Va., the following changes during a five year period in proportional commitment of dollar resources:

(In Percentages)

	1968		1972	
16 mm (color)	28.6		22.1	
Silent filmstrips	17.5	25.1	8.3	28.0
Sound filmstrips	7.6		19.7	

	(In Percentages)	
	1968	1972
Overheads	8.6	4.9
Prerecorded tapes	4.9	9.7
Multimedia kits	6.9	12.7
16 mm, black and white	6.7	3.1[20]

CENTRALIZATION. There are several choices regarding centralization of functions which allow for money saving decisions along the path of development of non-print retrieval systems. The first is in the selection and acquisition of equipment. There are several reasons why all audio-visual equipment used by all departments should be acquired centrally. First, equipment should be purchased by those who are most qualified to know what the best available equipment is at any given time (and this changes from month to month as more and more companies get into the act.) If any department wants a specific make and can justify its purchase as against others, its choice should be honored. However, one of the advantages of centralized acquisitions is the opportunity to standardize as much as possible without sacrificing flexibility. Second, it makes the job of maintenance easier. The same knowledgeable technicians who select and acquire equipment can also check it out when it arrives to be sure it is in proper working order. They can plan routine maintenance which may avoid expensive repairs later. Third, it saves time (which is also money). One efficient centralized procedure for acquiring equipment by people who know the market saves the time of 20 inefficient decentralized procedures by people who do not know the market. And last, it saves money. It is easier to get a good price when buying in quantity

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20."Filmstrip's Outstrip 16 mm Films--Multimedia Kits on Rise," Epiegram, 2 (October 1, 1973), p. 2.

(say, 30 slide projectors) than when buying only one. Also, the centralized acquisitions personnel are enabled to take advantage of special "offers" or "deals" if they know the current requirements of the campus as a whole.

Other areas of centralization which we already have are inventory and maintenance.

A fourth is storage. It is not true that every piece of equipment which is acquired centrally must be stored centrally. It is true, however, that unless equipment is used heavily by a given department, housing it in that department limits its use and makes more extensive duplication of equipment purchase necessary. We should avoid the tendency to "save" our equipment so it will last longer. We need to think more in terms of getting as much use from it as possible before it is superseded by superior equipment. If a given department has two filmstrip projectors and could supply the demand with one, then one should be put in central storage for the use of anyone who needs it. On the other hand, if the two filmstrip projectors are constantly in use and it is necessary to turn down requests from teachers in the department because there are no machines, the department should be able to get additional machines from central storage on extended loan as long as the demand continues. Central storage makes necessary an efficient pick-up and delivery system, so that a machine in good working order can be at the right place at the right time. This can be done with the use of student help and can give students valuable experience in the use of equipment in the process.

There should be an Audio-Visual Equipment Laboratory, a place to learn to operate machines. To the very greatest extent possible, people who need to use equipment should be comfortable in doing so. There needs to be a place where faculty, future teachers, students, and staff can have hands on

experience with equipment and "learn to do by doing." If adequate written instructions are provided, this can be done individually.

A final type of centralization which is called for in order to make the others work is that of the instructional equipment budget. If the same machine is to be shared by various departments, it must be paid for out of a central fund. Use by only one department must be justified by evidence of use rather than automatically granted because it has been purchased by that department. Some of the effects of this major step deserve consideration. One is the effect it has on departments. It should be thought of as a way of pooling our resources so that we can have more together than we can ever have separately. Money will not be as plentiful probably in the 70s as it was in the 60s, and we cannot afford unnecessary duplication. It could even be a freeing experience. If a department requests a piece of equipment from central storage for a specific use and after several weeks decides that another type would be better, it can return the equipment and take the other instead (if it is available or there is money to pay for it). The department need not feel guilty because the original piece of equipment is rusting in the closet. This does not mean, of course, that each piece of equipment does not have to be carefully justified as to its intended use before purchase, but it does allow more flexibility in experimentation.

The other effect of a centralized equipment budget has to do with the administrators of that budget. Instead of having a small equipment budget hidden away in each department budget, there will be a sizable, impressive sum of money reflected in one large instructional equipment budget. This will be a highly visible budget item which will command greater scrutiny and justification. It should assure better use of the limited funds that are available.

Let me add one very important footnote to this discussion of centralization. I believe it can be satisfactory only if the centralized budget is administered from an office on the dean level, where all instructional services are coordinated (not just the equipment budget). See the discussion of organization in the chapter on implications.

I have proposed two approches for cutting costs--justification and centralization. Let us now consider EXPERIMENTATION. Aside from the commitment to educational technology for the sake of better education, it is likely that that kind of close integration of the instructional program with media systems will result in savings which will help offset additional expenses.

Some experimental approaches that might effect savings as well as improved learning are:

1. Offering advanced courses which attract few students on a more individualized basis. Advanced students are the best able to study independently.
2. All teachers who teach a particular course could cooperate in the individualization of certain units. However, alternate learning paths to meet the needs of different learning patterns are desirable.
3. Use equipment over as long a period of time as possible.
4. Increase speed at which a student learns.
5. For a 3 hour class, meet class twice a week and use an individualized lesson in place of the third meeting. (The Oklahoma Christian College offers a speech course in this way, and the students prefer it.)

6. Select the lessons that are most easily adapted to an individual or multi-media approach and offer them in that format instead of in the traditional classroom.

If one thinks only in terms of saving money, it is possible to design the program to save whatever he wants to. Oklahoma Christian College experimented with completely individualizing their intermediate algebra course, having no teacher contact. The result was that students never finished. Now they have a senior math major who meets with them once a week. This works fine. Dr. North says, "Our experience is that students, by and large, have to have some structured contact with teachers in order to keep going."[21] This has been born out by other people with whom I have talked from colleges that are known for their innovative teaching programs, such as Oral Roberts University.

It is not economically possible for a teacher to give the same lecture at several different times to students as they are ready for it on an individualized program, but it is possible to make available a tape, film, book, or programmed instruction lesson on an individual basis.

I have interjected something about teaching to make a point about how new approaches might affect the cost of retrieval systems. Further pursuance of this path is not the purpose of this report.

EVALUATION. As has been mentioned in other parts of this paper, evaluation cannot be ignored at any point. It is expensive to maintain ineffective instructional programs and systems.

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21. Stafford North, "Evaluation of Learning Centers," in What Are We Learning About Learning Centers? ed. by Marshall Gunselman (Oklahoma City: Oklahoma Christian College, 1971), p. 69.

THE VIDEOTAPE SYSTEM

Videotape has made its appearance on the educational scene with an impact that very likely has only begun. It has many of the assets of film but not quite equal quality yet. However, for typical instructional use a quality videotape is every bit as acceptable as a film. It can be used in room light, a decided advantage in a learning environment. It has the capability of instant recording and playback, which makes it a valuable tool for teaching and evaluation purposes. It can be used to record television programs off-the-air. The porta-pak (portable) half inch video recorder and camera unit is being used extensively on some campuses, such as San Jose State College, by teachers and students. It is easier to use than film, particularly in the cassette format. Although the open reel format is better for recording purposes, it is certainly the cassette that appeals for its ease of use and ready access, and it is that format to which most of the following remarks are connected.

Any format can be put on a video cassette. It can even be used to store still pictues, perhaps the entire slide and filmstrip collection on one cassette. A random access capability would make such use more practical. Such a tape search unit has been developed by Alma Engineering, San Diego, California. The RAC-300 extends random access capability to any 3/4" videoplayer. The price will be about $400.00.[22]

Another random access program system, exhibited at the Sony Showcase exhibit is the self-contained system with a color television receiver and 3/4" videoplayer and cabinet with a videocassette storage space made by

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22. "Auto Tape Search Unit Debuts," Videoplayer, 2 (December, 1973), p. 30-31.

Videodetics, Anaheim, California, for $2,995.00. Then there is the extensively modified Sony VP-1000 player offered by Techno Products Company, No. Hollywood, California. It makes possible the random access selection of up to 45 separate programs on a 60 minute U-matic videocassette.[23]

In addition to the random access feature, it is also possible now to buy videoplayers with a pause feature which will stop the tape where it is without rewinding it into the cassette. This is a great asset to the use of the videocassette in individualized instruction. Sony makes such a machine for $1,200.00.[24]

At the present time it is easier to maintain and repair 16 mm projectors than video cassette hardware and cheaper to buy them. However, there is little doubt that prices will come down for video cassette systems, quality will improve, and future equipment will be more rugged and easier to repair. Although the video cassette hardware is now more expensive, the software can be produced more cheaply. A 30 minute 16 mm color film costs about $200.00, but a 30 minute color video cassette duplication costs only about $55.00. Obsolete programs can be erased and the tape recycled, thus reducing replication costs by half or more. Sony and 3M suggest that you can get in excess of 1000 plays from a single cassette. Tests have shown that a recording on a Sony video cassette can be played 200 times without significant picture quality loss.[25] A film is good for 10, 20, or 30 showings. Films require regular inspection, cleaning and repair and may be more easily damaged than video cassette tape.

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23. "Videosell Has It All," Videoplayer, 2 (November, 1973), p. 29.
24. "Random Access Videoplayer," Videoplayer, 2 (August, 1973), p. 20-21.
25. National Association of Educational Broadcasters, op. cit., p. 37.

Following is a list of educational/social applications of the video cassette as suggested by the National Association of Educational Broadcasters:

1. Magnification and visual display of laboratory materials, graphic pieces, book pages, etc. for group viewing.
2. Preservation of "behavioral specimens" for analysis in such performance areas as speech, drama, music, practice teaching, and calisthenics.
3. Administrative prescription to students or personnel who must be shown how to go about a certain procedure in class, in the laboratory, in getting together documentary evidence and like activities.
4. Drill exercises in language, calisthenics, mathematics and other subject areas where rote learning is desired.
5. Data storage and retrieval, especially for group showing. The data may be static or cinematic, with or without audio.
6. Test application in a non-print format so that a wider range of responses can be elicited for course measurement.
7. Simulation and gaming experiences requiring audio-visual cueing.
8. "Electronic blackboard" displays of teaching value in mathematics, physics and related topics of high abstraction.
9. Topics for written or discussion assignment given in audio-visual formats.
10. Materials to enrich curriculum through expansion of a student's learning environment. Such materials might include film documentaries and resource presentations by eminent authorities in specialized fields.
11. Specific teaching elements to be integrated with other elements of course design in making a total learning experience. (This is one of the more valuable TV cartridge system applications).

12. Electronic adjunct materials for correspondence course teaching. These might include special review lectures and make-up exercises.
13. Total teaching, especially through the use of linear programming designs. (It is conceivable that the photographic and holographic TV cartridge system formats might also allow branched programming design.) Linear materials could be used for groups as well as individual learners.
14. Operating components of new instructional systems which are characterized by design procedures quite unlike those of traditional teacher-centered education.[26]

In Texas' Tarrant County Junior College District, deaf students receive instructional aid via 3/4" videocassettes right along with the 13,000 general student population with the use of audio amplifiers and subtitles produced by character generators.[27] At Gallaudet College, increasing numbers of faculty members are making use of videocassettes in their instructional programs.

Standardization of video cassettes has been a problem. The market has offered EVR (Electronic Video Recording) from CBS, Instavision from Ampex, Cartrivision from Carter, Cassette TV from Sony, holographic video recording with laser beams from NBC, video disc recording from Teledec, and others. Although some people still maintain that video discs will replace tapes as the standard format, there are strong indications that the Sony designed 3/4 inch "U-Matic" video cassette format is here to stay. Dr. Gordon says, "From the technical viewpoint we believe that Sony's 3/4 inch tape cassette will

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26. Ibid., p. 17-19.
27. "Video for the Deaf," Videoplayer, 3 (April, 1974), p. 8.

become an industry standard, for many reasons. But, if a way is found to use 1/2 inch tape in the same manner as 3/4 inch tape ... what conceivable difference will it make to the consumer ... ?"[28] Recently manufacturers have agreed that all cassettes of the same type (i.e., configuration) must be playable on all machines designed to accept that type cassette. This will be accomplished by detailed cross-licensing and patent arrangements. The following manufacturers are selling video cassette machines which accept the Sony cassette: Panasonic, 3M/Wollensak, JVC, Concord, Sony.[29]

Which machines should be purchased? A unit requires both a player and a monitor. Players can be bought for $200-$400 less than machines which will both play and record. This is not only a money savings but is also a distinct advantage in terms of preventing programs from being erased accidentally by inexperienced users. Concord and Panasonic have solenoid-operated function controls (i.e., forward, rewind, play, etc.), so inexpensive remote control is possible.[30] Any TV set may be used to receive programs from any video cassette player. The Sony "Trinitron" monitor is of outstanding quality.[31] The difference between a receiver and a monitor is that the receiver can be used only for playing a video cassette or tape, while a monitor can also display a picture directly from a video camera and is therefore useful for production.

Reports are beginning to accumulate about the success of video cassette systems. The Army Audio Visual Service has several thousand video cassette

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28. George N. Gordon, and Irving A. Falk, Videocassette Technology in American Education (Englewood Cliffs, N.J.: Educational Technology Publications, 1972), p. 148.

29. Jim Seymour, "Videocassettes: a technology whose time has come," Educational Technology, 13 (April, 1973), p. 15.

30. Ibid., p. 16

31. Ibid.

players and have given their system a 98.6 percent reliability rating after extensive testing. This rating is comparable to other ratings.[32]

Blank video cassettes of the Sony U-Matic type are available from two places--3M and Sony, but will soon be made only by 3M. Prices are something like:

10 minute video cassette	17.00
20 minute video cassette	20.00
30 minute video cassette	25.00
60 minute video cassette	35.00

How can a program be put onto video cassette? There are three ways. First, send the program to a Sony (or other) Videocassette Duplicating Center. They can make one or 1000 copies, using expensive equipment to insure top quality. Second, send the program to the Great Plains National Instructional Television Center in Lincoln, Nebraska. They have high technical standards and will provide video cassette duplication services at less cost than others (for educational institutions only). Third, in-house dubbing (duplicating) is inexpensive, fast, and capable of high quality. A Sony Video Cassette Duplicating System costs $75,000, but a tape can be made from one machine to another in real time (30 minutes to make a copy of a 30 minute tape). This is not feasible for quantity duplication. Unless a school has a film chain, it must use one of the first two choices to make the first transfer from film, slides, etc. to video cassette. That copy can then be used as a master for making other copies.[33] The Gallaudet College TV studio has a film chain with which it can make a black and white video cassette. In the very near future a color film chain is expected to be operational.

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32. Ibid., p. 17.
33. Ibid.

The question of keeping master copies of programs brings up space and economic considerations. Certainly a working file of master tapes for instructional programs in current use is very important. This does not apply to entertainment. The master file should never be allowed to become a historical file of unused, out-dated programs except for those that are of specific historical interest.

A video cassette player can be hard-wired to several sets and thus be retrievable in many places at once. "One Sony video cassette unit can feed up to 20 TV sets by use of a simple divider, any number of sets by a signal amplifier (or series of signal amplifiers--depending on the number of sets)."[34]

When the box to be placed on top of a TV set for video cassette playback is perfected inexpensively for home use it will make it possible for students to adapt their own TV sets and borrow video cassettes from the Library to watch at home. This probably will not be feasible for several years.

The R and D Center for Teacher Education at the University of Texas, Austin, has adopted the videocassette as their standard output format for audiovisuals for many of the reasons already mentioned. Although materials can be produced (or acquired) originally in their most appropriate, convenient and economic formats, they will be duplicated onto videocassette for use.[35] They believe that with the exception of the filmstrip (which can be duplicated for $2.00-$3.00 and is therefore best left as a strip), it is economically practical to change other formats to video cassette, even slide shows.[36] Frame by frame advance capability, necessary for this application, is apparently already a possibility. The National Association of Educational Broadcasters reports:

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34. National Association of Educational Broadcasters, loc. cit.
35. Seymour, op. cit., p. 14-15.
36. Ibid., p. 18.

