ASSESSING THE IMPACT OF A MOBILE SELF-INSTRUCTIONAL ENVIRONMENT UPON MEDICAL STUDENT OUTCOMES IN FIVE CLINICAL SETTINGS

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ABSTRACT

ASSESSING THE IMPACT OF A MOBILE SELF-INSTRUCTIONAL ENVIRONMENT UPON MEDICAL STUDENT OUTCOMES IN FIVE CLINICAL SETTINGS

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The development of community-based physician training programs has prompted medical schools to explore means for monitoring program quality and for delivering supporting resources in off-campus clinical locations.

The purpose of this study was to assess the impact of employing one type of resource delivery system, the MEME (Mobile Environment for Medical Education), with students enrolled in a six-week Obstetrics and Gynecology Clerkship in off-campus clinical locations.

The MEME is a portable, self-contained learning carrel. It is equipped with a slide projector and audio cassette playback equipment as well as video cartridge playback capability. The MEME, containing appropriate self-instructional materials, was placed in each clinical setting.

The sample consisted of seventy-three, third and fourth year medical students at Michigan State University assigned to five clinical communities. Three instruments were used; a clerkship pre-test, a clerkship assessment form to obtain attitudinal and MEME use data, and a clerkship post-test.

A Two Phase design was used. Phase One assessed student attitudes toward the clerkship experiences, the MEME and instructional materials. Student knowledge of clerkship content was measured by pre and post-test.

Baseline data from the Phase One assessment were used in examining a series of hypotheses in Phase Two. The hypotheses contrasted overall MEME use with logistics factors, acquired content knowledge and the importance of the MEME to this and other clerkship experiences. Student evaluations of the quality of MEME materials and their preferences for specific materials were contrasted with use of the materials.

Based on the findings, it was concluded that the Ob/Gyn clerkship, was a positive learning experience providing students with an appropriate educational "mix" of clinical practice, formal classroom contact and the opportunity to ask pertinent questions. The clerkship facilitated the students' acquisition of "clinical confidence" in their ability to perform obstetrics and gynecology procedures.

There was no evidence that the degree of MEME use independently effected student content acquisition.

The MEME was used by a significant number of clerkship students primarily as a source of clerkship content. It was used most often between the hours of seven a.m. and midnight, for periods of thirty-one minutes to one hour in duration. The average weekly use per student was between zero and six hours.

Equipment operation and convenience of location were not major logistical problems. It was determined however that students experiencing difficulty in equipment operation and/or inconvenience in MEME location were low MEME users. For those students who used the MEME, it was an important addition to the clerkship experience. The availability of MEME's for use in other clerkships was a significant need expressed by students.

Textbooks were the most preferred, rated highest in quality, and received the heaviest use of all clerkship resource materials. Video cassettes ranked second in these categories and provided the most viable non-print resource format. Audio cassettes ranked lowest in student preference, quality and use. Preference and perceived quality of audio cassettes as well as programmed materials influenced student use of these materials.

The delivery of learning resources in support of specific content objectives provides a unique problem for medical schools using community hospitals for clinical training. This study demonstrates the viability of the MEME as one strategy for the delivery of content information to medical students in close proximity to patient care. The MEME as a content resource delivery system is a potentially important vehicle for extending the effectiveness of faculty in community educational sites as well as providing at least a partial strategy for controlling the quality of community-based medical education programs.

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THE RESEARCH PROBLEM

IDENTIFICATION OF THE RESEARCH PROBLEM

In recent years a number of medical schools have developed physician training programs utilizing community-based teaching hospitals rather than university-based teaching hospitals. Fourteen of the twenty-three medical schools admitting a first class since 1967 have used only community hospitals for clinical training. Of the remaining eighty-nine accredited medical schools in the United States, all now have affiliations with community hospitals and/or veterans administration hospitals.[1]

The College of Human Medicine at Michigan State University is among those institutions that have developed community hospital-based clinical experiences for physician training. Murphree et al., (1972) and Kowalewski (1975), indicate that the community hospital environment provides students with an opportunity to interact with primary care physicians who serve as role models in the training process. Second, the community hospital setting provides a rich environment within which students participate with physicians in patient care activities.

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[1]American Association of Medical Colleges Directory of American Medical Education, 1976-77.

While the community hospital setting incorporates these elements important to physician training, the development of such programs has accentuated several educational problems for the college.

As an educational institution, the College has goals, objectives, and standards which are essential to any educational program. The use of community hospitals as the setting for clinical education is one way of providing clinical training in environments more closely approximating the real world. At the same time, the use of remote clinical settings requires the development of better means to monitor and control the educational quality of community programs. Basic to the issue of quality control is the realization that student progress or achievement is closely linked to the processes of delivery of medical education. Any efforts to provide quality control of student performance in terms of the acquisition of medical content, problem solving and clinical skills must include careful planning and evaluation of the ways in which these elements are delivered and structured as learning experiences for students.

Ideally, the community hospital is one in which the student acquires and synthesizes new medical content provided by campus and community physicians in community-based clinical settings. This balance between clinical experience and content acquisition is a critical concern when coupled with the issue of quality control across several communities and hospitals.

Community-based educational programs must include components which maximize the availability of a wide variety of learning

experiences and resources. In addition, such components must address the issue of quality control through the vehicle of minimum educational requirements for all students.

An additional complication results from the change in learning environment from the University campus to the community setting. While the clinical setting becomes the primary learning environment for Year 3 and Year 4 clerkship students, the needs for means of facilitating the rapid acquisition of medical content continue. On campus, Year 1 and Year 2 students have available to them a wide vatiety of learning resources, specifically developed to facilitate the rapid acquisition of medical content. Such resources include fully equipped learning carrels and a wide range of print and non-print materials appropriate to the curriculum. These resources do not exist in the clinical communities. This fact, coupled with the distance between clinical settings and the main campus as well as difficulty in obtaining rapid access to appropriate materials via traditional loan systems accentuates the problem.

It follows then that the education development process faces two primary problems. First, there is a need to develop a set of minimum educational standards based in specific objectives and supported by a wide range of learning resources against which student progress can be measured. Second, there is a need to develop a means by which these learning objectives and supporting resources may be effectively packaged and delivered to students in the community setting.

In September of 1974, the College, prompted by pressures from several departments, students in the clinical settings, and community-based faculty, began a process of examining alternative solutions to the problems of quality control and content acquisition in the community setting. A number of alternatives were explored by an ad hoc committee[2], constituted by the Associate Dean, which included the development of learning resource centers in each clinical community and/or in each community hospital. A preliminary cost study was done to determine the feasibility of developing learning resources centers in each community. Initial estimates involving fully equipped learning areas ran between fifty and seventy-five thousand dollars per site. This would have placed the total cost for five communities in the area of two hundred fifty to three hundred thousand dollars. Funding of this magnitude was not available to the College for such a project. While the development of fixed learning resources centers in each community was not a viable alternative, neither was acceptance of the status quo. The alternative finally adopted included developing a prototype model involving some form of portable, fully-equipped, unit which would effectively facilitate rapid acquisition of focused content material by medical students in the community setting. The general parameters for this development were as follows:

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[2]Membership included the Associate Dean, Acting Director-Office of Curriculum Implementation, Campus Ob/Gyn Clerkship Coordinator, Director-Learning Resources Center, and Director-Biomedical Communications Center.

1. The unit should be easily portable between clinical communities (preferably by one but not more than two persons).
2. The unit should be easily moveable within any one location via hospital elevators, preferably by one person.
3. The unit should contain capabilities for play back of videotapes and the viewing of slide-tape programs, microfiche and audio programs.
4. The unit should provide space for the storage and efficient retrieval of all materials to be utilized by students.
5. The unit, when in use, should provide as attractive and comfortable an environment for students as possible and when not in use, should be unobtrusive to hospital staff.
6. The unit should be designed and built at a total cost, including equipment, of approximately $5,000.00[3].

After a careful search of commercially available units, it was determined that of those which existed, none met the specified parameters.

The final outcome of this process was the development of a portable learning carrel designated the Mobile Environment for Medical Education, acronym MEME (See Appendix A). The MEME is essentially a mobile, self contained, learning carrel which includes packaged audio-visual material, selected print material, and videotape equipment. The MEME can be located almost anywhere.

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[3]Author's Notes from Development Meetings held in September and October of 1974.

When closed, it takes up very little room or hall space and when opened, it provides a complete study unit for the student with a certain degree of privacy and enough room to spread out materials and take notes. These units can be stocked with a complete set of study materials which may be added to or changed as frequently as desired.

The MEME is currently being utilized as an integral part of the Ob/Gyn Clerkship which occurs in each of the clinical communities. The total number of Ob/Gyn Clerkships for 1975-76 is fifteen.

The Ob/Gyn Clerkship is a six-week clinical experience required of each student. The clinical content is organized around eight subject areas. They are: The History and Physicial Examination; Normal Obstetrics (Pregnancy, Labor and Delivery); Common Obstetrical Abnormalities; Gynecology; Endocrinology, Infertility, Dysmenorrhia; Obstetrics and Gynecology Procedures; Control of Reproduction; and Sexuality.

The primary print resource provided to each student is the Departmental Objectives and Data Base Book. This publication, sponsored by the American Association of Obstetricians and Gynecologists Foundation and endorsed by the Association of Professors of Gynecology and Obstetrics, was modified and adopted for use at Michigan State University in 1973. It contains enabling and terminal student objectives for each of the eight content areas and an outline for each. Additional print materials include standard Ob/Gyn texts and other pamphlets available in the MEME. In addition, a

large number of non-print resources and playback equipment are available to students in the MEME. These mediated, self instructional, materials have been produced and validated by the Steering Committee for cooperative teaching of the Association of Professors of Gynecology and Obstetrics. These materials are an integral part of the Ob/Gyn clerkship and are keyed to the clerkship objectives. They provide the Ob/Gyn Department with a potentially important vehicle for extending a small faculty across five communities; a means to standardize quality of content and a way in which to facilitate rapid student acquisition of medical content. Appendix B, includes a listing and description of each of these media materials.

The MEME is available to students on a twenty-four hour basis and is normally placed in one of the sleeping rooms in the obstetrics ward of the community hospital used for the clerkship. Student use of the MEME and media materials is not a required part of the clerkship.

Formal learning experiences are coordinated by the campus-based clerkship coordinator, but the majority of clinical teaching is accomplished by community physicians. Campus-based faculty do provide some teaching input in the formal classroom setting during focal problem seminars, but a majority of these seminars are conducted by community physicians. In addition to traditional rounds with community physicians and the focal problem seminars, students also spend approximately four hours per week in an outpatient

setting in either clinics or physician's offices. Additional formal conferences termed "liaison experiences," are held in the areas of Psychiatry, Radiology and Pathology. Rounds with residents are also held in some communities. Students are expected to take "night call" in the hospital on a rotational basis every four to seven days. A typical student schedule is included in Appendix C.

There are several reasons why this clerkship was selected. As was noted earlier, the issue of quality control is of primary concern to both the College and to the Department. The Department of Ob/Gyn is one of the first clinical departments to adopt the educational strategy of "minimum educational accomplishment" as a means to insure quality control. That is, the Department has identified a comprehensive set of performance objectives which represent the minimum standards that students must meet to successfully complete the clerkship. This strategy in no way precludes student achievement beyond this level, but it does create a baseline to insure adequate training.

Second, the Ob/Gyn clerkship is organized in such a way that students are provided with an integrated set of clinical learning experiences which are identified as such. This set of clinical experiences provides for a balance between content acquisition and clinical experiences.

A third element is the evaluation system employed for the clerkship. It consists of a content exam containing items drawn from a pool of parallel items keyed to the clerkship objectives for

each of seven clerkship content areas.

A final element of the Ob/Gyn clerkship is the willingness of the department to be involved in asking difficult educational questions and to expose its programs to critical review as evidenced by extensive evaluation activities over the past five years.

It would appear then that the Ob/Gyn clerkship provides a rich, pedagogically sound environment in which to investigate the application of instructional technology as a potential source for, (1) monitoring and controlling program quality utilizing the "minimum standards" strategy, (2) extending campus-based faculty inputs into community programs, (3) insuring more uniform educational experiences between educational sites, and, (4) facilitating student acquisition of medical content.

In a broader sense, the study detailed in the following pages will contribute additional information to the current limited body of research literature concerned with the application of instructional technology to medical education, particularly in the clinical setting.

In additon, the research will provide information about the effect of utilizing instructional technology to deliver medical education to remote site locations and in systems utilizing distributed campuses.

PURPOSE OF THE RESEARCH

The present study investigates the impact of using the MEME with students involved in the Obstetrics and Gynecology clerkship

in five clinical communities. The research is divided into two phases. Phase One, is descriptive in nature and examines the following areas of student outcome related to the MEME in the clerkship setting. They are: (1) Student attitude toward the clerkship experience and each of its components; (2) Student performance in each component of the clerkship content exam; (3) Student attitude toward the MEME; (4) Student attitude toward the instructional materials placed in the MEME; and, (5) Patterns and degree of student use of the MEME and instructional materials.

Phase Two of the study assesses the relationship between these variables to determine how they contribute to the clerkship experience. A series of hypothesized relationships were tested to determine whether or not they were significant. The following general Hypotheses serve to focus the purpose of this study.[4]

HYPOTHESES

1. A relationship exists between logistical factors, i.e., reported convenience of MEME location, ease of equipment use, correct functioning of equipment, adequacy of orientation and overall student utilization of the MEME and media materials.

2. A relationship exists between the reported degree of student use of on-campus carrel facilities and the reported degree to which they utilize the MEME.

3. A relationship exists between reported student preferences for media materials by type and their reported use of media materials by type.

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[4]Specific research Hypotheses are provided in Chapter III.

4. A relationship exists between reported student perception of the quality of media materials by type available in the MEME and their reported use of media materials by type.

5. A relationship exists between reported faculty attitude toward the MEME and student use of the MEME.

6. A relationship exists between student performance on component parts of the final content exam and their reported use of media materials related to those content areas.

7. A relationship exists between reported student hours per week of carrel use and final content exam scores.

8. A relationship exists between reported student attitude toward component clerkship experiences and final content exam scores on items related to these experiences.

DEFINITIONS OF IMPORTANT TERMS

Ambulatory Experience: The non-hospital out-patient experience required of each student for one afternoon per week. These experiences occur either in a clinic or physician's office.

Clerkship: A term applied to a set of clinical learning experiences and anticipated outcomes designed for Years 3 and 4 medical students around a specific body of medical content and encompassing a specific period of time. In this study the Obstetrics and Gynecology Clerkship is utilized and involves the learning experiences and outcomes of Years 3 and 4 medical students in community hospitals in Flint, Grand Rapids, Kalamazoo, Lansing and Saginaw, Michigan. The Ob/Gyn Clerkship is a six-week experience.

Clerkship Assessment: A survey instrument designed to obtain data on student perceptions and attitudes relative to the total clerkship experience. The instrument is designed to obtain data

related to each aspect of the clerkship, including the MEME and the MEME materials (See Appendix D).

Clinical Medical Education: For the purposes of this study, clinical medical education is that set of undergraduate medical (Years 3 and 4) education experiences for students which occur primarily in clinical settings and occurs prior to internship or residency training.

Community Hospitals: A community hospital is any hospital which is affiliated with the Michigan State University College of Human Medicine through one of the five community corporations for the primary purpose of medical education. For the purposes of this study, the following community hospitals are included:

Flint - McLaren Hospital, Hurley Hospital

Grand Rapids - Blodgett Hospital, Butterworth Hospital

Kalamazoo - Bronson Hospital, Borgess Hospital

Lansing - St. Lawrence Hospital, E. W. Sparrow Hospital

Saginaw - Saginaw General Hospital

Content Exam - Post-Test: The final clerkship examination required of all students. The exam consists of two parts. The exam consists of approximately 200 items of the multiple choice type.

Objectives and Data Base: An outline of the Ob/Gyn content basic to the objectives specified for the clerkship.

Focal Problems: A series of approximately twenty small group discussion sessions in each clerkship involving all clerkship stu-

dents. The discussions are organized around common Ob/Gyn problems related to clerkship objectives and clinical experiences.

Learning Carrel: For the purposes of this study, a learning carrel is defined in Spangenberg's terms as "the physical setting as needed for individualized (or individualized team) self-paced instruction." In this research, the MEME is the specific type of learning carrel under investigation.

MEME: An acronym for the Mobile Environment for Medical Education, a self-contained, total portable learning carrel equipped with Panasonic NV-5110 video player, nine inch Panasonic television monitor, Singer Graflex Caramate P, Kodak Ektalite 120 microfiche reader, Wollensak 2505av audio cassette playback unit, study shelf, study lamp, headset and materials storage space (See Appendix A for specifications).

MEME Materials: The self-instructional materials keyed to clerkship objectives and stored in the MEME unit for use by students (See Appendix B). For the purposes of this study, the materials are categorized as follows:

-Pamphlets/books - print materials which include no specific objectives, and require no overt student response. (N=8)

-Audio cassettes - Audiotape recordings of patient interviews keyed to clerkship objectives and the like which are not accompanied by other media forms. (N=3)

-Audio cassettes with slides - Audiotape recordings accompanied by slides keyed to clerkship objectives. The audio and visual

components are designed to compliment each other and the learning experience. (N=5)

-Audio Cassettes with slides, objectives, workbooks, post-test and answer key - Slide tape materials keyed to specific learning objectives requiring student responses and providing feedback to students on achievement. (N=11)

-Video cassettes - Panasonic video cartridges keyed to specific clerkship content. Some units include objectives, study plans, practice materials, post-test and answer keys. (N=13)

-Print materials including objectives, workbooks, post-test and answer key related to clerkship objectives but involving no projected media. (N=10)

Non-Clinical Medical Education: For the purposes of this study non-clinical medical education refers to that set of undergraduate medical education experiences (Years 1 and 2) for students which occurs primarily outside of the clinical setting.

Objectives: The set of specified learning outcomes provided to students in the Ob/Gyn clerkship which define the enabling and terminal behaviors expected of each student.

Primary Care: That aspect of health care which involves health problems that can be managed within an ambulatory setting (clinic or physician office) and for which the individual physician is the first point of contact for a given patient's medical problem.

Psychiatry, Radiology, and Pathology Liaison Experiences: A series of conferences in which students receive instruction involving

the relationship and importance of these medical areas to Ob/Gyn in general and in terms of specific patients.

Resident Rounds: A learning experience in which students accompany residents on "rounds" as they visit hospitalized patients. Residents use the patient cases as instructional content and students are expected to answer questions related to these cases.

OVERVIEW

Chapter II, contains a review of the literature pertinent to this research. The review includes the application of instructional technology in non-clinical medical education, the use of instructional technology in clinical education and the use of learning carrels in clinical medical education.

In Chapter III, the design of the study is discussed and focuses on the sample, measures employed to obtain data and the specific research design employed. The broad research hypotheses listed in Chapter I, are restated in testable form and the methods of data analysis are discussed.

Chapter IV, includes an analysis of the results of the research, including a restatement of the pertinent hypotheses and supportive data when it is found.

In Chapter V, a summary of the research and the conclusions drawn from the study are presented. In addition, the broader implications of the research are discussed and suggestions for future research are set forth.

CHAPTER II

REVIEW OF RELATED LITERATURE

OVERVIEW

As noted earlier, there is little research literature dealing with the application of instructional technology to clinical medical education. Thus, this section presents a very brief review of the extent research literature pertinent to the study. It is important to acknowledge the influence of S. N. Postlethwait (1964) and his work at Purdue University in undergraduate education upon later systematic applications of instructional technology for self-instruction in medical education. S. N. Postlethwait has noted four important characteristics of the audio-tutorial approach which include an emphasis upon learning as opposed to teaching; student selection of optimal time schedules for learning; an emphasis upon greater student opportunities for individualized instruction through more effective and efficient use of faculty time; and the capability of the audio-tutorial approach to provide a more standardized set of basic learning experiences for students. These four basic concepts, while developed for undergraduate education in the biological sciences, provide an important referrant for understanding later studies in medical education.

The areas of medical education in which limited research and literature do exist and which are germaine to this investigation have been catagorized to include: (1) review of the literature on the application of instructional technology to non-clinical medical education; (2) review of the literature on the application of instructional technology to clinical medical education; (3) review of the literature on learning/study carrel design.

INSTRUCTIONAL TECHNOLOGY IN NON-CLINICAL MEDICAL EDUCATION

One of the earliest studies involving instructional technology in non-clinical medical education was reported by Hayden et.al. (1967) and involved the teaching of three dimensional awareness in human anatomy. Hayden was interested in whether or not motion (in this case, film) could facilitate an awareness of three-dimensionality more effectively than non-motion (slides). The study involved one hundred nineteen, Year 1 medical and dental students. All students watched an introductory film which utilized camera angle and time lapse techniques to develop the concept of three dimensionality. Fifty-six of the students were shown the film twice while sixty-three were shown a slide series, taken from the film footage after viewing the introductory film. A twenty-two item achievement test and an attitude measure was administered to each group. The researcher found no significant differences in achievement test scores.

Attitude outcomes indicated, however, that eighty-two students preferred film (motion) as a medium for learning three dimensionality (significant at the .001 level). Both groups preferred film as a

means for better understanding three dimensionality.

Allen (1968) reported a study utilizing visual and auditory presentations involving dental students comparing conventional laboratory experiences, lectures combined with laboratory experiences and laboratory experiences combined with self-instructional units. He reported no significant differences between the three approaches in terms of learning outcomes but noted that the primary values of the self-instructional machine presentations for some students was the logical, step by step process provided by this format.

Conklin (1970), investigated the effectiveness of self-instructional slide-tape programs for developmental anatomy instruction for Year 1 medical students over a two year period. In the first year, two sections of thirty students each received conventional instruction involving laboratory and lectures. A third group of thirty students, used study carrels, self-instructional materials and the appropriate media equipment. In the second year, all students utilized the self-instructional materials. Two sections viewed the self-instructional materials in the laboratory while one section used study carrels. All students were pre-tested and were given the same post-test. Students utilizing the carrels logged their time.

Differences in pre-test scores were not statistically significant. On the post-test, the mean and median scores of students using the study carrels were significantly higher. When all three sections used the self-instructional materials, there was no significant difference in post-test scores. However, students utilizing the study

carrels spent fifty percent less time learning the material than did students in other sections.

A study reported by Koprowska et.al. (1971) involving the use of self-instructional materials in the teaching of cytopathology supported the general conclusions of the Conklin research. Koprowska summarized the important characteristics of self-instructional materials in non-clinical medical education as facilitating favorable student attitudes; uniform quality of instruction; individualizing student instruction; and better utilization of faculty time.

Ways and Fiel (1972) report a study involving the use of four self-instructional units to teach venipuncture, homoglobin determination, packed cell volume determination and the reticulocyte count to medical students. By varying the amount of time allotted to students, based in needs of students, they report a mean success rate in meeting the objectives for each unit measured by criterion outcomes and task analyses as follows in Table 1.

TABLE 1

MEAN SUCCESS RATE BY UNIT

Unit Topic	Mean Success Rate
Venipuncture	95%
Hemoglobin Determination	89%
Packed Cell Volume Determination	95%
Reticulocyte Court	93%

The authors utilized the data from task analysis and criterion outcomes to further refine the units with the objectives of increasing the mean success rates to 95 percent or above.

A 1974 study reported by Sandritter and Edzard, investigated the use of seventy self-instructional units in teaching Pathology to one hundred sixty medical students. An "Automat lab" as described by the authors was developed which included audio-cassette and slide projectors at stations throughout the laboratory area. A printed text was available for students for each of the seventy units and a volunteer discussion group was available for students each week. The discussion groups were student led and a graduate student was available to answer questions while students utilized the "automat lab."

The one hundred sixty students were divided into five equivalent groups for the study as follows in Table 2.

TABLE 2

CONTENT SCORES BY TREATMENT GROUP

Group		Content Scores (Total = 39)
A	View Program - Content Exam	3.2
B	View Program Twice/10 Minute Discussion/ Content Exam	15.5
C	View Program Twice on Two Different Days/ Content Exam	16.0
D	View Program Twice on Two Different Days/ 10 Minute Discussion/Content Exam	10.5
E	View Program Once/Complete Response Sheets/ 10 Minute Discussion/Content Exam	26.5

From this data the authors concluded that active student involvement in learning activities while utilizing self-instructional materials and as a basis for discussion following the self-instructional activities had an important influence in learning outcomes. They also note that achievement among all students involved in the course had improved. In addition, the authors indicate that the notions of self-pacing, student choice of materials withing a broad range of content topics and volunteer involvement in discussion groups have an important impact on student attitude toward the experience. Sandritter and Edzard, also indicate that a typical unit of twenty minute running time requires approximately 5½ to 6 hours per week in the "automat lab" and that attendance at volunteer discussion groups is at the ninety percent level.

