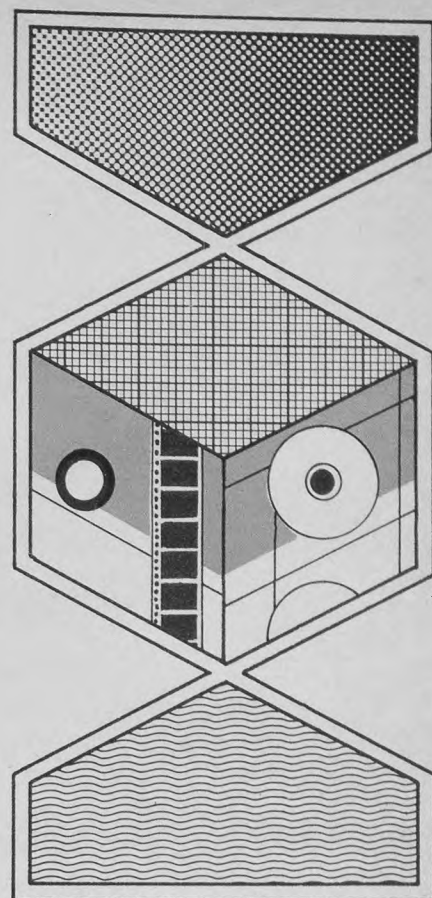


A Teaching Bank of Audiovisual Materials for Family Practice

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Although increasing emphasis has been placed in recent years on the production and use of audiovisual materials in medical education, little work has yet been done on the identification and application of these materials in family practice teaching programs. This paper describes the content, uses, limitations, and initial experience of a Teaching Bank developed to support family practice teaching in varied settings. Video cassette and tape-slide units are most useful; audio cassettes alone are less likely to be selected. The evaluation of content, quality, and effectiveness of audiovisual media poses a particular problem. Although audiovisual materials can enhance learning based on different individual learning needs and styles, they cannot stand alone and usually must be supplemented by other teaching methods.

The breadth of content of family practice teaching programs poses particular problems in the development and implementation of curricula at undergraduate, graduate, and post-graduate levels. Family practice residency programs, for example, include a complex of learning experiences involving several major settings — the Family Practice Center, hospitals, specialty clinics, and other ambulatory care settings — as well as several teaching methods: didactic, small group, one-to-one, and self-instruction. Individual residents and students have different needs and learning styles and time is always at a premium. In this context, self-instruction in certain areas is not only effective but needed if residents and students are to meet

their individual educational needs. Audiovisual materials appear to have much to offer in this respect, but to date little has been done in the identification and evaluation of useful materials for family practice.

Starting with two assumptions — first, that audiovisual materials are of potential value in family practice teaching programs, and second, that a wide spectrum of *existing* materials has already been developed relating to various aspects of family practice — an extensive search for such audiovisual materials has been carried out during the last several years and a Teaching Bank developed. This paper will briefly describe the development, content, uses, limitations, and initial experience of the Teaching Bank, in the hope that other programs will benefit from this experience.

and more recently at the University of California, Davis, a national search has been carried out for audiovisual materials relevant to family practice. Over 500 audiovisual units have been identified and procured for the Teaching Bank in 33 specific content areas. Sources have included medical schools, Regional Medical Programs, specialty groups, and other organizations involved with audiovisual materials in medical education. Particular emphasis has been placed on video cassettes, tape-slide units, and motion picture films. However, some written materials have been included due to lack of content in modalities listed above.

Table 1 shows categories of current holdings in the Teaching Bank.*

Development of Teaching Bank

First at the University of Utah,¹

*Catalogue available at cost by writing to Network Teaching Bank, Department of Family Practice, School of Medicine, University of California, Davis, Calif 95616.

From the Department of Family Practice, University of California, School of Medicine, Davis, California. Requests for reprints should be addressed to Dr. John P. Geyman, Department of Family Practice, University of California, School of Medicine, Davis, Calif 95616.