> Machines of photographic, holographic and electro-mechanical formats can allow for precise single-frame stops, advances and reverses, making it possible for these devices to be employed as micro-media, provided the picture quality is adequately high for the document materials to be stored. These same cartridge machines might also be employed in displaying frames of programmed instruction, or for making simple slide or filmstrip presentations.[37]

One disadvantage of the videocassette is its limitation in use with large audiences. If an original program in film or slide format is available, it is better for such use. If not, several TV monitors can be used in a large room. This problem is not relevant to the concern of providing retrieval of instructional programs in the library, but it is certainly of concern in the use of such materials for a large class, workshop, faculty meeting, or any of numerous other situations where non-print materials are used with large groups of people.

Let us consider the effect of video cassettes on cost of instruction. Dr. Gordon believes that "Teachers able to use with facility and with academic finesse the videocassette technology may find videocassettes the equivalent of a second teacher or teacher's aide at hand. This might well be considered a mere 'second best' to the real thing for some teachers. For those pedagogically gifted with imagination and teaching skills, the video cassette might, however, prove to be more of a boon than a second teacher."[38]

Videotape, like other formats, has not been adequately evaluated in terms of instructional effectiveness. "To date, media research has not dealt in any systematic way with cognitive achievement benefits which might accrue from videotaped instruction."[39]

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37. National Association of Educational Broadcasters, op. cit., p. 11.
38. Gordon, op. cit., p. 81.
39. Campeau, op. cit., p. 14.

THE TELEVISION SYSTEM

Videotapes may be used individually as described or may be transmitted electronically via television. Television is a mass medium and in some ways seems contradictory to the trend toward individualization of instruction. However, video cassettes and cheaper, light weight TV cameras are giving it a place in the individualized instruction concept. The most difficult problem is the development of course materials that are worth televising, rather than the planning of new and more complicated physical facilities. We at Gallaudet College already have extensive TV capabilities to be put to the best possible use. TV is capable of presenting materials in vivid terms, and its effectiveness will largely depend upon how well that capability is utilized. There have been studies to try to evaluate the effectiveness of instruction by TV. "Major reviews of literally hundreds of comparative effectiveness studies concluded that, in general, no significant differences were found when instructional TV was compared with face-to-face, live instruction."[40]

The logical conclusion to this statement, that teaching by TV can save extensive teaching time, must be tempered with warnings from many other sources. There are two distinct kinds of audiences for instructional TV. One is the open circuit audience such as is served by Chicago's TV College. Lessons are broadcast over educational TV channels. Highly motivated adults may register for the courses and receive necessary materials, tests, etc., as well as optional seminars or individual meetings with teachers. The University of Maryland has experimentally broadcast two such courses developed by the faculty of Britain's Open University over Channel 26.

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40. Campeau, op. cit., p. 12.

The other instructional TV audience is the closed-circuit audience, such as that on Gallaudet College campus. College students may not be as highly motivated or as willing to accept a "talking face" presentation on TV in place of ordinary classroom instruction. TV programs in this kind of set-up must be superior and must successfully exploit the potential of the medium. It needs to be combined with other devices and procedures that individualize instruction rather than mass produce it. The odds are against TV in the classroom unless it is followed up with conventional instruction.[41] On the other hand, if TV is to make the impact in education of which it is capable, it must be carefully integrated into the instructional program and not delegated solely to the ranks of entertainment and supplementary input.

The Strake Jesuit College Preparatory in Houston, Texas is one place which is making use of a TV - RF (radio frequency) distribution system for instructional purposes. They have six video channels to each of 80 stations on a six building campus. A user at any of these stations can dial the operator in the control room and request a program by voice. The program is started manually by the control room attendant.[42] Although they have a dial access system for audio programs, they decided not to use dial access for video.

TV is much cheaper than dial access. It is designed for the home market, which is highly competitive and will result in lower prices and more reliable equipment. Dial access is designed for the educational market.[43] Dial access has many advantages and many disadvantages (see next section on dial access).

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41. James J. Zigerell, "Televised Instruction: Where Do We Go From Here?" in Audio-Visual Teaching and Learning (Englewood Cliffs, N.J.: Educational Technology Publications, n.d.), unpaged.

42. Richard Stoltz, "SJET: the System for Individualizing Instruction," Audio Visual Instruction, 16 (September, 1971), p. 72.

43. Taylor, op. cit., p. 200.

Its chief advantage, the electronic control of access to programs, is not as great an advantage as may appear on the surface. The capacity of the system is limited, and programs not on the system at any given time must be handled manually anyway. Dr. William Jernigan at Oral Roberts University, which pioneered in dial access, told me on my 1973 visit that he plans to expand the capability to their dial access system by using TV. He said if you have closed circuit TV there is no need for dial access.

Dr. Robert Taylor wrote, in his description of the kind of library he would like to develop at Hampshire College, of such a TV system which would in addition have a user remote control capability after the video tape had been put on the system manually.[44] Such a capability is possible although as far as I know has not yet been proved practical through use.

TV as we have known it commercially for years is transmitted by air waves. There have been educational channels which have made their own contribution to TV transmission of instructional programs. An example of an educational program that everyone knows about is Sesame Street. It has received wide recognition for its quality use of TV's special capabilities. Why are there not such programs on the college level? Aside from the lack of imaginative college professors who will dare to dream big, there is the obstacle of tremendous cost. Sesame Street costs $8 million a year. We spend, however, far more on liquor, sports, gambling, and cigarettes than on education. In an Educational Product Report it is estimated that a high school or college equivalency course of 20 hours would cost about $800,000, to which should be added thirty percent for research, planning, organizing and distribution.[45]

Whatever is or is not happening on the TV air waves, cable TV greatly enhances the possibilities of TV. Cable TV signals are transmitted by

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44. Ibid., p. 198.
45. Ed. Product Report, "Three educational technologies." no. 45, v.5, n.9, p. 41.

coaxial cable instead of over the air. It provides a clear, static-free picture. One type of cable TV is the closed circuit system such as ours at Gallaudet College. The other is the community antenna system which serves subscribers in the community served by any given cable system. There are now 9 million cable subscribers in the U.S.[46] By 1980 it is possible that half of the homes in the U.S. will be wired for cable TV. We are on the verge of a cable revolution.

One of the reasons why this development is so revolutionary is that it provides for a capability of 24-30 channels on one wire. Because cable service can diminish the audience of other TV stations, it is a threat to them and is therefore being controlled rather stringently by the FCC. The controls are slowing the developmental process in urban areas like Washington, but develop it will, although slowly. There is already a cable system in the Gaithersburg, Maryland area, and one starting in Arlington. Perhaps there are others underway. Eventually the entire metropolitan area will be served. One of the implications of such a development which could have great meaning for the deaf is that FCC guidelines make it mandatory for every cable system with more than 3000 subscribers to provide at least one channel for "public access." Anyone can do anything on TV on a first come, first served basis.[47] That will provide an opportunity to serve groups with special needs, such as the deaf. However, the five year trial period for this requirement is already partly gone, and the success of the idea is far from proven. There are many unanswered questions about the future of cable TV.

Another requirement of the FCC is that cable systems are required by law to have capacity for at least non-voice two-way communications.[48] There has

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46. Henry S. Resnick, "Do-It-Yourself TV," Saturday Review of Education, 1 (May, 1973), p. 60.

47. Ibid.

48. Federal Communications Commission, Cable Television (Washington, D.C.: FCC, 1972), p. 8.

been much conjecture about how this would work. It most likely will not even be attempted for some years. "As is often the case with emerging technologies, the promise of two-way services on cable has at times been oversold. Although most proposed new services are technically feasible, many will not be economically feasible for at least a decade. Others can probably best be accommodated on the telephone network or by other means. Some may not be desirable at all. The value to society of, and the commercial demand for, various new cable services is, in general, unknown at the present time."[49]

Interactive services can be separated into four categories:

1. Subscriber response services (opinion polling, etc. Short data response to queries from a central point.)
2. Shared voice and video services (instructional TV with voice feedback, in which individuals share return channels to a central point.)
3. Subscriber initiated services (catalog ordering, ticket sales - the individual can request information or services from a variety of sources.)
4. Point-to-point services (one subscriber transmits video, voice, or data information directly to another).

The last two types are too costly for mass home audiences in this decade, although some business and instructional uses may be feasible. Subscriber response services are more likely candidates for home use in the next five years. More sophisticated and costly services such as information retrieval and CAI could be added to the basic response system as they prove feasible.[50]

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49. Walter S. Baer, Interactive Television, Prospects for Two-Way Services on Cable (Santa Monica, Calif.: Rand Corporation, 1971), . p. V.
50. Ibid., p. VI.

Some of these possibilities may prove to be very valuable to our service to the deaf in the years to come, especially after the local cable network has developed, but for the immediate future covered by this report it would seem advisable to concentrate on simpler uses of our own closed circuit TV system as a part of the development of a multi-media instructional environment awareness on our campus.

Another library application of television is Video Reference Service (VRS), which means sending information visually over the TV system to a remote location. A TV camera is mounted to focus on the material to be televised. A monitor shows what the camera sees. A zoom lens provides magnification. A transmitter sends the signal to the CTV head end. Such a system in the Natrona (Casper, Wyoming) Public Library costs:

hook up (cable to head end, transmitter, modulator, and cables to connect them)	$ 3,500.
Sony 3210 camera (black and white)	495.
Zoom lens	195.
Monitor	325.
Flood light	12.
TOTAL:	$ 4,527.

They believe demand for the service will increase, but it has already helped increase the reference work load by forty-four percent in a year.[51]

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51. Kenneth E. Dowlin, "Can a Library Find Happiness in the Big, Cruel World of Television?" Wilson Library Bulletin, 47 (May, 1973), p. 765-766.

THE DIAL ACCESS SYSTEM

For the most part, when educators refer to dial access they mean the electronic automatic remote retrieval of instructional programs (audio and or video) by means of a computer switching mechanism. They usually do not mean a random access system, by which each user receives the desired program at its beginning on call and has control over it as long as desired. The former remote access system has the disadvantages of not providing user control and of not being able to start a given program for a student at the beginning if there is already another student using it. The latter has the disadvantage of being so prohibitively expensive that it cannot be justified except in terms of extremely heavy demand. Dr. Marshall Gunselman, who was at the time located at Oklahoma Christian College, where their dial access system is audio only, says, "It is difficult to justify dial access video solely on the basis of cost."[52] He was not talking about random access, either, but only remote access.

I have visited only two random access systems. The first, Oak Park and River Forest High School, which I visited in 1972, was in operating condition, although there were switching problems and it was underutilized. The system at Illinois State University, Normal, Ill., had been down since November, 1972, and was just about to get on its feet again when I visited on June 8, 1973. That system was justified by heavy usage and was planning to expand, but nevertheless was having big equipment breakdown problems. A third - St. Cloud State College, St. Cloud, Minn. - I did not visit because the system was down when I called in the spring and was not expected to be back in operation before September. All three of these were Ampex

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52. Gunselman, "Determining Cost of Learning Centers," p. 128.

systems. It is very possible that in a few years the problems of random access systems will be ironed out and that they will have developed a way of including moving pictures, which they cannot at present. It is also possible that it will have been totally superseded by TV.

I have visited three remote access video systems (not random). These were the University of Maryland Non-Print Library, Oral Roberts University, and Dallas Baptist College. These systems were all in operation. One, the University of Maryland, is new and thus far does not have the support services in the area of instructional development to make use of it properly. Oral Roberts University, the oldest, has probably done the most thorough job of integrating the system with the instructional program. As Dr. Jernigan said, "We have sunk so much money into the dial access system that we must very carefully justify purchase of any other equipment." Dallas Baptist College is working hard on a closer coordination of their dial access system into the total functioning of the library.

In addition, I visited Oklahoma Christian College, which has a dial access system of audio programs only.

Tarrant Count Junior College reports that it is moving away from dial access to individual pieces of equipment because of the limitations of dial access.[53]

In 1972 I wrote a paper on dial access systems, to which I refer for further background.[54] At that time I felt that such a system would be most desirable for Gallaudet College. Since that time I have changed my mind for several reasons:

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53. Virginia Clark, "Learning Resources at Tarrant County Junior College," in What Are We Learning About Learning Centers? ed. by Marshall Gunselman (Oklahoma City: Oklahoma Christian College, 1971), p. 192.

54. Fern Edwards, An Introduction to Dial Access Information Retrieval Systems and some Recommendations for use by the Deaf at Gallaudet College Library (Washington, D.C., 1972).

1. Cost cannot be justified except by heavy demand.
2. Although audio dial access systems are quite well perfected and satisfactory, video systems seem to have many maintenance problems.
3. Except for the most sophisticated random access system (which has its limitations, too) dial access has basic limitations like lack of user control and joining programs in the middle. A comparable capability can be provided by TV, with which we are already equipped.

THE COMPUTER ASSISTED INSTRUCTION SYSTEM

Although it is impossible to make a report on non-print media without reference to CAI, I have defined it out of my present study except for brief reference because it is really a print more than a non-print medium, along with programmed learning texts and teaching machines. Gallaudet College already has the capability for its use and is making use of it in some departments.

FUNCTIONS

As stated before, a system is a combination of the various components required for a common purpose. I doubt if Gallaudet College will be introducing any new sophisticated retrieval systems in the near future--at least the next ten years. The question is one of expansion. The extent of expansion rests with us--all of us. In the final analysis it will be used rather than money which will determine that expansion. It is easier, I affirm, to find money than to bring about fundamental changes in the ways of doing things. An unused system is a waste of money. A system which is use primarily for supplementary purposes is expensive. If faculty, educational technologists, librarians and administrators work together, we can make non-print materials a vital part of the instructional program. In order for this to happen, the library must be experimental and must extend its activities beyond its traditional domain. This chapter will deal with the supportive functions which help to make the system work.

As educational technology has broad implications for the role of the teacher, resulting in his assuming some of the reference functions of the librarian, so does it also have broad implications for the role of the librarian, whose function as it relates to the retrieval of non-print materials is changing and expanding. The following functions will be dealt with in this chapter:

Selection

Organization and housing

Dissemination

Outreach to students and faculty

Evaluation

Other functions, such as production of materials and maintenance of equipment, which are parts of a fully integrated Learning Center, are presently handled by the Office of Educational Technology. They are not included in this consideration of retrieval.

The first function listed above is not presumed to be a part of retrieval. However, it is such a vital prerequisite that it cannot be ignored in consideration of retrieval. The last two functions are essential support activities to an ongoing and satisfactory retrieval system.

SELECTION

One vital consideration preliminary to selection of non-print materials is that of knowing what other resources are available. For hearing audiences the possibilities for borrowing and renting are extensive. Our resources off campus are limited to Captioned Films for the Deaf, captioned foreign films, films without narration, other captioned media or media with scripts. The use of an interpreter during film projection is a possible but unsatisfactory arrangement for group use and precludes individual retrieval. Because most commercially produced materials require adaptation for use with deaf audiences, we must plan to acquire permission for such adaptations and make copies of our own. This points up the great importance of videotapes. Adaptations of materials which are of temporary use only can be erased and the tape reused.