In summarzing this section, it would appear that the application of instructional technology, in the form of self-instructional units with concommitant learning equipment and space has a role in non-clinical medical education, particularly as a means of providing quality control of programs, better meeting student learning needs and for providing more effective and efficient utilization of faculty effort. In the next section, we deal with application of instructional technology to clinical medical education.

INSTRUCTIONAL TECHNOLOGY IN CLINICAL MEDICAL EDUCATION

Television has been by far the most widely used form of instructional technology in clinical medical education. As Judge (1968) states, television provides an effective means of storage and retrieval

of medical content; can be used to record events such as surgical procedures that may represent new techniques and/or when the presence of audiences is not possible; to capture an important sequencing of events; to provide repetition of information; and as a means of feedback to students for evaluation purposes.

Film has been used in clinical medical education in much of the same way as television. North (1967), reports the use of eight millimeter sound film to teach the Gesels neurological and developmental examination to Year 4 medical students. He concluded that all students utilized the film and felt it to be an important concommitant to direct patient contact. Barrows (1968), used a similar approach in teaching students how to do the neurological exam and concluded "the use of self-instructional cartridges in clinical clerkships, with all other factors kept equal, did improve the quality of students neurological examinations." (p. 1096)

The use of self-instructional materials involving the slide tape format has also been tried in a limited way in clinical settings. Sly (1975), investigated the use of four slide tape programs with Year 4 students in a Pediatric Clerkship. The medical content involved the atopy, etiology, pathogenesis and treatment of allergic asthma. In this study, the control group listened to the primary physician's explanation of the medical information to parents of allergic children. The experimental group viewed a fourteen minute self-instructional slide-tape unit presenting the same information. All students took a written content exam immediately after exposure to the content and at

the end of the six week clerkship. Mean scores showed no statistical difference for either group. However, the time required to learn specific content was reduced in the experimental group, freeing the physician for more meaningful student contact with the experimental group students. It is important to note that the primary purpose of student involvement in the control group experience was medical content acquisition. Thus, the study supports the argument that the effective and rapid acquisiton of medical content knowledge in the clinical setting can be facilitated by the application of instructional technology.

Lange (1966), summarized the advantages of the self-instructional approach in clinical nursing education to include: the release of instructors for more individual student contact; the provision of better quality control across educational locations; and the provision for greater self-pacing in terms of student learning needs.

While this section is admittedly brief and the information reported involves exploratory field investigation, the general thread does appear to be logically consistent with the notion that instructional technology can play a meaningful role in clinical medical education. The next section deals with the literature on learning carrels in the clinical setting.

PORTABLE LEARNING CARRELS

Spangenberg (1975), has compiled the most comprehensive summary of the state of the art with regard to learning carrels. Of particular interest are his comments on portable carrels. Spangenberg notes

that portable carrels are primarily used in circumstances where hands-on training on large equipment is required, when a number of work stations are involved or when some form of mobility between areas is required. The specific portable carrel identified by Spangenberg was developed by Lowry Air Force Base for on the job training. Termed MAVIS, an acronym for Modularized Audio Visual Instructional System, this portable carrel contains a viewing unit fourteen inches wide, eighteeen inches high and thirty-two inches deep. The unit is shown in Figure 1 below.

MAVIS will accept any two projector combination of 35mm projector, filmstrip projector or 8 mm projector. A cassette tape unit can be placed in a drawer space below the projection screen. The MAVIS is equipped with head phones and a foot operated remote start and stop device for learning situations in which the student needs full use of both hands. Spangenberg does not include data regarding the use of MAVIS in an instructional setting.

MAVIS

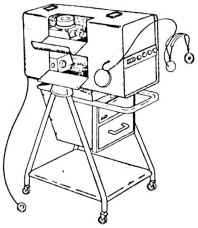

FIGURE 1

LEARNING CARRELS IN CLINICAL MEDICAL EDUCATION

The field of Obstetrics and Gynecology has been a forerunner in the application of instructional technology involving learning carrels to clinical medical education. Russel (1966), provides some insight into why Ob/Gyn has played a leading role. He notes that the concept of "ward teaching" room on the Ob/Gyn floor of Royal Victoria Hospital developed out of patient irritation with the amount of teaching done at the bedside and the fact that wards and corridors were too busy to allow students and physicians to congregate. A third factor indicated by Russel involves the "personal nature" of Ob/Gyn. That is, while some patients are willing to be examined by groups of students, others are very reluctant. Through the use of audiotape, videotape, film and slides developed around the cases of consenting patients, medical content could be delivered to students with less disruption of the primary hospital routine of patient care.

Chez and O'Gorman (1974), have reported the evaluation results of carrel based self-instructional materials program for Ob/Gyn clerkship students in a teaching hospital. This clerkship involves eight to sixteen students per six week session and occurs eight times in each academic year. The program had been in operation for approximately three years at the time of the study. The primary purposes for utilizing the carrel based, self-instructional approach as indicated by the authors were: to provide effective presentation of didactic material; to support student initiative and responsibility for self-learning; and to enhance more effective use of faculty-student contact time.

Four learning carrels containing cassette player, headphones, slide projectors, eight millimeter projector, X-ray view box, rubber models and programmed textbooks were available to students on a twenty-four hour basis. There were thirty-two units developed for the program with an aggregate audiotape running time of fourteen hours.

The results of the study indicated that twelve percent of the students used the carrels from 12:00 midnight to 6:00 A.M. and twenty-four percent used them from 6:00 A.M. to 8:00 A.M. Sixty-four percent of the students used the carrels between 12:00 noon and 6:00 P.M. The average length of use was two hours with approximately thirteen total utilizations per student for each six week period. The primary use of the carrels was in conjunction with patient care. In addition, ninety-nine percent of the 192 students surveyed preferred the self-instructional materials over lectures as a means of acquiring medical content knowledge.

The concept of portability of learning carrels is not addressed in the existing literature to any extent. However, Lange (1966) briefly notes the advantage of portability of self-instructional materials between locations for nursing education.

It would appear, however, that the work of Russel, as well as Chez and O'Gorman, support the notion that further study of the concept of carrel-based, self-instructional approaches in the area of clinical medical education.

SUMMARY

This review has examined the extant literature involving application of instructional technology to medical education in three categories: (1) non-clinical medical education; (2) clinical medical education; and, (3) learning carrels in clinical medical education.

The literature, though limited, tends to support the concepts that: students can learn medical content through self-instructional approaches; the use of instructional technology can provide more effective and efficient use of faculty and student time; the use of self-instructional material can provide a measure of quality of control between educational locations; and that the use of self-contained learning areas by students can provide a means of decreasing the disruption of hospital routine. Clearly, however, more research is required before any definite conclusions may be drawn.

The research proposed in this document is an attempt to extend this research. This research proposes to study, in-depth, one application of instructional technology in the clinical setting by isolating and examining the interrelationships between the variability of student attitude toward the technology, the utilization of the technology, attitude toward the clinical experience and the acquisition of medical content.

CHAPTER III

DESIGN OF THE STUDY

INTRODUCTION

This investigation examines the impact of MEME upon students enrolled in the Ob/Gyn Clerkship. As a field study, the research is designed in Kerlinger's (1966) terms as exploratory in the sense that it attempts to delineate important variables in the field situation and to examine relationships between these variables. Hypothesis testing is employed as a means for assessing these relationships.

SAMPLE

The study sample consists of sixty-three, Year 3 and Year 4 students enrolled in the Ob/Gyn Clerkship in five clinical communities. The communities are: Flint, Grand Rapids, Kalamazoo, Lansing and Saginaw, Michigan. The clerkships utilized are those occurring in the Spring, Summer and Fall Term, 1976. Of the seventy-three subjects, sixty-one are classified as Year 3 students, while twelve are classified as Year 4 students. Forty-nine are male and twenty-four are female. The male to female ratio of .67 to .33, closely approximates the .70 and .30 ratio of male to female admissions for these two classes. The sixty-one students comprise sixty percent of the Year 3 class and the twelve Year 4 students comprise twelve percent of that class.

Strict random assignment of subjects for the study was not possible since clerkship rotation assignments in each community are a function of the availability of positions during any one term. However, the original assignment of students to clinical communities was random. That is, student names were drawn using a table of random members for assignment to communities. In addition, students in this study were "pooled" across different communities and different times to cancel out effects of selection based on such factors as interest in Ob/Gyn, preferences for type of practice and the like. In examining the major characteristics of students there appears to be no bias.

As noted earlier, the sample consists of Year 3 students (61) and Year 4 students (12) in clerkships occurring at different times. For this reason, pre-test scores are used as covariates with clerkship post-test scores to control for sources of unknown bias. Although most students are enrolled in the Ob/Gyn Clerkship as one of their first clinical experiences following the primary clerkship (Fundamentals of Patient Care) there are some who may have had at least one prior clerkship. The use of pre-test scores as covariates of post-test scores was an important design consideration in controlling for entering differences and to minimize their affects on findings.

INSTRUMENTATION

Three different instruments were used to obtain data in this study. They are the clerkship content pre-test, the clerkship content post-test, and the clerkship/MEME assessment form.

The clerkship content pre-test has been utilized for the past two years with Ob/Gyn Clerkship students. It is a multiple choice exam and is similar in format to the post-test. Pre-test items are not drawn from the same item pool as the post-test. The reliability of the pre-test is above .80, estimated by the KR-20 reliability coefficient formula with similar groups of Ob/Gyn Clerkship students at Michigan State University. The same pre-test instrument was used throughout the study.

The clerkship post-test has also been used with Ob/Gyn students for the past two years and has a reliability which varies between .75 and .85 as estimated by the KR-20 reliability coefficient formula. The post-test used on all subjects in the study is composed of items initially drawn randomly from an item pool of parallel items keyed to clerkship objectives. The initial selection of the items was based on the following criteria.

1. All items were keyed to clerkship objectives.
2. All items were reviewed and found appropriate by three past clerkship students and the clerkship coordinator.
3. All items were selected to provide a balance between those rated moderately difficult by reviewers and those rated quite difficult.
4. All items were selected to provide an equal ratio of items for each set of objectives.
5. All items were selected to provide an equal balance in orientation between the areas of basic science, behavioral science and clinical sciences.

The clerkship assessment is a self-reporting instrument consisting of two parts. The first portion is an assessment of the

six major component parts of the clerkship. They are: Obstetrics, Gynecology, Ambulatory Care, Focal Problems, Departmental Objectives and Data Base, and Liaison Experiences (ie. Resident Rounds, Psychiatric Liaison, Radiology and Pathology). A copy of this instrument is included in Appendix D.

This portion is the final form of a similar instrument which has been utilized for the past two years with Ob/Gyn Clerkship students and was developed by the researcher with expert input from the clerkship coordinator and the Ob/Gyn Faculty. This part of the clerkship assessment includes thirty-three items.

The second part of the clerkship assessment form focuses on the MEME and the materials placed in the MEME. The MEME assessment is the product of three months development by the researcher.

As a part of the development process, the alternate form method was utilized. Alternate forms of the initial instrument were completed by twelve Ob/Gyn Clerkship students upon completion of the clerkship experience and six week exposure to the MEME and MEME materials. Student comments on each of the questions were solicited to determine whether or not the items were understood in the context for which they were intended. As the questionnaires were administered in small groups, a discussion of each item followed administration of the instruments. Written documentation of these discussions as well as audio tape recordings were used to "capture" all feedback data. Thus, the instrument is assumed to have face validity based on expert opinion but is of unknown reliability.

DESIGN

Kerlinger (1966), defines field studies as ex-post facto scientific inquiries aimed at discovering the relations and interactions between attitudes, values, perceptions and behaviors in real social structures (p. 387). The potential strength of field studies lies in their realism, richness of variables, social significance and plethora of potential hypotheses. Kerlinger also notes that there are significant weaknesses inherent in field studies which must be considered in the research design. Among these weaknesses are the ex-post facto character of field studies rendering weaker casual relationships, difficulty in controlling and separating variables and lack of precision in measurement. The narrative that follows, describes the logic and design of the study aimed at capturing the richness of data inherent in the field study while minimizing the potential weaknesses.

In order to assess the impact of using the MEME with Ob/Gyn Clerkship students, the design of the study includes two phases. The first phase is descriptive in nature and was designed to answer such representative questions as: 1) Do students use the MEME and MEME materials and to what extent? 2) What are the patterns of student use of the MEME and materials? 3) What preferences do students have for print and non-print instructional materials? 4) What are student attitudes toward the clerkship experience? 5) What are perceived faculty attitudes toward the MEME? 6) Are there significant differences among students content knowledge when they enter the clerkship? 7) Do student achievement levels differ

upon completion of the Ob/Gyn Clerkship? 8) Are the materials available in the MEME valuable to students in learning clerkship content? 9) Were there logistics factors which precluded student use of the MEME and MEME materials? This phase of the study then serves two important functions. First, it delineates the variables under investigation and separates them in such a way that they can be measured. Second, it develops a baseline of information which can later be used to exclude alternative explanations. In short, by defining and assessing these variables, a greater degree of control is achieved. By employing a pre and post-test, the entry and exit levels of student content knowledge are established. These pre-test scores used as covariates provide a measure of control for entering differences. The clerkship and MEME assessment form provides baseline data on student attitudes. Phase One then serves to better describe and delineate the broad categories of variables which follow.

The major dependent variable is medical content acquisition while the intervening variables are, student attitude toward the MEME, student attitude toward the MEME materials, and student attitude toward the clerkship experiences. The patterns and degrees of MEME and MEME materials utilization are treated as intervening/dependent variables. That is, these variables may be dependent upon such logistics factors as ease of equipment use, convenience of MEME location and the like, but may also impact directly upon the dependent variable. The time of clerkship occurrence and community location are treated as independent variables and are not manipulated.

While Phase One serves to better define and describe the parameters of the variables under study, Phase Two was designed to assess the relationships between these variables. The basic design strategy for Phase Two relied on the use of crossbreaks to assess hypothesized relationships. Figure 1 on page 37 is representative of the types of crossbreaks that are utilized.

The use of crossbreaks to assess a large number of posited relationships is an important part of the design strategy for field studies. By employing a design that assesses a wide range of posited relationships, the researcher is better able to discard alternative explanations. For instance, in this study such factors as awareness of the availability of the MEME, adequacy of the orientation, convenience of location, ease of equipment use, ease of materials location and the like are sub-sets of the larger variable "logistics." By carefully examining each of the sub-sets of the larger concept logistics greater control over the variable is obtained and a better case can be made for discarding alternative hypotheses.

The same design argument is set forth with regard to other posited relationships such as the relationship between student attitude toward clerkship experiences, use of the MEME and MEME materials and student content outcomes. By collecting relatively large amounts of data on specific learning experiences, logistics, attitudes and preferences and by assessing their interrelationships, the design attempts to control for those effects which are not specifically attributable to the MEME. Thus, alternative explanations for main effects may be discarded.

FACTORS EFFECTING MEME UTILIZATION

(i.e., Convenience of Location-Ease of Equipment Use)

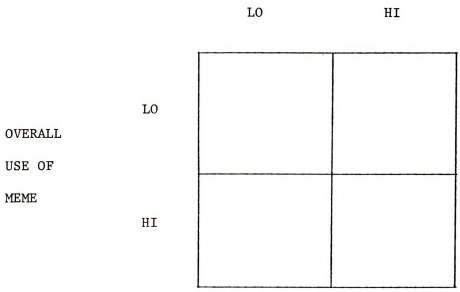

FIGURE 2

As with any field study, the design is limited to some extent by the circumstances of time and location, the variety of ways in which data may be handled and the number of subjects available. Nevertheless, the field study employing two phases for delineating potentially important variables and then assessing hypothesized relationships between these variables provides a scientific approach to capturing rich data in the real world. The hypotheses which follow represent the strategy for assessing the relationships between the major study variables.

TESTABLE HYPOTHESES

LOGISTICS

(1) Null Hypothesis: No difference will be found between the number of students reporting high and low levels of use of the MEME media materials when contrasted with that group of students reporting high convenience of location and that group reporting low convenience of location.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Convenience

f_2 = High Use, Low Convenience

f_3 = Low Use, High Convenience

f_4 = Low Use, Low Convenience

Alternative Hypothesis: H_1: $f_1, f_2 \ldots f_4$ are not all equal.

(2) Null Hypothesis: No difference will be found between the number of students reporting high and low levels of use of the MEME media materials when contrasted with that group of students reporting high ease of equipment use and that group reporting low ease of equipment use.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Ease of Equipment Use

f_2 = High Use, Low Ease of Equipment Use

f_3 = Low Use, High Ease of Equipment Use

f_4 = Low Use, Low Ease of Equipment Use

Alternative Hypothesis: H_1: $f_1, f_2 \ldots f_4$ are not all equal.

(3) Null Hypothesis: No difference will be found between the number of students reporting high and low levels of use of the MEME media materials when contrasted with that group of students reporting high awareness of availability and that group reporting low awareness of availability.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Awareness of Availability

f_2 = High Use, Low Awareness of Availability

f_3 = Low Use, High Awareness of Availability

f_4 = Low Use, Low Awareness of Availability

Alternative Hypothesis: H_1: f_1, $f_2 \ldots f_4$ are not all equal.

(4) Null Hypothesis: No difference will be found between the number of students reporting high and low levels of use of the MEME media materials when contrasted with that group of students reporting high adequacy of orientation and that group reporting low adequacy of orientation.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Adequacy of Orientation

f_2 = High Use, Low Adequacy of Orientation

f_3 = Low Use, High Adequacy of Orientation

f_4 = Low Use, Low Adequacy of Orientation

Alternative Hypothesis: H_1: f_1, $f_2 \ldots f_4$ are not all equal.

(5) Null Hypothesis: No difference will be found between the number of students reporting high and low levels of use of the MEME media materials when contrasted with that group of students reporting high occurrence of equipment failure and that group reporting low occurrence of equipment failure.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, Low Occurrence of Equipment Failure

f_2 = High Use, High Occurrence of Equipment Failure

f_3 = Low Use, Low Occurrence of Equipment Failure

f_4 = Low Use, High Occurrence of Equipment Failure

Alternative Hypothesis: H_1: $f_1, f_2 \ldots f_4$ are not all equal.

(6) Null Hypothesis: No difference will be found between the number of students reporting high and low levels of use of the MEME materials when contrasted with that group of students reporting high negative faculty reaction toward the MEME and that group reporting low negative faculty reaction to the MEME.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, Low Negative Faculty Reaction

f_2 = High Use, High Negative Faculty Reaction

f_3 = Low Use, Low Negative Faculty Reaction

f_4 = Low Use, High Negative Faculty Reaction

Alternative Hypothesis: H_1: $f_1, f_2 \ldots f_4$ are not all equal.

(7) Null Hypothesis: No difference will be found between the number of students reporting high and low levels of use of the MEME media materials when contrasted with that group of students reporting high difficulty in locating materials in the MEME and that group reporting low difficulty in locating materials in the MEME.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, Low Difficulty in Locating Materials

f_2 = High Use, High Difficulty in Locating Materials

f_3 = Low Use, Low Difficulty in Locating Materials

f_4 = Low Use, High Difficulty in Locating Materials

Alternative Hypothesis: H_1: $f_1, f_2 \ldots f_4$ are not all equal.

(8) Null Hypothesis: No difference will be found between the number of students reporting high and low levels of use of the MEME media materials when contrasted with that group of students reporting high desire for a copy of scripts of each of the media units and that group reporting low desire for a copy of scripts of each of the media units.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, Low Desire for Scripts

f_2 = High Use, High Desire for Scripts

f_3 = Low Use, Low Desire for Scripts

f_4 = Low Use, High Desire for Scripts

Alternative Hypothesis: H_1: $f_1, f_2 \ldots f_4$ are not all equal.

(9) Null Hypothesis: No difference will be found between the number of students reporting high and low levels of use of the MEME media materials when contrasted with that group of students reporting a high preference for written descriptions of media materials and that group reporting a low preference for written descriptions of media materials.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, Low Preference for Written Description

f_2 = High Use, High Preference for Written Description

f_3 = Low Use, Low Preference for Written Description

f_4 = Low Use, High Preference for Written Description

Alternative Hypothesis: H_1: $f_1, f_2 \ldots f_4$ are not all equal.

(10) Null Hypothesis: No difference will be found between the number of students reporting high and low levels of use of the MEME media materials when contrasted with that group of students reporting high ease in studying effectively at home and that group reporting low ease in studying effectively at home.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, Low Ease in Studying at Home

f_2 = High Use, High Ease in Studying at Home

f_3 = Low Use, Low Ease in Studying at Home

f_4 = Low Use, High Ease in Studying at Home

Alternative Hypothesis: H_1: $f_1, f_2 \ldots = f_4$ are not all equal.

CONTENT KNOWLEDGE vs USE OF RELATED MEME MATERIALS

(11) Null Hypothesis: No difference will be found in average students scores on the normal obstetrics portion of the content exam between that group reporting high use of the MEME

materials related to these items and that group reporting low use of MEME materials related to these items.

Symbolically: $H_o: M_1 = M_2$

Legend: M_1 = Group Reporting High Use of MEME Materials

M_2 = Group Reporting Low Use of MEME Materials

Alternative Hypothesis: $H_1: M_1 > M_2$

(12) Null Hypothesis: No difference will be found in average student scores on the abnormal obstetrics portion of the content exam between that group reporting high use of the MEME materials related to these items and that group reporting low use of MEME materials related to these items.

Symbolically: $H_o: M_1 = M_2$

Legend: M_1 = Group Reporting High Use of MEME Materials

M_2 = Group Reporting Low Use of MEME Materials

Alternative Hypothesis: $H_1: M_1 > M_2$

(13) Null Hypothesis: No difference will be found in average student scores on the Gynecology portion of the content exam between that group reporting high use of the MEME materials related to these items and that group reporting low use of MEME materials related to these items.

Symbolically: $H_o: M_1 = M_2$

Legend: M_1 = Group Reporting High Use of MEME Materials

M_2 = Group Reporting Low Use of MEME Materials

Alternative Hypothesis: $H_1: M_1 > M_2$

(14) Null Hypothesis: No difference will be found in average student scores on the History and Physical portion of the content exam between that group reporting high use of the MEME materials related to these items and that group reporting low use of MEME materials related to these items.

Symbolically: $H_o: M_1 = M_2$

Legend: M_1 = Group Reporting High Use of MEME Materials

M_2 = Group Reporting Low Use of MEME Materials

Alternative Hypothesis: $H_1: M_1 > M_2$

(15) Null Hypothesis: No difference will be found in average student scores on the Endocrinology portion of the content exam between that group reporting high use of the MEME materials related to these items and that group reporting low use of MEME materials related to these items.

Symbolically: $H_o: M_1 = M_2$

Legend: M_1 = Group Reporting High Use of Media Materials

M_2 = Group Reporting Low Use of Media Materials

Alternative Hypothesis: $H_1: M_1 > M_2$

(16) Null Hypothesis: No difference will be found in average student scores on the Contraception portion of the content exam between that group reporting high use of the MEME materials related to these items and that group reporting low use of MEME materials related to these items.

Symbolically: $H_o: M_1 = M_2$

Legend: M_1 = Group Reporting High Use of MEME Materials

M_2 = Group Reporting Low Use of MEME Materials

Alternative Hypothesis: H_1: $M_1 > M_2$

(17) Null Hypothesis: No difference will be found in overall average scores on the Clerkship content exam between that group reporting high use of the MEME materials related to these items and that group reporting low use of MEME materials related to these items.

Symbolically: H_o: $M_1 = M_2$

Legend: M_1 = Group Reporting High Use of Media Materials

M_2 = Group Reporting Low Use of Media Materials

Alternative Hypothesis: H_1: $M_1 > M_2$

ON CAMPUS CARREL USE vs MEME MATERIALS USE

(18) Null Hypothesis: No difference will be found between the number of students reporting high and low weekly hours of carrel use on campus when contrasted with that group of students reporting high use of MEME materials and that group of students reporting low use of MEME materials.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Weekly Hours of Carrel Use, High Use of MEME Materials

f_2 = High Weekly Hours of Carrel Use, Low Use of MEME Materials

f_3 = Low Weekly Hours of Carrel Use, High Use of MEME Materials

f_4 = Low Weekly Hours of Carrel Use, Low Use of MEME Materials

Alternative Hypothesis: H_1: $f_1, f_2 \ldots f_4$ are not all equal.