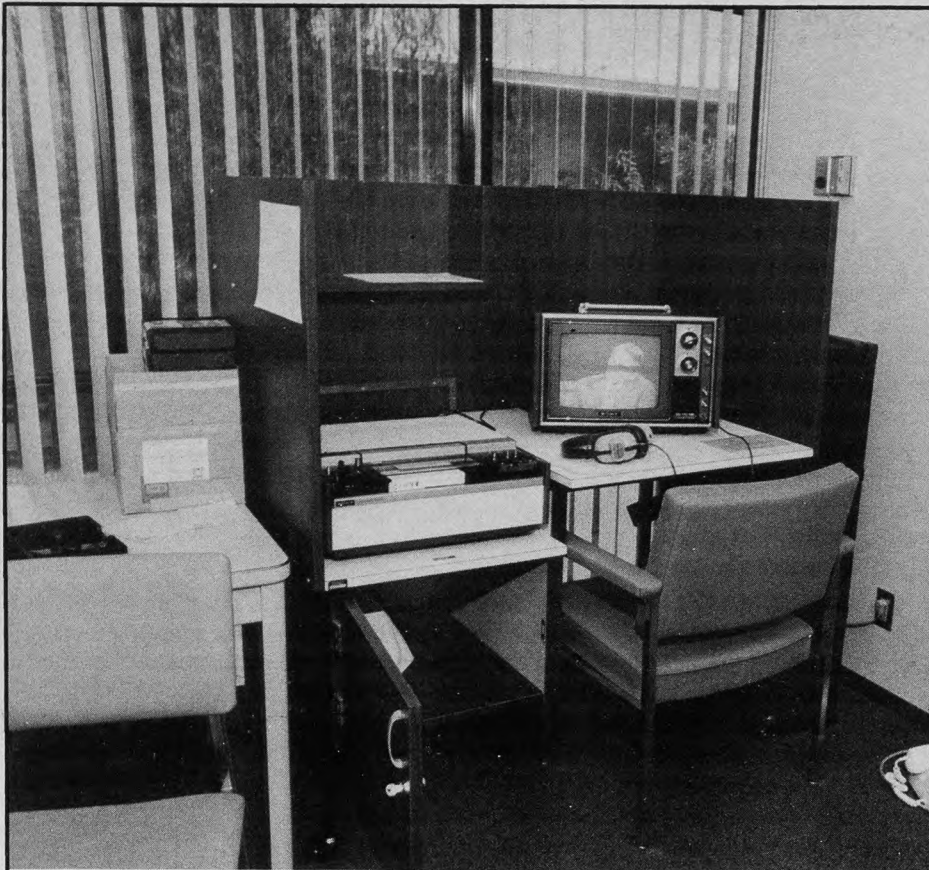


Figure 1. Video Tape Playback Self-Learning Carrel

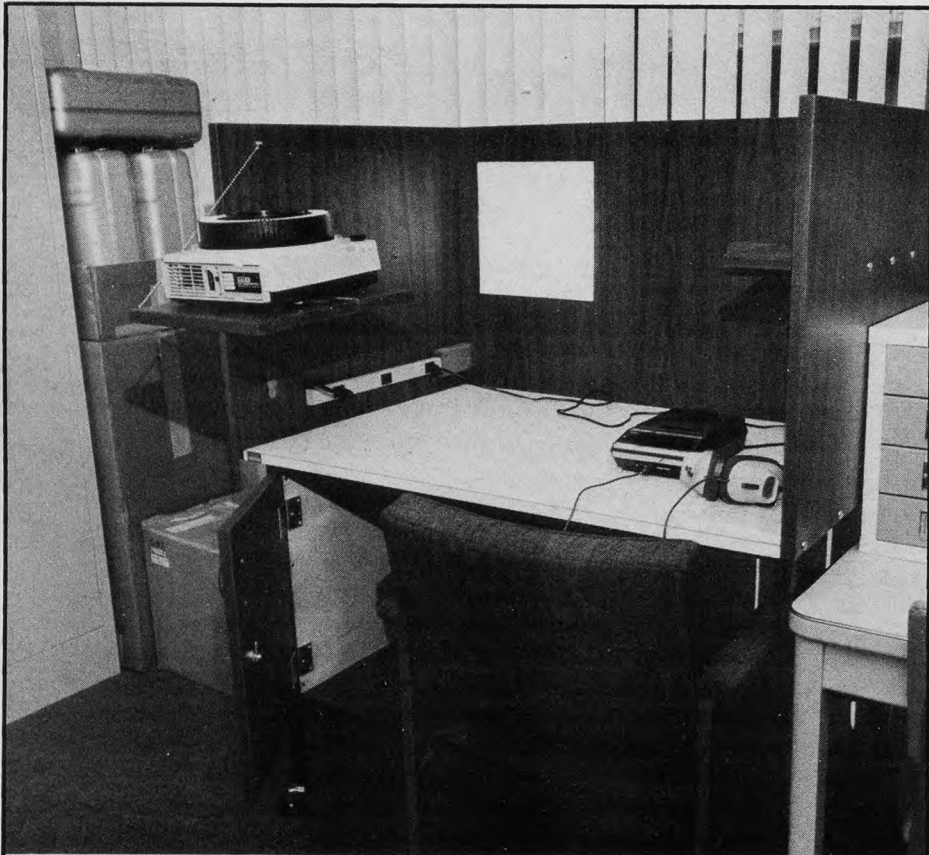


Figure 2. Tape-Slide Self-Learning Carrel

Individual units were chosen largely on the basis of content (by title), available information concerning their quality (often minimal), and the reputation of their source as a developer of audiovisual materials. While appropriate audiovisual materials exist in many content areas, in others, especially rehabilitation and preventive medicine, suitable materials are lacking.

Equipment has been utilized which is portable, readily available, and easily maintained. Hardware includes 16mm film projectors, 35mm carousel slide projectors, and 3/4-inch video cassette playback units. Synchronized adaptors for 35mm projectors have not been utilized due to costly additional equipment and different tape channels used by multiple producers for slide advancement. The 3/4-inch video cassette playback unit has been selected as the most generally available and useful size.

Learning carrels for both tape-slide and video cassette units have been designed and built locally and are located in the Family Practice Center of each component program within the University of California, Davis, Family Practice Residency Network Program.² (See Figures 1 and 2) The learning carrels were designed to be movable so that they could be placed in various locations according to need. For example, they can be placed in patient waiting areas and used for patient education and then returned to normal locations. In addition, it is possible to lock up all equipment and materials, remove coasters, and leave carrels in areas that are accessible to non-authorized persons, and they will be "steal-safe" to a major degree. As all equipment is concealed from view, no media or equipment has been lost in over a year's time since carrels were placed in Family Practice Centers.

Media are rotated through each of the affiliated residency programs on a monthly basis and are also available on an on-call basis when not otherwise in use. A catalogue is maintained and periodically updated as new materials are added to the Teaching Bank so that requests for new media are facilitated.

A major problem from the beginning has been the difficulty of obtaining sufficient evaluation before purchase of audiovisual materials to be certain of their value in family

practice. Careful evaluation of each unit requires much time, usually in short supply among faculty members. Moreover, it is frequently difficult to obtain individual audiovisual programs for review without expending considerable funds, in many cases approaching actual purchase costs.