Just as we depend on faculty members to recommend to us the books and periodicals needed in the Library to support their instructional programs, so we must depend on them for recommendations of non-print materials. A selection policy is necessary to guide both faculty and librarians in this process. The Library staff must take an active role in developing this procedure to the point where it is as automatic as that of book selection. They should initiate and develop one-to-one relationships with teachers for this purpose. They should anticipate the needs of the faculty by keeping informed about curriculum changes and informing instructors of new classes about non-print materials in the library that might be appropriate for use with those classes. At the same time an offer should be made to work with the teachers further in locating other commercially produced materials.

If the Library Staff believes in this objective, it should begin at home. A careful search needs to be made of available materials for teaching Library Science. Appropriate materials should be adapted for our use and other materials produced. A search should also be made for multi-media courses or units produced by other departments at Gallaudet College. Well constructed courses using a multi-media approach are the best promoters of further experimentation. If a course is carefully organized into units, a revision of one unit can be tackled without undertaking revision of the complete course all at one time.

Every effort should be made to help faculty members incorporate non-print media into their instructional programs. "If media are selected in isolation, they tend to be used that way."[1]

How much of the total collection should be non-print? Dr. Taylor estimated that approximately 33 percent of the collection for Hampshire College, or about 50,000 items, should be planned for.[2] They are an innovative college seeking to make a unique contribution of non-print media to a consortium of more traditional colleges. Evergreen State College, Olympia, Washington, another innovative college, has a collection made up of about 30 percent non-print items. As of August, 1974, the Gallaudet College Library had the following non-print materials (some figures are estimated):

	NUMBER	CATALOGED?
Videotapes	344	no
16mm films	660	no

1. Cora Paul Bomar, Guide to the Development of Educational Media Selection Centers (Chicago: American Library Association, 1973), p. 5.

2. Robert S. Taylor, The Making of a Library: the Academic Library in Transition, Final Report (Amherst, Massachusetts: Hampshire College, 1970), p. 69 and 91.

	NUMBER	CATALOGED?
8mm films	77	no
8mm film cartridges	92	no
Filmstrips	908	yes
Records	745	yes
Transparencies	160	no
Slides	4000	no
Total number of items	6986	

Microfilm has not been included, since it really is a print medium. Out of a collection of approximately 150,000 items, this represents about 4.7 percent. There are 500 travel films which were a gift and have not been processed in any way. If those 500 films, which were not selected by us and are not now retrievable, are subtracted, the number of non-print items represents about 4.3 percent of the collection. We have counted each slide and transparency as a unit. If they were reported in sets, this would further lower the percentage. Most of the 8mm films and cartridges are for the purpose of teaching sign language, and most of the 16mm films (other than the 500 previously mentioned) are concerned with Gallaudet College and its history. A large percentage of the videotapes are recreational, although more of those currently being produced are of an instructional nature. The overall picture is a very limited collection of non-print media in the subject areas of the curriculum.

A joint committee of the Association of College and Research Libraries and the Association for Educational Communications and Technology has been appointed to revise the 1959 Standards for College Libraries. The revision will probably appear sometime in 1975. We will seek to apply these new standards to our library.

Patricia Cory was Director for a project on School Library Service for the Deaf, sponsored by the Convention of American Instructors of the Deaf. The Project included:

1. Status Study of School Library Programs in Schools for the Deaf.
2. Development of Standards for Library-Media Center Programs in Schools for the Deaf.

Her conclusion was that the minimum resources to be spent on audiovisual materials in schools for the deaf need to be two or three times more than for hearing students. She said there should be a minimum of $1,000 spent annually, plus twelve dollars per student annually.[3] There are no such standards for the post-secondary level.

The Library is committed to greater emphasis on non-print. First, we need to discard items which are not worth keeping and catalog the rest. Only the filmstrips and records are cataloged and retrievable through the card catalog. Second. we can build up our collection of selection tools which can be used by librarians and faculty members in locating materials which are appropriate. In addition to advertisements which come across the desks of teachers and librarians daily, there are evaluative and selective tools which must be collected in one place for use by all. Granted, these non-print selection tools are inadequate, not nearly as well developed as for print. However, they are improving and multiplying. Commercial companies are beginning to collect instructional materials from public schools and usiversities for distribution as they

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3. Patricia Cory, "Report on Library Programs in Schools for the Deaf," in The Educational Media Complex, Symposium on Research and Utilization of Educational Media for Teaching the Deaf (Lincoln, Nebraska: Nebraska Center for Continuing Education, 1967), p. 710.

have gathered up books for publication, and to produce catalogs of these instructional materials.[4] Jobbers like Baker and Taylor are beginning to handle non-print as well as print materials. More and more film producers are making their films available also in videocassette format. The job of keeping informed about all these sources requires someone who can give a large block of time regularly to learning about and collecting this information. We may be pleasantly surprised at how much is available already, and that amount will be multiplied in the next few years.

> The problem of finding out what is available in certain subjects ... may appear insuperable. ... The typical reaction of the untrained searcher is to conclude that the local user himself must produce the needed materials. But with the help of the staff of an educational media selection center, the teacher or curriculum supervisor may find the range of choices wider and more pertinent than had been anticipated. If supplementary local production is still required, at least it can be more precisely targeted.[5]

Brigham Young University, in the forefront of universities with a non-print emphasis, has set up a separate section to gather and disseminate to faculty information about promising commercial materials, because this is cheaper than producing the materials themselves.[6]

Preliminary plans for the Hampshire College Library included a film information center, to be broadened to all media, manned by a half-time non-librarian. Functions of this person would be:

1. Collect, organize and file distributors' catalogs and special subject lists of films of potential use.
2. Scan reviewing media and other sources of critical information.

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4. Darrel J. Monson, "Preparing Materials for Learning Centers," in What Are We Learning About Learning Centers? edited by Marshall Gunselman (Oklahoma City: Oklahoma Christian College, 1971), p. 100.

5. Cora Paul Bomar and others, Guide to the Development of Educational Media Selection Centers (Chicago: American Library Association, 1973), p. 14.

6. Monson, op. cit., p. 89.

3. Order films of possible interest for preview and maintain evaluation records.
4. Invite faculty and students to preview sessions (sometimes all day).
5. Collect and organize critical comment on films previewed.
6. Suggest, as a result of previews, films for possible purchase.
7. Rent films.[7]

Here are some of the tools which should be included in such a collection:

Selection policy
Professional literature on the selection and evaluation of educational media
Evaluative reviews of new materials:
- Audio Visual Instruction
- Booklist
- Previews
- Educational Product Report
- Educational Screen and AV Guide
- Film News: the Newsmagazine of Films, Filmstrips, Recordings, Educational TV
- Instructor
- School Library Journal
- Catalogs from the National Instructional Center for Educational Materials

Non-evaluative lists:
- Westinghouse Learning Directory
- Library of Congress Catalog (3 times a year)
- Multi-Media Review Index

Listings of only one medium, such as the following:
- Great Plains National ITV Library Catalog, University of Nebraska, Lincoln, Neb. 68508
- Landers Film Reviews, Landers Associates, P.O. Box 69760, Los Angeles, Calif. 90069

Catalogs from professional organizations, such as:
- National Council of Teachers of English, Resources for English and the Language Arts, 1973-1974

Producers' catalogs
General and special lists of recommended materials

After having established a working collection of selection tools, we need to pursue an active preview program. Non-book materials are in general more expensive than books. The cost of single filmstrips or 8mm cartridges is comparable to that of a book, and such materials can be ordered on the strength of a review as we do for books. However, more expensive films, tapes, or sets of materials should be previewed before purchase. Adequate

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7. Taylor, op. cit., p. 114-115.

preview facilities must be provided. We will need to take the initiative in calling promising new materials to the attention of faculty members and offering to order them for preview. Evaluation sheets should be made by each previewer and filed for selection purposes.

Here are some of the selection criteria that should be considered:

Fundamental principles:

1. Know clientele and its desires
2. Extensive fund of information on all kinds of resources

Criteria:

1. Authenticity
2. Appropriateness
3. Scope
4. Interest
5. Organization
6. Special features
7. Physical characteristics
8. Furtherance of stated learning objectives
9. Relevancy to curriculum
10. Stimulus or response as related to current teaching methods
11. Broadening of intellectual, emotional, and creative experiences
12. Technical quality
13. Visual: effective composition, proper focus, cogent use of color[8]

Although I am stressing again and again the need for integrating non-print materials into the instructional program, we must not lose sight of the need for providing media support for independent study as well. Just as books which are directly relevant to the curriculum although not integrated into the formal instructional process may be added to the collection, so may comparable non-print materials.

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8. Warren B. Hicks, Developing Multi-Media Libraries (New York: Bowker, 1970), p. 16-18.

ORGANIZATION AND HOUSING

Efficient retrieval of non-print materials is dependent on an adequate system of organization and housing. A first basic and often broken rule is: if non-book materials are to be used, they must be retrievable--they must show up in the catalog so the user knows they exist.

"Cataloging procedures ... should be based upon national standards as recommended by the A.L.A. and the A.E.C.T."[9] The A.E.C.T. states, "Approved cataloging principles, as stated in the Anglo-American Cataloging Rules, prepared by the A.L.A., the Library of Congress, the Library Association, and the Canadian Library Association, should be used as a guide in the cataloging of Audio-Visual materials insofar as they are applicable to the local situation."[10] Access should be possible by author (if any), title, subject, format, and producer/publisher.

The question of classification remains quite a controversial issue between those who advocate using Dewey or LC numbers and those who advocate using a media accession number. If the latter is selected, there is a standard set of symbols for various media recommended by A.E.C.T.[11] Following is a list of advantages and disadvantages for each:

Dewey Decimal or LC classification (whichever is followed for the book collection):

Advantages:

Uniformity with book classification - one type of call number rather than several.

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9. Cora Bomar, Guide to the Development of Educational Media Selection Centers (Chicago: A.L.A., 1973), p. 51.
10. Association for Educational Communications and Technology, Standards for Cataloging Nonprint Materials (Washington, D.C.: A.E.C.T., 1973), p. iv.
11. Ibid., p. 3-4.

Media can be retrieved by call number along with books for subject bibliography.

Leaves open the option of experimentation with inter-shelving with books or shelving in departmental areas near books.

Compatible with Machine-Readable Cataloging (MARC) or other automated systems ("one assumes that any use of Machine-Readable Cataloging (MARC) or other automated systems will be compatible with Dewey").[12]

Disadvantages:

Takes more cataloging time if original cataloging is necessary.

Housing is more difficult.

Media accession number:

Advantages:

Ease of storage

Takes less cataloging time

Disadvantages:

Must be assigned in the local library

Confusing to the patron

Cannot be retrieved with books by call number in a subject bibliography made from the shelf list or call number.

Not compatible with MARC or other automated systems.

Discarding leaves gaps in the numbering system.

The Brookdale Community College assigns a LC classification number but incorporates an accession number into the call number. The classification number is valuable in subject print outs. Media are shelved, however, by accession number. The classification number determines the departmental location of each item.

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12. Bomar, loc. cit.

The processes of cataloging and classification are very expensive. Many efforts are being made by large libraries to automate the process. In some places centralized cataloging departments serve many libraries. Some libraries pay to have their materials cataloged commercially. This is more satisfactory for books than for non-print materials at this time. Perhaps later commercial processing of non-print media will be a viable option. Hampshire College planned to function without a trained cataloger with the assistance of commercial cataloging companies but has decided that it is necessary to have a cataloger on the staff. Edward Turner of Washington and Lee University did a cost study of processing media. He said it cost $3.75 per item in 1966 and $4.50 in 1968.[13] It may cost $5.50 or more now. Every effort must be made to reduce this cost without sacrificing a necessary level of accuracy.

Non-print materials, like books, are meant for individual use in or out of the library as well as for classroom use. Therefore they must be shelved in the most easily retrievable way possible. This is no easy problem because of widely varying shapes and sizes. Should non-print materials be shelved with books? Wright State University in Dayton, Ohio, totally interfiled their media in Library of Congress classification order. However, when they built their new building, they did away with that system. Some of the disadvantages are:

Takes more space

More non-print materials need to be near machines which are necessary for their use

Non-print materials are generally more expensive than books; therefore, loss is more costly

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13. Robert S. Taylor, The Making of a Library: the Academic Library in Transition. Final Report. (Amherst, Mass.: Hampshire College, 1970), p. 168.

Many kinds of storage cabinets and shelves designed for all types of formats are available commercially. It is very important to develop a system which is functional for the present and adaptable and expandable for the future.

DISSEMINATION

There are two types of dissemination in a modern library. One is the lending of physical items over a circulation desk. The other is the electronic distribution of images--print, sound, and visual--throughout the campus. "The systems ... for the dissemination, both physically and electronically, are the most critical, for it is here that the back-up systems either succeed or fail. If the user cannot obtain something the catalog informs him the library has, easily and without excessive bureaucreacy and dispersion, then the library has failed in one of its major public interfaces."[14]

Following are some criteria for physical dissemination suggested by Dr. Taylor:

1. All media and necessary small portable equipment should be controlled from one point in the Library: the Circulation desk.

2. A control card should exist for each item of material and for each piece of equipment. They should be the same size and have a similar format, varying only in printed statements or description and in color.

3. Control cards should be in machine readable form or the option for key punching be kept open. Physical size and card stock should be based on the standard data card.[15]

As individualized use of non-print materials increases, so will the use of machinery. Ease and efficiency of circulation is important. Circulation of equipment adds to the expense of maintenance but is essential for maximum access to and benefit from the non-print collection. At

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14. Ibid., p. 160.
15. Ibid., p. 162.

Evergreen State College in Olympia, Washington, a user can buy insurance (fifty cents for the first 24 hours, ten cents per day thereafter) to cover equipment damage or loss during loan.[16]

Another vital part of the dissemination process is statistical information. Although frequency of use does not reflect how much learning has taken place, it does certainly point up trends in library use. Statistics can be of great use in keeping the non-print collection weeded and functional.

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16. "Not Just a Library, a Generic Library," College and University Business, 55 (October, 1973), p. 35.

OUTREACH TO STUDENTS AND FACULTY

The ultimate objective of an adequate retrieval system is that the materials that are available will be used. This is not an automatic result of having done the other steps well. Without an "aggressive" stance on the part of the Library staff, it is unlikely that the use made of non-print materials will justify all of the time, hard work, and money devoted to making them available. This is true because the integration of non-print materials into the total library services and into the instructional process is a comparatively new idea. It involves establishment of new habits and new thought and teaching patterns. It requires the coordinated efforts of all who are involved. A commitment of administration, faculty, and media services personnel to this task is important, but the task will actually be accomplished to the extent that individual contacts are made. It will not happen in a big, spectacular way; it will happen in a small quiet way here and there.

The library staff must constantly, actively pursue these individual contacts, re-evaluating priorities in the light of this most important of all functions. It is more important to have 50 filmstrips which are consistently used than to have 5000 filmstrips which are not used. Extensive communication between the library and its patrons will help to establish the library as a service rather than a storage agency.

I would like to suggest some of the ways in which the library can take the initiative with its patrons - first with the faculty.

1. Faculty handbook. A handbook, preferably loose leaf for the purpose of easy up-dating, should be distributed to each faculty member with information such as:

Selection procedures

Procedures to be followed in scheduling the use of non-print media

Reviewing, discard and replacement procedures

Recent acquisitions[17]

2. Develop special interest profiles of major users; notify these people of relevant new materials and send to them reviews of new media available.