REPORTED USE OF MEME MEDIA MATERIALS vs
PERCEIVED QUALITY OF MEME MATERIALS

(19) Null Hypothesis: No difference will be found between the number of students reporting high and low degrees of use of pamphlets available in the MEME when contrasted with the group reporting that pamphlets in the MEME were of high quality and the group reporting that pamphlets available in the MEME were of low quality.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Quality

f_2 = High Use, Low Quality

f_3 = Low Use, High Quality

f_4 = Low Use, Low Quality

Alternative Hypothesis: H_1: $f_1, f_2 \ldots f_4$ are not all equal.

(20) Null Hypothesis: No difference will be found between the number of students reporting high and low degrees of use of the objectives and data base available in the MEME when contrasted with the group reporting that the objectives and data base in the MEME were of high quality and the group reporting that the objectives and data base available in the MEME were of low quality.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Quality

f_2 = High Use, Low Quality

f_3 = Low Use, High Quality

f_4 = Low Use, Low Quality

Alternative Hypothesis: $H_1 = f_1, f_2 \ldots f_4$ are not all equal.

(21) Null Hypothesis: No difference will be found between the number of students reporting high and low degrees of use of the audio cassettes available in the MEME when contrasted with the group reporting that audio cassettes in the MEME were of high quality and the group reporting that audio cassettes available in the MEME were of low quality.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Quality

f_2 = High Use, Low Quality

f_3 = Low Use, High Quality

f_4 = Low Use, Low Quality

Alternative Hypothesis: H_1: $f_1, f_2 \ldots f_4$ are not all equal.

(22) Null Hypothesis: No difference will be found between the number of students reporting high and low degrees of use of the audio cassettes and slides available in the MEME when contrasted with the group reporting that the audio cassettes and slides in the MEME were of high quality and the group reporting that the audio cassettes and slides available in the MEME were of low quality.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Quality

f_2 = High Use, Low Quality

f_3 = Low Use, High Quality

f_4 = Low Use, Low Quality

Alternative Hypothesis: H_1: $f_1, f_2 \ldots f_4$ are not all equal.

(23) Null Hypothesis: No difference will be found between the number of students reporting high and low degrees of use of the video cassettes available in the MEME when

contrasted with the group reporting that the video cassettes in the MEME were of high quality and the group reporting that the video cassettes available in the MEME were of low quality.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Quality

f_2 = High Use, Low Quality

f_3 = Low Use, High Quality

f_4 = Low Use, Low Quality

Alternative Hypothesis: H_1: $f_1, f_2 \ldots f_4$ are not all equal.

(24) Null Hypothesis: No difference will be found between the number of students reporting high and low degrees of use of the workbooks and programmed materials available in the MEME when contrasted with the group reporting that the workbooks and programmed materials in the MEME were of high quality and the group reporting that the workbooks and programmed materials available in the MEME were of low quality.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Quality

f_2 = High Use, Low Quality

f_3 = Low Use, High Quality

f_4 = Low Use, Low Quality

Alternative Hypothesis: $H_1 = f_1, f_2 \ldots f_4$ are not all equal.

REPORTED USE OF MEME MEDIA MATERIALS vs PREFERENCE FOR MEME MEDIA MATERIALS BY TYPE

(25) Null Hypothesis: No difference will be found between the number of students reporting high and low use of pamphlets available in the

MEME when contrasted with that group reporting high preference for pamphlets and that group reporting low preference for pamphlets.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Preference

f_2 = High Use, Low Preference

f_3 = Low Use, High Preference

f_4 = Low Use, Low Preference

Alternative Hypothesis: $H_1 = f_1, f_2 \ldots f_4$ are not all equal.

(26) Null Hypothesis: No difference will be found between the number of students reporting high and low use of objectives and data base available in the MEME when contrasted with that group reporting high preference for objectives and data base and that group reporting low preference for objectives and data base.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Preference

f_2 = High Use, Low Preference

f_3 = Low Use, High Preference

f_4 = Low Use, Low Preference

Alternative Hypothesis: $H_1 = f_1, f_2 \ldots f_4$ are not all equal.

(27) Null Hypothesis: No difference will be found between the number of students reporting high and low use of audio cassettes available in the MEME when contrasted with that group reporting high preference for audio cassettes and that group reporting low preference for audio cassettes.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Preference

f_2 = High Use, Low Preference

f_3 = Low Use, High Preference

f_4 = Low Use, Low Preference

Alternative Hypothesis: $H_1 = f_1, f_2 \ldots f_4$ are not all equal.

(28) Null Hypothesis: No difference will be found between the number of students reporting high and low use of audio cassettes and slides available in the MEME when contrasted with that group reporting high preference for audio cassettes and slides and that group reporting low preference for audio cassettes and slides.

Symbolically: $H_o: f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Preference

f_2 = High Use, Low Preference

f_3 = Low Use, High Preference

f_4 = Low Use, Low Preference

Alternative Hypothesis: $H_1 = f_1, f_2 \ldots f_4$ are not all equal.

(29) Null Hypothesis: No difference will be found between the number of students reporting high and low use of video cassettes available in the MEME when contrasted with that group reporting high preference for video cassettes and that group reporting low preference for video cassettes.

Symbolically: $H_o: f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Preference

f_2 = High Use, Low Preference

f_3 = Low Use, High Preference

f_4 = Low Use, Low Preference

Alternative Hypothesis: $H_1 = f_1, f_2 \ldots f_4$ are not all equal.

(30) Null Hypothesis: No difference will be found between the number of students reporting high and low use of workbooks and programmed materials available in the MEME when contrasted with that group reporting high preference for workbooks and programmed materials and that group reporting low preference for workbooks and programmed materials.

Symbolically: $H_o: f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Preference

f_2 = High Use, Low Preference

f_3 = Low Use, High Preference

f_4 = Low Use, Low Preference

Alternative Hypothesis: $H_1 = f_1, f_2 \ldots f_4$ are not all equal.

CONTENT KNOWLEDGE vs AVERAGE WEEKLY USE OF THE MEME

(31) Null Hypothesis: No difference will be found in average student final content exam scores between that group reporting high weekly use of the MEME and that group reporting low weekly use of the MEME.

Symbolically: $H_o: M_1 = M_2$

Legend: M_1 = Group Reporting High Average Weekly Use of the MEME

M_2 = Group Reporting Low Average Weekly Use of the MEME

Alternative Hypothesis: $H_1: M_1 > M_2$

CONTENT KNOWLEDGE BY AREA vs ATTITUDE TOWARD LEARNING EXPERIENCE BY CONTENT AREA

(32) Null Hypothesis: No difference will be found in average student scores on the normal obstetrics

portion of the final content exam between that group reporting positive learning experiences in the obstetrics portion of the clerkship and that group reporting negative learning experiences in the obstetrics portion of the clerkship.

Symbolically: $H_o: M_1 = M_2$

Legend: M_1 = Group Reporting Positive Learning Experiences

M_2 = Group Reporting Negative Learning Experiences

Alternative Hypothesis: $H_1: M_1 > M_2$

(33) Null Hypothesis: No difference will be found in average student scores on the abnormal obstetrics portion of the final content exam between that group reporting positive learning experiences in the obstetrics portion of the clerkship and that group reporting negative learning experiences in the obstetrics portion of the clerkship.

Symbolically: $H_o: M_1 = M_2$

Legend: M_1 = Group Reporting Positive Learning Experiences

M_2 = Group Reporting Negative Learning Experiences

Alternative Hypothesis: $H_1: M_1 > M_2$

(34) Null Hypothesis: No difference will be found in average student scores on the gynecology portion of the final content exam between that group reporting positive learning experiences in the gynecology portion of the clerkship and that group reporting negative learning experiences in the gynecology portion of the clerkship.

Symbolically: $H_o: M_1 = M_2$

Legend: M_1 = Group Reporting Positive Learning Experiences

M_2 = Group Reporting Negative Learning Experiences

Alternative Hypothesis: H_1: $M_1 > M_2$

OVERALL CONTENT KNOWLEDGE vs ATTITUDE TOWARD LEARNING EXPERIENCES

(35) Null Hypothesis: No difference will be found in average student scores on the final content exam between that group reporting positive learning experiences in ambulatory care experiences and that group reporting negative learning experiences in the ambulatory care experiences.

Symbolically: H_o: $M_1 = M_2$

Legend: M_1 = Group Reporting Positive Learning Experience

M_2 = Group Reporting Negative Learning Experience

Alternative Hypothesis: H_1: $M_1 > M_2$

(36) Null Hypothesis: No difference will be found in average student scores on the final content exam between that group reporting positive learning experiences in focal problem sessions and that group reporting negative learning experiences in the focal problem sessions.

Symbolically: H_o: $M_1 = M_2$

Legend: M_1 = Group Reporting Positive Learning Experience

M_2 = Group Reporting Negative Learning Experience

Alternative Hypothesis: H_1: $M_1 > M_2$

(37) Null Hypothesis: No difference will be found in average student scores on the final content exam between that group reporting positive learning experiences in liaison experiences and that group reporting negative learning experiences in the liaison experiences.

Symbolically: H_o: $M_1 = M_2$

Legend: M_1 = Group Reporting Positive Learning Experience

M_2 = Group Reporting Negative Learning Experience

Alternative Hypothesis: H_1: $M_1 > M_2$

(38) Null Hypothesis: No difference will be found in average student scores on the final content exam between that group reporting a positive attitude toward the departmental objectives and data base and that group reporting a negative attitude toward the departmental objectives and data base.

Symbolically: H_o: M_1 and M_2

Legend: M_1 = Group Reporting a Positive Attitude Toward Departmental Objectives and Data Base

M_2 = Group Reporting a Negative Attitude Toward Departmental Objectives and Data Base

Alternative Hypothesis: H_1: $M_1 > M_2$

(39) Null Hypothesis: No difference will be found in average student scores on the final content exam between that group reporting a positive attitude toward the obstetrics experiences and that group reporting a negative attitude toward the obstetrics experiences.

Symbolically: H_o: $M_1 = M_2$

Legend: M_1 = Group Reporting a Positive Attitude Toward Obstetrics Experiences

M_2 = Group Reporting a Negative Attitude Toward Obstetrics Experiences

Alternative Hypothesis: H_1: $M_1 > M_2$

(40) Null Hypothesis: No difference will be found in average student scores on the final content exam between that group reporting a positive attitude toward the gynecology experiences and that group reporting a negative attitude toward the gynecology experiences.

Symbolically: H_o: $M_1 = M_2$

Legend: M_1 = Group Reporting a Positive Attitude Toward Gynecology Experiences

M_2 = Group Reporting a Negative Attitude Toward Gynecology Experiences

Alternative Hypothesis: H_1: $M_1 > M_2$

DATA COLLECTION PROCEDURES

The following procedures were employed to collect the data necessary for the study:

1. As part of the standard procedure for the clerkship, each student received a set of objectives for his/her successful completion of the clerkship. These objectives represent the "minimal educational accomplishment" level for each student. Satisfactory completion of the content exam, clinical assessment and clerkship assessment was a written requirement for each student.

2. On the first day of the clerkship the pre-test was administered and students had approximately one and one-half hours to complete the exam. The exam items were discussed by the clerkship

coordinator and clerkship students. The numerical scores for each student were forwarded to the campus clerkship coordinator.

3. During the final week of the clerkship, the content exam was administered and proctored by the Community Clerkship Coordinator. Students were given three hours in which to complete the exam.

4. On Monday of the final week of the clerkship, students were given the clerkship assessment. They were asked to work independently and to complete the assessment by Wednesday of that week and to return it to the community coordinator.

5. The clerkship coordinator in each community collected the content exams, clerkship assessment and clinical skills assessments and forwarded them to the Evaluation Office no later than one week after the final day of the clerkship.

6. All students received a content exam score. Results of the MEME portion of the clerkship assessment were also made available to students.

DATA ANALYSIS

The pre-test, post-test and clerkship assessment data were machine and hand scored. Statistical analysis of the data took several forms. Analysis of covariance was employed as noted earlier with pre and post-test scores to control for entering student differences and to minimize the potential introduction of bias.

For nominal data such as that collected on logistics variables, on-campus vs MEME media materials use, use of MEME media materials vs perceived quality of MEME materials and use of MEME media vs

preference for MEME media materials, the chi-square test was used. An alpha level of .05 was specified.

With regard to continuous data such as that collected on content knowledge vs use of related MEME media materials, content knowledge vs average weekly use of the MEME and content knowledge vs attitude toward learning experiences attest for significance was was used. Pooled two-tailed tests were utilized with an alpha level of .05 specified.

The data analysis was done on the Michigan State University CdC6500 computer.

REQUIRED RESOURCES

Personnel

As noted earlier, the development and preparation of the clerkship assessment was accomplished by the investigator. Seventy-three (73) subjects were involved in the study. The administration of the pre-test, clerkship assessment and post-test was the responsibility of the clerkship coordinator in each clinical community. The investigator was responsible for coordinating the processing of all data with personnel of the evaluation unit, within the Dean's Office, College of Human Medicine.

The transportation and placement of the MEME and MEME materials was accomplished by the staff of the Learning Resources Center, College of Human Medicine as requested by the investigator. The Director, Learning Resources Center and his staff were responsible for keeping the MEME operational in each community.

Materials

The materials utilized in the study included the MEME and MEME materials developed for the Ob/Gyn Clerkship and are described in Chapter I. In addition, approximately seventy-three (73) copies of the following materials were required to conduct this research:

1. Pre-test/Answer Sheet
2. Post-test/Answer Sheet
3. Clerkship Assessment

All copies of the pre-test and post-test instruments were provided by the Department of Obstetrics, Gynecology and Reproductive Biology. Copies of the Clerkship Assessment were provided by the investigator through the Office of Curriculum Implementation, Dean's Office, College of Human Medicine. All pre and post-test answer sheets were machine scored while the Clerkship Assessments were hand scored by trained evaluation staff.

SUMMARY

The purpose of this study was to assess the impact of utilizing the MEME with Ob/Gyn Clerkship students. In order to accomplish this task, given the strengths and weaknesses inherent in any field study, the design strategy involved two phases. The first phase was essentially descriptive and included the collection of large amounts of data around the key variables of logistics, MEME and MEME materials utilization patterns, student preferences for media type, student perception of media quality by type, faculty attitude

toward the MEME, student attitude toward clerkship experiences and student performance on pre and post-test content exams.

Phase Two of the Design involved the testing of hypothesized relationships between these variables as a means of determining the extent to which the MEME and an impact upon students in the clerkships. It is hoped that this field study approach will provide additional information to those interested in utilizing this type of instructional technology for medical education in a clinical setting.

CHAPTER IV

ANALYSIS OF RESULTS

INTRODUCTION

In Chapter III, a two phase research design was set forth. Phase One data is descriptive and delineates the major variables under investigation including logistics factors related to the MEME and MEME materials, student preferences for various types of media, student attitudes toward the clerkship learning experiences, student content knowledge before and after the clerkship and perceived faculty attitudes toward the MEME and MEME materials.

Phase Two was then designed to assess the hypothesized relationships between these variables. The important hypothesized relationships from Chapter III are included prior to data presented in this Chapter.

The tables in Chapter IV, summarize the data derived from the study. In assessing student attitudes toward the clerkship experiences, a four point scale was employed. Thus, a choice of 1, represented a response meaning "No" (Never), where 2, represented a response of "No, with reservations" (Infrequently), 3 represented a response of "Yes, with reservations" (Usually) and 4 represented a response of "Yes" (Always). The mean scores displayed in the tables on pages 64-75, thus represent the mean item response for the number (N) of student responses. The standard deviation for each item is also displayed.

Attitude toward the MEME was measured using the same four point scale. Other data regarding times and hours of MEME use are shown as percentages.

A similar four point scale was used to assess student preference for media types and student perception of the quality of media materials. For both preference and quality, a response of 1, indicated "strongly dislike," 2, indicated "mildly dislike," 3, indicated "mildly like" and 4, indicated "Like very much." The tables displaying these data include the number of responses, mean response, and standard deviation.

Finally, a five point scale was used to assess student use of specific materials by type. In this scale, 0, indicated "Not Available," 1, represented "Did Not Use," 2, represented "Skimmed Briefly," 3, represented "Reviewed for Main Ideas," and 4, represented "In-depth Use." In addition, students were asked to indicate "Yes" if the material was of value. Thus, the tables displaying these data show the mean use score, the range for the percentage of responses in category three and four and the range for the percentage of responses in category three and four and the range for the percentage of students indicating that the material was of value in each clerkship.

PHASE ONE

Nine learning experience categories were defined in assessing student attitude toward the clerkship. The categories consisted of experiences in: Obstetrics; Gynecology; Ambulatory Care; Focal Problem Sessions; Clerkship Objectives and Data Base; Resident Rounds; Radiology; Psychiatric Liaison; and Pathology.

Obstetrics

Table 1, on page 64, provides a summary of student responses to the Obstetrics portion of the assessment instrument.

The ability to follow patients in labor received the highest mean response of all items in the Obstetrics portion (3.63). Sixty-five percent of the student responses were in the Always (4) category, Thirty-two percent in the Yes, with reservations, category (3), and Three percent indicated No, with reservations. When asked why they were allowed to follow patients in labor, cooperations and interest by the attending Physician received the highest mean response (3.34) followed by aggressiveness on the students part (3.22) and cooperation and interest by Nursing Staff (3.20).

Lack of student aggressiveness received the highest mean score as a reason why they were not allowed to follow patients in labor. The score was (2.20), followed respectively by lack of cooperation and interest by Nursing Staff (2.17), lack of cooperation and interest by attending (1.60) and lack of Physician/Resident time (1.60).

Regarding whether or not interaction with staff nurses and nursing supervisors were satisfactory, the mean response score was 3.47. The mean response score for student confidence in providing prenatal care for patients without complications was 3.44 with Forty-nine percent of the students indicating Yes (4), and Forty-seven percent indicating Yes, with reservations (3).

TABLE 1

OBSTETRICS EXPERIENCES

TOTAL N = 73

	N	MEAN*	S.D.
I was allowed to follow patients in Labor.	72	3.63	.54
Why you were allowed to follow patients.			
Aggressiveness on my part.	63	3.22	.77
Cooperation and interest by attending.	59	3.34	.69
Cooperation and interest by Nursing Staff.	56	3.20	.86
Why you were NOT allowed to follow patients.			
Lack of Aggressiveness on my part.	5	2.20	1.30
Lack of Cooperation and interest by attending.	5	1.60	.55
Lack of Cooperation and interest by Nursing Staff.	6	2.17	1.17
Lack of Physician/Resident Time	5	1.60	.89
My interactions with Staff Nurses and Nursing Supervisors were satisfactory	72	3.47	.63
I became confident that I could provide pre-natal care for patients without complications	73	3.44	.62
I became confident that I could follow a patient without complications in labor, order analgesia, take charge of a normal spontaneous delivery and provide post-partum care.	73	3.42	.69

*1 = No (Never)
2 = No, with reservations (infrequently)
3 = Yes, with reservations (usually)
4 = Yes (Always)

Gynecology

Student responses to the Gynecology experiences portion of the clerkship assessment are summarized in Tables 2, 3, and 4 on pages 66 and 67.

The data indicate that students were more often allowed to perform pelvic examinations on patients under anesthesia than pre-operatively. The mean score for pre-operative pelvic examinations was 3.30 and 3.84 for pelvic exams under anesthesia.

The students indicated that residents discussed patient cases with them slightly more often than the attending physicians. The mean score for resident discussion, was 3.12 and 3.05 for attending physicians. When asked why they were allowed to accomplish these activities, cooperation and interest by the attending physician received the highest mean rating (3.33), followed by aggressiveness (3.32) and cooperation and interest by Nursing Staff (2.75).

Lack of Physician/Resident time (3.20) was the major reason indicated by students, why they were not allowed to perform these functions. Lack of cooperation and interest by the attending physician (2.80), lack of cooperation and interest by Nursing Staff (2.50) and lack of aggressiveness (1.67), followed in order. Eighty-five percent of the students indicated that the right amount of emphasis was placed on surgical technique while eleven percent felt there was too much and four percent indicated that there was too little emphasis. Thirty-three percent of the students observed more than fifteen operations and the same number reported seeing

TABLE 2

GYNECOLOGY EXPERIENCES

TOTAL N = 73

	N	MEAN*	S.D.
I was allowed to perform pelvic exams on patients pre-operatively.	73	3.30	.97
I was allowed to perform pelvic exams on patients under anesthesia.	73	3.84	.41
Patient cases were discussed with me by the attending Physician.	73	3.05	.85
Patient cases were discussed with me by a Resident.	68	3.12	1.06
Generally, why were you allowed to do the above?			
Aggressiveness on my part	66	3.32	.77
Cooperation and interest by the attending	64	3.33	.64
Cooperation and interest by Nursing Staff	57	2.75	1.04
Generally, why were you NOT allowed to do the above?			
Lack of aggressiveness on my part	3	1.67	.58
Lack of Cooperation and interest by attending.	5	2.80	.84
Lack of Cooperation and interest by Nursing Staff.	4	2.50	1.00
Lack of Physician/Resident time.	5	3.20	.84
The pre-operative learning experience was a valuable learning experience.	73	3.29	.75
The operative experience was a valuable learning experience.	73	3.45	.65
The post-surgical care experience was a valuable learning experience.	73	3.11	.81

*1 = No, (Never)
2 = No, with reservations (infrequently)
3 = Yes, with reservations (usually)
4 = Yes, (Always)

TABLE 3

GYNECOLOGY EXPERIENCES
TOTAL N = 73

	%	N
Regarding Emphasis on Surgical Technique there was:		71
1) Too Much	11	
2) Too Little	4	
3) The Right Amount	85	
How many total operations did you observe?		73
1) 1 - 5	3	
2) 6 - 10	31	
3) 11 - 15	33	
4) More than 15	33	

TABLE 4

GYNECOLOGY EXPERIENCES
TOTAL N = 73

	% BY CATEGORY				N
	1-3	4-6	7-9	10+	
How many Gynecologic Patients did you Average seeing daily?	76	24	0	0	72
How many Work-ups did you complete?	4	37	26	33	73

between eleven and fifteen. Thirty-one percent observed six to ten operations and three percent saw between one and five.

The largest percentage of students (76%) averaged seeing between one and three patients daily while twenty-four percent saw between four and six. Thirty-three percent of the students completed more than ten patient work-ups while twenty-six percent completed between seven and nine. Thirty-seven percent completed between four and six work-ups and four percent reported completing between one and three work-ups.

Ambulatory Experiences

Ambulatory learning experiences were the next clerkship experiences assessed. The data are presented in Table 5.

TABLE 5

AMBULATORY EXPERIENCES

TOTAL N = 73

	N	MEAN*	S.D.
I saw a wide variety of patients.	73	3.22	.92
I was given sufficient responsibility.	73	3.38	.79
There were people to whom I could direct questions.	73	3.67	.62
I felt that there was enough teaching.	73	3.16	.97

*1 = No, (Never)
2 = No, with reservations (Infrequently)
3 = Yes, with reservations (Usually)
4 = Yes, (Always)

The highest mean score (3.67) occurred for the item dealing with the availability of persons to whom questions could be directed. The mean student response to whether or not they saw a wide variety of patients was 3.22. The questions regarding sufficient responsibility received a mean rating of 3.38. The issue of whether or not enough teaching occurred received a 3.16 mean score.

Focal Problems Sessions

The data for the Focal Problems Sessions are presented in Table 6.

TABLE 6

FOCAL PROBLEMS SESSIONS

TOTAL N = 73

	N	MEAN*	S.D.
Instructors were often late.	72	2.03	1.16
Students were often late.	72	1.79	.89
The important assigned objectives were discussed.	72	3.44	.63
Presentations were clear.	73	3.55	.60
There were ample opportunities to ask questions.	73	3.88	.33

*1 = No, (Never)
2 = No, with reservations (Infrequently)
3 = Yes, with reservations (Usually)
4 = Yes, (Always)

The item receiving the highest mean score for Focal Problems (3.88) involved the opportunity to ask questions. Students indicated a mean response of 2.03 for tardiness of instructors and mean response

of 1.79 for student tardiness. When asked if important assigned objectives were discussed, the mean response was 3.44 and 3.55 for clarity of presentations.

Objectives and Data Base

The data for the Objectives and Data Base are presented in Table 7.

TABLE 7

OBJECTIVES AND DATA BASE

TOTAL N = 73

	N	MEAN*	S.D.
The departmental objectives were understandable.	70	3.67	.53
The departmental objectives were reasonable for a six week period.	72	3.01	.93
It was easy to match the departmental data base with the appropriate objectives.	70	3.43	.71
The departmental data base made it unnecessary to do additional reading for assignments.	70	1.37	.68

*1 = No, (Never)
2 = No, with reservations (Infrequently)
3 = Yes, with reservations (Usually)
4 = Yes, (Always)

Understandibility of the Objectives and Data Base received the highest mean score in this section (3.67). The mean response to the reasonableness of the Objectives and Data Base for six week clerkship was 3.01. Regarding the ease of matching the departmental objectives

with the data base, the mean student response was 3.43. When asked if the Objectives and Data Base made additional reading unnecessary, the mean response was 1.37.