Costs of audiovisual materials have varied by type of media. Tape-slide programs average \$5 to \$65, video cassettes \$40 to \$200, and 16mm films \$75 to \$200. The two learning carrels have been constructed for a total of \$960, the tape-slide carrels were built for \$460 each, and the video cassette carrels were built for \$500 each.

Uses of Teaching Bank

Teaching Bank audiovisual materials have been useful at four different levels among the activities of the Department of Family Practice. At the graduate level, varied materials are rotated to each affiliated hospital on a monthly basis. Table 2 outlines a typical rotation. Some residents regularly view all materials during a rotation, while others choose those relating to a particular field of interest and/or those relating to their current clinical rotation. Some do not use materials at all. Selected audiovisual programs are sometimes used in conjunction with a teaching conference as background for subsequent discussion. Some textbooks are kept in the carrels themselves, or in a nearby bookcase, because a given audiovisual program may stimulate the resident to do further reading on a particular subject. In addition, a resident may choose textbooks over media for learning purposes. Learners require multiple options and it is desirable to enrich a learning area so that each can use modalities of his/her choice.

The Teaching Bank has been used to supplement postgraduate learning in several ways. Family physician preceptors attending in the Family Practice Centers of the residency program network frequently devote a portion of their time to viewing selected audiovisual programs, sometimes in conjunction with residents. Preceptors often use extra time to review media for self-learning when they are not actively consulting with residents. Dialogue with residents about specific content areas is some-

times prompted by these media. A learning room for self-instruction is provided at the Department's annual five-day Family Practice Refresher Course and has attracted considerable use. The Teaching Bank is also available to family physicians returning to the University as part of a preceptorship-locum tenens exchange program with third-year residents throughout the network.

Teaching Bank materials are made available to support off-campus preceptorship and clerkship training for medical students. This allows for structured self-instruction during the clerkship or preceptorship experience. This can help meet learning needs in important areas of family practice not previously covered by the students. The Teaching Bank also supports teaching activities on campus in such electives as Emergency Medicine and Sports Medicine. Students have found the extensive holdings helpful to pursue their individual interests, often dropping in to use them on an elective basis.