3. In-service training. Teachers need to be competent in the use of a variety of non-print formats: films, film cartridges, filmstrips, slides, transparencies, video cassettes, cable TV, and learning kits. Equally important is acquaintance with the software market of these media. What is available? Where? How should available materials be evaluated? What has already been evaluated? What materials originally produced by other colleges are available? What formats are best for what purposes? How can they be integrated into instructional programs? The final question is, how can I produce my own materials, but this question should be asked only after the other questions have been answered. The Library can offer workshops which would be addressed to the answering of these questions. The four Regional Media Centers for the Deaf have provided such a service to elementary and secondary teachers for several years. There is a new national system of learning resource centers for the handicapped being developed, but they are primarily for elementary and secondary education also. It is time we provided for the Gallaudet College

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17. Association of College and Research Libraries, Guidelines of Audio-Visual Services in Academic Libraries (Chicago: American Library Association, 1968), p. 17-18.

faculty a similar service. Virginia McJenkin has proposed the following guidelines for planning inservice-training programs:

> The program must grow out of problems that are significant to teachers, librarians, supervisors, and principals.
>
> The concerned persons must be involved in planning the inservice activities.
>
> There must be opportunities for all concerned to share effective techniques that are learned and materials that are located.
>
> Necessary resources, materials, and consultants must be made available.
>
> Any program must start where the group is and go as far as possible.
>
> There must be evaluation of the program and re-examination of needs at regular intervals.[18]

4. Audio-Visual Equipment Laboratory. This is a place where various types of machines are set up at one location to give all interested people an opportunity to learn how to operate them. Written instructions for each machine are made available for individual use. If machines are in short supply, it might be necessary to limit the availability to specified times, such as the first two weeks of a semester or during times of heavy demand. I visited two colleges which have such a lab: Anderson College, where the set-up is simple and temporary, and Illinois State University, where it is elaborate and permanent. Both feel that it is a very important service and saves a great deal of time which would otherwise be required for instructional purposes.

5. Equipment pick-up and delivery service, including operating assistance when necessary. If the process of getting desired equipment at the proper time is too difficult and time consuming, it will greatly slow down

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18. "School System Programs of In-Service Education on the School Library as a Materials Center," in The School Library as a Materials Center, ed. by Mary Helen Mahar, Office of Education, Publication no. OE-15042 (Washington: Govt. Printing Office, 1963), p. 35-40.

progress toward increased utilization. We must do everything possible to create an environment which will be conducive to the use of non-print materials.

Teachers and students should be encouraged to make use of the Audio-Visual Equipment Laboratory and prepare themselves to operate the pieces of equipment they wish to use. However, mechanical aptitude should not be a prerequisite for a teacher. The effective use of non-print materials is the primary objective and must not be interrupted by the lack of mechanical skills. In order to encourage such teachers to use non-print materials, assistance should be provided in the use of the equipment. "The more functional system will not be the one where every classroom teacher is capable of handling all instructional materials with wisdom and efficiency, but one where every classroom teacher need not."[19]

6. Previewing service. In connection with the selection and acquisition processes, it will be necessary for the library to schedule previews and keep a record of evaluations. At least two people should evaluate expensive materials.

7. Individualized study areas in the library. We want to encourage teachers not only to use non-print materials in the classroom, but also to assign individual use of such materials in the library. The library must prepare itself to take care of this demand, both by developing the necessary physical facilities and also by preparing its staff to be facilitators in such a program.

The use that students make of library resources is in direct proportion to the enthusiasm and commitment of the teachers. We do have the objective, though, of encouraging individual use of non-print, as well as print, materials. For example, if a student is writing a term paper on American Indians, we hope

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19. National Association of Educational Broadcasters, Television Cartridge and Disc Systems: What Are They Good For? (Washington, D.C.: N.A.E.B., 1971), p. 56.

he will find and use videotapes and slides as well as books and pamphlets. This will be accomplished partly by getting all materials cataloged and incorporated into the card catalog, but that is not enough. Librarians need to be seen and heard outside the library as well as in. The more contacts each member of the library staff makes with students, the better. New and novel ways of publicizing non-print materials should be continually sought.

Teaching students how to use the library is a vital part of encouraging its use. We have used a number of orientation approaches at Gallaudet College Library, all the way from a series of classes during orientation week to a party with refreshments and without any formal attempt to "teach." Two things are needed--inspiration and instruction. Inspiration is probably best achieved by a film or videotape which presents the library as an exciting place where students can exploit their interests and abilities. Instruction is needed in the areas of circulation (including reserve and other collections), card catalog (including research procedures), periodicals and documents (including major indexing systems), and reference. A format other than moving pictures is best for this purpose, e.g., slides or filmstrips. Mr. Larson suggests one approach for such a course.[20] Many such approaches have been developed. We need to find or develop one that fits our needs best and revise it until it does the job we want done. Instruction can best be done when students are motivated. An individualized approach can be used by any student when he is so motivated. Such a program, if it uses a multi-media approach, can also serve the purpose of building the confidence of students in using various formats on his own. The best students will find little difficulty in adapting to multi-media and individualized study. We must make a concerted effort to "turn on" the others.

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20. Dale Larson, A Systems Approach to Individualized Library Instruction (Fullerton: California State College,, 1972), p. 10ff.

Aside from the need to use many formats for optimum learning, it is also our responsibility to produce graduates who know the meaning and use of new technologies in the present age. This is especially true of future teachers, who will probably not use non-print materials in their teaching if they have not experienced that approach in their learning.

EVALUATION

Non-print media are neither good nor bad in themselves. It is what we do with them that is good or bad. The "garbage in, garbage out" description of computer operation can as well be applied to the retrieval of non-book materials. We should avoid the temptation to "use Audio-Visual aids" for their own sake, without regard to quality. And when they are used they need to be continually evaluated. The head of the non-profit Educational Products Information Exchange Institute recently stated that "The 'largest single group of unprotected consumers' in the U.S. consists of millions of students who are now deluged with more than 200,000 poorly tested textbooks, films, teaching machines and other complex learning gadgets. (He) estimated that 99 percent of the nation's teaching materials have never been systematically tried out to see how much students actually learn from them."[21] Field testing usually means only the salesman's reports of what they have picked up in the field. Adequate testing is slow, costly, and complex. The government-run National Institute of Education is now drawing bipartisan support in Congress. "The U.S. spends 4.6 percent of its health budget and about 10 percent of its military budget on research and development. In education, says Indiana Congressman John Brademas, an institute backer, the R. and D. costs are now less than one third of one percent."[22]

Recently the California state legislature passed a law that holds instructional materials producers accountable for gathering evidence of

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21. "Untested Textbooks," Time, (June 7, 1971), p. 33.
22. Ibid.

their materials' effectiveness, and for continuously improving those products via the process of learner verification.[23]

Testing before marketing is good, but continued testing and feedback after marketing is vital. Producers should commit themselves to effective revisions. There is no such thing as a final evaluation. Evaluations of educational products are developmental by definition. Mr. Komoski, Executive Director of EPIE, in his survey of educational materials, could find no clear example of a producer systematically using feedback from learners as part of a regular revision process over a number of years on the elementary and secondary level. He found one college textbook - Paul Samuelson's economic text - which has been revised by this procedure and is now in its ninth edition as a result.[24]

It follows, then, that an evaluation system needs to be built in to all instructional programs. Gallaudet College's commitment to evaluation should apply to instructional processes as well as other areas: "Planning and evaluation are the alpha and omega of accountability. ... Mechanisms for evaluation must be built into program design from the beginning."[25] Teachers have always evaluated their instruction in the classroom. As more instruction takes place in the library on an individualized basis, and as the library staff works increasingly with instructors on the development of such instructional programs, it is to be expected that the library staff will have a part to play in the evaluation process.

Instructional programs which are produced by our Office of Educational Technology will undoubtedly have evaluative procedures built into them. The

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23."New Laws Affect Instructional Materials," Epiegram, 2 (October 1, 1973), p. 4.

24. P. Kenneth Komoski, "50,000,000 Educational Consumers Can't be Wrong - But Who's Listening?" Audiovisual Instruction, 16 (September, 1971), p. 14-15.

25. Master Plan, Gallaudet College, Program Summary, July 1, 1973, p. B-11.

library staff should be trained to help in whatever way is appropriate in the collection of information to help in this analysis whenever the programs are used individually in the library or borrowed from the library. A start has been made in this direction in the Learning Laboratory which is now operating in the library.

In addition, when the library staff works directly with the faculty in the selection and acquisition of commercial materials for incorporation into instructional programs, and when those programs are designed for individual use, they should work with the faculty members and the Office of Educational Technology to discover ways the library can help in the evaluative process. Certainly a simple questionnaire to be filled out by the user of a program, as the library is now doing for videocassettes, would provide a minimal evaluation. The library staff should attempt to continually improve these forms, organize the results and inform teachers of findings. They should cooperate with teachers in helping to correct difficulties reflected by evaluation forms.

Other kinds of information that we need to collect are:

With how many teachers is the library staff working to acquire non-print materials for specific instructional programs?

How many individualized lessons have been placed in the library for implementation with students?

How long has each been used?

How many students have used each?

How many times has each been revised? With what results?

How many individualized lessons have been discontinued?

Why?

Were they replaced by others?

Again we must live in the tension between making each program cost effective by careful evaluation and revision, and realizing that "the worth of the collection is measured by the contribution it makes to the community it serves and not by its annual budget."[26]

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26. National Medical AV Center of the National Library of Medicine, Primer for Media Resources Librarians (Atlanta, Ga., 1972), p. 15.

PHYSICAL FACILITIES

Gallaudet College is fortunate to have time for careful thinking and planning before a new Library/Learning Center is built. The problems of building a library in the 1970s are different from those of building traditional libraries. An adequate Instructional Materials Center needs to be far bigger than the traditional library. Standards that have been accepted in the past need to be reconsidered. Dr. Taylor says that "Libraries built during the 70s will be the last of the kind with which we are familiar to be built on a campus. They will bear the burden of being a transition instrument to a new type of institituion."[1] One of the certainties about libraries of the future is their uncertainties. Because of rapid technological and philosophical developments, the library must be capable of change, too.

Although the purpose of this study is not to plan a facility, individualized retrieval of non-print information has major implications for study facilities. The long library tables of the past are being forced to compromise, at least, with individual study areas. Those who believe that there should be many different types of study facilities are pitted against those who believe that every student should have his own study carrel, but no one argues the fact that individual use of non-print materials for instructional purposes necessitates extensive electronically equipped individual study spaces. "Graduate institutions have long had individual study carrels in their libraries. They have been able to justify the concept without any mediated

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1. Robert S. Taylor, The Making of a Library: the Academic Library in Transition. Final Report (Amherst, Mass.: Hampshire College, 1970), p. 242.

instruction. How much more can their importance be demonstrated with the multiplicity of media available today?[2]

A study of student study habits in the neighboring institutions of Amherst, Mt. Holyoke, and Smith Colleges and the University of Massachusetts indicated that 80 percent of the students preferred small study areas such as dorm rooms or individual study carrels. Movement, as well as noise, interferes with concentration. Just because many of the Gallaudet College Library clientele are deaf does not prevent them from being distracted.

A variety of learning environments in the library would certainly seem to be desirable while at the same time maintaining as much flexibility as possible. A modular type building with movable partitions and interlocking units instead of walls can provide maximum adaptation to both present and future needs. In addition to individual study carrels, there should also be small group areas, electronically equipped. The Medical College of Virginia in Richmond removed 75 individual carrels and replaced them with "cluster carrels," which will accommodate six students and an instructor. Each cluster carrel has a table, seven chairs, a blackboard, a screen, a carousel projector, and an 18 inch color TV.[3] Such areas will be necessary as there are more teachers working with small groups of students in the library. No doubt one or two larger teaching stations will be necessary, too.

"The study carrel is a small table with a raised partition on 1, 2, or 3 sides to screen off from the seated student visual distractions that interfere with concentration."[4] Individual study carrels that are electronically

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2. Marshall Gunselman, "Determining Cost of Learning Centers," in his What Are We Learning About Learning Centers? (Oklahoma City: Oklahoma Christian College, 1971), p. 127.

3. Melvin C. Shaffer and Carol L. Hampton, "Some Experiences with a Self-Study Center," Drexel Library Quarterly, 7 (April, 1971), p. 149.

4. Alvin Toffler, "Libraries", in Bricks and Mortarboards, by Educational Facilities Laboratories (New York: EFL, 1964), p. 80.

equipped are used for a variety of reasons: cable TV, manually operated machines, CAI, typewriters and calculators, and listening. The minimum width should be 3 feet. A four foot space is frequently recommended for adults and a five foot space for two projectors or two people. Depth should be 24-30 inches. Adequate outlets should be provided. Expansion capability is far less expensive in the initial installation than later.[5] Another proposed standard is that dry carrels (conventional) should have 4-8 square feet of work space, and wet carrels (electronic) should have 10-15 square feet of work space.[6] Some equipment will require special provisions. For example, videocassette players are still quite expensive and delicate. At the University of Maryland non-print library they are kept and used in locked individual study rooms.

In the past it has been generally accepted that there should be library seating for 1/3 of the enrollment. However, as new modes of instruction require other resources to supplement books, students find it necessary to spend more time in the library. Dr. Taylor planned, based partly on the study of student study habits mentioned previously, to provide library seating for only 27 percent of the projected enrollment in 1975 for Hampshire College. Eighty percent of the students were to have single rooms and there were to be four house libraries with about 25 seats each.[7] However on my visit in the summer of 1973, I was told that the four house libraries are not there yet and dormitory rooms, while single, are still noisy. Library seating has been found to be inadequate. Recommendations of professional

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5. William J. Quinly, "Carrels for Learning," Library Trends, 19 (April, 1971), p. 469.

6. Nicholas A. Esposito, ed., Instructional Media Center. Educational Facility Series. A Guide to Planning (Trenton, N.J.: State Dept. of Education, Bureau of School Planning Services, 1969), p. 21.

7. Taylor, op. cit., p. 91.

planners for study spaces in carrel format range from 70 percent to 100 percent of the enrollment.[8]

Others have made estimates of how much of the total seating provided should be in individual study units. Keys Metcalf planned the Lamont Undergraduate Library at Harvard and has been consultant to hundreds of other libraries. He said, "Since 1949 we've had a great many individual seats in all parts of libraries and dared to put in up to 50 percent individual seating when we were designing Lamont just after World War II. ... Today if it were done, I'd go to 75 or 80 percent individual seating--and this for undergraduates."[9]

Mr. Quinly suggests that in an institution which is heavily media oriented, 1/3 of the carrels should be for books only, with typewriters and calculators in some of them.[10]

If space is a problem, as it almost always is, it may be that some individual study facilities should be provided in other buildings than the library. Those to be used for lab work, for example, could be in the buildings of respective subject disciplines. There could be at least a few conventional carrels in each dormitory.

Another reason that future libraries will need more space than traditional libraries is for storage of non-print materials and equipment. Integrated shelving with books is very extravagant space wise. If it is decided to shelve them separately, there must be considerable space available for the various types of shelves, files, cabinets, and racks that are required for different formats. There are no space estimates for storage of non-print materials comparable to those for books.[11]

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8. Quinly, op. cit., p. 468.
9. Toffler, loc. cit.
10. Quinly, op. cit., p. 470.
11. Taylor, loc. cit.

In selection of storage units, consideration should be given not only to space requirements but also to retrievability and portability. Furniture with internal structuring for specific use of media systems and pertinent materials are expensive and probably less useful than furniture that permits expansion, contraction, alteration, or differing arrangements of components. For storage of equipment, sturdiness, flexibility, and security should be considered.[12]

The administrative control area should be in view of powered carrels, retrieval systems equipment and computer terminals in order to offer assistance to users and to monitor the physical use of expensive systems.[13]

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12. Gilbert E. Tauffner, "Furniture and Related Facilities to Accommodate Multi-Media Activities in Libraries," Library Trends, 19 (April, 1971), p. 498-499.
13. Ibid., p. 499.