Liaison Experiences

Resident rounds, Psychiatric Liaison, Radiology and Pathology experiences, were the next clerkship assessment components. Data for these experiences are presented in Table 8.

TABLE 8

RESIDENT ROUNDS, PSYCHIATRIC LIAISON, RADIOLOGY AND PATHOLOGY EXPERIENCES

TOTAL N = 73

Did this Experience:	RESID.ROUNDS			PSYCH.LIAISON			RADIOLOGY			PATHOLOGY		
	N	MEAN*	S.D.	N	MEAN*	S.D.	N	MEAN*	S.D.	N	MEAN*	S.D.
Occur during the clerkship at all?	72	2.74	1.26	69	2.75	1.28	72	2.36	1.29	71	2.66	1.22
Provide you with appropriate learning experiences?	61	2.77	1.22	57	2.60	1.22	58	2.50	1.17	60	2.60	1.09
Provide instruction of good quality?	60	2.97	1.18	55	2.67	1.19	56	2.45	1.20	57	2.72	1.15
Leave you feeling there should be -	% by Category			% by Category			% by Category			% by Category		
	More	Less	Same	More	Less	Same	More	Less	Same	More	Less	Same
	60	2	38	50	11	39	59	2	39	61	6	33

*1 = No, (Never)
2 = No, with reservations (Infrequently)
3 = Yes, with reservations (Usually)
4 = Yes, (Always)

When asked whether or not Resident Rounds occurred during the clerkship, the student mean response was 2.74, while the mean response for Psychiatric Liaison was 2.75, for Radiology 2.36 and 2.66 for Pathology. The mean response for appropriateness of learning experiences in Resident Rounds was 2.77 with Psychiatric Liaison at 2.60, Radiology was 2.50 and Pathology received a mean response of 2.60. With regard to the quality of instruction, Resident Rounds received a mean student response of 2.97, Psychiatric Liaison 2.67, Radiology 2.45, and Pathology 2.72.

Sixty percent of the students felt there should be more Resident Rounds, fifty percent felt there should be more Psychiatric Liaison experiences while fifty-nine percent desired more Radiology and sixty-one percent felt there should be a greater number of Pathology experiences. These nine categories and the data associated with each, describe student attitudes and perceptions of the major components of the clerkship experience. The section which follows is derived from the second major portion of the clerkship assessment and contains data on student attitudes toward the MEME and MEME materials.

MEME Logistics Factors

The data in Table 9 on page 73 provide a summary of student responses related to Logistics Factors involving use of the MEME and MEME materials.

The data show that awareness of the MEME's availability received the highest mean score (3.92) of all items in the logistics section. The mean response to the adequacy of the orientation was 3.66.

TABLE 9

LOGISTICS FACTORS

TOTAL N = 73

	N	MEAN*	S.D.
I was aware that the MEME was available.	72	3.92	.44
The orientation to the MEME was adequate in preparing me to use the materials & equipment.	67	3.66	.75
The location of the MEME was convenient, excluding defects in equipment & materials.	72	3.21	1.24
I found it easy to use the MEME equipment.	63	3.52	.88
Equipment in the MEME was often broken or not functioning correctly.	61	1.51	.81
I had difficulty locating materials in the MEME.	60	1.73	.97
It would have been valuable to have my own copy of content summaries.	55	2.64	1.30
Written descriptions of all media materials would have made it easier to skim content.	60	3.07	1.01
Faculty with whom I had contact reacted negatively to MEME.	53	1.45	.87
I was able to study at home.	69	3.57	.76

*1 = No, (Never)
2 = No, with reservations (Infrequently)
3 = Yes, with reservations (Usually)
4 = Yes, (Always)

Sixty-seven percent of the students answered Yes (4) to the item involving convenience of location. Twenty-two percent indicated No. The mean response for this item was 3.21.

With regard to ease of equipment use, the mean response was 3.52 and 1.51 for frequency of broken equipment and/or equipment malfunction. In terms of difficulty in locating MEME materials, fifty-three percent of the students indicated no difficulty (1), while thirty percent indicated No, with reservations (2). Ten percent of the students indicated Yes (4). The mean response for this item was 1.73. Forty-two percent indicated that it would have been valuable to have their own copies of written content summaries of media material, twenty-nine percent indicated that this would not have been valuable. The mean response for this item was 2.64. On a similar item, students were asked if written summaries of media materials would have facilitated "skimming" of content. The mean response was 3.07, with forty-three percent indicating Yes (4) and ten percent indicating No (1).

Faculty Attitude

Seventy-four percent of the students indicated no negative faculty attitude toward the MEME, while six percent noted negative faculty attitude. The mean response to the item regarding the ability of students to study effectively at home was 3.56, while sixty-eight percent indicated Yes (4).

Student Use of the MEME

Table 10, below, presents data related to student use of the MEME and MEME materials and attitudes toward their availability in the Ob/Gyn clerkship as well as other clerkships.

TABLE 10

MEME USE AND AVAILABILITY FOR CLERKSHIPS

TOTAL N = 73

	N	MEAN	S.D.
I used or reviewed most of the MEME materials.	72	2.46	1.17
Having the MEME available was an important addition to the clerkship.	67	2.55	1.19
The MEME should be made available for other clerkships.	70	3.11	1.07

	% RESPONSE BY CATEGORY		
My primary use of the MEME materials was for: *1 = No, (Never) 2 = No, with reservations 3 = Yes, with reservations 4 = Yes, (Always)	Clerkship Content	Review for Patient Contact	Review from Patient Contact
	86	5	9

Twenty-eight percent of the students indicated that they used all of the MEME materials, eighteen percent answered Yes, with reservations (3), twenty-six percent responded No, with reservations (2), while twenty-eight percent indicated No. The mean response for this item was 2.46. Thirty-two percent of the students indicated that having the MEME available was an important addition to the

clerkship, while seventeen percent answered Yes, with reservations (3). Twenty-six percent felt that it was not an important addition to the clerkship. The mean response for this item was 2.55.

Seventy-four percent of the students felt that the MEME should be made available for other clerkships (3 + 4), while twenty-six percent felt that it should not. The mean response for this item was 3.11. Eighty-six percent of the students indicated their primary use of the MEME materials was in learning basic clerkship content. Five percent indicated their use based primarily for upcoming patient contact, while ten percent noted that their major use was based on review of past patient contact.

Patterns of MEME Use

Table 11, on page 77, provides data on patterns of student use of the MEME and MEME materials.

Ninety-six percent of the students indicated that they used the MEME between zero and six hours per week, while four percent said they used it seven to twelve hours per week on the average. In comparison with on-campus learning carrel use, student use of the MEME was heavier in the zero to six hours per week category and lower in other categories. Eighty percent of the on-campus students used carrels between zero to six hours per week while eleven percent used them from seven to twelve hours and two percent reported use between thirteen and sixteen hours.

Thirty percent of the students reported an average time per use for the MEME of thirty minutes while forty-four percent indicated an average use of thirty-one minutes to one hour. Twenty-three percent

TABLE 11

PATTERNS OF MEME USE

TOTAL N = 73

	% by CATEGORY			
	0-6	7-12	13-16	More Than 16
On the Average, how many hours/week did you use the MEME?	96	4	0	0
On the Average, how many hours/week did you use your Carrel on Campus?	80	11	2	7

	% by CATEGORY			
	30 Min.	31 min. - 1 hr.	61 min. - 1½ hr.	More Than 1½
The Average Length of time I used MEME was	20	44	23	13

	% by CATEGORY		
	12 AM - 7 AM	7 AM - 5 PM	5 PM - 12 AM
Generally I used the MEME most often between	11	44	45

of the students indicated using the MEME from one to one and one-half hours per use and thirteen percent indicated an average use of over one and one-half hours per visit.

Eleven percent of the students reported using the MEME between the hours of twelve a.m. and seven a.m., while forty-four percent indicated seven a.m. to five p.m. as their prime use time. Forty-five percent indicated that their primary use was from five p.m. to twelve a.m.

Student Preference for MEME Materials

The next section of the clerkship assessment dealt with student preferences for media by specific type as well as student use of each instructional unit available in the MEME. Table 12 on page 79, summarizes student preferences for media by type and their assessment of the quality of the existing clerkship materials.

Textbooks were the most preferred of all media materials with a mean preference score of 3.66. Video cassettes were the second most preferred of the seven media formats with a mean score of 3.48. Pamphlets ranked third with a mean score of 3.22, followed closely by the objectives and data base and workbooks and programmed materials both at 3.19. The audio cassettes with slides ranked fifth in student preference with a mean score of 2.88, and audio cassettes alone ranked sixth at 2.69. Audio cassettes with slides and audio cassettes alone were the only media types with mean scores below a mean score of three (mildly like). The overall mean preference score for all media types was 3.19.

TABLE 12

PREFERENCE FOR AND QUALITY OF MEME MATERIALS

TOTAL N = 64

	PREFERENCE			QUALITY		
	N	MEAN*	S.D.	N	MEAN**	S.D.
Pamphlets	60	3.22	.80	51	3.00	.94
Objectives and Data Base	64	3.19	.83	61	3.20	.77
Audio Cassettes	59	2.69	.99	43	2.93	.77
Audio Cassettes and Slides	60	2.88	.94	48	3.02	.84
Video Cassettes	62	3.48	.76	53	3.42	.69
Textbooks	64	3.66	.57	61	3.69	.50
Workbooks and programmed Materials	58	3.19	.83	46	2.98	.83
		3.19			3.18	

* 1 = Strongly dislike
2 = Mildly dislike
3 = Mildly like
4 = Like very much

** 1 = Poor
2 = Less than adequate
3 = Adequate
4 = High

Student Ratings of Quality of MEME Materials

Textbooks were rated highest in quality with a mean score of 3.69, while video cassettes again ranked second with a mean quality score of 3.42. The objectives and data base ranked third in quality with a mean score of 3.02. Pamphlets ranked fifth in quality with a mean score of 3.00, while workbooks and programmed materials were sixth with a mean score of 2.98. Audio cassettes again ranked last with a mean score of 2.93. With regard to quality, workbooks and programmed materials and audio cassettes were the only media types with mean scores below 3.00. The overall mean quality score for all materials was 3.18 or .01 lower than the overall mean preference score.

Student Use of MEME Materials

The data for student use of specific media materials by type and title as well as the perceived student value of these materials are presented in Appendix E. Video cassettes received the highest overall use (excluding texts) with a mean score of 2.62, followed by pamphlets at 2.12, and audio cassettes with slides, objectives, workbooks and post-tests 1.94. Audio cassettes with slides ranked fourth and received an overall mean use score of 1.78, followed by print materials fifth at 1.72, and audio cassettes ranked last at 1.57. The departmental objectives and data base was the only single item which received a mean use score of above 3.00 and it was 3.25.

An examination of the percentage of students using the material by category (i.e., 0 = was not available; 1 = did not use; 2 = skimmed briefly; 3 = reviewed for main ideas; 4 = in-depth use) as well as the percentage responses for 3, reviewed for main ideas and 4,

in-depth use have been combined. Thus, for video cassettes, the range of percentage responses for the two categories was between thirty-six and sixty-six percent for all items. The percentage range of responses regarding whether or not the material was of value ranged from a low fifty-two percent yes, to a high of ninety-seven percent yes, see Table 13.

For pamphlets, the second highest used media type, the combined category three and four percentage ranged from a low of thirty-six percent to a high of sixty-two percent. The percent of students indicating that the material was of value ranged from a low of seventy-one percent to a high of ninety percent.

TABLE 13

OVERALL MEAN USE SCORES, COMBINED CATEGORY PERCENT RANGES AND RANGE OF PERCENT FOR YES VALUE SCORES

	OVERALL MEAN USE SCORES	RANGE FOR COMBINED % CATEGORY 3 + 4	RANGE OF % FOR YES VALUE
Video Cassettes	2.62	21-62	52-97
Pamphlets	2.12	36-66	71-90
Audio Cassettes, Slides, Workbooks, etc.	1.94	30-48	67-86
Audio Cassettes with Slides Only	1.78	22-46	82-89
Print Materials	1.72	25-40	71-84
Audio Cassettes Only	1.57	24-32	56-60

Audio cassettes with slides ranked third in overall mean use. The combined percentages from category three and four ranged from a low of thirty to a high of forty-eight. The value percentages ranged from sixty-seven to eighty-six percent indicating that the material was valuable. Audio cassettes with slides alone ranked fourth in overall mean use. The combined category three and four percentages ranged from a low of twenty-two to a high of forty-six.

The range of percentages indicating the material was of value was eighty-two as a low percentage and eighty-nine as the high.

Print materials ranked fifth in overall mean use and the range of combined category use percentages ranged from a low of twenty-five to a high of forty. The range of percentages indicating the material was of value was from seventy-one to eighty-four.

Audio cassettes ranked last in overall use. The combined percentages category for response categories three and four, ranged from twenty-four to thirty-two, while the percentages indicating that the materials were of value ranged from a low of fifty-six to a high of sixty.

Pre and Post-test (Content Exam) Analysis

Content knowledge prior to the clerkship experiences and following the clerkship was also measured as part of Phase One of the study. Data for the entry and final content exams are presented in Table 14 on page 83. Mean percentage scores on the entry exam were highest for Physiology (80.12) followed by Endocrinology (73.64), Anatomy (72.12), Histology/Pathology at (70.99) and Embryology/Genetics (53.15). The mean score for all entry exam components was 70.99.

TABLE 14

ENTRY CONTENT EXAM AND FINAL CONTENT EXAM

TOTAL N = 74

ENTRY CONTENT EXAM			
	MEAN% SCORE	S.D.	% RANGE
Anatomy	72.12	11.51	38-93
Histology/Pathology	70.99	11.75	27-92
Embryology/Genetics	53.15	15.05	25-83
Physiology	80.12	14.42	43-100
Endocrinology	73.64	12.49	42-90
TOTAL	70.99	8.78	42-90

FINAL CONTENT EXAM			
	MEAN% SCORE	S.D.	% RANGE
History/ Physical Exam	76.06	12.41	42-100
Normal Obstetrics	66.55	9.25	44-88
Abnormal Obstetrics	72.05	7.07	48-86
Gynecology	72.21	7.22	60-96
Endocrinology	73.32	9.28	46-93
Procedures	68.82	14.14	29-100
Contraception	78.34	8.07	57-96
Sexuality	74.32	18.02	25-100
TOTAL	73.27	5.52	61-85

The final content exam scores indicate that the highest student mean score occurred in the Contraception component (78.34). The mean score for the History and Physical Exam component was (76.06), followed by Sexuality (74.27). Mean student scores for the Endocrinology component were (73.32) followed by Gynecology (72.21), Abnormal Obstetrics (72.05), and Procedures (68.82). Normal Obstetrics had the lowest mean score of (66.55).

The KR-20 reliability coefficient formula when applied to the two halves of the post-test estimated a reliability coefficient of .79 for the first half and a reliability coefficient of .67 for the second half. Based on the length of the total exam (228 items) and inspection of the item statistics, the lower reliability coefficient for part two is probably a function of fatigue.

Pre-test scores were used as covariates to control for sources of unknown bias. No significant differences were found in pre and post-test content exam scores between high and low MEME users.

Pearson Correlation Coefficients were calculated on student scores for each component of the entry and final content exams. These data are presented in Table 15 on page 85. Four correlations were significant at the .001 level. A correlation of .44 was found between the Histology/Pathology scores on the entry exam and those on the Normal Obstetrics component of the final exam. The same correlation (.44) was found between the Physiology component scores and Normal Obstetrics scores. Physiology scores were also found to correlate (.43) with the total final content exam score.

TABLE 15

PEARSON CORRELATION COEFFICIENTS FOR CORRELATIONS BETWEEN COMPONENTS OF THE ENTRY CONTENT EXAM AND THE FINAL CONTENT EXAM

Entry Content Exam Components	FINAL CONTENT EXAM COMPONENTS								
	History/Physical Exam	Normal Obstetrics	Abnormal Obstetrics	Gynecology	Endocrinology	Procedures	Contraception	Sexuality	TOTAL
Anatomy									
Histology/Pathology	.44								
Embroyology/Genetics									
Physiology	.44							.43	
Endocrinology									
TOTAL									.45

A correlation of (.45) was found between the total entry content exam and the total final content exam scores.

Table 16, shows significant ($P < .001$) Pearson Correlation Coefficients for student scores on components of the entry content exam.

There was a correlation of .49 between the Anatomy and Physiology scores in this exam. The highest part-whole correlation for scores between a single exam component and the total exam was Endocrinology

TABLE 16

PEARSON CORRELATION COEFFICIENTS FOR CORRELATIONS BETWEEN COMPONENTS OF THE ENTRY CONTENT EXAM

ENTRY CONTENT EXAM COMPONENTS

Entry Content Exam Components	ANATOMY	HISTOLOGY/PATHOLOGY	EMBRYOLOGY/GENETICS	PHYSIOLOGY	ENDOCRINOLOGY	TOTAL
Anatomy				.49		.73
Histology/Pathology						.69
Embryology/Genetics						.58
Physiology	.49					.72
Endocrinology						.74

(.74) followed by Anatomy (.73), Physiology (.72) Histology/Pathology (.69), and Embryology/Genetics (.58).

The significant ($P < .001$) correlation coefficients for student scores on component parts of the final content exam are displayed in Table 17, on page 88.

SUMMARY OF PHASE ONE FINDINGS

Phase One of the study was designed to collect baseline data related to the following areas of investigation. The major findings are summarized here.

Student Attitudes toward Each of the Nine Categories of Learning Experiences in the Clerkship

Student attitudes toward the Obstetrics experiences were positive as mean scores for all items ranged from 3.20 to 3.62, based on a scale of 1 = No (Never) to 4 = Yes (Always). Similar positive student attitudes were reported for Gynecology Experiences on which all item means ranged from 3.11 to 3.84.

Student attitudes toward Ambulatory Experiences were also positive. Mean scores ranged from 3.16 to 3.67. Positive attitudes were indicated with regard to focal problem sessions and the departmental objectives and data base.

Student attitudes toward the Liaison Experiences, including Resident Rounds, Psychiatric Liaison, Radiology, and Pathology experiences were less positive. Mean scores for any item related to these experiences were not above 3.00. Resident Rounds received the highest overall mean score (2.83) followed by Psychiatric Liaison (2.67), Pathology (2.66) and Radiology (2.44).

Student Attitudes Toward the MEME, Including Logistics Factors, Patterns of Use and Perceived Faculty Attitude Toward the MEME

TABLE 17

PEARSON CORRELATION COEFFICIENTS FOR CORRELATIONS BETWEEN COMPONENTS OF THE FINAL CONTENT EXAM

Final Content Exam Components	FINAL CONTENT EXAM COMPONENTS								
	History/Physical	Normal Obstetrics	Abnormal Obstetrics	Gynecology	Endocrinology	Procedures	Contraception	Sexuality	TOTAL
History/Physical Exam									
Normal Obstetrics			.55	.54			.45		.78
Abnormal Obstetrics		.55		.53					.73
Gynecology		.54	.53			.43	.48		.84
Endocrinology				.43					.61
Procedures									
Contraception		.45		.48					.63
Sexuality									

Logistics factors (i.e., ease of equipment use and equipment malfunction etc.) were not major problems for students using the MEME.

One exception, important to this study, however, relates to the convenience of MEME location. Sixteen students indicated that the MEME's location was not convenient to them. In other data related to this study, it is this group which predominately did not use the MEME or the MEME materials. In contrast to the location factor, faculty attitudes toward the MEME were not perceived by students as negative. In terms of student use patterns, the largest number of students used the MEME from six hours per week or less, for thirty-one minutes to one hour each use, with the primary objective of learning clerkship content. Forty-four percent of the students used the MEME between seven a.m. and five p.m. Forty-five percent of the students used it between five p.m. and twelve a.m., while 11 percent used the MEME between twelve a.m. and seven a.m. Most students indicated that they were able to study effectively at home.

Based on the same four point scale, the mean score for overall student use of the MEME was 2.46, indicating that approdimately sixteen students did not use the MEME or MEME materials. Student attitude toward the value of the MEME in the clerkship was mixed as illustrated by a mean score of 2.55, almost the exact scale midpoint, for this item. However, student perception of the need for the MEME to be available in other clerkships was more positive as indicated by a mean score of 3.11.

Student Attitude Toward the MEME Media Materials, Including Preferences for Media Type, Perceived Quality of Media Materials,

Use of Media Materials by Type and Perceived Value of Materials After Use.

Students indicated that textbooks were the most preferred of the MEME media materials. These data are presented in Table 18.

TABLE 18

MATERIALS PREFERENCE BY RANK ORDER*

Textbooks	3.66
Video Cassettes	3.48
Pamphlets	3.22
Objectives and Data Base	3.19
Workbooks/Programmed Materials	3.19
Audio Cassettes with Slides	2.88
Audio Cassettes	2.69

*1 = Strongly Dislike
2 = Mildly Dislike
3 = Mildly Like
4 = Like Very Much

With regard to the quality of MEME media materials, students rated textbooks as being of the highest quality. Students perceptions of the quality of materials are presented below in mean rank order.

TABLE 19

PERCEIVED QUALITY OF MATERIALS BY RANK ORDER*

Textbooks	3.69
Video Cassettes	3.42
Objectives and Data Base	3.20
Audio Cassettes with Slides	3.02
Pamphlets	3.00
Workbooks and Programmed Material	2.98
Audio Cassettes	2.93

*1 = Poor
2 = Less Than Adequate
3 = Adequate
4 = High

In summarizing materials use data, excluding textbooks and objectives and academic data base which were most heavily used, video cassettes received the next heaviest use by students. The mean rank ordering of use by type was video cassettes, pamphlets, audio cassette with slides and workbooks, audio cassettes with slides only, workbooks and programmed materials, and audio cassettes. These results do not parallel the preference or quality data. However, preference and quality rating do follow use patterns for textbooks, video cassettes and the objectives and data base at the higher levels of perceived quality, preference and use. The same is true of audio cassettes at the lower extreme. The range of perceived value of all materials after use by students was generally positive.

Student Content Knowledge of Obstetrics and Gynecology Prior to the Clerkship Experiences and Upon Completion of the Clerkship as Measured by Entry and Final Content Exam Scores

Mean post-test scores for students did not vary importantly from pre-test-scores when entering differences were controlled. Pearson Correlation Coefficients were calculated for component portions of the entry exam scores and the final content exam to examine relationships between and within pre and post-test scores. The analysis of the entry exam indicates few correlations between parts of this exam, but strong correlations significant at the .001 level between component parts were found to be more frequently correlated, but fewer correlations between component parts and final content exam scores were found. Few correlations significant at the .001 level were found between the pre-test exam and the final exam, but a correlation of .45 was found between overall pre-test scores and overall post-test scores.

These data presented in graphic and summary form serve to delineate the major variables under investigation and provide the basis for the hypothesized relationships examined in Phase Two.

PHASE TWO

Phase Two was designed to assess a series of hypothesized relationships between variables described in Phase One. The hypothesized relationships were grouped into eight categories (See Chapter III) as follows:

Logistics Factors

Content Knowledge by Area vs Use of Related MEME Materials

On-Campus Carrel Use vs MEME Material Use

Reported Use of MEME Materials by Type vs Perceived Quality of MEME Materials by Type

Reported Use of MEME Materials by Type vs Preference for MEME Media Materials by Type

Content Knowledge vs Average Weekly Use of the MEME

Content Knowledge by Area vs Attitude Toward Learning Experiences by Content Area

Overall Content Knowledge vs Attitude Toward Learning Experiences

A series of hypothesized relationships between student use of the MEME and a variety of logistics factors were the first examined in Phase Two.

The chi square test was employed with an alpha level of .05 specified. Significant findings were obtained when MEME use and convenience of MEME location were examined. Similar findings were obtained when use and ease of equipment use; use and perceived importance of the MEME to the clerkship; and use and perceived importance of providing the MEME in other clerkship were examined.

(1) Null Hypothesis: No difference will be found between the number of students reporting high and low levels of use of the MEME media materials when contrasted with that group of students reporting high convenience of location and that group reporting low convenience of location.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Convenience

f_2 = High Use, Low Convenience

f_3 = Low Use, High Convenience

f_4 = Low Use, Low Convenience

Alternative Hypothesis: H_1: $f_1, f_2 \ldots f_4$ are not all equal.

