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ADVISORY COMMITTEE ON MEDICAL RESEARCH

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DEVELOPMENT OF A MULTIMEDIA LEARNING RESOURCE
IN THE PAHO REGIONAL LIBRARY OF MEDICINE

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1. **Introduction**

At its August 1971 meeting, the Scientific Advisory Committee on the PAHO Regional Library of Medicine (RLM), Escola Paulista de Medicina in São Paulo, Brazil, endorsed the proposal by the Library's Director that an Audiovisual Unit be established. The Committee also recommended that a consultant be asked to make a study and advise the Pan American Health Organization on the development of the proposed RLM Audiovisual Unit in the new addition to the Library building.

Briefly stated, the consultation would be concerned with the configuration, partitioning, and layout of space; recommendations for acquisition of standard viewing and listening equipment; media cataloguing and indexing systems; planning for the development of an audiovisual loan and distribution system; training of personnel in the operation of an audiovisual unit; development of a plan for similar training of individuals in other libraries; and a review of media evaluation techniques with faculty members of the Escola Paulista de Medicina.

The Scientific Advisory Committee further recommended that the audiovisual program be started with a small model experiment in a limited subject area. This experiment should be based on a selection from motion pictures and slide-tape presentations offered by the U.S. National Library of Medicine (NLM) from the media collections at its National Medical Audiovisual Center in Atlanta, Georgia.

This report is based on a study conducted at RLM between 25 January and 5 February 1972. Progress made in developing the above-mentioned model experiment is also described.

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2. **Essence of the Report**

The modern view of the function of health science libraries is that they should be comprehensive information centers serving as an educational aid for the student, an information bank for the health professional, and a research tool for the experimenter. To be most effective in this mission, libraries must harness the potential of currently available communications technology for the benefit of their users. Prominent among nonprint communications tools is a wide range of visual and auditory media such as motion pictures, videotapes, audiotapes, slide-tape presentations, microfiches, and programmed instructional materials that are of proved worth in the information transfer and learning process.

RLM now provides literature services to the students and faculty of the Escola Paulista de Medicina in São Paulo and to individuals, medical libraries, and other health science institutions in Brazil and throughout Latin America. The development of an audiovisual unit as part of its information support program would enhance the Library's present significant record of accomplishment. Educational and training programs for librarians currently under way at RLM will be greatly facilitated by such a unit. And the Library could make an important contribution to the improvement of the efficiency and effectiveness of medical education in Latin America through emphasis on instructional technology.

The ten days spent at the Regional Library meeting with key personnel at the Library and the Escola Paulista de Medicina, studying the physical layout of the Library, and becoming acquainted with its programs have led to the formulation of a plan for the development of audiovisual and learning resources for students and faculty and postgraduates at this institution, for meetings, conferences, and training activities, and for the storage of media and their distribution to other institutions.

RLM is an ideal place for the development of facilities for the above purposes. When completed, the facilities, with their separate but interrelated functions, can be a demonstration of educational technology developments and multimedia learning materials, a focal point for the training of librarians and others in various aspects of information science, for providing medical
students with self-instructional materials in appropriate learning spaces, for providing the faculty and postgraduates of the Escola Paulista de Medicina with small areas for discussions and use of media, and for teaching health science teachers how to teach.

3. **Recommendations**

1. That an audiovisual unit be developed at the PAHO Regional Library of Medicine, and that it relate to and be organized to serve educational, training, research, and practice needs of the health sciences community throughout Latin America, thus enabling the Library to become a comprehensive resource center.

2. That the design, furnishings, and equipment of the RLM audiovisual facilities, and particularly the auditorium, be planned to serve as a pedagogic laboratory for Latin American health science teachers and a demonstration of the effective use of educational technology in learning and the information transfer process.

3. That the RLM audiovisual unit be developed as a four-part facility for use by medical students in self-instruction; by postgraduates and faculty for study, seminars, and curriculum planning; for conferences and workshops; for training librarians in the development and use of audiovisual resources; and for the storage of nonprint media and their distribution to other institutions.

4. That worldwide sources of health science audiovisual media be identified by RLM, and their communication quality, currentness, and usefulness for Latin America be evaluated by review panels composed of subject matter specialists, educators, communication specialists, and students. Evaluation programs should be developed in both São Paulo and Washington, D.C.

5. That a Chief of the Audiovisual Unit, with broad experience in educational technology and its application in teaching in the health sciences, be appointed early to organize and then administer the audiovisual facilities. He should report to the Director, RLM.
6. That the Chief of the Audiovisual Unit be responsible for the training of appropriate RLM personnel in the operation and servicing of audiovisual equipment and in the acquisition, organization, storage, utilization, and distribution of nonprint media.