PERSONNEL

The kind of library described in this paper cannot be developed with a traditional staff which is unwilling to change. Efficient retrieval of materials depends to a large extent on a trained personnel. The redefinition of library functions is as necessary for the benefit of librarians as for that of the library's public. If technology is to be used in the library, the staff must be prepared for its effective use. "The actions of people are integral parts of all technology, and technology includes the essential performance of people."[1]

If we are to develop an effective Learning Center which performs its proper function in the instructional process, there are two "givens" in relation to staff which I believe we must grab ahold of and hold constantly before us. One is that the librarian of the future is a new breed, neither wholly librarian nor wholly audio-visual specialist. The Gallaudet College Library has begun to receive questions like, "Do you have a movie on ...?" or "Don't you have a slide of ... that I can take to show my class?" In both cases, we didn't.

At present "there are virtually no university programs in operation to prepare learning center personnel. ... Learning Center personnel must break away from the restrictions of their former fields and perceive their work in new terms. Personnel not able to do this could be limited in their contributions ..., and such an attitude in a learning center administrator could bring disaster."[2] "The stature of the (library) profession will stand or fall on the success library education has in developing programs which will result

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1. C. Ray Carpenter, "Instructional Functions of New Media," in New Media and College Teaching, ed. by J.W. Thornton, Jr., and J.W. Brown (Washington, D.C.: Dept. of Audio Visual Instruction, National Education Association, 1968), p. 3.

2. Marshall Gunselman, "Some Conclusions," in his What Are We Learning About Learning Centers? (Oklahoma City: Oklahoma Christian College, 1971), p. 207-208.

in librarians with a better understanding of the interrelationships between man, media and machines and of the role they must assume to bring these interrelationships to fruition."[3]

It follows, then, that a conscious effort must be made to avoid dividing functions of personnel into print and non-print operations. If our aim is integration, such division would do great harm to that concept. A much better division for public services people would be by subject area. Perhaps in the early stages of development it would be satisfactory to establish one-to-one relationships with faculty as seems most natural without drawing lines of specialization for media personnel.

Labels used to define people's jobs have a definite part to play in creating an image for the Library in the eyes of its public. Reference Librarian is a traditional term which conjures up a straight-laced old maid ferreting out hidden bits of information from dusty tomes. It would seldom occur to very many people, librarians included, that a reference librarian would make use of a filmstrip in answering a patron's query. On the other hand, a Media Resources Librarian would most likely be understood as a person who specializes in the use of non-print resources. The word media, however, refers to book as well as non-book materials. A Media Resources Librarian is one who makes use of all possible resources at hand, not just books. If we must run the risk of misinterpretation, it may be better to make people wonder for the present if we have disowned the book and followed blindly after innovative, technological attractions. If public services people call themselves Media Resources Librarians, it will at least raise some eyebrows and attract a few questions. Such labeling is not for the benefit of the public alone. It would also help the library staff to retrain its own attitudes regarding

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3. Anna Mary Lowrey, "Staffing Patterns and Education for Media Center Personnel: Relevant or Regressive?" Library Trends, 19 (April, 1971), p. 508.

patterns of service and library functions. "Librarians who plan to be a part of (the) new communications era must escape their image as 'keepers of books,' and assume a new role as resource specialists in all informational formats--audio, visual, printed, and computerized."[4]

The second "given" concerning staff is that as library resources are increasingly integrated into the instructional program, librarians must think of themselves as and function more and more as educators. "One of the first steps in creating a healthy view of ourselves is to recognize that knowledge of learning method is as important as an acquaintance with the tools. If we once recognize this fact, we will then see that by coupling the two we can become facilitators of learning."[5]

As the faculty move toward individualization of instruction, the library staff must accept more of a tutorial role in relation to students and more of a cooperative planning role in relation to teachers. In the past, librarians built their collections the way they thought they should be built with as much help as they could get from teachers. The basic criterion of good library was whether it had the volumes listed on a given "recommended" list. Now the criterion is shifting to whether the library has or can acquire an item, be it print or non-print, which can effectively teach a unit and help the student achieve a certain objective. Libraries are being called upon to duplicate non-print lessons, as they have print lessons in the past, for individual retrieval by students. Coupled with that is individual testing to determine whether the student learned what was expected of him. The librarian can no longer say, "That is the job of the teacher." He must be able to accept a new degree of responsibility for cooperating with teachers in this new

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4. William J. Quinly, "Carrels for Learning," Library Trends, 19 (April, 1971), p. 467.

5. Marvin L. McBride, "New Dimensions in Innovation," Learning Today, 6 (Spring, 1973), p. 19.

type of program. He must even be ready to take the initiative in offering this service. Librarians must be "conversant with the theories of human learning and instructional programming if they are to become actively involved in the library-college concept wherein they must assume a tutorial role, rather than occupy the conventional mode as dispensers of information. It can no longer be assumed that substantially all education is to take place in the classroom."[6] Librarians must be prepared to cross the line between education for librarianship and teacher education. They must enroll for courses which will prepare them for their new role.

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6. Quinly, loc. cit.

RECOMMENDATIONS

Following are specific suggestions in the form of PROGRAM OBJECTIVES for the development of the non-print retrieval services at Gallaudet College Library in the immediate future. They are based on conclusions reached in this study.

Immediately following the Program Objectives are COST ESTIMATES for achieving these objectives. Costs are labeled by Program Objective numbers and are entered under the budget year indicated in the Program Objective statement. Continuing expenses have been increased by 10 percent each year to allow for inflationary increases and hopefully a gradual expansion of services. There is nearly a $12,000 difference between the lowest estimated year (1978) and the highest (1976). This is not a reflection of the total costs of the non-print retrieval system but an attempt to show additional costs required by the proposed expansion of non-print services.

Although the Library and the Office of Educational Technology have separate budgets, they will both be affected by these recommendations. Details of budget allocations will need to be worked out in discussions between the two departments. An effort has been made to project costs to budget year 1980, the first five years. At the end of that time, further projections will be made.

Following the cost estimates is a section of MATERIALS RELATED TO PROGRAM OBJECTIVES which have been developed as of August, 1974. Each is labeled with the appropriate Program Objective number.

A large part of the cost of non-print services is the acquisition of new materials. A decision has been made not to divide the materials

budget between print and non-print, but to encourage faculty members to order needed materials regardless of format. Under the MATERIALS RELATED TO PROGRAM OBJECTIVES section, Program Objective number IV, is a chart of the Library budget since 1968, indicating a steady decline percentagewise in relation to the total college budget. From 1969-1973 the percentage of the Library budget spent for materials and periodicals declined steadily also. The 1974 and 1975 budgets show a reversal of that trend, although the relationship of the Library budget to the total college budget continues to decline.

According to an article in the Library Journal, the average price of hardcover books has gone up from $8.43 in 1967 to $12.20 in 1973, an increase of 31 percent, the average price of periodicals has gone up from $8.02 in 1967 to $16.20 in 1973, an increase of 50 percent; and the average cost of serial services has gone up from $76.98 in 1967 to $103.45 in 1973, an increase of 35 percent.[1] No doubt costs of non-print items are increasing as much. These figures point up the urgent need for a readjustment of the Library budget.

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1. "Price Indexes for 1974," Library Journal, 99 (July, 1974), p.1775.

PROGRAM OBJECTIVE I

SYSTEMS - JUSTIFICATION

By fall, 1974 a procedure will be implemented for justifying each hardware system used in the Library.

I-1. By July, 1974 all systems now in use in the Library will be justified by the Policy Group on information services. No new system will be added until it is justified.

I-2. By September, 1974 those systems presently in use which cannot be justified will be eliminated. All adaptations of format indicated in I-1 will be completed.

I-3. Annually before budget time equipment purchasing priorities will be set for the new budget on the basis of instructional demand, statistics of use, replacement needs, and justification guidelines. (See Objective VIII-2.)

PROGRAM OBJECTIVE II

SYSTEMS - CENTRALIZATION

By fall, 1974 the selection, acquisition and use of equipment will be coordinated with the Department of Educational Technology.

II-1. By fall, 1974 both software and hardware of a portable nature will be checked out from the library building.

II-2. By fall, 1974 a policy will be adopted regarding the use of equipment both inside and outside the Library.

II-3. By fall, 1974 there will be a coordinated process in which equipment specialists and public service people will work together to identify needs and acquire appropriate equipment.

PROGRAM OBJECTIVE III

SYSTEMS - EXPERIMENTATION

By spring, 1976 a report will be made on the state of experimental uses of non-print systems in the Library.

III-1. By January, 1975 based on recommendations from Dr. Tobin of the Department of Audiology and Speech, facilities for individual and small group listening/viewing learning stations will be ready for use.

III-2. By January, 1975 a Porta-Pak will be operational in the Library for individual and small group use.

III-3. By January, 1975 in cooperation with the Department of Audiology and Speech, controlled experiments will be completed on the effectiveness of induction loops and ear phones now in use in connection with videocassettes in the Library.

III-4. By spring, 1975 a room for individual use will be equipped in cooperation with the Department of Audiology and Speech as a pilot laboratory facility for "look and listen" practice.

III-5. By spring, 1975 in cooperation with the English Department, a series of multi-media self-instruction programs will be available for the purpose of teaching library skills.

PROGRAM OBJECTIVE IV

FUNCTIONS - SELECTION

By fall, 1976 the Library will facilitate a range of media selection in the various subject areas of the curriculum (see Library Master Plan Objective III). This collection will be guided by recommendations in Standards for College Libraries to be published jointly by the Association for Educational Communications and Technology and Association of College and Research Libraries, probably sometime in 1975.

IV-1. By fall, 1974 a written selection/acquisition procedure for non-print materials will be distributed to the person responsible for selection of library materials in each academic department, including whatever forms are necessary for this process.

IV-2. By fall, 1974 a selection area including selection tools for both print and non-print materials, producers catalogs for both print and non-print materials, books on selection and evaluation of materials, and tables and chairs will be provided.

IV-3. By spring, 1975 scripts will be prepared for all software programs which include audio format.

IV-4. Present procedures of working with faculty members in a search for appropriate non-print materials to be used in the instructional process will be expanded. When such a search fails to turn up needed materials, the request will be referred to the production department as appropriate.

PROGRAM OBJECTIVE V

FUNCTIONS - ORGANIZATION AND HOUSING

By fall, 1976, all non-print materials on campus will be included in a union catalog.

V-1. By September, 1974 a master copy collection of all appropriate locally produced non-print materials and of all purchased materials in formats which we do not use (after being adapted to other formats which we do use) will be established. (see Objective I-2)

V-2. By fall, 1974, the Non-Print Formats Sheet will be completed, thus providing answers to basic decisions regarding use.

V-3. By January, 1975 cataloging procedures for non-print formats will be written.

V-4. By spring, 1975 all non-print materials which have been cataloged at MSSD will be represented in the union catalog.

V-5. By spring, 1975 a procedure will be adopted for cataloging of all appropriate locally produced non-print materials as they are produced.

V-6. By fall, 1976 all non-print materials in the Gallaudet College Library will be cataloged.

V-7. By fall, 1976 all non-print materials in academic departments will be cataloged and either shelved in the Library or marked with a location indicator on the catalog cards.

V-8. By fall, 1976 all non-print materials which have been cataloged at KDESD will be represented in the union catalog.

PROGRAM OBJECTIVE VI

FUNCTIONS - DISSEMINATION

By January, 1977 the processes will be operational for efficient dissemination of all formats of non-print materials in the Library collection.

VI-1. Equipment will be purchased as software collection grows and as use increases.

VI-2. By fall, 1974 the transmission center and technical support functions will be moved to the Library building.

VI-3. By fall, 1974 the central audio-visual equipment pool will be moved to the Library. An inventory file will keep a record of the location of each piece of equipment at all times.

VI-4. By spring, 1975 a uniform check out procedure will be developed for all software and hardware.

VI-5. By fall, 1976 the Library will have conducted a survey of schools, organizations, and other colleges serving the deaf to determine the feasibility and need for sale, exchange, and/or lending of originally produced materials.

VI-6. By January, 1977 if the preliminary study indicated a need, the Library will develop a procedure for sale, exchange, and/or lending of originally produced materials.

PROGRAM OBJECTIVE VII

FUNCTIONS - OUTREACH TO STUDENTS AND FACULTY

By fall, 1975 channels will be established for two way communication with faculty and students concerning library matters.

VII-1. By January, 1974 the Standing Library Committee for the General Faculty will be the channel for dealing with library issues of concern to the various units on campus.

VII-2. By May, 1974 the Library will have an elected or ex-officio representative on Committee B for the purpose of keeping abreast of curriculum development issues and of inputting information about the Library's response capabilities.

VII-3. By fall, 1974 faculty and student library handbooks will be distributed.

VII-4. By fall, 1974 a UGF/graduate body composed of both faculty and students will be established to discuss library-related issues and make recommendations to the Library.

VII-5. Faculty members will be informed on a regular basis of new and interesting developments in the area of non-print services and use. Various channels that might be used for this purpose are: new faculty orientation, faculty meetings, Serendipity, TV, departmental meetings, and individual contacts.

VII-6. By summer, 1975 a prototype workshop will be offered to faculty members for the purpose of promoting more effective use of non-print media in various formats in the instructional process.

VII-7. By fall, 1975 the Library will have collected a file of syllabi, course objectives, etc., for courses currently offered, which will be kept up-to-date and which will be used in the selection process and in increased library efforts to notify faculty members of new appropriate materials available.

PROGRAM OBJECTIVE VIII

FUNCTIONS - EVALUATION

By July, 1976 an annual evaluation of the effectiveness of non-print services in general and also of individual non-print programs will be started based on automatic channels of information collection.

VIII-1. By January, 1975 the Library will promote greater use of its individualized testing supervision services. Whenever appropriate, results of such testing will be used to help evaluate non-print materials in the Library.

VIII-2. By July, 1976 annual circulation statistics by type of medium will be compiled.

VIII-3. By July, 1976 an annual survey of use of individual units of software and hardware will be conducted for the purposes of weeding, publicizing, replacement, maintenance, selection in areas of greatest demand, and follow-up with faculty members who have used the collection.

COST ESTIMATES

PROGRAM OBJECTIVE NUMBER	ITEMIZED COST	BUDGET YEAR 1975	1976	1977	1978	1979	1980
I-1.	Writing	100	20	22	24	26	30
	Typing	25	5	5	6	6	7
I-2.	Copy Alumni films (est. 16,560 feet at twelve cents a foot.)	1887					
	Copy MAD films, Alumni films & other GC films onto video-cassettes (about 13 hours)						
	Videocassettes ($30 an hr.)	390					
	Staff Time	130					
	Copy other films onto videocassettes as permissions are granted (about 15 hours)						
	Videocassettes ($30 an hr.)	450	300	330	365	400	440
	Captioning	1500	1000	1100	1210	1330	1460
	Other Staff Time	150	100	110	120	135	150
I-3.	Equipment	2000	2200	2420	2660	2925	3220
II-1.	Continuation and expansion of present service						
II-2.	Policy Writing	25					
II-3.	Development of Process	100					
III-1.	Carpet	2000					
	Room Dividers	3000	1000				

PROGRAM OBJECTIVE NUMBER	ITEMIZED COST	BUDGET YEAR					
		1975	1976	1977	1978	1979	1980
III-1. (cont'd.)	Storage Cabinets ($340 each)	1360	750	820	450	495	545
	Carrels ($180 each)	3975	1980	2175	2395	2635	2900
	TTY	500					
	Counter		2000				
	New full-time position and student assistants	14900	18000	20000	21500	23000	24500
III-2.	Porta-Pak	1375					
III-3.	Planning and implementation of evaluation	50					
III-4.	Sound proof door	750					
	Air conditioner	300					
	Other materials and labor	1150					
III-5.	Program development (6 programs at $250 each) and continued development	1500	500	550	600	660	720
	Program evaluation (6 programs at $120 each) and continued evaluation		720	240	265	290	320
IV-1.	Procedure Writing	25					
	Reproduction and Distribution (see P.O. VII-3.)						