TABLE 20

USE OF MEME

CONVENIENCE OF LOCATION	LOW	HIGH
*LOW	N = 15	N = 24
HIGH	N = 2	N = 31

Chi Square = 9.0455
Degrees of Freedom = 1
Significance = .0026
Low = 1 + 2
High = 3 + 4

HYPOTHESIS 1

(2) Null Hypothesis: No difference will be found between the number of students reporting high and low levels of use of the MEME media materials when contrasted with that group of students reporting high ease of equipment use and that group reporting low ease of equipment use.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Ease of Equipment Use

f_2 = High Use, Low Ease of Equipment Use

f_3 = Low Use, Low Ease of Equipment Use

f_4 = Low Use, Low Ease of Equipment Use

Alternative Hypothesis: H_1: $f_1, f_2 \ldots f_4$ are not all equal.

TABLE 21

USE OF MEME

EASE OF EQUIPMENT USE	LOW	HIGH
*LOW	8	22
HIGH	0	33

Chi Square = 8.067
Degrees of Freedom = 1
Significance = .0045
*Low = 1 + 2
High = 3 + 4

HYPOTHESIS 2

No significant findings were observed for the other hypotheses related to logistics. However, chi square tests were made on two other variables included in the logistics portion of the clerkship assessment. Because of the high levels of significance obtained and their importance to the discussion presented in Chapter V, these data are presented here. The first finding pertains to student use of the MEME and student perception of the MEME's importance to the clerkship. These data are presented in Table 22 on page 95.

TABLE 22

USE OF MEME

IMPORTANCE TO THE CLERKSHIP	*LOW	HIGH
*LOW	N = 26	N = 7
HIGH	N = 8	N = 26

Chi Square = 18.3073
Degrees of Freedom = 1
Significance = .0001
*Low = 1 + 2
High = 3 + 4

The second finding involved student use of the MEME and student perception of whether or not the MEME should be made available for clerkships other than Obstetrics and Gynecology. This data is presented in Table 23.

TABLE 23

USE OF MEME

NEED FOR AVAILABILITY IN OTHER CLERKSHIPS	*LOW	HIGH
*LOW	N = 27	N = 4
HIGH	N = 8	N = 25

Chi Square = 13.6672
Degrees of Freedom = 1
Significance = .0002
*Low = 1 + 2 + 3
High = 4

The second category of hypotheses examined, acquired content knowledge by content area as measured by post-test scores and student

use of related MEME materials. No significant findings were observed in this case or when overall use reports were contrasted with either content area scores or overall post-test scores.

No significant findings were identified in the third category of hypotheses that contrasted on-campus carrel use by students with student use of the MEME and MEME materials.

The fourth category of hypotheses examined reported use of the MEME materials by type and perceived quality of materials by type. Chi square was the statistical treatment employed in examining these hypotheses. An alpha level of .05 was specified. Two significant findings were observed. They involved perceived quality of audio cassettes and their use by students and perceived quality of workbooks and programmed materials and their use by students.

(21) Null Hypothesis: No difference will be found between the number of students reporting high and low degrees of use of the audio cassettes available in the MEME when contrasted with the group reporting that audio cassettes in the MEME were of high quality and the group reporting that audio cassettes available in the MEME were of low quality.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Quality

f_2 = High Use, Low Quality

f_3 = Low Use, High Quality

f_4 = Low Use, Low Quality

Alternative Hypothesis: H_1: $f_1, f_2 \ldots f_4$ are not all equal.

TABLE 24

USE OF AUDIO CASSETTES

QUALITY	*LOW	HIGH
*LOW	N = 23	N = 12
HIGH	N = 1	N = 7

Chi Square = 5.47477
Degrees of Freedom = 1
Significance = .0193
*Low = 1 + 2
High = 3 + 4

HYPOTHESIS 21 (AUDIO CASSETTES)

(25) Null Hypothesis: No difference will be found between the number of students reporting high and low degrees of use of the workbooks and programmed materials available in the MEME when contrasted with the group reporting that the workbooks and programmed materials in the MEME were of high quality and the group reporting that the workbooks and programmed materials available in the MEME were of low quality.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Quality

f_2 = High Use, Low Quality

f_3 = Low Use, High Quality

f_4 = Low Use, Low Quality

Alternative Hypothesis: $H_1 = f_1, f_2 \ldots f_4$ are not all equal.

TABLE 25

USE OF WORKBOOKS, PROGRAMMED MATERIALS

		*LOW	HIGH	
QUALITY	*LOW	N = 18	N = 14	Chi Square = 4.03429 Degrees of Freedom = 1 Significance = .0446
	HIGH	N = 2	N = 10	*Low = 1 + 2 High = 3 + 4

HYPOTHESIS 25
(WORKBOOKS, PROGRAMMED MATERIALS)

In the fifth category of hypotheses, those contrasting, reported use of MEME materials by type and preference for materials by type, one significant finding was observed. This involved preference for audio cassettes and student use of audio cassettes.

(28) Null Hypothesis: No difference will be found between the number of students reporting high and low use of audio cassettes available in the MEME when contrasted with that group reporting high preference for audio cassettes and that group reporting low preference for audio cassettes.

Symbolically: H_o: $f_1 = f_2 \ldots = f_4$

Legend: f_1 = High Use, High Preference

f_2 = High Use, Low Preference

f_3 = Low Use, High Preference

f_4 = Low Use, Low Preference

Alternative Hypothesis: $H_1 = f_1, f_2 \ldots f_4$ are not all equal.

TABLE 26

USE OF AUDIO CASSETTES

PREFERENCE	*LOW	HIGH
*LOW	N = 30	N = 12
HIGH	N = 3	N = 9

Chi Square = 6.62477
Degrees of Freedom = 1
Significance = .0101
*Low = 1 + 2
High = 3 + 4

HYPOTHESIS 28
(AUDIO CASSETTES)

Statistical significance was not found for any of the hypotheses contrasting overall content knowledge and average weekly use of the MEME. In addition, no significant findings were identified pertaining to content knowledge by area and attitude toward learning experience by content area or between overall content knowledge and attitude toward learning experiences.

SUMMARY OF PHASE TWO FINDINGS

Two significant findings were observed in the cluster of hypotheses dealing with logistical factors. A significant finding (.0026) was observed when student use of the MEME was contrasted with perceived convenience of location. A similar significant finding (.0045) was observed in examining student use of the MEME and reported ease of equipment use.

Student use of the MEME when contrasted with perceived importance of the MEME to the Ob/Gyn clerkship also provided significant findings (.0001). In addition, a significant finding (.0002) was observed when student use of the MEME was contrasted with perceived need for MEME availability in other clerkships.

Two significant findings were observed when use of media materials and perceived quality of media materials were examined. A significant result (.0193) was found pertaining to perceived quality and student use of audio cassettes. A similar significant finding (.0446) was observed when student use of workbooks and programmed materials was contrasted with perceived quality of these materials.

Finally, a significant finding (.0101) was obtained when student preference for audio cassettes and student use of audio cassettes was examined.

CHAPTER V

SUMMARY AND CONCLUSIONS

SUMMARY

In recent years a number of medical schools have developed physician training programs utilizing community-based teaching hospitals rather than university-based teaching hospitals. The implementation of community-based clinical programs has motivated several institutions to explore means by which community-based educational programs can be developed while maintaining high and equivalent quality learning experiences across different community locations. One approach is to establish minimum acceptable performance standards based in specific objectives and supported by a wide range of learning resources against which student progresss can be measured. Implicit is the need to develop means by which these learning objectives and supporting resources may be effectively packaged and delivered to students in the community setting.

The purpose of this study was to assess the impact of employing one type of resource delivery system, the MEME (Mobile Environment for Medical Education), with students enrolled in a six-week Obstetrics and Gynecology Clerkship in off-campus clinical locations.

The MEME, a portable self-contained learning carrel with slide projector and audio cassette, as well as video cartridge playback

capabilities (containing appropriate self-instructional materials), was developed and placed in each clinical setting.

The sample consisted of seventy-three, third and fourth year medical students at Michigan State University assigned to five clinical communities during the Spring, Summer and Fall terms of 1976. Three separate instruments were used in the study including a clerkship pre-test, a clerkship assessment form to obtain attitudinal and MEME use data, and a clerkship post-test.

A Two Phase design was used. Phase One, descriptive in nature, was designed to assess and delineate a number of variables including: 1) student attitude toward learning experiences in the clerkship; 2) student attitudes toward the MEME, including logistics factors and patterns of use; 3) student attitudes toward the media materials and perceived value of materials; and, 4) student content knowledge as measured by pre and post-test examinations.

In Phase II, data derived from the Phase One assessment were used as a baseline for examining a series of hypotheses pertaining to the utilization and effect of the MEME. The hypotheses were grouped into eight categories: 1) the relationship between MEME use and logistics factors surrounding MEME use; 2) acquired content knowledge and use of related MEME materials; 3) the relationship between on-campus carrel use and MEME use in clinical communities; 4) the relationship between use of MEME materials and perceived quality of MEME materials; 5) the relationship between use of MEME materials by type and preference for materials by type; 6) the relationship between average weekly use of the MEME and content

knowledge; 7) the relationship between attitude toward clerkship learning experiences and content knowledge; and, 8) the relationship between attitude toward clerkship learning experiences and overall content knowledge.

SUMMARY OF STATISTICALLY SIGNIFICANT FINDINGS

A large body of data was derived from this study, much of it summarized in Chapter Four. The following findings are those which were statistically significant at the specified levels.

1. Two logistic factors, convenience of location and ease of equipment use, when contrasted with overall student use of the MEME yielded significant findings. A significant finding (.002) was observed when convenience of location was contrasted with the overall MEME use. When ease of equipment use was contrasted with overall MEME use, a significant result (.005) was obtained.

2. Significant findings were observed when student attitudes toward the importance of the MEME in the Ob/Gyn clerkship as well as perceived need for the MEME in other clerkships were contrasted with overall use of the MEME. Significant results (.001) were obtained in contrasting overall MEME use with student perception of the MEME's importance to this clerkship. A significance of (.001) was observed in contrasting overall student use and perceived need for MEME placement in other clerkships.

3. No significant findings were obtained when final content exam scores were contrasted with MEME utilization.

4. No significant findings were observed when on-campus carrel use was contrasted with use of the MEME in the clinical communities.

5. Generally, significant findings were not obtained when perceived quality of materials was contrasted with use of materials. However, two significant findings were observed: The first finding (.01) contrasted perceived quality of audio cassettes and use of audio cassettes. The second significant observation (.04) contrasted perceived quality of workbooks and programmed materials with student use of these materials.

6. Generally, preference for MEME materials when contrasted with student use of materials provided no significant observations. One exception was noted and involved audio cassettes: In this case, a significant finding was obtained (.01) when preference for audio cassettes was contrasted with student use of audio cassettes.

CONCLUSIONS

The conclusions drawn from this study are necessarily constrained by its design and the imperfections inherent in most field studies. The lack of precision in measurement as well as the ex-post facto nature of data collection in field studies are built-in weaknesses. Additional limitations in generalizing the results of the study beyond the Ob/Gyn Clerkship in the College of Human Medicine at Michigan State University result from the fact that the study utilized third and fourth year students drawn primarily from one entering class and that only one series of Ob/Gyn Clerkships was assessed. The conclusions and discussion which follow are presented in light of these limitations based upon the data obtained in Phase One and Phase Two of the study.

Phase One was designed to obtain data on student attitudes toward the clerkship, the MEME and to define patterns of student use. Examination of the descriptive data leads to the following conclusions:

1. Student Attitude Toward Learning Experiences
   a. The Ob/Gyn clerkship was a positive learning experience for students providing an appropriate educational "mix" of hands-on clinical experience, formal classroom contact and the opportunity to ask pertinent questions.

   b. As a result of positive clerkship experience students acquired "clinical confidence" in their ability to perform obstetrics and gynecology procedures.

c. Liaison experiences (radiology, pathology, resident rounds, psychiatry) were less positively assessed by students in terms of their appropriateness of content, quality of instruction and frequency of occurrence. This clerkship component should be given particular attention by the clerkship coordinator as one area for further development and administrative coordination.

2. Student Attitudes Toward the MEME, Logistics Factors and Patterns of Use.

a. The MEME was used by a significant number of clerkship students. (Forty-six percent of the students indicated that they used most of the MEME materials.)

b. The primary reason for student use of the MEME was for the acquisition of clerkship content information.

c. The MEME was used most often between the hours of seven a.m. and midnight, for periods of thirty-one minutes to one hour in duration and the average weekly use per student was six hours or less.

d. Student use of the MEME was inhibited when it was not placed in a convenient location.

e. Logistics factors such as equipment malfunction, difficulty in equipment operation and difficulty in locating materials were not significant problems for clerkship students. However, those students who experienced difficulty in operating MEME equipment or who found its location inconvenient used the MEME less than other students.

f. Locating materials in the MEME was not a significant problem for clerkship students, but written descriptions such as those in Appendix B should be made available for students to facilitate "skimming" of content.

g. Negative faculty attitude toward the MEME was minimal among clerkship faculty and did not influence student use of the MEME.

3. Student Attitudes Toward Media Materials

a. The availability of non-print resources via the MEME did not replace the textbook. Textbooks were the most preferred, rated highest in quality and were most heavily used by students among all learning resources available in the clerkship.

b. The clerkship objectives and academic data base provided students with an understandable and useable set of minimum educational standards against which individual student performance in the clerkship was measured.

c. The video-cassettes used in this clerkship provided the most viable format for the delivery of non-print resources to students as they ranked second to textbooks in preference, quality and use.

d. The audio cassettes used in this clerkship provided the least viable format for delivery of non-print resources to students as they ranked lowest in preference, quality and use.

e. Examination of student preference, perceived quality and use of learning materials established textbooks as ranking highest in all categories, followed by video cassettes. Audio cassettes ranked lowest in all categories. No other pattern of preference was identified for the remainder of the learning resources such as slide-tapes, workbooks or pamphlets.

4. Student Content Knowledge as Measured by Pre and Post-Test Scores.

a. The pre and post-test instruments upon statistical analysis, did not measure similar content knowledge. It was therefore not possible to examine gains in student content knowledge upon completion of the clerkship. All clerkship students did however successfully complete the clerkship during the study period.

In the context of the descriptive data derived from Phase One, a series of hypothesized relationships were examined in order to assess the impact of the MEME and the clerkship upon students along several dimensions. Five groups of conclusions are drawn from this analysis:

1. MEME Use, Logistics Factors and Attitudes Toward the MEME

a. Although difficulty in operating MEME equipment was not a significant problem for most students in the clerkship, use of the MEME was reduced among those students who experienced difficulty in equipment operation.

b. Although the location of the MEME was convenient for most students in the clerkship, student use of the MEME was reduced among those students who did not find the location convenient.

c. For those students who used it, the MEME was an important addition to the clerkship and the availability of MEME for use in other clerkships was a significant need expressed by students.

2. Acquired Content Knowledge, Average MEME Use and Use of Related Materials.

   a. There is no evidence that the degree of MEME use independently affected student content acquisition based upon post-clerkship content scores partitioned in terms of high and low MEME use.

3. On-Campus Carrel Use and MEME Use in Clinical Communities.

   a. Average weekly use of the MEME was lower than average weekly use of on-campus learning carrels. On-campus carrel use per-se is probably not a valid predictor of MEME utilization by students in the clinical communities.

4. Use of MEME Materials, Preference for Media Type and Quality of Materials.

   a. The perceived quality of workbooks, programmed materials and audiocassettes influenced their use by students when use was partitioned into high and low categories. Quality and use were not related with regard to other MEME materials.

   b. Student preference for audiocassettes influenced their use by students when use was partitioned into high and low categories. Preference and use were not related with regard to other MEME materials.

5. Attitude Toward Clerkship Learning Experiences and Content Knowledge.

   a. Student attitudes toward the clerkship were positive. It was not determined however that student attitudes toward clerkship components independently affected post clerkship content exam scores generally or when examined by content area.

In short, the Ob/Gyn clerkship was a positive and appropriate learning experience for students and enhanced their confidence in clinical areas. The MEME provided a focusing vehicle for clerkship objectives and content. In this context it played a potentially important role in the delivery and stabilization of the clerkship as an educational program.

Although there is no evidence that MEME use improved content exam scores, the MEME was used by a significant number of students and was viewed as an important addition to the clerkship. The latter, when examined in light of logistical factors, suggests that the MEME provided a viable alternative for delivering medical content in a patient care setting.

The difficulties of research within the millieu of patient care, physician training and the delivery of learning resources have already been noted. In the discussion that follows, evidence is extracted from within this millieu to suggest that the MEME was a viable partial educational strategy for addressing program delivery issues inherent in community-based clinical training.

DISCUSSION

In Chapter I, it was argued that the community hospital, given its "real world" setting, provides an environment more appropriate than the university-based medical center for the physician training. Given the fact that only about one percent of all patients seen by physicians are ever treated in university-based medical centers, this argument is probably sound. However, the use of community

hospitals located away from university campuses as clinical training centers presents unique problems for the College of Human Medicine. Among these problems are: 1) the need to monitor and control the quality of educational programs in remote sites; 2) the need to assess ways in which the acquisition of medical content, problem solving and clinical skills are delivered; and, 3) the need to investigate ways in which learning objectives and supporting resources may be effectively packaged and delivered to students in the community setting. These themes form a framework for the discussion which follows.

The need to monitor and control the quality of educational programs in remote sites has been a primary focus of numerous debates within the Michigan State University College of Human Medicine. The comparison of content exam scores before and after educational experiences has been one approach to assessing program quality. The same model with control and experimental groups has been used for assessing the educational impact of new or innovative programs, methodologies and technologies.

In this study, it was not feasible to withhold use of the MEME and MEME materials from students. However, since student use of the MEME was not required to some extent, natural selection of its use by students occurred. That is, some students reported higher use of the MEME than others. Thus, it was possible to examine the relationship between degree of MEME use and content exam score outcomes. As reported earlier, there was no evidence that the degree of MEME use independently effected student content acquisition

based upon post clerkship content scores partitioned in terms of high and low MEME use. These findings are similar to those of a broad range of research in educational media, namely, that no significant differences can be attributed to the medium, per-se. The research in medical education of Hayden et. al. (1967), Allen (1968), Conklin (1970), and Koprowska (1971), examining medical student content outcomes in non-clinical areas, also showed no significant differences. Sly (1975), Lange (1966), and Russel (1966), all report no significant differences in content outcomes attributable to self-instructional media approaches in clinical settings. These findings are not surprising, in view of selectivity of medical school admission programs which emphasize aptitude and intelligence test scores. High motivation, high achievement needs, and a belief in the importance of learning to future practice are also common medical student traits. It is suggested therefore that other outcome variables such as student attitude may hold more promise than content outcomes in isolating the impact of media utilization in medical education. Nevertheless, content outcomes based upon well-defined minimum performance measures are critically important as quality control measures for clinical learning experiences.

A second way to maintain quality control and to assess the delivery of clinical education is via program evaluation by students. Phase One was designed to collect data on student perceptions and attitudes toward the clerkship experience. The efficacy of this approach is based on the notion that medical students, by the time they are in their clinical years, are quite sophisticated in their

assessment skills. The students used in this study had been involved in program assessment since their first quarter of medical school. The College of Human Medicine Curriculum was designed to reinforce the value of student involvement in assessing learning expereinces. Thus, the data derived from Phase One provided an important assessment of the educational delivery system and its component parts which constitute the Obstetrics and Gynecology clerkship.

It appears that students were satisfied with the degree to which they were allowed to follow patients in the Obstetrics experiences. Student initiative, coupled with cooperation and interest by attending physicians as well as nursing staff were potentially important contributing factors. In the few instances (2) when students indicated they were not allowed to follow patients, lack of aggressiveness and lack of cooperation by nursing staff were the primary reasons. In general, however, interactions with nursing staff were assessed as satisfactory. Most students became confident they could provide prenatal care for patients and follow a patient in labor, taking charge of a normal delivery. Mean scores of 3.44 and 3.42 (based on a four point scale) for these two areas indicate satisfaction with the Obstetrics portion of the clerkship.

The Gynecology portion of the clerkship was rated positively by students as well. Students were more often allowed to perform pelvic exams on pateints under anesthesia than pre-operatively. Physician concern for student skill levels and potential patient discomfort probably contributed to this phenomenon. Based upon the nature of the procedure, this finding could be anticipated.

The discussion by physicians and residents of patient cases with students is lower than anticipated, but probably not unreasonable for physicians in practice. The fact that the operative experience was valued most highly by students, over pre-operative and post-operative experiences could be expected on the basis of the inherent student interest generated by surgical procedures.

Although 85 percent of the students felt that the emphasis on surfical technique was correct, the number of surgical observations varied. This implies that the number of observations made by any one student was probably determined by him or her in negotiation with the attending physicians on the basis of varying student needs.

The data derived from the ambulatory experience assessment are positive. The variety of patients in the ambulatory setting could be expected to receive a lower student rating and is probably a function of the common and repetitive nature of presenting problems in any ambulatory setting. It could be expected that student perceptions of the amounts of formal teaching occurring in the ambulatory setting would be lower than other experiences because of the pateint care emphasis in this environment.

The availability of persons to whom students could direct questions is, from an educational perspective, a positive indication of program effectiveness. The process of learning clinical and diagnostic skills involves repetitive, applied practice, and requires that students have the opportunity to ask numerous questions. The opportunity to ask relevant clinical questions was a

potentially important contributor to positive student assessment of this clerkship component.

Focal problems data also revealed a positive assessment. Students indicated that the important assigned objectives were discussed and that faculty presentations were clear. The focal problems sessions were the primary formal instructional experiences in the clerkship. It appears that they fulfilled their intended purpose in providing understandable presentations of content around assigned objectives with ample opportunities for students to ask questions.

The objectives and data base, a primary source of written clerkship content information, was evaluated as understandable by the students. The format, including objectives and content information for each objective, it appears, was not problematic. Students did indicate that the number of objectives to be met in the six-week period was not reasonable. Although the basic clerkship content was outlined by objectives in this booklet, students indicated that additional reading was required to adequately master the clerkship objectives. This finding was anticipated as the data base is actually a content outline rather than a detailed description of content data.

The clerkship experiences which consistently received the lowest ratings were the liaison components consisting of resident rounds, psychiatric, radiology and pathology experiences. None of these components received mean ratings above 3.00 based on a four point scale. The liaison experiences are those over which the Department of Obstetrics and Gynecology as well as the clerkship

coordinator has little authority or control. For this reason, it appears that the liaison experiences were less consistent in their occurrence, appropriateness of learning experiences and instructional quality. In each case, however, students indicated the desire for a greater number of liaison experiences.

In summary, it appears that, with the exception of the liaison experiences, the Obstetrics and Gynecology clerkship was a positive and consistent educational experience for students. The clerkship assessment thus provides, in addition to the content exam, a means for monitoring the quality and delivery of clinical educational experiences as perceived by students.

The third theme of this study focused on the need to examine ways in which learning objectives and supporting resources might be effectively packaged and delivered to students in the community setting. Thus, an integral portion of the research involved assessing whether or not a device such as the MEME could provide a viable means for the delivery of resources in support of learning objectives in remote, clinical sites.

Logistics issues comprised one area of investigation. In the development process, considerable time was spent in selecting equipment that could be easily operated with a minimum of training. The logistics data support the fact the equipment operation was not generally a hinderance to use. However, eight students who indicated low ease of equipment use also fell within the category of low reported MEME utilization. The findings, contrasting reported ease of equipment use with overall MEME use were statistically significant

indicating a strong relationship between these variables. Each clerkship group received an indepth orientation to the MEME and MEME equipment operation with a supervised practice period. The student evaluations of the orientation were positive (3.66 on a four point scale). Faculty attitude toward the MEME was not perceived as negative by students.

The mean score of 3.21, based on a scale of one to four for convenience of MEME location, is misleading. Although this is generally a positive finding, sixteen of the seventy-three clerkship students indicated that the location was not convenient. These students were identified in the low MEME use category. Significant findings were observed when convenience of MEME location was contrasted with MEME use. In twelve of the sixteen cases, it was found that the MEME was not located in the "on call" student sleeping quarters, which were regarded as medical student "territory" and available on demand. Instead, the MEME was located in another hospital area and not convenient to the "OB" floor. In the other four cases, a second hospital was assigned to these clerkship students and no MEME was available in that facility.

Equipment malfunction and breakdown was not a major logistics problem. This was due to two factors: First, equipment for placement in the MEME was selected on the basis of low breakdown statistics; and second, weekly maintenance checks were made by a media technician to clean and adjust equipment. When equipment was malfunctioning, a community contact person called the main campus and back-up equipment was placed in the MEME.