7. That a decision be made soon to develop an audiovisual unit at the RLM, so that details regarding space configuration, partitions, and other physical aspects can be given to the architect of the Library addition now under construction, and so that there will be sufficient lead time to obtain recommended equipment and have it shipped to São Paulo for use later in 1972.

4. Why an Audiovisual Unit for RLM

4.1 Health science communications: needs, solutions

Students, postgraduates, faculty members, clinicians, and researchers all use health science libraries as learners. The up-to-date professional must remain a student throughout life. The already overwhelming volume of biomedical knowledge is steadily increasing, and the traditional means of storing and disseminating information—the book and the journal, are being augmented and even replaced by electronic communications systems, e.g. the computer. The present technologic revolution in the field of information processing points to mass-media techniques as being ever more important to the learner.

Audiovisual technology is an important component of the communications process as it relates to health science education, research, and practice. It is also a component of instructional technology but, in the minds of many, this latter expression conjures up such audio and visual terms as television, films, slides, audiotapes, computers, projectors, and other items relating to machines and program materials. Instructional technology, in a larger and more important sense, is "... a systematic way of designing, carrying out, and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human learning and communication, and employing a combination of human and nonhuman resources to bring about more effective instruction."
It is in the context of the modern library as a comprehensive informational and educational center, employing a wide range of knowledge processing and utilization methodologies, that the development of audiovisual facilities at the RLM is justified and recommended.

4.2 Precedents and potentials

Many health science institutions in Canada, the United States, and elsewhere are moving rapidly toward the development of libraries that are comprehensive information and educational centers. The experience at the U.S. National Library of Medicine, Bethesda, Maryland, is relevant to this discussion.

When NLM developed an audiovisual learning resource in its main reading room in 1970, it was to extend the Library's reference services beyond the provision of literature services only and to demonstrate how nonbook media, traditional library literature services, and computer-related learning and informational facilities could be coordinated to provide dynamic and responsive reference services. It appeared that the resource could also serve to demonstrate self-learning principles and be a showcase of nonprint informational materials applicable in medical schools, in continuing health science education, and learning in other scientific subject areas. Experience has proved these views to be sound.

The use of an audiovisual unit at the Regional Library of Medicine in São Paulo is potentially much greater than at NLM. The Library is on a medical school campus that has about 400 students who use the facilities regularly, and there is a sizeable staff of faculty members and postgraduates. RLM will provide an experimental laboratory for information processing and educational technology. The extension of the services of the audiovisual unit to other institutions through the already established interlibrary loan system would further enhance its significance. And finally, the facility can be a learning center that has a profound effect on health science education, practice, and research throughout Latin America.
RLM has recently received funds from the W.K. Kellogg Foundation to begin a comprehensive three-year educational program for library personnel. People in key positions in the international network of biomedical libraries will be introduced to the advanced technology of information handling and the management of libraries. There will also be demonstrations of training programs that local institutions can extend to subregional library centers. In all of these educational and training activities the audiovisual facilities developed at RLM would play a very significant role.

5. Planning RLM Audiovisual Facilities

5.1 Space availability

The addition to RLM, now under construction, will increase available space from 1,950 to 3,340 square meters. There will be a large student study area with a two-story ceiling that is entered by a ramp from the new main entrance to the Library. At one side of this study area is a mezzanine. The elongated area beneath it will accommodate the circulation desk and also other activities. The mezzanine area is also elongated and has a low front wall that permits one to look down on the student study area. On the north side of the original four-story, square Library building is a smaller one-story addition that will be used primarily for administrative offices and an auditorium.

It should be pointed out that the medical student and the faculty and postgraduate reading and study areas will be separate. Reading facilities for faculty and postgraduates will remain on the first floor in the original building where the circulation, reference, and reading facilities and services are now located.

5.2 Emergence of plan

It soon became apparent that what had been considered an audiovisual resource for RLM is not a single entity but, in fact, a complex of facilities relating to at least four separate but interrelated functions that would be located in four distinct parts of the Library: (1) the provision of self-instructional audiovisual facilities for the medical
students in their own reading area; (2) the provision of small discussion and study rooms equipped with multimedia materials for faculty and postgraduates; (3) the development of a reasonably sophisticated auditorium to serve as a conference, presentation, and training center for groups of up to 50 persons, and (4) the provision of an area for carrying on the distribution of audiovisual materials to other institutions. If properly laid out, equipped, and coordinated, the first three areas can serve effectively as a pedagogic laboratory where health science teachers can come together to participate in modern approaches to instruction and learning where educational technology, learning objectives, self-instruction, and evaluation are emphasized.

5.3 Communications and learning areas

Since they will be located in different parts of the building, the student, and faculty and postgraduate audiovisual facilities at RLM must be developed separately. It is fortunate that the configuration of the new space is such that these facilities can be accommodated in what appear to be desirable locations for their most efficient operation. Space for the auditorium is also conveniently located for use by the Library staff and people coming in from outside.