PROGRAM OBJECTIVE NUMBER	ITEMIZED COST	BUDGET YEAR					
		1975	1976	1977	1978	1979	1980
IV-2.	File organization	100	110	120	135	150	165
IV-3.	Transcribe sound track from records for filmstrips (at $5 each)	75	100	110	120	135	150
IV-4.	Continuation and expansion of present service						
V-1.	Storage cabinets at $300 each (for adaptation, see I-2.)	600	330	365	400		
V-2.	Non-Print Format Sheets completion	35					
V-3.	Procedures development	250					
V-4.	MSSD non-print materials added to union catalog (at $1 each)		200	400	450	500	550
V-5.	Procedure development in cooperation with Office of Educational Technology	40					
V-6.	Cataloging of non-print materials at $8 per unit	3000	3300	1815	1995	2195	2415
V-7.	Survey and policy development cataloging (at $8 per unit)	50	4000	4000			
V-8.	KDES non-print materials added to union catalog (at $1 each)		9400	400	450	500	550
VI-1.	Equipment to be purchased in cooperation with Educational Technology (see P.O. I-3)						
VI-2.	New full-time position and student assistants	9300	12100	12500	12900	13300	13700

PROGRAM OBJECTIVE NUMBER	ITEMIZED COST	BUDGET YEAR					
		1975	1976	1977	1978	1979	1980
VI-3.	Setting up of inventory file (included in staff time under P.O. III-1.)						
VI-4.	Planning and implementation of check out procedure	150	20	22	24	26	30
VI-5.	Planning and implementation of survey (included in staff time under P.O. III-1.)						
VI-6.	Writing procedure (included in staff time under P.O. III-1.)						
	Publicity			50	55	60	65
VII-1.	No cost						
VII-2.	No cost						
VII-3.	Writing handbooks	300	100	110	120	135	150
	Printing	300	330	365	400	440	485
VII-4.	Planning for library advisory group	20					
VII-5.	Continuation and expansion of present service						
VII-6.	Planning for workshop	600	200	220	240	265	290
	Implementation of workshop	200	200	220	240	265	290
VII-7.	Continuation and expansion of present selection service						
VIII-1.	Continuation and expansion of present service						

PROGRAM OBJECTIVE NUMBER	ITEMIZED COST	BUDGET COST					
		1975	1976	1977	1978	1979	1980
VIII-2.	Continuation and expansion of present statistical records						
VIII-3.	Continuation and expansion of present statistical records						
TOTALS		52662	58965	48469	47124	49873	53132

MATERIALS RELATED TO PROGRAM OBJECTIVES
PROGRAM OBJECTIVE I-1

JUSTIFICATION OF SYSTEMS

1. What is the purpose of the system? Is it a valid need?

2. Can the system fulfill that purpose? What are the specifications needed?

3. Is it compatible with other instructional technologies in use?

4. What are the strengths of this system? The weaknesses?

5. Is the system likely to be outdated soon?

6. How much hardware will be required? What will it cost?

7. Technical stability and operational efficiency. What will it cost for maintenance and replacement?

8. Is there another system which could do the same job for less money?

9. Does this system duplicate the functions of another system? Would it be better to adapt software to another system than to add a new type of hardware? Is new equipment needed for that adaptation? How much will it cost?

Software:

10. How much software do we have for the system in the Library? On campus?

11. Is commercially produced software available in quantity?

12. Is software being produced on campus for the system, or are there plans/ capabilities for production?

13. Is the software durable? Reproducible? Modifiable?

GUIDELINES FOR DEVELOPMENT OF PILOT STUDY AREA

Space - about 18' by 21' in back left corner of reference room. (2 sides are wall with windows, one side is book stacks, one side is open.)

Facilities needed:

One small group listening/viewing/teaching station:

seating for six
blackboard
logistical capability for moving a portable TV monitor and player into the area
rear projection screen
electrical outlets and space for various kinds of projectors (one at a time) to be used with rear projection screen
listening capability (induction loop, insert receivers to be used with ear molds, or earphones) Other experimental approaches are:

Octave equalizer
Duplicate sound tapes at different frequencies
Wire certain carrels to different frequencies
Personal set of headphones with built in equalization through a chip, especially for people with big problems. They could take them to other libraries, use them with TV, etc.

As many individual study carrels as can be fitted comfortably into the remaining area. Perhaps some of our individual study tables could be used with the addition of a two-sided divider. We might investigate the possibility of using do-it-yourself "building pieces" which are easily moved and changed

half the carrels should be dry (they need 2'x3' table space)

half should be equipped with rear projection screen, electrical outlets, and space for a projector (must be larger than dry carrels)

2 should be equipped with listening capability for experiemental and evaluative purposes

2 others should be equipped with space for 9" TV monitors and video cassette players.

"Look and Listen" practice facilities
two small equipment storage rooms downstairs to be adapted.

MATERIALS RELATED TO PROGRAM OBJECTIVES
PROGRAM OBJECTIVE III-1

MEDIA UTILIZATION DIVISION
Areas needed

Open shelving: microfilm, filmstrips, transparencies, kits, games
New York Times Indexes

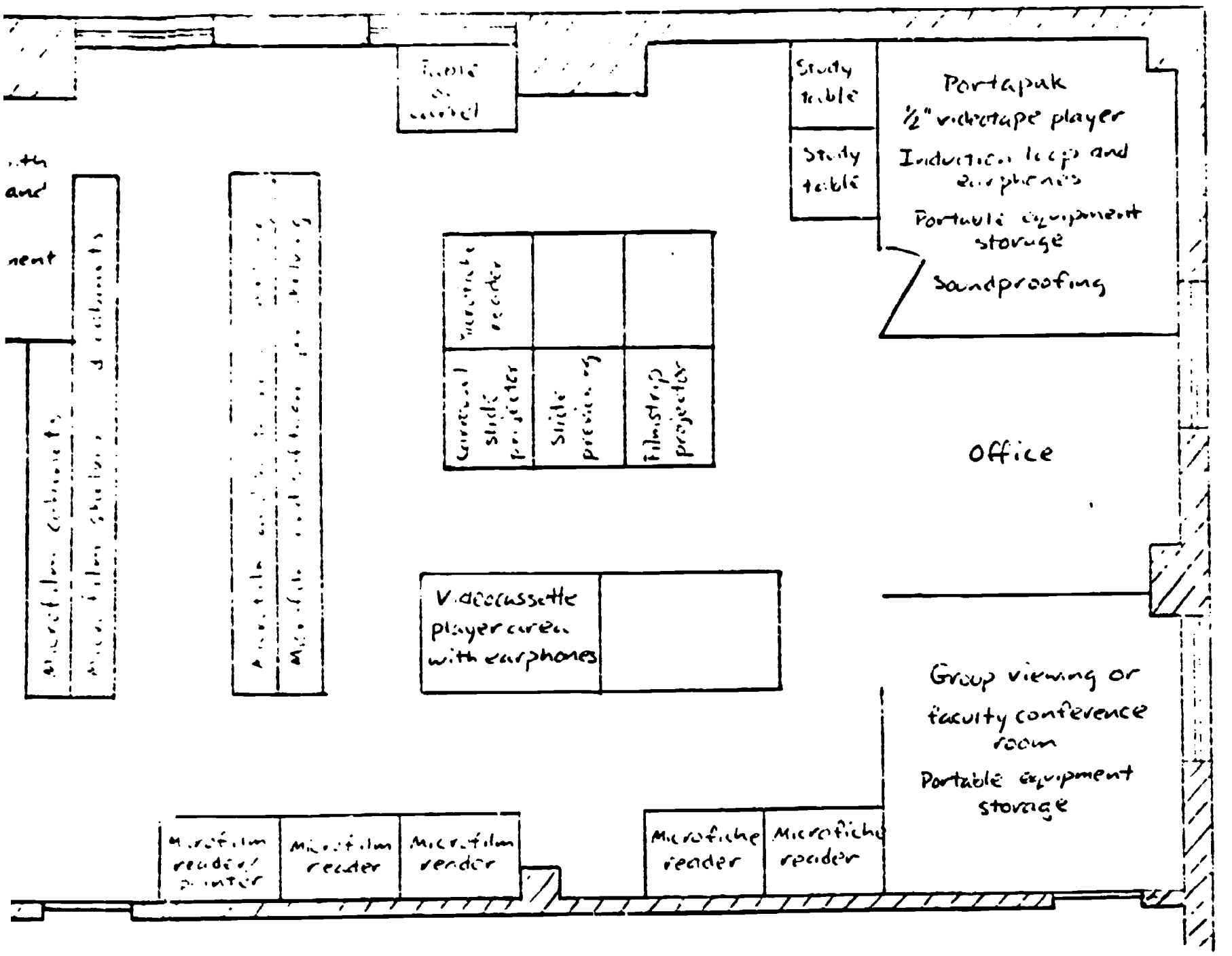
Transmission center:
Transmission
Repair
Mailing

Circulation desk:
Desk
Closed shelving:
Hardware
Software: videotapes, slides, 16mm films
TTY

Study carrels:
Learning laboratory
Microfilm/fiche readers/reader-printer
Porta Pak

Office for Assistant Librarian: Media Utilization

Computer terminal



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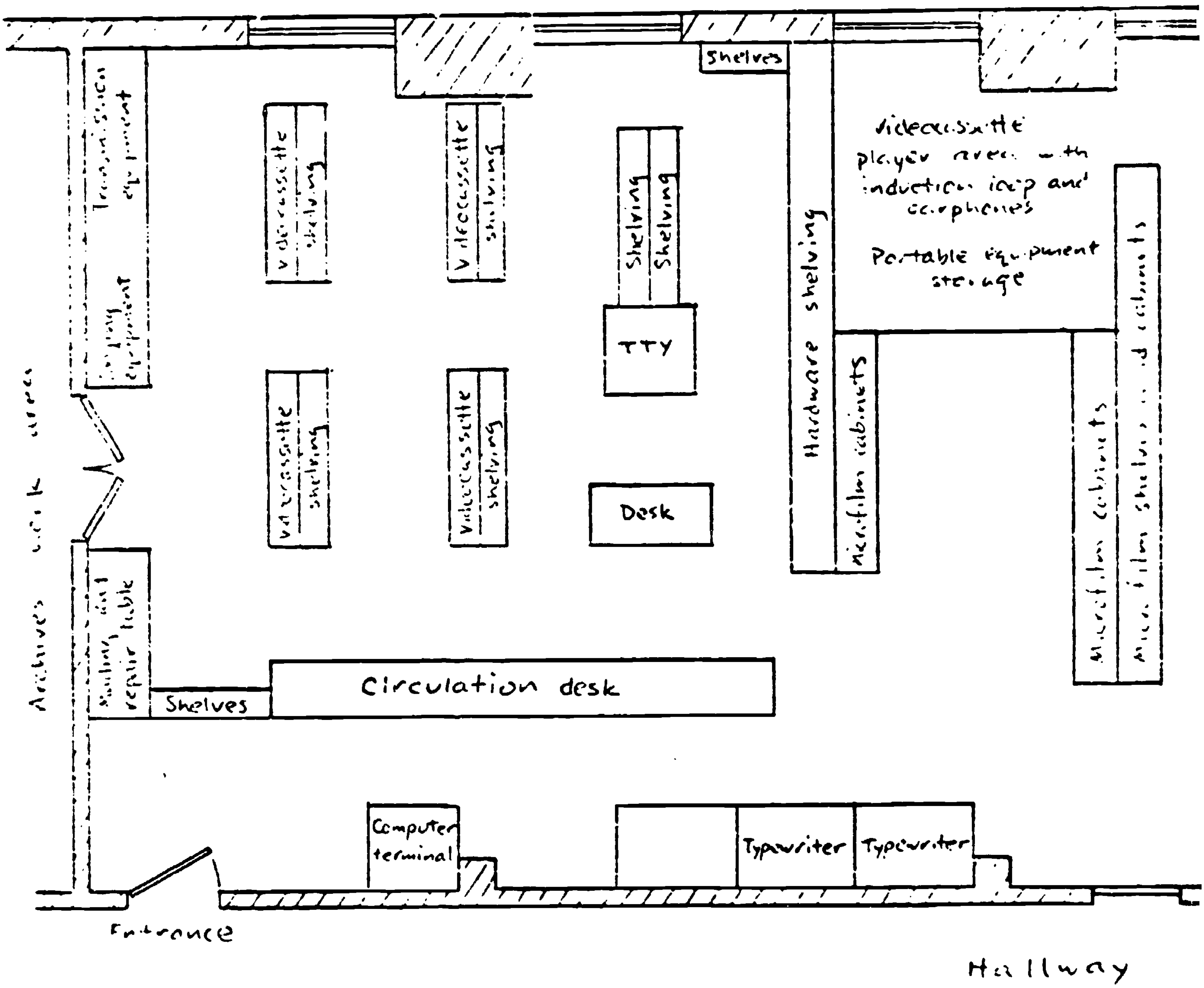
VARD MINER GALLAUDET MEMORIAL LIBRARY



MEDIA UTILIZATION ROOM • EDWARD

Summary: Sound Treatment

In order to improve the ambient noise and reverberation conditions in the 18' x 21' space designated in the library for Look and Listen activities the following modifications should be considered:

1. Providing more permanent room boundaries. This can be done by building permanent walls on the 18' x 21' internal dimensions, or by adding moveable partitions to enclose this space, or by use of a combination of a permanent wall and a moveable partition. A sound reduction door will also be needed.

2. Providing carpeting of the entire floor space. The carpet should be of dense pile material on 40 ounce hairfelt or foam rubber.

3. Provide drapes for the two windows. A heavy velour (18 ounce per yard) has a high absorption coefficient across frequency. Extending the drapes out from the wall will also have the effect of increasing their low frequency absorptive capability.

4. Provide at least 25% of the ceiling area with absorption materials. If the entire ceiling is not done, then the absorption material can be placed aroung the periphery of the ceiling.

Summary:

Sound Measurements

The ambient noise level and the reverberation time were measured within the 18' x 21' area of the northwest corner of the main floor of the Edward Miner Gallaudet Library.

The ambient noise level was measured on three different occasions according to the survey method as described by American National Standards Institute (A.N.S.I.)S1. 13-1971. All measurements exceeded the Niemoller recommendation of 35-40 dB A for classrooms for the deaf.

Reverberation time was measured according to the instructions of Bruel and Kjaer. A reverberation time of 1 second was found. This exceeds the most liberal of recommendations by Niemoller who suggested a .4 second reverberation time for small classrooms and .6 second for large classrooms.

(Ref. Niemoller, A.F. Acoustical Design of Classrooms for the Deaf. Amer. Ann. Deaf, 113, 1040-1045, 1968.)

Based on the sound measurements, the following recommendations are made:

1. In order to achieve the best signal-to-noise ratio at the listener's ears and isolate the audio signal from neighboring areas of the library, headphones should be used as the preferred mode of listening.
2. Acoustic treatment is needed to bring the ambient noise level into a more acceptable region.
3. Acoustic treatment is needed to decrease the reverberation time to about .6 second.