In addition, the Teaching Bank has been found useful by the Family Nurse Practitioner Program. This decentralized program involves five satellite teaching centers and relies heavily on the use of audiovisual materials.

Table 1. Network Teaching Bank Content Categories

- I. General Medicine
- II. Pediatrics
- III. Medical Subspecialties:
 1. Allergy
 2. Cardiology
 3. Cancer
 4. Chest
 5. Dermatology
 6. Gastroenterology
 7. Hematology
 8. Infectious Diseases
 9. Metabolic and Endocrinology
 10. Neurology
 11. Renal
 12. Rheumatology
- IV. General Surgery
- V. Surgical Subspecialties:
 1. Anesthesiology
 2. Dental
 3. Otolaryngology
 4. Ophthalmology
 5. Orthopedics
 6. Urology
 7. Minor Surgery
 8. Proctology
 9. Neurosurgery
- VI. Obstetrics - Gynecology
- VII. Behavioral Science
- VIII. Emergency Medicine
- IX. Rehabilitation
- X. Clinical Pharmacology
- XI. Health Care Delivery and Practice Management
- XII. Preventive Medicine
- XIII. Geriatrics
- XIV. Miscellaneous

Table 2. Sample Media Rotation

Title	Format	Time
The Problem-Oriented System: An Introduction	Cassette/19 slides	12 min
Anaphylactic Reactions to Drugs	Video cassette	15 min
Current Concepts of Toxemia	Video cassette	30 min
Local Anesthesia: Three Effective Techniques	Video cassette	15 min
Urinary Tract Infections	Video cassette	30 min
Burn, Part I	Video cassette	15 min
Burn, Part II	Video cassette	16 min
After the Spontaneous Abortion: Counseling by the Family Physician	Video cassette	19 min
Fetal Monitoring	Video cassette	30 min
Aspects of Sexual Interviewing — the Frigid Wife	Video cassette	35 min
		Total time: 3 hrs, 37 min

Perspectives on Teaching Bank Approach

It is important to summarize some advantages and disadvantages of using audiovisual materials. One advantage is that media from the Teaching Bank save teacher time. Use of selected audiovisual materials before or during teaching conferences may increase the productivity of the group and better focus attention on the content under discussion. Since audiovisual materials are available at any time during the day, individuals can readily use them despite busy schedules. The scope of learning experiences available to residents can be greatly extended, since no one program can immediately produce patients or content experts within all possible clinical content areas. The Teaching Bank can allow individuals to use a variety of approaches to learning based upon their personal learning styles.

One problem with the Teaching Bank relates to the varying quality of its audiovisual materials. Most materials have been reviewed by only one or two persons, so that their relevance, quality, and value have not been completely evaluated. Experimental design programs where growth in knowledge can be shown have not been systematically undertaken for most of the acquired software. In some content areas, materials are not available in any form or are limited to one type, which does not allow user choice of modality according to content. It has also been found that quality of audiovisual materials varies widely among producers. Most materials in the Teaching Bank, therefore, need supplementary instruction by faculty since use of media cannot entirely replace one-to-one or small group discussion.

It was recognized early that appraisal of media by residents and other users must be voluntary. It has been shown that administrative barriers placed between the media and the users lead to underutilization of media.³ Therefore, user evaluation has not been overstressed and the data that have been obtained is not reportable. However, certain patterns of usage of audiovisual materials have been identified. Table 3 shows the *elective* usage of Teaching Bank materials during the 1974-1975 year. It is interesting to note that the greatest use has been demonstrated in general

Table 3. Elective Usage of Media in the Network Teaching Bank; 1974-1975*

Media Category	No. of Units in Bank	No. of Units Used	No. of Days Used
General Medicine	27	17	1,151
Pediatrics	32	22	1,114
Medical Subspecialties	166**	57**	1,045**
Allergy	7	3	133
Cardiology	53	17	420
Chest	17	6	97
Cancer	7	0	0
Dermatology	23	6	154
Gastroenterology	8	5	20
Hematology	15	3	34
Infectious Diseases	1	0	0
Metabolic and Endocrinology	10	4	35
Neurology	10	6	103
Renal	5	4	19
Rheumatology	10	3	30
General Surgery	10	1	14
Surgical Subspecialties	105***	29***	637***
Anesthesiology	7	0	0
Dental	2	1	71
Otolaryngology	20	12	348
Ophthalmology	21	3	21
Orthopedics	39	8	16
Urology	8	3	19
Minor Surgery	3	2	162
Proctology	4	0	0
Neurosurgery	1	0	0
Obstetrics-Gynecology	31	16	230
Behavioral Science	29	9	166
Emergency Medicine	26	10	160
Rehabilitation	4	2	54
Clinical Pharmacology	6	1	10
Health Care Delivery and Practice Management	7	1	16
Preventive Medicine	2	0	0
Geriatrics	17	1	22
Totals	462	166	4,619