Finally, it was anticipated that the MEME might provide an alternative study area for students who were not able to study at their residence. It was not possible to evaluate the MEME's function in this regard since students indicated that study at home was not a problem.

The overall use of MEME materials was not generally as high as anticipated. Two factors may have mitigated against higher use: First, the primary learning resources used by medical students in this clerkship, as in other parts of the medical educational process, was the textbook. The aptitude tests utilized for medical school admissions emphasize verbal and written comprehension abilities. Thus, it is argued that non-print learning resources were not generally as accepted by clerkship students for learning basic content as were texts. The preference and quality data collected on media materials support this statement since textbooks ranked highest in student preference and perceived quality. Second, students were not required to use the MEME and MEME materials. Students were informed that all clerkship content could be learned via textbooks and other clerkship activities. The MEME was presented to students as an alternative. Thus preference for learning modality played a potentially important role in determining student use of the MEME.

Significant data were obtained regarding student perceptions of both the value of the MEME in the Obstetrics and Gynecology clerkship and whether or not MEME's should be available for other clerkships. The mean score for the item assessing student perceptions

of the value of the MEME to the present clerkship was 2.55 on a four point scale. However, the results contrasting overall use of the MEME with perceived value of the MEME to the clerkship were significant. Thus, a strong relationship was identified between MEME use and its perceived importance by students.

A similar finding was observed when overall MEME use was contrasted with whether or not MEME's should be available for other clerkships. Two interpretations are offered for these results: First, it is suggested that there existed, within the total clerkship group, a subgroup who preferred to learn content in a less traditional way. For these students, the MEME was an important clerkship component. Second, it has already been argued on the basis of descriptive data, that the clerkship components with the exception of liaison experiences, received consistently high ratings by students. The mean score for student perception of the importance of the MEME in this clerkship (2.55) on a four point scale, was lower than student desire for the MEME's availability in other clerkships (3.11). This finding potentially indicates general student satisfaction with this clerkship and suggests less student confidence in the quality of learning experiences in other clerkships. In other words, students may feel less need for MEME type support in the "good" clerkships and greater need for support in clerkships that are not considered to be as effective.

The MEME assessment also examined student preferences for media materials. As noted earlier, textbooks were the most preferred learning material.

Video cassettes, however, received the second highest preference of all learning materials. There are two possible explanations for this phenomenon: First, all of the videotape material was professionally produced and of high visual impact, presenting compact informational packages. Second, most of the videotape material was clinically relevant, much of it showing clinical skills and procedures such as the pelvic examination. The materials provided an opportunity for students to observe clinical procedures which they would be expected to perform.

Audio cassette/slide packages ranked next to last in student preference. Discussions with medical students regarding this phenomenon suggest that the rate of content presentation inhibits some students from moving through the materials at a rate comfortable to them. Thus, student use is decreased.

Audio cassettes were the least preferred of all learning materials. However, the finding contrasting preference and use was significant indicating a strong relationship between these variables.

In examining perceived quality of materials by type, textbooks ranked highest followed by video cassettes. Audio cassettes again ranked lowest. Two significant findings were obtained when perceived quality of media materials was contrasted with student use. One was observed when perceived quality of audio cassettes was contrasted with their use by students. The second was obtained when perceived quality of workbooks and programmed materials was contrasted with their use by students. With regard to audio cassettes, it is acknowledged that they were essentially sexist in approach.

This could be deduced from the titles, but after listening to them, there can be little doubt. The introductory portions of these tapes are particularly suggestive. Descriptions of patients and patients' attire include strong sexual and suggestive overtones. Written and verbal comments by some students confirm this perception.

Overall mean use scores for media materials by type were lower than anticipated. Video cassettes received the highest use by students, excluding texts and the objectives and academic data base. Audio cassettes were the least used. It was found however, that at least fifty percent of all students who used the materials indicated that the materials were of value to them. The lowest percentage of students in any one clerkship,(indicating that use of the specific material was of value), was fifty percent. The highest was ninety-seven percent.

Finally, a pattern was found when the perceived quality, preference and use of textbooks, video cassettes and audio cassettes was examined. The ranking of these three types of materials was consistent in quality, preference and use.

SUMMARY

The initial portion of this discussion presented three needs unique to medical schools such as Michigan State University using community-based clinical programs: The first, the need to better monitor and control the quality of educational programs; and the second, the evaluation of curriculum delivery were discussed in terms of content acquisition, student attitudes and student

assessment of the learning experiences. In this study, student use of the MEME did not independently influence final content exam scores. Student attitudes toward the clerkship learning experiences were, however, positive. The strong relationship between student perception of the importance of the MEME to the clerkship as well as the perceived need for MEME's in other clerkships is evidence that the MEME use did impact student attitudes. The research of Hayden et.al. (1967), Sandritter and Edzard and Kowalewski (1971) in non-clinical medical education, which shows no evidence of improved content knowledge outcomes related to non-print media use per-se, does indicate positive student attitudes toward non-traditional media applications. Similar observations were reported by Chez and O'Gorman (1974) in clinical applications.

The need to investigate ways in which learning objectives and supporting resources may be effectively packaged and delivered to students in the community setting was a third broad category of need addressed in this study.

The MEME represents one viable strategy for meeting this need and serves as a focal point for learning resources in close proximity to patient care activities. It appears that logistics factors are important in the use of media equipment and materials in remote sites. Convenience of location and ease of equipment use should be carefully considered in MEME placement and in the initial process of selecting media equipment. In addition, a dependable and routinely scheduled materials and equipment maintenance program, with emergency back-up equipment and materials support, is

potentially important to maintaining remote site viability. A well organized and obligatory orientation program with supervised practice time is important to minimizing logistics problems surrounding student use of the MEME. It would appear also, that concise program summaries such as those included in Appendix B, might be useful to students in "skimming" for specific curricular content.

In examining student use of learning materials, it was found that the students preferred texts over all other forms, rated them higher in quality and used texts most heavily. Professionally produced, clinically related video cassettes, however, ranked second in these categories. This suggests that video tape may hold the promise as a viable non-print format.

Based on student content scores, it can be concluded that the MEME use did not independently improve student performance nor did it hinder performance. For certain students, use of the MEME and the availability of media materials was an important addition to the clerkship experience. Whether or not these findings are important enough to support further use of the MEME in community programs is a question to be answered on the basis of philosophical and educational values.

OBSERVATIONS FOR FUTURE RESEARCH AND PRACTICE

The primary purpose of this section is to suggest modifications in the design of the study which might produce stronger results, to note several areas in which positive results of the study could be

used to extend research investigation and to provide recommendations to decision makers contemplating use of the MEME.

As noted earlier, field studies are potentially strong in realism, richness of variables, and plethora of hypotheses. They are, however, potentially weak in their ex-post-facto character, in controlling variables and in precision of measurement.

Precision of measurement was a difficulty encountered in this study. The clerkship assessment instrument was lengthy and ex-post-facto. There is less concern here with that portion evaluating the clerkship experiences than that portion of the MEME assessment dealing with specific clerkship materials by title. The number of students responding to the specific title evaluations was lower than the total number of students answering other questions on the instrument. This indicates either fatigue or an inability to remember. In future assessments students should be asked to evaluate the media title immediately after use. An evaluation sheet included with each title would provide for an immediate response. This would potentially provide greater accuracy and a higher response rate.

A second design consideration, involves pre and post-test content exams. Pre and post-test exams were considered by content experts to be equivalent in difficulty, and a correlation of .45 existed between total scores for the pre and post-test exam. There were however, few correlations between component parts of the two exams. This implies that an important amount of different content was measured by each. It is suggested that the same content exam

be used in future clerkships for pre and post-test purposes, or at least in an experimental way to provide better control of this variable.

Third, it may be that content exam scores, although separated by clerkship content area, with items keyed to objectives and learning materials, are too global. That is, a more fruitful approach to isolating the impact of MEME material use upon content score outcomes may lie in more controlled analysis of specific material use related to specific objectives and test items. The implication is also present for a more careful redevelopment of resource materials in terms of specific objectives, anticipated learning outcomes and exam items.

In a more general sense, there is a need to continue to refine the assessment instrument and to decrease the items to a critical mass that provides important data. The presentation format should also be improved and reliability data developed. It is gratifying to know that the Department of Obstetrics, Gynecology, and Reproductive Biology and the Office of Curriculum Implementation at Michigan State University are currently undertaking these tasks. The MEME portion of the assessment requires modification in items 14, 15, and 16 to include a category of "did not use" and a more finite breakdown in the hours used portions.

Several modifications in the research design and further research are also suggested. One design alternative would involve withholding use of the MEME either in an existing community clerkship or in another clerkship. The impact of MEME use upon

variables similar to those examined in this study would be assessed in experimental and control groups. Another alternative is to develop materials appropriate to another clerkship, less positively evaluated than the current one and to make the MEME available for student use. Another approach might involve the assessment of all college clerkships to determine whether or not availability of the MEME does impact student attitudes and if this factor can be isolated.

Another area of investigation, not addressed in this study, involves cost analysis of the MEME versus the development of on-site learning centers. Although it has been argued that the MEME is cost efficient, given its current use, a study of cost variables given wider use of media materials in all clerkships might be beneficial. A variation of this study might investigate the number of MEME's required, based on student populations and numbers of clerkships.

There are several additional areas in which the research might be extended. The first involves an investigation of video tape as a clinical learning resource format. Although it is suspected that content preference and production quality influenced student use of video materials in this study, it is possible that the format and ease of use may also have had an influence. Research comparing variables similar to those used in the study between MEME materials as they exist and the existing MEME materials converted to video tape might provide important additional information.

Another direction that future research might take, would involve a closer examination and control of logistical factors. Essentially, it would be important to know whether or not convenience of location and/or ease of equipment use will create greater MEME use. If it were determined that some students will simply not use non-print materials, regardless of logistics, then methods should be developed to better identify users and non-users for more efficient resource allocation in educational programs.

Finally, further research is suggested to investigate the relationships between preference, perceived quality and use of non-print materials in the clinical setting. Assuming that the rapid acquisition of content material will continue to be an important concern of medical educators, it is reasonable to continue the investigation of these alternatives.

Within this context the following recommendations are made with regard to use of the MEME for clerkship experiences in clinical communities affiliated with the College of Human Medicine at Michigan State University.

1. The MEME should continue to be used in the Ob/Gyn clerkship.

   Optimal conditions for its continued use include:

   a. Placement of the MEME only in the "on call" quarters of the OB ward to which students are assigned.

   b. Continued on-campus back-up equipment support for MEME equipment and weekly preventive maintenance from main campus.

   c. Continued MEME orientation sessions for students in the first week of the clerkship with obligatory, supervised equipment operation practice.

d. The development of a short form materials evaluation instrument stored in the MEME for students to complete after each use.

e. The redevelopment of audio cassette materials to conform to more modern and mature approaches to females as persons.

f. The expansion in production of media materials in video tape format to include redevelopment of existing materials and expanded production of new materials.

g. Inclusion of the MEME materials descriptions (see Appendix B) as part of the Objectives and Data Base booklet provided to all clerkship students.

2. The Ob/Gyn clerkship assessment should continue to be used but in a shortened format and excluding item by item evaluation of MEME materials.

3. The College of Human Medicine should investigate the possibility of utilizing the MEME in other clerkships such as Pediatrics, Medicine, or the Fundamentals of Patient Care (F.P.C.). Optimal conditions for expanded clerkship would include:

a. The existence of M.D. faculty (preferably the clerkship coordinator) willing to work with developers and evaluators to specify objectives, identify materials and to provide input into the assessment process.

b. The availability of evaluation, development and production expertise to work with content specialists to develop materials, assessment items and objectives.

c. Administrative and fiscal support for the project at the Dean's level in the College of Human Medicine.

d. Implementation of a comparative study of MEME effectiveness in the clerkship(s) selected as proposed in the earlier section of this chapter.

4. The Ob/Gyn clerkship should continue to be organized and presented as it now is with greater administrative control of the Liaison Experiences.

The results of this study, as is the case in all field studies, are extracted from a millieu of interrelated variables and observations and must necessarily be couched in conservative terms. However, the MEME, provides at least, a viable partial strategy for the delivery of learning resources in support of educational objectives, in the context of patient care. Logistical issues such as equipment operation, malfunction and location are important considerations, but can be effectively managed in remote clinical sites.

Outcome variables such as content knowledge provide essential quality control measures, but student attitudes expressed in program assessment data also provide important measures of program effectiveness. When educational experiences and supporting resources are developed and selected to compliment each other, as they were in this clerkship, the potential for clinical confidence and positive learning experiences is enhanced.

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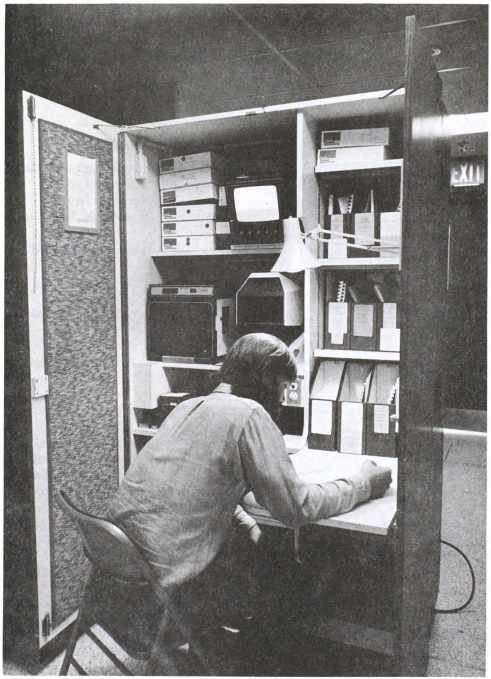
A P P E N D I C E S

A P P E N D I X A

MEME SPECIFICATIONS


EXIT

MEME DESIGN SPECIFICATIONS

FINAL DRAFT

October 17, 1974

SUBJECT-Design specifications for MEME units (Medical Education Mobile Environment)
A self-contained mobile learning environment for storage of and access to self-instructional materials and equipment.

I Dimensions, External:
- A.) Height 6'8" including casters
- B.) Width 48" side to side
- C.) Depth 24" front to back

II Materials, External:
- A.) External Walls of 3/4" Plywood with weight-reducing cores.
- B.) External Covering-Textolite, Golden Teak
- C.) Internal Covering-Textolite, Buttery

III Mobility and Handling:

The MEME unit shall be mounted on four (4) heavy-duty soft-tire casters with locks on all four casters. There shall be three steel bars mounted on the unit to facilitate handling. One bar shall be mounted on the bottom of the unit and shall run front-to-back full length along the center line. One bar shall be on each side of the unit, 36" inches from floor level. The bars at the side shall be inset to provide a flush side surface, and shall run full length front to back in an inset mount. The inset portion of the side wall shall be surfaced in the same manner as the overall external surfacing.

IV Access:

A.) Access to the interior, from the front, of the MEME unit shall be center-open key-lock double doors that are the full width and height of the MEME surface. Security should be provided by a center-mounted rod-locking system that secures the top and bottom of both doors.
   1.) Door interiors shall be fully lined with sound-retarding material
   2.) There shall be a positioning device at the top of each door, to hold the door open at 90^{o} from full closed position.

3.) There shall be a strong retractable-leg device on the front edge of each door that shall prevent the MEME unit from tipping forward when doors are positioned as in (2) above. This device shall mount on the inside surface of each door.

4.) Two fittings shall be provided on the inside, (and one on the outside) of the left hand door to accomodate 8 x 10 print information sheets. The inside surface of the right hand door shall have imprinted on a plastic backed surface, operating directions for the MEME unit.

5.) There shall be one coat hanger permanently mounted to the inside of each door. The positioning of the hanger shall be such that the use of the hanger shall not block the print information.

6.) There shall be two folding chairs mounted on the inside of the right hand door. The two chairs shall be firmly locked into position by a securing device. The device to secure the folded chairs for transit shall be one-stage locking devices that lock and unlock with a minimum of effort.

B.) Access to the interior, from the rear of the MEME unit, shall be by means of a vented, key-locked access panel designed to allow all hardward specified for the MEME to be installed, locked in place and interconnected from the rear of the unit.

V Exterior-dimensions and fittings:

A.) Actual height of the cabinet portion of the MEME unit shall be from the surface to which the casters are mounted. The external walls of the cabinet surface (door surfaces included) shall extend to within 3 inches of the floor, and shall mask the caster units. The caster locking devices shall be easily accessible and the rotation of the casters shall not be inhibited by the masking.

B.) There shall be two lights with 3" red lenses mounted flush with the exterior side surfaces at a height of 5'10" from floor level. These lights shall be wired to indicate when the master AC power switch to the MEME unit is in the on position.

C.) There shall be, at the bottom, rear right hand corner of the MEME unit access to a spring loaded A/C power supply cord.

VI Interior-all interior surfaces shall be covered as specified in II (C)

A.) Softward storage-Right side:

1.) The right side (when facing the doors of the unit) shall be designed to provide storage, ready access to and visibility of all softward formats. Adjustable shelving; 8 in number for each unit, shall extend from the top to the bottom of each unit. Adjustment devices shall be designed to hold shelves fixed during transit. There shall be 1/2" lip on the front face of each shelf to aid retention of stored materials during transit. Width of shelve unit shall be 18" from right exterior surface. Depth of shelves, from front to back shall be 16" from back exterior surface. Retention of softward during transit shall be aided by styrofoam "dummies" or forms intended to firmly fix designated material packages.

2.) There shall be a fixed counter surface running horizontally the full interior width. The counter surface shall be 30" from the floor and, on the right side shall extend 16" from the rear exterior surface. Width of the right side counter surface shall be 18" from right exterior surface.

3.) There shall be a fixed vertical divider extending from the top to bottom interior surfaces. The vertical divider shall be set 18" from right exterior surface and shall extend 24" from rear exterior surface except for a cut-out area extending upward from the counter surface. The cut-out area shall measure 16" from the rear exterior surface upward and shall curve outward to 24" from rear exterior surface at the level of the upper left hand shelf upon which the television monitor is mounted (18" from top exterior surface of unit).

4.) There shall be a fold-down work surface, the width of the shelving and the depth of the right door when in the folded down position. The height of the work surface, when folded down, shall be 30" from floor surface-flush with the horizontal counter surface. The fold-down work surface shall lock firmly in place in the up position, and must provide sufficient support, in the fold down position, to serve as a writing/work surface for the MEME user (s).

5.) There shall be a rheostat controlled light, with movable reflector, mounted on the right interior door surface, positioned to illuminate the work surface in the fold down position. The rheostat shall be positioned below the lighting fixture and shall be the type that incorporates a power on-off capability.

VII Interior Hardware Storage-left side

A.) The left side of the MEME unit shall be configured and wired to install, mount, and provide access/interconnection to:

ITEM 1 - Panasonic TR-910V
Video Monitor, 9"

ITEM 2 - Audio Selector Dial
2 Position (Headset/Speaker)

ITEM 3 - Singer Graflex sound/slide projector
Carramate P

ITEM 4 - Kodak Ektalite 120
Microfiche Reader

ITEM 5 - Wollensack 2505AV
Audio Cassette Playback unit

ITEM 6 - Self-enclosed 4" Speaker unit

ITEM 7 - 2 Position Jack Box for standard phone plug jacks

ITEM 8 - Master AC power switch

ITEM 9 - Panasonic NV-5110
Video Cartridge Player

ITEM 10 - 2 Pair Telex Headsets Model 610-1 or equivalent

ITEM 1 - Panasonic TR-910V
B + W Video Monitor 9"

a.) There shall be a shelf of 15" depth and 15" clearance from rear and top exterior surfaces respectively. This shelf shall extend fully across the left side of the MEME unit.

b.) The right corner of the shelf shall have, for installation from the rear access panel, a swivel mounting bracket to accomodate the TR-910V.

c.) The mounting bracket shall provide for the TR-910V viewing screen to be at 20^{o} to 30^{o} down angle from vertical to provide an acceptable sight-line for seated user.

d.) Monitor audio shall be accessed as specified in ITEM 2 (c) & (d).

e.) Monitor video shall be provided from the NV-5110 video cartridge player only.

f.) Monitor AC power shall be provided through a fuse system from the master AC power switch.

g.) The shelf shall be constructed in manner that prevents removal of the video monitor from the front. Installation, interconnection and mounting of the monitor shall be as specified in IV (B).

ITEM 2 - Audio Selector Dial: 2 position: Headset and Speaker. The audio selector, 2 position dial, shall be mounted beneath and on the center line of the shelf unit. The 2 position dial shall provide for:

a.) Speaker audio for the Wollensack 2505AV through a 4" speaker (Item 6) mounted directly behind the selector dial.

b.) Headphone audio for the Wollensack 2505AV through the 2 position jack box for standard phone jack plug.

c.) Speaker audio for the TR-910V video monitor through the monitor internal speaker.

d.) Headphone audio for the TR-910V video monitor through the 2 position jack box for standard phone jack plug.

e.) Speaker audio for the sound/slide projector Carramate P through the Carramate internal speaker.

f.) Headphone audio for the sound/slide projector Carramate P through the two position jack box for standard phone jack plug.

ITEM 3 - Sound/Slide Projector Carramate P
and
ITEM 4 - Ektalite 120 Microfiche reader
There shall be a shelf of 18" depth and 36" height from the rear and bottom exterior surfaces respectively. This shelf shall extend fully across the left side of the MEME unit.

a.) The left side of the shelf shall have, for installation, and interconnection through the rear access panel, a mounting bracket to accomodate the Carramate P. The mounting bracket shall position the viewing surface at a 15^{o} angle toward the center line of the left side of the MEME unit. Audio for the Carramate P shall be accessed as specified in ITEM 2 (e) & (f). AC power for the Carramate P shall be provided through a fuse system from the master AC power switch. The shelf shall be constructed in a manner that prevents removal of the Carramate P from the front, but does not inhibit the operation (loading of carousel unit) of the Carramate P. Installation, interconnection and mounting of the Carramate P shall be as specified in IV (B).

b.) The right side of the shelf shall have, for installation and interconnection through the rear access panel, a mounting bracket for the Ektalite 120 microfiche reader. The mounting bracket shall position the

viewing surface at a 15° angle toward the center line of the left side of the MEME unit. AC power for the microfiche reader shall be provided through a fuse system from the master AC power switch. The shelf shall be constructed in a manner that prevents removal of the Carramate P from the front, but does not inhibit the operating (loading of microfiche & focus) of the microfiche reader. Installation, interconnection and mounting of the Ektalite 120 microfiche reader shall be as specified in IV (B).

ITEM 5 - Wollensack 2505AV Audio Cassette playback unit. There shall be a counter surface that shall extend the full width of the MEME unit, at 30" from floor level. The shelf shall extend the full depth (24") on the left side of the MEME unit. The 2505AV shall be mounted permanently and flush with the counter surface, 12" from the front edge and in the center of the left side counter surface. Audio for the 2404AV shall be provided as specified in ITEM 2 (a) & (b). AC power for the 2505AV shall be provided through a fuse system from the master A/C switch.

ITEM 6 - (see ITEM 2 (a))

ITEM 7 - 2 position jack box for standard phone plug jack: To accomodate two-headset interconnection to MEME operation; shall be mounted permanently in the left hand corner of the left-side counter surface. Interconnection through the audio selector dial shall provide Headphone Audio as specified in ITEM 2 (a) (b) (f).

ITEM 8 - Master AC power switch.

a.) There shall be permanently mounted next to the audio selector dial unit, a master AC power switch through which AC power is supplied to all equipment specified for the MEME unit.

b.) The switch should indicate <u>on</u> by means of both letters and red light, on the power switch plate, and by the two red lights on the exterior side walls of the MEME unit as specified in V (B).

c.) The master power switch shall route power to, but not bypass, AC power switches on the equipment specified for the MEME unit.

d.) There should be a minimum of 2 AC power 3-prong outlets installed in the left side counter area-wired through the master AC power switch.

ITEM 9 - Panasonic NV5110 Video Cartridge Player.

a.) There shall be a shelf of 18" depth from the rear exterior surface that shall run the full length of the left side of the MEME unit at a height of 12" from the bottom exterior surface.

b.) The shelf shall have, for installation and interconnection through the rear access panel, a mounting bracket to accommodate the NV5110. The mounting bracket shall be positioned to allow storage, on the shelf to the right of the NV5110, of 2 pairs of Headphones, Telex Model 610-1 or equivalent (Item 10).

c.) Audio and video interconnection to the TR-910V videomonitor should be provided as specified in Item i (d) & (e).

d.) AC power shall be supplied through a fuse system from the master AC power switch.

e.) The shelf shall be constructed in a manner that prevents removal of the NV5110 from the front.