MATERIALS RELATED TO PROGRAM OBJECTIVES - PROGRAM OBJECTIVE IV

Year	LIB. BUDGET[1]	TOTAL COLLEGE BUDGET	LIB. BUDGET PERCENTAGE OF TOTAL	MATERIALS BUDGET	PERCENTAGE OF LIB. BUDGET FOR MATERIALS	PERIODICALS BUDGET	PERCENTAGE OF LIB. BUDGET FOR MAT. & PER.
1968	163,755	3,745,729	4.372	22,700	13.862	7,000	18.137
1969	182,032	4,546,680	4.004	32,700	17.964	10,200	23.567
1970	202,905	5,441,247	3.729	28,100	13.849	11,500	19.517
1971	248,095	6,674,921	3.717	33,200	13.382	10,500	17.614
1972	273,306	8,281,570	3.300	33,200	12.147	10,500	15.989
1973	281,445	9,818,520	2.866	33,200	11.796	10,500	15.527
1974	277,401	10,641,000	2.607	36,300	13.086	10,500	16.871
1975	296,898	11,969,000	2.481	44,600	15.022	12,030	19.074

1. Adjusted figure to allow for 1/2 of the budget from Library Science to be included in the Library budget for library, non-teaching functions of three faculty members.

Date ordered _____ Order prepared by _____

Date confirmed _____

NON-PRINT PREVIEW RECORD

Date received _____

GALLAUDET COLLEGE LIBRARY

Date return required _____

Date returned _____

itle _____ Subject _____

edium _____ b/w silent

ength _____ color sound

ear produced _____ captioned

irector/Producer _____ Sale price _____

istributor and address: Rental price _____

Preview fee _____

atalog description:

valuations found? Requested by _____

reviewed by: Date Preview form attached?

tion requested: Seek captioning permission _____ Purchase _____

Future order file _____ Not needed _____

tion taken: Date:

MATERIALS RELATED TO PROGRAM OBJECTIVES
PROGRAM OBJECTIVE IV-1

NON-PRINT PREVIEW FORM

GALLAUDET COLLEGE LIBRARY

Title_____ Medium_____

Comments: impact, factual accuracy, suitability for Gallaudet audience, likely to become dated, instructional plan (Objectives stated, scope adequate for objectives, evaluation of objectives), technical quality, interest, organization, relevance to curriculum, etc. The extent of narration, its speed, and its direct relation to the visual presentation is important.

Recommendations:

_____ seek captioning permission for making a videotape

_____ purchase for use in what class? _____

_____ future order file

_____ not needed

_____ other (please specify)

Name_____ Date_____

Format	1. Use: Individual, Small group, Large group, Cable	Master copy, library, circulate	Statistics of use	2. Organization: Open/closed access	Type of storage
Videocassette	individual group cable	master library	quarterly stat.	closed	cabinets
Videotape	individual group cable	master library	quarterly stat.	closed	cabinets
Audio cassette	individual	library circ.	part of filmstrip stat.	open	cabinets
Records	individual	library circ.	daily stat. like books	open	record cabinet
Filmstrips	individual group	library circ.	quart. stat.	open	cabinet
Slides	individual group	library circ.	quart. stat.	closed	cabinet
Transparencies	individual group	circ.	quart. stat.	open	shelves
16mm films	individual group	master library circ.	quart. stat.	closed	cabinet
8 mm films:	master copy only	master	none	closed	cabinet
Reel to reel					
Technicolor 8	"	"	"	"	"
Technicolor SR	"	"	"	"	"
Kodak	"	"	"	"	"
Kits	individual group	library circ.	quart. stat.	open	cabinets shelves
Games	group	library circ.	quart. stat.	open	cabinets shelves
Programmed inst.	individual	library circ.	stat.	open	shelves

Table V-2

Master copy, library, and circulate	1. Statistics of use	2. Organization: Open/closed access	Type of storage	Special cat. requirements	3. Equipment: Individual/group type	Library or circulate	Fixed location or desk check out	Type of storage	User controlled or staff controlled
master library	quarterly stat.	closed	cabinets		different sized monitors	library	fixed location	permanently attached	staff [illegible]
master library	quarterly stat.	closed	cabinets		"	library	fixed location	permanently attached	staff [illegible]
library circ.	part of filmstrip stat.	open	cabinets	must be cat. with FS	portable players	library circ.	desk check out	cabinet	user controlled
library circ.	daily stat. like bk	open	record cabinet		individual	library circ.	desk check out; fixed loc.		user controlled
library circ.	quart. stat.	open	cabinet	shelve separate from tapes	individual group	library circ.	desk check out	cabinets	user controlled
library circ.	quart. stat.	closed	cabinet	cat. as sets if possible	individual group	library circ.	desk check out	cabinet	user controlled
circ.	quart. stat.	open	shelves	cat. in sets	none (commit in depth.)				
master library circ.	quart. stat.	closed	cabinet		individual group	library circ.	fixed loc. and check out	cabinet closet	staff [illegible] user controlled
master	[illegible]	closed	cabinet	keep in 2 formats	individual group	library circ.	desk check out	cabinet	user controlled
"	"	"	"	"	preview only	library		cabinet	staff controlled
"	"	"	"	"	preview only	"		"	" "
"	"	"	"	"	"	"		"	"
library circ.	quart. stat.	open	cabinet shelves	[illegible] together	1 [illegible]	lib. circ.	[illegible]	cabinet	user controlled
library circ.	quart. stat.	open	cabinet shelves		none				
circ.	stat.	[illegible]	shelves						

MATERIALS RELATED TO PROGRAM OBJECTIVES
PROGRAM OBJECTIVE - V-3

CATALOGING WORKSHEET FOR VIDEOTAPES
(One sheet for each program)

For TV Studio Use:

Title: Generation of copy:

Date Recorded: Date of Production:

Producing Co.:

Physical Description: ____hr. ____min. in ____part(s) ____sound ____silent

____captioned ____signed ____color ____b&w ____1/2" ____3/4"

Series (Also give number if applicable):

With: Begins: Ends:

Remarks (Stars, story, anything which may be helpful):

Copyright status: ____cablecasting ____make copies ____off campus distribution

____other: _____

Requested by:

For Library Use:

Date Received in Library: Date Processed:

Call Number:

Annotation:

Tracings:

MATERIALS RELATED TO PROGRAM OBJECTIVES

PROGRAM OBJECTIVE VII-6

WORKSHOP

The in-service training workshop would be a means whereby we could work with the faculty to acquire non-print materials which would be of great value in the learning process. Each medium has its own special strengths, and it is important that we take full advantage of each of them where they are appropriate, as we have made use of print in the past. It is also important that non-print media added to the library in this way be integrated as closely as possible into the achievement of behavioral objectives in the instructional process so that we put our limited funds to the best possible use.

It is true that the commercially available materials are not always usable, or even adaptable. Sometimes it is necessary to produce original materials. The Office of Educational Technology is well equipped to serve this need. However, they cannot possibly fill the need for all non-print materials in the instructional program. They should not be expected to produce materials until the availability of commercial materials has been exhausted. The production of commercial materials is expanding very rapidly in response to the demand from educators. It would be the purpose of the workshop to take full advantage of this market and to promote more effective use of non-print media in various formats in the instructional process. Only if we take full advantage of such materials can we hope to come near supplying the demand on our campus for non-print media in the future.

Participants:

1. Gallaudet College faculty members, either as individuals or as departmental teams.
2. Gallaudet College graduate students.

Program Objectives:

1. Each teacher would identify a unit of a course for which he would like to explore more effective use of media in various formats. A graduate student might select a teaching unit which would support a class assignment or one which he could use later in teaching.
2. Each participant would state the objectives for his unit in behavioral terms.
3. Each participant would make use of collections of materials on or off campus and the selection aids available in the Library to select materials for preview.
4. Each participant would apply principles of evaluation to the previewing, evaluation, and final selection of materials which can best achieve the behavioral objectives.
5. Each participant would adapt selected materials for use in his project (caption, script, develop worksheets, preliminary lessons, pre-post-tests, etc.) The Office of Educational Technology will be asked to assist in the adaptation process.
6. Each participant would field test his unit.
7. Each participant would present his completed unit to other members of the Institute for suggestions and discussion.
8. Each participant would write an evaluation of his unit when used in an instructional setting. If faculty members wish to make their units of instruction available to students on an individual basis, the library staff will work with them to make this possible.

Program Plan:

The nature of the Institute will necessitate its being held on three separate weekends, to allow time for ordering materials for preview, developing adaptations of selected materials and field testing. This schedule has the disadvantage of loss of continuity from one meeting to the next. However, if the projects selected are pertinent to the interests of the participants, the opportunity to work with the projects over a period of weeks will not only overcome this disadvantage but will heighten the effectiveness of the final product. Members of the library staff and the Office of Educational Technology will be available between sessions to assist participants in any way possible.

When perfected projects achieve the instructional objectives, faculty members will be asked to write up the unit to make it available in our Curriculum Laboratory and for sharing with other colleges who teach deaf students as this possibility develops. Videotapes of the units may be used to explain the purposes of the workshop to other faculty members.

Participants will be asked to evaluate the Institute at the end of the program and again at a later date within one year of their attendance. It is hoped that with the help of such feedback it will be possible to perfect an approach which will meet the needs of our faculty. If results warrant, such an Institute might be offered to schools for the deaf by teams of library staff members and former Institute participants.

GALLAUDET COLLEGE

TELEVISION EVALUATION FORM

Please fill out this form as carefully and thoughtfully as possible. Your answers and ideas will help the T V Studio improve its television programming for your benefit.

Name of program watched: _____

1. DID YOU ENJOY THE PROGRAM YOU JUST SAW?

_____ A. Yes _____ B. Some of the time _____ C. No

2. WAS THE PROGRAM IN SIGN LANGUAGE?

_____ No. _____ Yes

If you answered yes, were the signs easy to see?

_____ A. Yes _____ B. No

3. IF THE PROGRAM WAS CAPTIONED, COULD YOU SEE THE CAPTIONS CLEARLY?

_____ A. Yes _____ B. Some of the time _____ C. No

4. WAS THE SIZE OF THE LETTERS ALL RIGHT?

_____ A. They were a good size _____ B. Too small _____ C. Too large

5. DID YOU HAVE TIME TO READ THE CAPTIONS?

_____ A. Yes _____ B. Some of the time _____ C. No

6. THE WORDS OF THE CAPTIONS WERE:

_____ A. Too easy _____ B. About right _____ C. Hard to understand

7. DO YOU WANT FULL CAPTIONS?

_____ A. Yes _____ B. No, I want edited and summarized captions

8. COMMENTS OR SUGGESTIONS: _____

_____

_____

Won't you help us by responding to the questions below? Your feedback will enable us to make the videotape services as convenient and useful to you as possible. Don't be afraid to be forthright. We are not overly sensitive to criticism. Thanks! Return this paper to Lee Putnam in the Library.

Teacher_____No. of students_____

Class_____

Program watched_____

Date_____Time_____

Where did your class see this program?

_____Library
_____HMB Room_____
_____Other_____

Was this location convenient? _____yes _____no Any comments?

How did you make arrangements for this program?___Telephone___TTY___In Person

Who did you contact?

_____Earl Higgins
_____Richard Groff
_____Lynette Cardinale
_____Jeanne Conway
_____Lee Putnam
_____Other_____

Were there any problems in making the arrangements? Any comments?

Do you ever assign viewing videotape programs as part of a student's work outside of class?

Say anything you would like to about the videotape services in the space below:

IMPLICATIONS

Development of the use of educational technology on the Gallaudet College campus, including the provision of an adequate retrieval system in a learning center, has implications for the total program of the college. It cannot be planned and implemented by the library alone, nor by the library and the Office of Educational Technology together. The degree of success achieved will be proportionate to the degree of coordination with faculty, students and administration. I would like to point out three areas for which such a program would indicate change.

1. The instructional process. Some colleges, such as Oral Roberts University, began their existence with a total commitment to mediated learning. Gallaudet College, on the other hand, is one of the many established colleges with a traditional approach to education. The decision has already been made to make use of educational technology concepts and procedures. Just how well and how fast this is done depends on all of us. Many steps have already been taken. Some long term coordinated planning is necessary for best results. Educational technology is not just using more audio-visual aids in the classroom. It is much more of a total process which over a period of time will affect the teaching and learning process in fundamental ways. As more attention is given to meeting stated objectives, new ways will be tried and evaluated. Some will succeed and some will fail. There cannot be significant success without willingness to try and accept failure.

Hesitancy to break away from traditional procedures is caused by fears of media controlling instruction, of a centralized media center which might reduce accessibility, of increased bureaucracy that might impede progress,

of a decreasing of student-teacher contact, of losing jobs, of the new and unknown. It is also caused by lack of satisfactory evidence of the effectiveness of new methods, lack of time, lack of faculty incentives (recognition and royalties) as compared with writing books, and lack of supportive services and in-service training opportunities. Where these problems exist at Gallaudet, they need consideration and resolution.

The commitment of librarians, educational technologists, and administration must be coupled with the good faith openness to new possibilities by the faculty in general and the generating enthusiasm of individual faculty members who are ready to lead the way. The development of innovative teaching methods may in the future provide a new, exciting area of specialization in addition to subject mastery.

There is a dual role which teachers are expected to perform, but there is time for only one. They are:

Role A - Manipulating the environment (learning experience) for each student in order to maximize learning, a task that is highly dependent upon interpersonal human relationships.

Role B - Presenting the content of a course which may be relatively stable semester after semester and as such can probably be presented for the most part by non-human sources.[1]

It is only in finding alternate ways of performing Role B that an adequate job of Role A can be done.

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1. Donald K. Stewart, "Programming Instructional Media into Instruction," in Audio-Visual Technology and Learning (Englewood Cliffs, N.J.: Educational Technology Publications, n.d.), unpaged.

2. Organization. There are two reasons why coordination of media services is important: efficiency and economy. Dr. Donald P. Ely, Director of the Center for Instructional Communication at Syracuse University, says that a coordinated management program of media support services makes the best use of available funds and resources. He recommends centralization of:

A. Equipment purchase, supply, and maintenance (although satellite "depository" centers should be provided as needed)

B. "Software" purchase and organization

C. Production services[2]

Coordination makes better use of the resources already available (personnel, library services, educational technology services, bookstore, testing bureaus, research procedures) and makes possible the development of these resources to their maximum potential without duplication of efforts, materials and equipment.

Gallaudet College in its Master Plan has committed itself in theory to such coordination under the label "stewardship." Of the five areas of concern recognized in the Plan, stewardship stands as second priority for the first five years, second only to student development.[3] However, in the section "Undergraduate Programs," it stops short of coordination of all information services. In Program Objective 9 the Office of Educational Technology is commissioned to coordinate department master plan reports related to technological aids, and in Program Objective 10 the librarian is commissioned to coordinate department master plan reports related to library-aided information services.[4] It would seem that a further step is needed to coordinate these two objectives.

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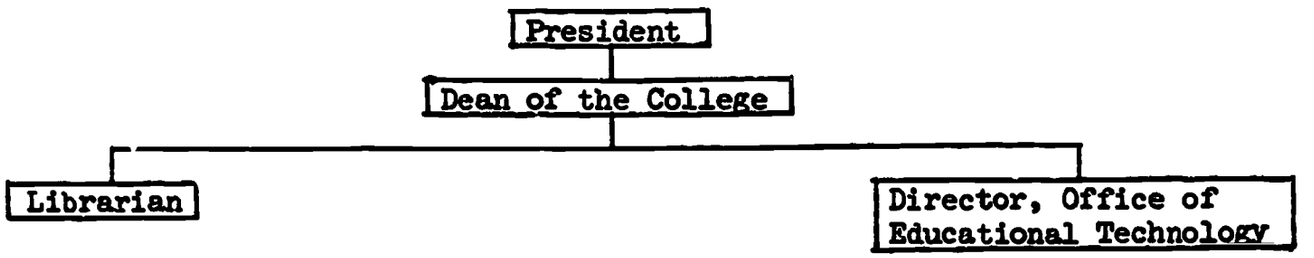
2. The Report of University Ad Hoc Committee on Instructional Media (Greensboro, N.C.: North Carolina University, 1971), p. 6.