5.3.1 Student audiovisual facility

Space available under the mezzanine seems to be ideal for student use of multimedia learning materials in self-instruction. Six rooms (3.9 m x 3 m) have been designed as learning spaces of various types, e.g., where several students can work together, where individuals can work alone, where specialized equipment can be used, and where multimedia self-instructional packages can be displayed and used.

A sliding door between two of the rooms, when open, would create a larger area for accommodating several students when there are special demonstrations relating to educational technology, or when particular curricular learning materials require more space.
Such an arrangement would also permit teachers to meet with students on occasion during sessions of the pedagogical laboratory.

Since any layout of student study facilities must be considered as experimental, the plan provides for maximum flexibility in that modular partitioning with impermanent walls is recommended. The location and type of study tables and most space dividers are such that these can be removed or shifted. Little of the equipment to be used in any room should be permanently installed.

It is recommended that a program for the evaluation of the use and effectiveness of the student learning facility should be gotten under way early. If this review indicates the need for changes in the configuration and content of the study rooms, modifications should be made promptly. Earlier it was emphasized that the audiovisual facility is experimental and, therefore, subject to change.

5.3.2 Faculty and postgraduates audiovisual facility

The faculty and postgraduate discussion and audiovisual area would be located on the mezzanine above the students and would also consist of six small rooms. One room would be a combined projection, equipment, media storage, and maintenance area. Limited production of slides and graphics could be carried out here.

The next two rooms can be made into one large one by opening a sliding door. This room has rear screen projection and can be used for workshops on teaching materials and methods, training courses, or small conferences. Television and MEDLINE terminals could be installed here, and the room should have chalk boards, display panels on the wall, and a collection of literature on educational technology and curriculum development and learning, media listings and catalogs, and information about equipment. The next room would have solid walls and could be used for small conferences when privacy is desired. The last two rooms could also be made into one large area by opening the sliding door.
There would be individual study carrels where various viewing and listening devices could be used by faculty and postgraduates. There would also be spaces for use of individual items of equipment, such as microfilm and microfiche readers, projectors, and tape recorders.

When the partition between these last two rooms is open, one would be in an educational technology display and use area. Training in the utilization of multimedia materials in health science teaching could be given here during sessions of the pedagogical laboratory. Media relating to courses of instruction in the Escola Paulista de Medicina could be examined in this area by faculty members. Postgraduates could use the facilities for choosing appropriate media in preparing for their instructional responsibilities or when studying for board examinations. Visitors from other institutions could become acquainted here with learning and informational media materials in the RLM collection.

In developing the faculty and postgraduate audiovisual facilities, the learning needs of the local medical students should be kept in mind. On occasion, selected students could be brought into the audiovisual facility on the mezzanine to interact with Library personnel and faculty members regarding current medical school instructional programs and the need for having additional learning materials at RLM. And faculty members would be encouraged to become acquainted with multimedia self-instructional materials, realize their potentials in the knowledge transfer process, and accept them as an efficient and effective replacement for most lectures.

5.3.3 Auditorium

An auditorium is planned for the Library. It will be used as a conference, workshop, and discussion room and has the potential of serving for the training of librarians and as an important center for teaching medical teachers how to teach. Therefore, this room needs to be well equipped, comfortably furnished and carpeted, and
acoustically treated so that the most effective communication can take place. It will accommodate up to 50 persons.

Two simultaneous translation booths are provided, with sound transmitted to wireless head sets. If a third language is required, an interpreter can use the projection booth.

The auditorium is strategically located, with ready access from the new administrative area of the Library, from the student reading area, and from outside the building. With the expanding programs of RLM, the support recently received for training of librarians in new methodologies and operations, and the certainty that the room will be used for introducing students and teachers to the advantages of educational technology, the auditorium will be a busy workshop.

6. Media Resources

6.1 Evaluation and acquisition

Before RLM acquires media (films, slides, audiotapes, programmed materials, etc.) for its audiovisual unit, they should be evaluated by panels composed of subject matter specialists, educators, communications specialists, and students. They should be reviewed for currentness, technical quality, communication effectiveness, and suitability for Latin America. In this way the Library will avoid acquiring a quantity of obsolete materials. More importantly it will be providing its users and other institutions with learning and informational materials that meet accepted quality standards.