*Not included in this table are materials from the rotation media schedule which consists of 59 items rotated every day within the University of California, Davis, Family Practice Residency Network for a total of 21,535 days used.

**Sub-total of total units, units used, and number of days used in medical subspecialty areas.

***Sub-total of total units, units used, and number of days used in surgical subspecialty areas.

medicine, pediatrics, and the medical subspecialties (particularly cardiology, dermatology, and allergy). Moderate use has been demonstrated in obstetrics-gynecology, behavioral science, emergency medicine, and the surgical subspecialties (especially otolaryngology and minor surgery). Table 4 represents elective usage of audiovisual materials by media types. Video cassettes are in highest demand, followed by tape-slide materials. Audio cassettes alone and slides unrelated to other media are infrequently used.

Little attention has been paid to the characteristics of learners in terms of preference for media utilization. One overlooked area concerns the personality characteristics of individuals and how they react to instructional media. A recent study of college students majoring in engineering addressed this question. The study consisted of 55 students who took a self-paced course in thermodynamics. Although statistical evidence for the effectiveness of this course was provided in terms of student growth, the important aspect of the study concerned the kind of student by personality type who preferred self-paced instruction to conventional instruction. It was found that *perceiving* types of individuals preferred self-paced instruction over more conventional methodologies while *judging*-type individuals preferred conventional teaching methodologies.⁴ This study supports the notion that not all learners want to utilize the same learning strategies, thereby necessitating the need for alternative modalities, materials, and experiences.

In addition to personality, the effectiveness of various forms of teaching has been studied extensively. The results are mixed and it can be concluded that all forms of media can teach cognitive content and that any form of instruction has its advocates.¹⁻⁶

Discussion

Our initial experiences have been mixed in terms of the positive and negative aspects of establishing a Teaching Bank for regional use at multiple learning levels in family practice. Positive reactions have been expressed by many residents and preceptors to the rotation of media throughout the residency network.

Table 4. Elective Usage of Media by Type

Media Type	No. of Units in Bank	No. of Units Used	No. of Days Used
Video cassettes	164	80	2,582
Audio cassettes and slides	143	63	1,356
Audio cassettes	50	4	51
Slides	54	10	235
Films*	17	—	—
Written materials	49	9	395
Models	2	0	0

*16mm films converted to video cassette for individual use are not counted as they are not sent to users.

The relatively high *elective* use of audiovisual materials has likewise demonstrated strong interest in the Teaching Bank. At the same time, it has often been difficult to identify appropriate materials because of the lack of adequate content description and audience level information provided by producers. This relates to the problems of evaluation. It appears that producers find that extensive evaluation, other than expert testimony by persons often with a vested interest, is extremely costly and does not necessarily influence the marketing of materials. They tend not to subject media production to rigorous testing to ascertain audience acceptance or audience growth after use of media. Consequently, appraisal of the relevance of content, technical quality, and educational value of media is left to the user.

In order to more adequately approach the problem of evaluation of audiovisual materials for family practice, an Audiovisual Review Committee has been established as a subcommittee of the Education Committee of the Society of Teachers of Family Medicine. This group can better evaluate available audiovisual materials and provide appraisals by a number of reviewers for each piece of media. As this subcommittee continues to appraise media for family practice, information from a non-biased group will accumulate for those wishing to introduce audiovisual materials in family practice teaching programs.

In addition to the need for better evaluation of audiovisual materials in family practice, further efforts are

required in two areas. First, there is clearly a need for new audiovisual materials in such gap areas as rehabilitation and preventive medicine. Second, there is a need to develop learning modules involving single or multiple audiovisual units. These learning modules should include specific educational objectives and post-testing instruments with answer keys. Learners would then be able to assess content mastery.

Although audiovisual media cannot stand alone, the Teaching Bank approach appears to be a useful part of creating an enriched learning environment in various settings. However, much more needs to be done before the full potential is realized of integrating audiovisual media as a useful and relevant part of family practice teaching.

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