A P P E N D I X B

MEME MEDIA MATERIALS

MEME MEDIA MATERIALS

A. PAMPHLETS

1) TITLE: Outline For the Pelvic Examination

AUTHOR/DEVELOPER: Gerald B. Holzman, M.D. (N.D.)

AVAILABLE FROM: Department of Obstetrics, Gynecology and Reproductive Biology
College of Human Medicine
Michigan State University
East Lansing, Michigan

CONTENTS: Five page mimeograph outline

DESCRIPTION: An outline and synopsis of the major components of the pelvic examination with emphasis on the asymptomatic woman.

2) TITLE: Modern Obstetrics: Postpartum Hemorrhage

AUTHOR/DEVELOPER: The American College of Obstetricians and Gynecologists and the American Medical Association (1974)

AVAILABLE FROM: Ortho Pharmaceutical Corporation
Raritan, New Jersey 08869

CONTENTS: Eight page printed pamphlet

DESCRIPTION: This pamphlet outlines the paramaters of normal bleeding during delivery and describes the major causes of postpartum hemorrhage. It emphasizes the importance of patient reassessment during labor and basic procedures for dealing with postpartum hemorrhage.

3) TITLE: Modern Obstetrics: Pre-Eclampsia-Eclampsia

AUTHOR: Unknown

DEVELOPED BY: The American Association of Obstetricians and Gynecologists and the American Medical Association (1974)

AVAILABLE FROM: Ortho Pharmaceutical Corporation
Raritan, New Jersey

CONTENTS: Nine page printed pamphlet

DESCRIPTION: This pamphlet provides a basic discussion of the disease without an etiology. Included are definitions of the stages of the toxemia of pregnancy and descriptions of each stage. Identification of toxemia and treatment regimens are also described. Procedures for delivery of patients with mild and severe pre-eclampsia are discussed.

4) TITLE: How to Organize a Basic Study of the Infertile Couple

AUTHOR: Unknown

DEVELOPED BY: A Committee of the American Fertility Society (1971)

AVAILABLE FROM: The American Fertility Scoeity
1801 Ninth Avenue South, Suite 101
Birmingham, Alabama 35205

CONTENTS: Twenty page printed pamphlet

DESCRIPTION: A comprehensive introduction to the major aspects of a fertility study. Emphasis is placed upon the doctor/patient relationship and the importance of sensitivity to human feelings and needs. The pamphlet presents information on the interpretation of fertility factors, classification of sperm and a process for evaluating the major factors of female and male fertility.

5) TITLE: Reproductive Endocrinology

AUTHOR: Robert W. Kistner, Faco G., Guest Editor in Chief (1973)

DEVELOPED BY: Wyeth Laboratories/Medcom Learning Systems Inc.

AVAILABLE FROM: Medcom Learning Systems/Wyeth Laboratories
P. O. Box 8299
Philadelphia, Pennsylvania 19101

CONTENTS: Seventy page multicolored, illustrated, printed booklet with self-evaluation providing immediate feedback.

DESCRIPTION: The booklet includes three basic chapters providing an in-depth, illustrated review of current findings in endocrinology. Chapter One, is titled endocronologic basics and reviews the concepts of synthetic hypothalmic releasing factors, hypothalmic-pituitary discharge and ovarian modulation. Chapter Two, emphasizes physician application and includes the basics of ovulation induction and suppression, conception control and polycystic ovarian disease. Chapter Three, focuses on the major developments in contraceptive research.

6) TITLE: Contraceptive Technology 1976-77

AUTHOR: Hatcher, Robert; Steward, Gary; Guest, Felicia and Richard Finkelstein (1976)

DEVELOPED BY: Authors

AVAILABLE FROM: Irvington Publishing Company
551 Fifth Avenue
New York, New York

CONTENTS: One hundred forty-four pages, printed booklet

DESCRIPTION: This booklet presents the major types of contraception currently available for male and female patients. The positive and negative aspects for each are discussed as are the potential risks involved with each.

7) TITLE: Objectives and Data Base

AUTHOR/DEVELOPER: American Association of Obstetricians and Gynecologists Foundation, Inc. (1972)

AVAILABLE FROM: American Association of Obstetricians and Gynecologists Foundation, Inc.

CONTENTS: One hundred seventy-seven pages, mimeographed looseleaf

DESCRIPTION: Objectives: An eight unit compilation of terminal and enabling objectives covering the following topics, History and Physical Examination; Normal Pregnancy, Labor and Delivery; Obstetrical Abnormalties; Gynecology; Endocrinology; Procedures; Control of Reproduction and Sexuality.

Data Base: Essentially, this volume contains a content outline of major information related to the objectives presented in the first volume.

B. AUDIO CASSETTES

1) TITLE: Postpartum Hemorrhage with Gina Lollipop

AUTHOR/DEVELOPER: John Kelly, M. D. (1974)

AVAILABLE FROM: John Kelly, M. D.
University of Pennsylvania Medical School
Hershey, Pennsylvania

CONTENTS: Audio Cassette, Thirty minutes

DESCRIPTION: In this audio cassette, Dr. Kelly describes the mythical patient "Gina Lollipop." Emphasis is placed upon the detection and identification of postpartum hemorrhage and the major treatment regimens and procedures. Clearly sexist in approach.

2) TITLE: Ante-Natal Care with Agent 38-24-34

AUTHOR/DEVELOPER: John Kelly, M. D. (1974)

AVAILABLE FROM: John Kelly, M. D.
University of Pennsylvania Medical School
Hershey, Pennsylvania

CONTENTS: Audio Cassette, Thirty minutes

DESCRIPTION: This cassette utilizes a case presentation to examine the major considerations of history, current medications, emotional strain, overdue menses and the symptoms of early pregnancy (ie. nausea, lethargy and frequent urination) to explore early diagnosis of pregnancy. The "Mask of Pregnancy, Hypertrophy of Gums, enlarged thyroid and ptyalism are described

and the mechanism for each of these temporary symptoms is explained. Clearly sexist in approach.

3) TITLE: Difficult Labor with Mrs. Jan C. Bounce

AUTHOR/DEVELOPER: John Kelly, M. D. (1974)

AVAILABLE FROM: John Kelly, M. D.
University of Pennsylvania Medical School
Hershey, Pennsylvania

CONTENTS: Audio Cassette, Thirty minutes

DESCRIPTION: The case presented in this tape involves a time based simulation of difficult labor beginning in the early labor. The pros and cons of various medications is presented and the importance of the doctor/patient relationship is emphasized. Alternate methods to improve uterine contractions are discussed and the mechanisms involved with each are presented. Clearly sexist in approach.

C. AUDIO CASSETTES WITH SLIDES

1) TITLE: Identification and Evaluation of the High Risk OB Patient

AUTHOR/DEVELOPER: Michigan State Medical Society, Committee on Maternal and Prenatal Health.

AVAILABLE FROM: The University of Michigan
Ann Arbor, Michigan

CONTENTS: Sixty-four, 35mm Color Slides, Audio Cassette, Thirty minutes, seven page xeroxed script of audio cassette.

DESCRIPTION: This program is a case presentation involving a fifteen year old pregnant female. It details the methodology of identifying and evaluating obstetric patients who have a high risk of developing complications. The content emphasizes the importance of obstetrical, medical and family history, physical exam and appropriate lab tests as critical to proper patient management.

2) TITLE: Ante-Natal Management of High Risk in OB Patients

AUTHOR/DEVELOPER: Michigan State Medical Society Committee on Material and Perinatal Health (1972)

AVAILABLE FROM: The University of Michigan
Ann Arbor, Michigan

CONTENTS: Seventy-seven, 35mm, Color Slides, Audio Cassette Sixty minutes, eleven page script.

DESCRIPTION: This presentation emphasizes that high risk pregnancies can often be identified after the first antenatal visit. A management plan including assessment of fetal growth, assessment of fetal health, serial laboratory evaluation of the patient, appropriate consultation, appropriate timing of delivery, methods of delivery and appropriate location of delivery is presented. Each of these treatment parameters is described in depth.

3) TITLE: Detection of Fetal Distress in Labor

AUTHOR/DEVELOPER: Department of Postgraduate Medicine and Health Professions Education, University of Michigan (1974)

AVAILABLE FROM: University of Michigan
Ann Arbor, Michigan

CONTENTS: Fifty-five, 35mm slides, Audio Cassette, Forty-five minutes, eight page script.

DESCRIPTION: The major goal of this presentation is to demonstrate how modern techniques for clinical, electronic and chemical monitoring the labor process can reduce intrapartum fetal deaths as well as the number of infants with low apgar scores. This presentation emphasizes monitoring processes appropriate to each stage of labor and the abnormalities which may occur at each stage and under different anesthesia conditions.

4) TITLE: Endometriosis and Adenomyosis

AUTHOR/DEVELOPER: University Extension, the University of Wisconsin and the Department of Obstetrics and Gynecology (1975)

AVAILABLE FROM: University of Wisconsin
Center for Health Sciences
Madison, Wisconsin

CONTENTS: Eighty-three, 35mm color slides, Audio Cassettes, Twenty-two and one/half minutes, seven page script.

DESCRIPTION: This unit describes and defines the major characteristics of these disease conditions and notes that both are on the rise. The primary diagnostic indications are also shown in several patient case examples. The presentation also explains the relationship between hormonal production and the disease and draws upon current research to describe the treatment indicated. Additional references for further reading are provided.

5) TITLE: Perinatal Assessment of Maturation

AUTHOR/DEVELOPER: The Audiovisual Committee of the Association of Medical School Pediatric Department Chairmen (1972)

AVAILABLE FROM: National Medical Audiovisual Center
General Services Administration
Washington, D. C.

CONTENTS: One hundred seventeen, 35mm color slides, Audio Cassette, twenty minutes, twenty-six page script.

DESCRIPTION: Three infant cases, each full-term, but each of significantly different maturation and developmental stages are presented and used to describe the importance of maturation to the newborn. This unit presents the major criteria for determining gestational age and methods to be used in the newborn exam.

D. AUDIO CASSETTES WITH SLIDES, OBJECTIVES, WORKBOOKS AND POST-TEST WITH ANSWER KEY

1) TITLE: The Menstrual History

AUTHOR/DEVELOPER: California District of the Steering Committee for Cooperative Teaching; Association of Professors of Gynecology and Obstetrics (1974)

AVAILABLE FROM: California District of the Steering Committee for Cooperative Teaching; Association of Professors of Gynecology and Obstetrics

CONTENTS: Thirty, 35mm color slides, Audio Cassette, Twenty minutes, four page script, post-test and answer key.

DESCRIPTION: This presentation is keyed around eight questions considered basic to any satisfactory medical history. The questions include; age of menarche, menstrual interval, duration of menstrual flow, amount of menstrual flow, date of last normal period, premenstrual symptoms, dysmenorrhea and age of menopause.

2) TITLE: The Gynecological Examination

AUTHOR/DEVELOPER: Edward H. Bishop, M. D. (1973)

AVAILABLE FROM: University of North Carolina
School of Medicine

CONTENTS: Forty-one, 35mm color slides, Audio Cassette, Thirty minutes, Twenty page script, practice exercises, post-test and answer key.

DESCRIPTION: This unit provides an in-depth presentation of the basic components of the Gynecological exam including female genitalia and anatomy, procedures, equipment and interview approach. A six step complete gynecological exam including history, preparation of the patient, preparation for the patient, general physical exam, pelvic examination and summary are presented.

3) TITLE: Puerperium Evaluation

AUTHOR/DEVELOPER: Morgenstern, L., Christian, C. D., Carpenter, C., Harrison, W. T., and Helen A. Toews (1974)

AVAILABLE FROM: Medical Audiovisual Services
Arizona Medical Center
Tucson, Arizona

CONTENTS: Thirty-six, 35mm color slides, Audio Cassette, Thirty minutes, nine page script, post-test and answer key.

DESCRIPTION: The postpartum or puerperium evaluation as a normal part of past delivery follow-up is presented in this unit. The primary areas for discussion and examination are presented and emphasis is placed on sensitivity to emotional concerns of the patient. The major physical examination emphasis areas are also presented.

4) TITLE: Spontaneous Abortion

AUTHOR/DEVELOPER: MacLuchian, T. B., Livingston, R. A., and George J. Furman (1973)

AVAILABLE FROM: The Steering Committee for Cooperative Teaching Association of Professors of Gynecology and Obstetrics

CONTENTS: Twenty-six, 35mm color slides, Audio Cassette, Fifteen minutes, nine page script, post-test and answer key.

DESCRIPTION: The presentation includes information on the types of spontaneous abortion and the diagnosis of each based on sets of signs and symptons. In addition, management procedures for each are noted in depth.

5) TITLE: Prenatal Care

AUTHOR/DEVELOPER: Edward H. Bishop, M. D. (1973)

AVAILABLE FROM: University of North Carolina School of Medicine

CONTENTS: Thirty-four, 35mm color slides, Audio Cassette, Twenty minutes, Twenty-two page script, practice exercises, post-test and answer key.

DESCRIPTION: This unit provides an in-depth examination of the essential elements of prenatal care. Beginning with the diagnosis of pregnancy, the unit describes the principles of immunologic testing, the obstetrical history, pelvic measurement, laboratory examination, the hygiene of pregnancy as well as the dietary implication of pregnancy. Student practice exercises are also provided.

6) TITLE: Early Diagnosis of Pregnancy

AUTHOR/DEVELOPER: Caparo, V. J., M. D., Holzman, C. B., McGruder, C. E., Smith, Dennis H., Stickley, W., Wentz, B., Wolfe, W. M., and Bruce A. Work, Jr. (1974)

AVAILABLE FROM: Steering Committee for Cooperative Teaching Association of Professors of Gynecology and Obstetrics

CONTENTS: Thirty-eight, 35mm color slides, Audio Cassette, Thirty minutes, Ten page script, post-test with answer key.

DESCRIPTION: The unit focuses on the medical history as a resource in the importance of early diagnosis of pregnancy. It also emphasizes diagnostic data derived from the physical exam of breasts, vagina, cervix and fundus which may assist the physician in diagnosis. Also included is a discussion of the laboratory tests important to diagnosis of pregnancy.

7) TITLE: Identification of High Risk Pregnancy

AUTHOR/DEVELOPER: C. Weir Horswill, M. D.

AVAILABLE FROM: Department of Gynecology and Obstetrics
University of Wisconsin
Madison, Wisconsin

CONTENTS: Forty-eight, 35mm color slides, Audio Cassette, Thirty minutes, Eight page script, post-test and answer key.

DESCRIPTION: The unit emphasizes the preventive aspects of medical practice as they relate to obstetrics and gynecology. A careful medical history is presented as a major vehicle for early identification of risk factors coupled with appropriate initial physical exam and laboratory tests. Risk factors which should be considered during each portion of the examination are discussed.

8) TITLE: The Gynecological History

AUTHOR/DEVELOPER: Marvin C. Rulin, M. D.

AVAILABLE FROM: Steering Committee for Cooperative Teaching Association of Professors of Gynecology and Obstetrics

CONTENTS: Sixty, 35mm color slides, Audio Cassette, Forty-five minutes, Eighteen page script, post-test and answer key.

DESCRIPTION: This unit describes the rational for and basic content of each of the eight categories of the complete gynecologic history. Included are pelvic pain, bleeding, discharge, pelvic relaxation, menstrual history, obstetrical history, contraceptive history and sexual history.

9) TITLE: Vulvovaginitis: Diagnosis and Treatment

AUTHOR/DEVELOPER: Scott, J. C., M. D., Johnson, R. P., and F. Garvecki (1974)

AVAILABLE FROM: University of Nebraska Medical Center Omaha, Nebraska

CONTENTS: Thirty-two, 35mm color slides, Audio Cassette, Twenty-six minutes, Five page script, post-test and answer key.

DESCRIPTION: This presentation includes a description of the signs and symptoms of acute vulvovaginitis and the five primary causes. The diagnostic and treatment procedures involved with the disease are also discussed in detail.

10) TITLE: Ectopic Pregnancy

AUTHOR/DEVELOPER: Steering Committee for Cooperative Teaching Association of Professors of Gynecology and Obstetrics

AVAILABLE FROM: Steering Committee for Cooperative Teaching Association of Professors of Gynecology and Obstetrics

CONTENTS: Eighteen, 35mm color slides, Audio Cassette, Thirty minutes, eight page script, post-test and answer key.

DESCRIPTION: In this unit the primary sites of ectopic pregnancy are discussed as well as the major

presenting symptoms. The typical findings on physical examination are also presented and it is emphasized that laboratory tests are often of little help in diagnosing an ectopic pregnancy. Emphasis is also placed on the importance of stabilization of the patient physiologically.

11) TITLE: The Obstetrical History

AUTHOR/DEVELOPER: Hanson, F. M. D., Bragonier, R., Barraga, Carol, M. D., and T. Lebherz (1974)

AVAILABLE FROM: Steering Committee for Cooperative Teaching Association of Professors of Gynecology and Obstetrics

CONTENTS: Thirty-eight, 35mm color slides, Audio Cassette, Thirty minutes, Eight page script, post-test and answer key.

DESCRIPTION: The primary objective of this unit is to teach the student how to complete an obstetrical history and to identify normal and abnormal findings obtained from the history. Particular emphasis is placed on findings as they relate to teratogenic risk, bleeding, gravidity, discharge, medications, genetic problems and other signs that may affect the course of pregnancy.

E. VIDEO CASSETTES

1) TITLE: Postpartum Hemorrhage

AUTHOR/DEVELOPER: The American College of Obstetricians and Gynecologists and the American Medical Association (1974)

AVAILABLE FROM: Ortho Pharmaceutical Corp.
Raritan, New Jersey 08869

CONTENTS: Cartridge video tape, color Twenty-three minutes

DESCRIPTION: The parameters of normal bleeding during delivery and the major causes of postpartum hemorrhage are described in this video tape. Emphasis is placed upon patient reassessment during delivery and the important procedures indicated for dealing with postpartum hemorrhage.

2) TITLE: Fetal-Maternal Incompatability

AUTHOR/DEVELOPER: Sandoz Pharmaceutical Company

AVAILABLE FROM: Sandoz Pharmaceutical Company
East Hanover, New Jersey 07936

CONTENTS: Cartridge Videotape, Color, Thirty-two minutes

DESCRIPTION: This unit presents a discussion of the possible chances of a child being born with RH negative blood. A description of potential explanations for this factor and the procedures for altering blood type are presented.

3) TITLE: The Impotent Husband

AUTHOR/DEVELOPER: University of Pennsylvania Medical School (1972)

AVAILABLE FROM: Ortho Pharmaceutical Corporation
Raritan, New Jersey

CONTENTS: Cartridge Videotape, Color, Thirty-five minutes

DESCRIPTION: Impotence is presented as a problem common to the middle aged male. In this tape a joint counseling approach is used to model how the physician might help the couple discuss their problems. Replays of significant points are used to emphasize counseling skills.

4) TITLE: The Frigid Wife

AUTHOR/DEVELOPER: University of Pennsylvania Medical School (1972)

AVAILABLE FROM: Ortho Pharmaceutical Corporation
Raritan, New Jersey

CONTENTS: Videotape Cartridge, Color, Thirty-five minutes

DESCRIPTION: A three phase counseling model is presented in this tape centering around frigidity as a presenting problem. Phase one involves the development of rapport through compassionate concern and active listening skills. Phase two involves the patient appraisal and employs examination of non-verbal cues, patient interraction and patient coping patterns. Phase three involves

therapeutic responses, patient education to build self-esteem, tension replacement and finally, motivation for change.

5) TITLE: Development of the Female Reproductive System

AUTHOR/DEVELOPER: Department of Obstetrics, Gynecology and Reproductive Biology, Michigan State University (1972) East Lansing, Michigan

AVAILABLE FROM: Department of Obstetrics, Gynecology and Reproductive Biology (1972)
Michigan State University
East Lansing, Michigan

CONTENTS: Two Videotape Cartridges, Color, Thirty minutes each.

DESCRIPTION: This four part, two tape series traces the developmental stages of the female reproductive system in the pre-fetal and fetal state. Beginning with the migration of primordial sex cells into the genital ridge and differentiation of the genital ridge into the ovary of the fetus the developmental process moves toward form changes and descent of the ovaries and concludes with development of the uterine tubes, uterus and vagina.

6) TITLE: Pelvic Examination

WORKBOOK, AUTHOR/DEVELOPER(S): Hunter, C. A., and A. deLeon, (1974)

WORKBOOK, AVAILABLE FROM: Authors, Indiana University Medical Center

FILMS DEVELOPED BY: Indiana University Medical Center (1974)

FILM AVAILABLE FROM: Indiana University Medical Center

CONTENTS: Videotape Cartridge, Color, Fifteen minutes, Script, Post-test and answer key.

DESCRIPTION: The primary purposes of this tape are to teach students to describe the pelvic examination including visual observation of genetation including during rest and bearing down. In addition, instrumented observation of the vagina and cervix is shown as is the pap smear

technique. Bimanual examination of the cervix, uterus, adnexa and rectum is also shown.

7) TITLE: Normal Labor

WORKBOOK AUTHOR/DEVELOPER(S): Hunter, C. A., Wilds, P. L. and W. Johnson, (1974)

AVAILABLE FROM: Authors, Indiana University Medical Center

FILM DEVELOPED BY: Indiana University Medical Center

FILM AVAILABLE FROM: Indiana University Medical Center

CONTENTS: Videotape Cartridge, Color, Twenty minutes, Workbook, Post-test and answer key.

DESCRIPTION: This videotape emphasizes the identification of characteristics of normal uterine contractile patterns for the six phases or times of pregnancy. In addition, the fundamental forces of labor are presented.

8) TITLE: Prolongation of Labor Due to Uterine Dysfunction

WORKBOOK AUTHOR/DEVELOPER(S): Hunter, C. A., Johnson, W. L. and P. L. Wilds,(1973)

WORKBOOK AVAILABLE FROM: Authors, Indiana University Medical Center

FILM DEVELOPED BY: Indiana University Medical Center

FILM AVAILABLE FROM: Indiana University Medical Center

CONTENTS: Videotape Cartridge, Color, Fifteen Minutes, Workbook, Post-test and answer key.

DESCRIPTION: This unit emphasizes the diagnosis of prolonged labor as a result of the plateauing of labor in this first stage or lack of progress in the two phases of the second stage. Identification of the causes of abnormal labor and its treatment are also presented.

9) TITLE: Normal Delivery

WORKBOOK AUTHOR/DEVELOPER(S): Hunter, C. A. and J. D. Lewis (1973)

WORKBOOK AVAILABLE FROM: Authors, Indiana University Medical Center

FILM DEVELOPED BY: Indiana University Medical Center

FILM AVAILABLE FROM: Indiana University Medical Center

CONTENTS: Video Cartridge, Color, Fifteen minutes, Workbook, Post-test and answer key.

DESCRIPTION: The material emphasizes the management of the normal, spontaneous vaginal delivery process. Included are discussions of correct patient positioning for delivery, cleansing procedures, the rational for episiotomy, the mechanism of the delivery of the fetal head and episiotomy repair.

10) TITLE: Clinical Pelvimetry

WORKBOOK AUTHOR/DEVELOPER: Hunter, C. A., Smith, B., and Bernard Leduc.

WORKBOOK AVAILABLE FROM: Authors

FILM DEVELOPED BY: Ortho Pharmaceutical Company

FILM AVAILABLE FROM: Ortho Pharmaceutical Company
Raritan, New Jersey 08869

CONTENTS: Videotape Cartridge, Color, Twenty minutes, Workbook, Post-test and answer key.

DESCRIPTION: This unit presents a description of the morphology and planes of the female pelvis. It is intended to teach the viewer how to perform clinical pelvinmetry including identification of the sub-pelvic arch, measurement of the outlet plane, assessment of the mid-pelvis and measurement of the diagonal conjigate. Finally, the viewer will be able to determine if the boney pelvis is of adequate size and shape to allow passage of a normal size fetus.

11) TITLE: Pre-Eclampsia/Eclampsia

WORKBOOK AUTHOR/DEVELOPER: John V. Kelly, M. D.

WORKBOOK AVAILABLE FROM: Author

FILM DEVELOPED BY: American Association of Obstetricians and Gynecologists and the American Medical Association

FILM AVAILABLE FROM: Ortho Pharmaceutical Company
Raritan, New Jersey 08869

CONTENTS: Videotape, Cartridge, Color, Thirty minute, Workbook, Post-test and answer key.

DESCRIPTION: The unit presents the four primary objectives in management of the pre-eclamptic patient and the early as well as long term post partum complications for severe pre-eclamptic or eclamptic patients. The management of convulsing and hypertensive patients is also presented including potential side effects of drug therapy. The short comings of various anesthesia types are also discussed.