Ideally media should be evaluated by two well-structured groups, one organized by PAHO for reviewing panels in Washington, D.C., and another for panels in São Paulo that are set up by agreement between the RLM and medical groups, medical associations, or other appropriate bodies in Brazil. The functions, structure, and responsibilities of these review panels are presently being studied by an ad hoc group in Washington and its report will be submitted to the Director of RLM and his advisory body.
6.2 Distribution

The distribution of media to other institutions will be an important activity of the multimedia unit. Space for the storage of these media is available near the entrance to the Library. Problems will be encountered in the distribution function. For example, motion pictures are a single unit and they are generally returned intact. However, multimedia packages consisting of cartridge films, audiotapes, slides, and printed materials are more complex. It may be found that the loan of these is impractical due to loss of some of the components of a package. Then decisions will need to be made as to whether these learning materials are out at all. Perhaps they will be distributed to an institution and remain there. This would be an expensive practice for RLM and call for substantial financial support.

7. Administration and Operation of the Unit

7.1 Chief

It is recommended that RLM add a Chief of the Audiovisual Unit to its staff at an early date. This person should preferably have acquaintance with health science subject matter, be interested in the learning process, experienced in teaching, and grounded in educational technology. He would be responsible for development of the audiovisual facilities of RLM and their operation, the training of Library personnel in the use of media, establishment of rapport with the faculty of the Escola Paulista de Medicina and the health sciences community at large, and the organization of a system for lending media to other institutions.

The Chief should report to the Director of RLM. This will support him in his diverse responsibilities that relate to several Library operational areas, e.g. student reading room, faculty and postgraduate users, conference and meeting activities, and the distribution of media outside RLM. The Chief of the Audiovisual Unit has many important duties and he should be well paid.

7.2 Audiovisual unit personnel

Initially the Chief of the Audiovisual Unit should have a competent technician to provide maintenance services, serve as projectionist, and
do other work. As the unit develops, other audiovisual personnel will be required. In addition, certain RLM employees, particularly in the student reading room, will become involved in the operation of listening and viewing equipment and in the utilization of media.

8. Training of Librarians

The educational program for Latin American librarians at various levels that has recently been funded by the Kellogg Foundation should include instruction in the development, operation, and management of audiovisual resources. This particular training is another important responsibility for the Chief of the Audiovisual Unit and planning for it should receive his early consideration. At the earliest, it will be late in 1972 before the audiovisual facilities can be completed and equipped. Meaningful training for librarians from other institutions could not be started until mid-1973.

9. Model Experiment at RLM

9.1 Preparations

As stated in the Introduction, at the August 1971 Meeting of the Scientific Advisory Committee there was discussion about the subject specialty area that might be chosen to initiate an experiment by the consultant in the organization and use of audiovisual media at RLM. It was later decided to choose from media dealing with physical diagnosis. The following presentations were identified from the collections of the National Medical Audiovisual Center in Atlanta, reviewed at PAHO in Washington, D.C., and forwarded to São Paulo in December: (a) Motion Pictures: "The Ears," "The Nose," "Physiologic Manifestations of Emphysema," "Neurological Examination of the Newborn," and "Neurological Examination of the One-Year-Old;" (b) Audiotapes: "Heart Sounds and Murmures"; and (c) Slide-Tape Presentations: "Examination of the Knee" and "Examination of the Eye."

This selection of media was to be used to focus on certain aspects of the proposed audiovisual program of RLM, e.g. cataloguing, servicing of media, training personnel in the use of equipment, planning for distribution mechanism, media evaluation procedures, etc.
9.2 Accomplishments

Due to various factors, such as the summer vacation at the medical school and limited time, the above-mentioned aspects of the proposed audiovisual programs of RLM were only partially considered during the 10-day period of consultation.

Views on the indexing, cataloguing, storage, servicing, and distribution of media, and procedures for media evaluation were exchanged with individuals at RLM and in the Escola Paulista de Medicina. Due to the lack of equipment at RLM there was no opportunity to train Library personnel in use of audiovisual media and operation of hardware.

It is felt that through the media materials and literature supplied to RLM, the contacts made, the discussions held, and a presentation given before RLM personnel and students and faculty at the Escola Paulista de Medicina, many individuals at the Library and in the medical school became generally aware of the impending development of an audiovisual unit at RLM and its components.

10. Summary and Conclusions

A period of 10 days was spent at the PAHO Regional Library of Medicine meeting with key personnel at the Library and the Escola Paulista de Medicina, studying the physical layout of the Library, and becoming acquainted with its programs, all to formulate a plan for the development of audiovisual resources at this institution to: (1) provide self-instruction multimedia facilities for students, (2) provide faculty and postgraduates with discussion and study areas equipped for use of audiovisual media, (3) design the layout of an auditorium suitably equipped for meetings, conferences, and training activities, and (4) provide a facility for the storage of media and their distribution to other institutions.

It is concluded that the RLM is an ideal place for the development of resources for the above purposes, and that this facility will extend and enhance the literature information services now being provided by the Library. When completed, the unit, with its four separate but interrelated functions, can be a demonstration of education technology developments and a focal point
for the training of librarians and others in aspects of information science, for providing students with self-instructional learning materials, and for teaching health science teachers how to teach.