3. Master Plan, Gallaudet College, Program Summary, July 1, 1973, p. C-2.

4. Master Plan, Gallaudet College, Program Summary, July 1, 1973, p. E-7 and E-8.

In order for such coordination to be achieved, patterns of organization must change. The organization at Gallaudet College in this regard is at present traditional:



A unified media program is a program in which instructional and other services related to both print and audio-visual media are administered in a single unified program under one director.[5] Many colleges are finding it necessary to add such a director of learning resources or instructional development on the level of dean or vice-president. Ideally this person should have library, media and instructional orientation. Later in this section are three alternative organizational patterns. Although this matter is beyond the objective of this study, I feel that it deserves consideration as a matter of top priority. Such a decision should not be made without the input of faculty and students.

Organizational coordination can be greatly enhanced by physical proximity. Separate buildings reduce communication and make it more difficult to coordinate efforts. Hopefully this problem will be corrected when we get a new building.

The issue of organization is further heightened on the Gallaudet College campus by the proximity of the Model Secondary School for the Deaf and the Kendall Demonstration Elementary School. Questions such as duplication of expensive processes and services and maximum use of personnel are paramount

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5. Carolyn I. Whitenack, "School Media Program: Emerging Multi-Media Services," Library Trends, 19 (April, 1971), p. 415.

across these boundaries, too. A way certainly needs to be found to pull together for the maximum benefit of all.

3. New Learning Center. Although the Library is reaching the point of desperation space-wise, the delay in funding is giving us valuable planning time which should not be wasted. It has always been a large responsibility to plan a library building. It is increasingly so in view of the rapidly changing picture of higher education today. The issues of this paper are so paramount to the building of a new building that they must be dealt with first if the new building is to serve our needs adequately in the years to come. "Basic to the design of an educational edifice are the instructional methods used. To embrace space standards without defining instructional techniques and curricular goals and objectives is ludicrous. To condone the methods, space standards and spatial relationships used to design tradtional education buildings is to help perpetuate traditional teaching methods and implementation of curricula."[6] The work on curriculum revision being done by Committee B is a vital part of the planning needed before a new building is built.

Assuming a continuation in the trend toward the application of educational technology, individualized instruction, and innovative instructional methods, there will be an increased demand for individual study areas, faculty offices and small class meeting places in the new building. "The traditional facilities ... do not provide the spaces which will permit independent study. Neither materials adequate for independent study, nor places to work unbothered by others, nor places to meet in small groups, nor places to consult with the teachers are usually found in traditional buildings."[7]

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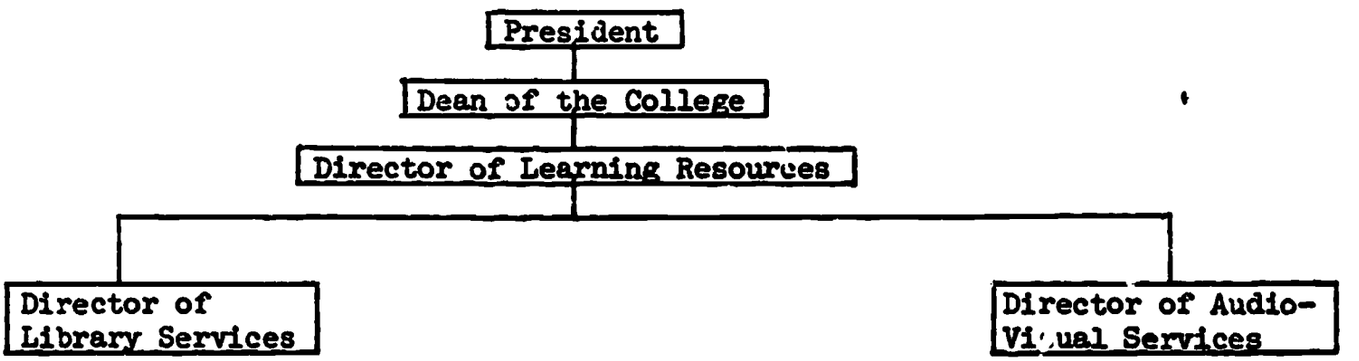
6. Gerald Volpe, "Planning Higher Education Facilities," Educational Technology, 10 (June, 1970), p. 19.

7. Frederick G. Knirk, "Learning Space Specifications," Educational Technology, 10 (June, 1970), p. 24.

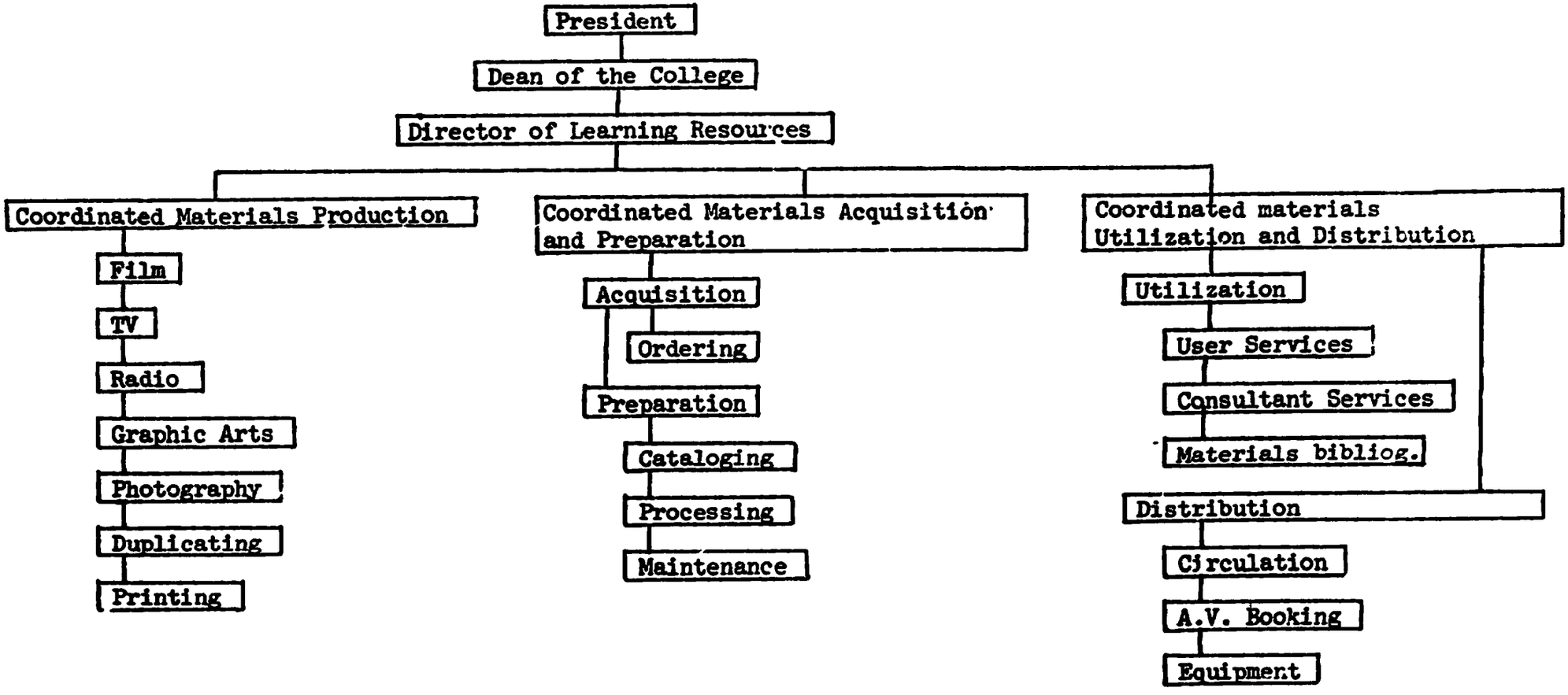
The new building will have to serve at least twenty years. All concerned users should have substantial input into the planning--faculty, students, librarians, educational technologists, and administrators. Advice should be sought from a consultant who has been involved in the planning of innovative library buildings.

More Coordinated and Integrated Organization



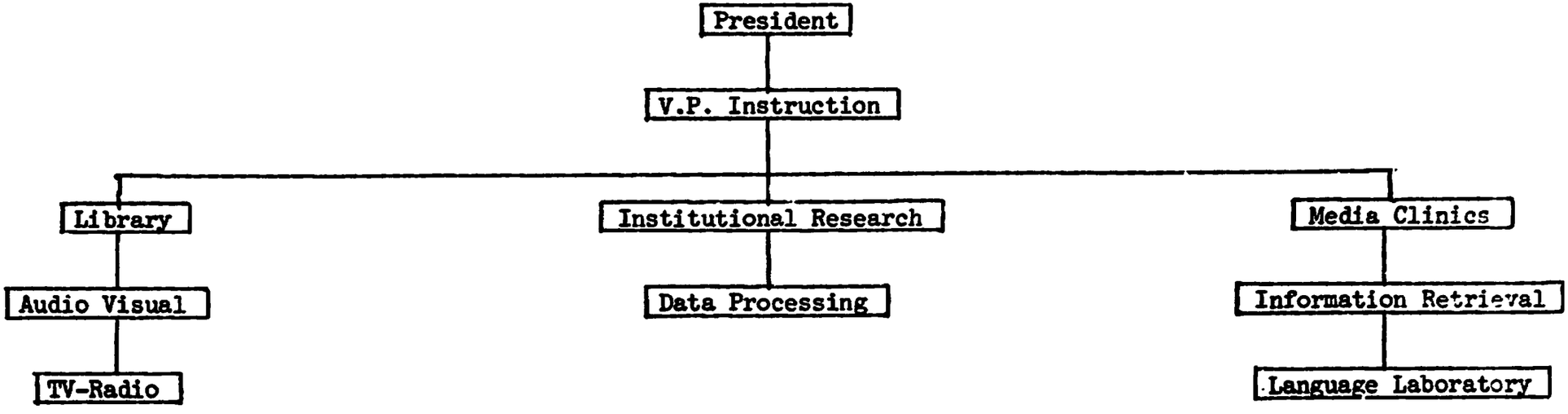
from Richard Ducote, "The Learning Resources Center: Concepts and Designs," paper presented at the meetings "The Learning Resource Center of the Two Year College," June 6-July 10, 1970, Appalachian State University, Boone, N.C., p. 11.

One innovative organizational pattern to try to break down barriers between library services, audiovisual services, and total education program:



from Richard Ducote, "The Learning Resources Center: Concepts and Designs," paper presented at the meetings "The Learning Resource Center of the Two Year College," June 6-July 10, 1970, Appalachian State University, Boone, N.C., p. 13.

Administrative educational services which pull together all services supportive of college's educational program:



from Richard Ducote, "The Learning Resources Center: Concepts and Designs," paper presented at the meetings "The Learning Resource Center of the Two Year College," June 6-July 10, 1970, Appalachian State University, Boone, N.C., p. 17.

FIELD TRIPS

As a part of this study I visited 20 schools and colleges to learn first hand about their media programs. There were:

5 universities

6 four-year colleges

3 two-year colleges

6 schools for the deaf

These schools and colleges were selected as the result of recommendations from interested professionals in the field and from readings in professional journals and research papers. See the following pages for a list of these visits and for the questionnaire that I used as a guide in my interviews with the people at these institutions.

I have summarized the replies for some of the most significant questions on the questionnaire. The sample is small and therefore responses cannot be considered decisive. Also, the questions were covered in varying degrees of thoroughness depending on whether I talked with directors, librarians, and/or media people and on the time available. For some questions answers are not comparable because of wide differences among the institutions.

It is important to remember that institutions were selected because they had active media programs. Conditions in these institutions would not therefore be typical of the average educational institution. In section 3 I felt it necessary to distinguish between functionally integrated and organizationally integrated library and media services. By organizationally integrated is meant those that are under an administrative head who is specifically committed to media services or instructional

development. Functionally integrated services are those that not only are organized under such an administrative officer but also seem to have achieved a real integration physically and psychologically. It is important to realize that just because such an administrator has been appointed does not guarantee that there will be integration of functions. That depends on institutional objectives and individual commitment.

There were not many planned programs of evaluation for media programs, as indicated by the second page of the questionnaire. That seemed to be the weakest link in the process.

Without exception I received gracious treatment at the places I visited and am extremely grateful for the generous amounts of time given from their very busy schedules. These visits provided me with many insights into the day-to-day functions of a variety of non-print retrieval systems which no amount of reading could have given me.

FIELD TRIPS

Universities:

University of Maryland, College Park, Md.
Hofstra University, Hempstead, N.Y.
Illinois State University, Normal Illinois
University of Tennessee, Knoxville, Tennessee
University of Illinois (Computer Assisted Instruction program only)
Urbana, Illinois

4-year colleges:

Anderson College, Anderson, Indiana
Oral Roberts University, Tulsa, Oklahoma
Oklahoma Christian College, Oklahoma City, Oklahoma
Dallas Baptist College, Dallas, Texas
Hampshire College, Amherst, Massachusetts
National Technical Institute for the Deaf (at Rochester Institute of Technology), Rochester, N.Y.

2-year colleges:

Essex County College, Newark, N.J.
Eastfield Junior College, Mesquite, Texas
Brookdale Community College, Lincroft, N.J.

Schools for the deaf:

St. Francis de Sales School, Brooklyn, N.Y.
Lexington School, Queens, N.Y.
Illinois School, Jacksonville, Illinois
Callier Hearing and Speech Center, Dallas, Texas
Tennessee School, Knoxville, Tennessee
North Carolina School, Morgantown, N. C.

1. General
   Name of institution and size of student body or clientele served

   Contact people

   Records of all hardware and software on campus?
   Brochures or write-ups of your program?

2. System
   What kinds of services are operational? Centralized or decentralized? Kinds of equipment and carrels used? Original and operating costs? How long in operation?

	Universities	4-year Colleges	2-year Colleges	Schools for Deaf
Remote access (electronic)	2	3		
Remote access (hard wired)	1			
Video tape/Television	4	6	3	5
Traditional media	3	5	3	6

3. Organization
   To whom is the director responsible?

   Size of staff

   Relationship to other information services

Library and media services functionally integrated	1[1]	3[2]	1	3
Library and media services organizationally integrated	2	2	2	2
Library and media services separate	1	1		
Unknown				1

1. University of Tenn. is integrating media services into the Library, although production and TV facilities are separate.
2. NTID uses the RIT library.

	Universities	4-year Colleges	2-year Colleges	Schools for Deaf
4. Use				
Instructional or supplemental? If instructional, who determines the format?				
Do you circulate media and equipment? (to students as well as to faculty)				
Yes	1	3	2	2
No	2	3	1	2
			/ Don't know	2
How many faculty make use of the system?				
Active demand	2	4	2	1
Records of use				
Yes	1	1	1	1
Research on effectiveness				
Yes	1	4	?	
5. Software				
Selection procedures				
Support services to faculty for planning software				
Yes		3	3	3
Media courses offered (and in/service training) for faculty and students				
Courses	1	3	2	2
In service training		2		3
Original programs available for use in other places? How are they validated?				
Continual evaluation procedures for software				
Yes		1	1	

6. Future plans and things you would do differently; major problems
Other places to visit

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