F. PRINT MATERIALS

1) TITLE: The Menopause

AUTHOR: W. E. Easterling, M. D. (1973)

AVAILABLE FROM: Author

CONTENTS: Twelve page printed workbook, practice cyles, post-test and answer key.

DESCRIPTION: This unit presents a description of the known and suspected effects of estrogen deficiency in the pre-menopausal and menopausal woman. The steps in appropriate diagnosis of the menopause and the proper use and contraindications to the use of estrogen in menopausal patients are also presented.

2) TITLE: Drugs Used in Menopause

AUTHOR: Tai-Chan Ping, N. D. (1973)

AVAILABLE FROM: Author

CONTENTS: Twenty-one page printed workbook, post-test and answer key.

DESCRIPTION: The climacteric, menopause and post-menopause periods of female reproduction are presented

in this unit. In addition, the two conspicuous and characteristic changes in blood level and levels of the four basic hormones present in climacteric and post-menopause women are also discussed. The characteristics of oral estrogen preparations are also presented as is the role and function of the endocrine system.

3) TITLE: Introduction to the Pharmacology of Estrogen

AUTHOR: J. L. Gueriguian, M. D. (1973)

AVAILABLE FROM: Author

CONTENTS: Twelve page printed workbook, post-test and answer key.

DESCRIPTION: The unit presents a description of natural estrogen, steroidal synthetic estrogen and non-steroidal synthetic estrogen and the general principles of relative potency determination of estrogen. Relative degrees of liver inactivation of estroidiol and enthinul estradiol are examined and the major routes of excretion for administered estrogen are presented. The side effects and contraindications for estrogen use are also included.

4) TITLE: Background of Normal Labor

AUTHOR: Charles H. Hendricks, M. D., (1972)

AVAILABLE FROM: Author

CONTENTS: Seventeen page print workbook, post-test and answer key.

DESCRIPTION: The major physiologic and anatomic changes preceding labor are presented in this unit. Fetal presentation, position and station and status of the cervix in normal labor are also described. "Labor readiness" is defined and described in detail.

5) TITLE: Fetal Growth and Development

AUTHOR: Martin, Chester B. and Laura R. Bowen (1970)

AVAILABLE FROM: Department of Obstetrics and Gynecology
University of Southern California

CONTENTS: Fifty-six frame printed linear instructional programs.

DESCRIPTION: This program emphasizes the correlation of embryonic/fetal life events with the appropriate stages of gestation. The mechanisms and sites of transfer for important metaboletes between mother and fetus are presented. The important ways in which functioning fetal organ systems differ from adult systems are discussed.

6) TITLE: Diagnostic Dilemma, Pre-Eclampsia/Eclampsia

NOTE: See Section E, Item 11

7) TITLE: Prolongation of Labor Due to Uterine Dysfunction

NOTE: See Section E, Item 8.

8) TITLE: The Female Pelvic Exam

NOTE: See Section E, Item 6.

9) TITLE: Normal Labor

NOTE: See Section E, Item 7.

10) TITLE: Normal Delivery

NOTE: See Section E, Item 9.

11) TITLE: Clinical Pelvimetry

NOTE: See Section E, Item 10

A P P E N D I X C

TYPICAL STUDENT CLERKSHIP SCHEDULE

GRAND RAPIDS OBSTETRICS & GYNECOLOGY CLERKSHIP

Spring Term - March 15, 1976 through April 23, 1976

WEEK	DATE/TIME	LOCATION	TOPIC	DATA BASE OBJECTIVES	INSTRUCTOR
WEEK I					Dr. Edward
Monday	3-15-76 8:00 AM	GRAMEC 1112	Orientation Pre-exam		Dr. VanderKolk Dr. Cooper
Tuesday	3-16-76 11:00 AM	Blodgett 350 Prof. Bldg.	Prolonger Labor, Fetal Monitoring, Fetal Distress	Unit III-D Unit III-D	Dr. Struyk
Wednesday	3-17-76	St. Mary's	All Day Conference	PLACENTA	Dr. Perrin
Thursday	3-18-76 11:30 AM	GRAMEC 1018	Pelvic Anatomy	Unit IV-III A-F Unit IV-H	Arthur Foley, MD MSU Anatomy Dept.
Friday	3-19-76 11:00 AM	Blodgett 350 Blodgett Prof. Bldg.	1st & 2nd Trimester Abnormalities, abortion Ectopic Fetal death in utero	Unit III, 1-2 Unit III, B, C	Dr. Daugherty
WEEK II					
Monday	3-22-76 11:30 AM	Butterworth Ob/Gyn Conf. Rm. 2nd Floor	III Trimester Abnormalities, Post Partum Hem., Abruptio Placenta & Placenta Previa	Unit III, D, F	Dr. Frost Dr. Miller
Tuesday	3-23-76 11:00 AM	Blodgett 350 Blodgett Prof. Bldg.	III Trimester Abnormalities, Prem. Rupt. Membrane, Dystosia, Breech	Unit III, 3, 4 Unit III, E, G, H	Dr. Oettinger
Wednesday	3-24-76 11:30 AM	Blodgett Ob/Gyn Conf. Rm.	III Trimester Abnormalities Toxemia	Unit III, 3 (g) Unit III, J	Dr. Romence Dr. Gunzenhauser
Thursday	3-25-76 11:30 AM	GRAMEC 1018	Medical Complications of Pregnancy: Heart Disease Anemia, Rubella	Unit III, 3 (I) Unit III L	Dr. Fahini
Friday	3-26-76 11:00 AM	Blodgett 350 Prof. Bldg.	Amniocentesis	Unit III, K	Dr. G. Anderson

A P P E N D I X D

CLERKSHIP AND MEME ASSESSMENT INSTRUMENT

OB/GYN CLERKSHIP ASSESSMENT

The following pages will require you to reflect briefly on your experiences of the past 6 weeks. While many aspects of the clerkship are stable and accepted, organization for the delivery of the clerkship is still undergoing change and development. It is clear that there are areas which could be improved or perhaps deleted. Similarly, there are many facets which should not be lost or notably changed. What happens in this process will partially be determined by your responses to this clerkship assessment. We sincerely appreciate your help, ideas, and feelings.

General Instructions:

1. Identify yourself in the spaces below by your clerkship community and CHM ID number. If you do not remember this number, contact Dr. Krupka's secretary (517-353-7140). No one else has the CHM ID key.

CHM ID# ___ ___ ___ ___ ___ Community _____

Student Assessment of Ob and Gyn Experiences

Consider each of the statements made about Ob and Gyn experiences in the Clerkship. Decide how accurate the statement is. Circle the number that corresponds to your decision. If your experience in the clerkship wasn't relevant for an item, leave the response space blank.

No (Never)	No, With Reservations (Infrequently)	Yes, With Reservations (Usually)	Yes (Always)
1	2	3	4

DURING THE OB EXPERIENCES:

1. I was allowed to follow patients in labor 1 2 3 4

   If your response to question 1 was generally positive, answer question #1a below.

   If your response to question 1 was generally negative, answer question #1b below.

   1a. Which of the following best describes generally why you were allowed to follow patients in labor?

   1. "Aggressiveness" on my part 1 2 3 4
   2. Cooperation and interest by attending 1 2 3 4
   3. Cooperation and interest by Nursing Staff 1 2 3 4
   4. Other _____

   _____

   1b. Which of the following best describes generally why you were not allowed to follow patients in labor?

   1. Lack of "aggressiveness" on my part 1 2 3 4
   2. Lack of cooperation and interest by attending 1 2 3 4
   3. Lack of cooperation and interest by Nursing Staff 1 2 3 4
   4. Lack of Physician/Resident time 1 2 3 4
   5. Other _____

   _____

2. My interactions with staff nurses and nursing supervisors were satisfactory 1 2 3 4

3. I became confident that I could provide prenatal care for patients without complications 1 2 3 4

4. I became confident that I could follow a patient without complications in labor, order analgesia, take charge of a normal spontaneous delivery and provide postpartum care 1 2 3 4

DURING THE GYN EXPERIENCES:

5. I was allowed to perform pelvic exams on patients pre-operatively 1 2 3 4

6. I was allowed to perform pelvic exams on patients under anesthesia 1 2 3 4

7. Patient cases were discussed with me by the Attending Physician 1 2 3 4

8. Patient cases were discussed with me by a Resident 1 2 3 4

No (Never) 1	No, With Reservations (Infrequently) 2	Yes, With Reservations (Usually) 3	Yes (Always) 4

If your responses to questions 5, 6, 7 and 8 were generally positive, answer question #8a below.

If your responses to questions 5, 6, 7 and 8 were generally negative, answer question #8b below.

8a. Which of the following best describes generally why you were allowed to accomplish the activities in question 5, 6, 7 and 8?

1. "Aggressiveness" on my part	1	2	3	4
2. Cooperation and interest by attending	1	2	3	4
3. Cooperation and interest by Nursing Staff	1	2	3	4
4. Other _____				
_____				

8b. Which of the following best describes generally why you were not allowed to accomplish the activities in question 5, 6, 7 and 8?

1. Lack of "aggressiveness" on my part	1	2	3	4
2. Lack of cooperation and interest by attending	1	2	3	4
3. Lack of cooperation and interest by Nursing Staff	1	2	3	4
4. Lack of Physician/Resident time	1	2	3	4
5. Other _____				
_____				

9. The pre-operative experience was a valuable learning experience	1	2	3	4
10. The operative experience was a valuable learning experience	1	2	3	4
11. The post-surgical care experience was a valuable learning experience	1	2	3	4

12. Regarding the clerkship emphasis on surgical technique there was:

- ☐ A. Too little emphasis
- ☐ B. Too much emphasis
- ☐ C. The right amount of emphasis

13. How many gynecologic patients did you average seeing per day?

- ☐ 1. 1 - 3
- ☐ 2. 4 - 6
- ☐ 3. 7 - 9
- ☐ 4. 10 or more

14. Approximately how many total operations did you observe?

- ☐ 1. 1 - 5
- ☐ 2. 6 - 10
- ☐ 3. 11 - 15
- ☐ 4. more than 15

15. How many work-ups did you complete?

- ☐ 1. 1 - 3
- ☐ 2. 4 - 6
- ☐ 3. 7 - 9
- ☐ 4. 10 or more

Use the space below to make additional comments regarding OB or GYN experiences: (Use back of page for additional comments)

Student Assessment of Ambulatory Experience

Consider each of the following statements about Ambulatory experiences in the clerkship. Decide how accurate the statement is. Circle the number that corresponds to your decision. If your experience in the clerkship wasn't relevant for an item, leave the response space blank for the item.

No	No, With Reservations	Yes, With Reservations	Yes
1	2	3	4

IN MY AMBULATORY EXPERIENCE:

16. I saw a wide variety of patients	1	2	3	4
17. I was given sufficient responsibility	1	2	3	4
18. There were people available to whom I could direct questions	1	2	3	4
19. I felt that there was enough teaching	1	2	3	4

Use the space below to make additional comments about the Ambulatory experiences: (Use back of page for additional comments)

Student Assessment of Focal Problems Sessions

Consider each of the following statements about the Clerkship Focal Problems Sessions. Decide how accurate the statement is. Circle the number that corresponds to your decision. If your experience in the clerkship wasn't relevant for an item, leave the response blank for the item.

No	No, With Reservations	Yes, With Reservations	Yes
1	2	3	4

IN THE 20 OR MORE FOCAL PROBLEMS SESSIONS:

20. Instructors were often late 1 2 3 4

21. Students were often late 1 2 3 4

22. The important, assigned objectives were adequately discussed 1 2 3 4

23. Presentations were clear 1 2 3 4

24. There were ample opportunities to ask questions 1 2 3 4

25. Estimate the frequency of the following types of instruction. (Mark each column once)

Lecture	Case Presentation (Live or Paper)	Seminar
☐ 0-5	☐ 0-5	☐ 0-5
☐ 6-10	☐ 6-10	☐ 6-10
☐ 11-15	☐ 11-15	☐ 11-15
☐ 16-20	☐ 16-20	☐ 16-20

Use the space below to make additional comments about the Focal Problems Sessions: (Use back of page for additional comments)

Student Assessment of Departmental Objectives and Data Base

Consider each of the following statements about the Departmental Objectives and Data Base used in the Clerkship. Decide how accurate the statement is. Circle the number that corresponds to your decision. If your experience in the clerkship wasn't relevant for an item, leave the response space blank.

No	No, With Reservations	Yes, With Reservations	Yes
1	2	3	4

26. The Departmental Objectives in the Clerkship were understandable 1 2 3 4

27. The Departmental Objectives in the Clerkship were reasonable for a six week period 1 2 3 4

28. It was easy to match the Departmental Data Base with the appropriate objectives 1 2 3 4

Use the space below to make additional comments about the Departmental Objectives and Data Base: (Use back of page for additional comments)

Student Assessment of Resident Rounds, Psychiatric Liaison, Radiology and Pathology Experiences

Consider each of the statements made about the four components listed across the page. Decide how accurate the statement is for each component. Circle the number that corresponds to your decision. If your experience in the component wasn't relevant for an item, leave the response space blank for the item.

No	No, With Reservations	Yes, With Reservations	Yes
1	2	3	4

		Resident Rounds	Psychiatric Liaison (Emotional Concomitants/ Sexuality)	Radiology	Pathology
DID THIS EXPERIENCE:					
30.	Occur during the clerkship at all	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
31.	Provide you with appropriate learning experiences	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
32.	Provide instruction of good quality	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
33.	Leave you feeling there should be:	☐A. More of them ☐B. Fewer of them ☐C. About the same number	☐A. More of them ☐B. Fewer of them ☐C. About the same number	☐A. More of them ☐B. Fewer of them ☐C. About the same number	☐A. More of them ☐B. Fewer of them ☐C. About the same number

Use the space below to make additional comments regarding Resident Rounds, Psychiatric Liaison, Radiology and the Pathology experience: (Use back of page for additional comments)

Student Assessment of the MEME in the OB/GYN Clerkship

Consider each of the statements made about the MEME in the OB/GYN Clerkship. Decide how accurate the statement is. Circle the number that corresponds to your decision.

No	No, With Reservations	Yes, With Reservations	Yes
1	2	3	4

1. I was aware that the MEME was available for this clerkship 1 2 3 4

No	No, With Reservations	Yes, With Reservations	Yes
1	2	3	4

3. The location of the MEME was convenient 1 2 3 4

3a. Where was it located? _____

_____

4. I used or reviewed most of the MEME media materials (slides/tapes, videotapes, tapes) 1 2 3 4

5. Excluding defects in equipment and materials, I found it easy to use the MEME equipment 1 2 3 4

6. Equipment in the MEME was often broken or not functioning correctly 1 2 3 4

7. Faculty with whom I had contact reacted negatively to the MEME 1 2 3 4

8. I had difficulty locating (finding) materials in the MEME 1 2 3 4

9. It would have been valuable to have my own copy of written content summaries (scripts) of MEME media materials (slides/tapes, videotapes, audio tapes) 1 2 3 4

10. Written descriptions of all media materials would make it much easier to "skim" and find the content material most useful to me 1 2 3 4

11. Having the MEME available to use was an important addition to the clerkship 1 2 3 4

12. I was able to study effectively at home 1 2 3 4

13. The MEME should be made available (assuming appropriate materials) for other clerkships 1 2 3 4

In this section, place a check by the answer which most closely represents your utilization of the MEME.

14. On the average, how many hours per week did you use the MEME?

- ☐ 1. 0-6 hours per week
- ☐ 2. 7-12 hours per week
- ☐ 3. 13-16 hours per week
- ☐ 4. more than 16 hours per week

15. On the average, how many hours per week did you use your carrel on campus?

- ☐ 1. 0-6 hours per week
- ☐ 2. 7-12 hours per week
- ☐ 3. 13-16 hours per week
- ☐ 4. more than 16 hours per week

16. The average length of time that I used the MEME at any one time was:

- ☐ 1. 30 minutes or less
- ☐ 2. from 31 minutes to one hour
- ☐ 3. from 61 minutes to 1½ hours
- ☐ 4. longer than 1½ hours

17. Generally, I used the MEME most often between the hours of

- ☐ 1. Midnight - 7:00 a.m.
- ☐ 2. 7:00 a.m. - 5:00 p.m.
- ☐ 3. 5:00 p.m. - Midnight

18. My primary use of the MEME materials was (check more than 1 answer, if appropriate)

- ☐ 1. learning basic clerkship content
- ☐ 2. review for upcoming patient contact
- ☐ 3. reviewing questions or problems which arose from patient contact

In this section, describe your preference for the type of learning materials available to you in the clerkship and relate this to your opinion of the general quality of these materials and your use of the materials. Circle the number in each column that represents your opinion. If you did not utilize one of the items, leave the quality column blank, but complete the preference column blank.

Preference for Media Type			
Strongly Dislike	Mildly Dislike	Mildly Like	Like Very Much
1	2	3	4

General Quality of Existing Materials			
Poor	Less Than Adequate	Adequate	High
1	2	3	4

	Preference	Quality
19. Pamphlets (Print)	1 2 3 4	1 2 3 4
20. Objectives and Data Base (Print)	1 2 3 4	1 2 3 4
21. Audio Cassettes	1 2 3 4	1 2 3 4
22. Audio Cassettes and Slides	1 2 3 4	1 2 3 4
23. Videocassettes	1 2 3 4	1 2 3 4
24. Textbooks	1 2 3 4	1 2 3 4
25. Workbooks, Programmed Materials	1 2 3 4	1 2 3 4

Use the space below to make additional comments on the materials listed above: (Use back of page for additional comments)

In this section, describe the extent to which you used the materials and whether or not they were of value. Circle the number which represents your use and place a check in the second column only if the material was of value. Note that a "0" denotes that the item was not available, missing or lost.

Use of Materials					Was the Material of Value
Not Available	Did Not Use	Skimmed Briefly	Reviewed For Main Ideas	In Depth Use	
0	1	2	3	4	☑ Yes

	Use	Value
A. PAMPHLETS		
1. Outline for Pelvic Exam	0 1 2 3 4	☐
2. Postpartum Hemorrhage	0 1 2 3 4	☐
3. Pre-Eclampsia/Eclampsia	0 1 2 3 4	☐
4. How to Organize a Basic Study of the Infertile Couple	0 1 2 3 4	☐
5. Reproductive Endocrinology Book (Wyeth)	0 1 2 3 4	☐
6. Fetal Growth and Development (Martin)	0 1 2 3 4	☐
7. Contraceptive Technology 1976-77	0 1 2 3 4	☐
8. Objectives and Data Base	0 1 2 3 4	☐
B. AUDIO CASSETTES		
1. Postpartum Hemorrhage with Gina Lollipop	0 1 2 3 4	☐
2. Ante-Natal Care with Agent 38-24-34	0 1 2 3 4	☐
3. Difficult Labor with Mrs. Jen C. Bounce	0 1 2 3 4	☐
C. AUDIO CASSETTES WITH SLIDES		
1. Identification and Evaluation of the High Risk OB Patient	0 1 2 3 4	☐
2. Ante-Natal Management of High Risk in OB Patients	0 1 2 3 4	☐
3. Detection of Fetal Distress in Labor	0 1 2 3 4	☐
4. Endometriosis and Adenomyosis	0 1 2 3 4	☐
5. Perinatal Assessment of Maturation	0 1 2 3 4	☐

	Use	Value
D. AUDIO CASSETTES WITH SLIDES, OBJECTIVES, WORKBOOKS AND POST-TEST WITH ANSWER KEY		
1. The Menstrual History	0 1 2 3 4	☐
2. The Gynecological Examination	0 1 2 3 4	☐
3. Puerperium Evaluation	0 1 2 3 4	☐
4. Spontaneous Abortion	0 1 2 3 4	☐
5. Prenatal Care	0 1 2 3 4	☐
6. Early Diagnosis of Pregnancy	0 1 2 3 4	☐
7. Identification of the High Risk Pregnancy	0 1 2 3 4	☐
8. Gynecological History	0 1 2 3 4	☐
9. Vulvovaginitis	0 1 2 3 4	☐
10. Ectopic Pregnancy	0 1 2 3 4	☐
11. The Obstetrical History	0 1 2 3 4	☐
E. VIDEO CASSETTES (T.V. TAPES)		
1. Postpartum Hemorrhage	0 1 2 3 4	☐
2. Fetal-Maternal Incompatibility	0 1 2 3 4	☐
3. The Impotent Husband	0 1 2 3 4	☐
4. The Frigid Wife	0 1 2 3 4	☐
5. Development of the Female Reproductive System		
A. The Migration of the Primordial Sex Cells Into the Genital Ridge	0 1 2 3 4	☐
B. Differentiation of the Genital Ridge into the Ovary of the Full Term Fetus	0 1 2 3 4	☐
C. Form Changes and Descent of the Ovaries	0 1 2 3 4	☐
D. Development of the Uterine Tubes, Uterus and Vagina	0 1 2 3 4	☐
6. Pelvic Examination	0 1 2 3 4	☐
7. Normal Labor	0 1 2 3 4	☐
8. Prolongation of Labor	0 1 2 3 4	☐
9. Normal Delivery	0 1 2 3 4	☐
10. Clinical Pelvimetry	0 1 2 3 4	☐
11. Pre-Eclampsia/Eclampsia	0 1 2 3 4	☐

	Use	Value
OTHER		
F. PRINT MATERIALS (OBJECTIVES, WORKBOOK, POST-TEST AND ANSWER KEY)		
1. The Menopause	0 1 2 3 4	☐
2. Drugs Used in Menopause	0 1 2 3 4	☐
3. Introduction to the Pharmacology of Estrogen	0 1 2 3 4	☐
4. Background of Normal Labor	0 1 2 3 4	☐
5. Diagnostic Dilemma, Pre-Eclampsia and Eclampsia	0 1 2 3 4	☐
6. Prolongation of Labor due to Uterine Dysfunction	0 1 2 3 4	☐
7. Female Pelvic Examination	0 1 2 3 4	☐
8. Normal Labor	0 1 2 3 4	☐
9. Normal Delivery	0 1 2 3 4	☐
10. Clinical Pelvimetry	0 1 2 3 4	☐

A P P E N D I X E

USE OF MEME MEDIA MATERIALS BY TITLE

USE AND VALUE OF MEDIA MATERIALS BY TYPE AND TITLE

	USE OF MATERIAL								WAS THE MATERIAL OF VALUE		
				% by CATEGORY							
A. PAMPHLETS	N	MEAN	S.D.	0	1	2	3	4	N	%Yes	%No
1. Outline for Pelvic Exam	60	1.90	1.19	8	40	15	27	10	33	79	21
2. Postpartum Hemorrhage	61	2.11	1.36	12	30	16	21	21	37	89	11
3. Pre-Eclampsia/Eclampsia	60	2.10	1.43	17	20	15	25	23	40	90	10
4. How to Organize a Basic Study of the Infertile Couple	60	1.88	1.19	12	33	19	23	8	34	82	18
5. Reproductive Endocrinology Book (Wyeth)	61	2.10	1.39	11	33	13	20	23	35	80	20
6. Fetal Growth and Development (Martin)	58	1.64	1.25	17	41	10	23	9	24	71	29
7. Contraceptive Technology 1976-77	59	1.88	1.40	19	30	12	22	17	31	77	23
8. Objectives and Data Base	60	3.25	.86	0	7	7	42	44	56	80	20

2.12

	N	MEAN	S.D.	0	1	2	3	4	N	%Yes	%No
B. AUDIO CASSETTES											
1. Postpartum Hemorrhage with Gina Lollipop	57	1.74	1.23	5	61	2	18	14	20	60	40
2. Anti-Natal Care with Agent 38-24-34	58	1.45	1.10	12	60	4	19	5	17	59	41
3. Difficult Labor with Mrs. Jen C. Bounce	58	1.53	1.13	9	62	5	15	9	18	56	44
		1.57									
C. AUDIO CASSETTES WITH SLIDES											
1. Identification and Evaluation of the High Risk OB Patient	59	2.10	1.32	8	37	9	27	19	32	88	12
2. Ante-Natal Management of High Risk in OB Patients	56	1.96	1.29	9	41	11	23	16	28	82	18
3. Detection of Fetal Distress in Labor	57	1.88	1.42	14	42	7	16	21	25	88	12
4. Endometriosis and Adenomyosis	57	1.47	1.27	19	49	9	11	12	18	89	11
5. Perinatal Assessment of Maturation	55	1.47	1.23	15	58	5	9	13	16	88	12
		1.78									

D. AUDIO CASSETTES WITH SLIDES, OBJECTIVES, WORKBOOKS AND POST-TEST WITH ANSWER KEY

	N	MEAN	S.D.	0	1	2	3	4	N	%Yes	%No
1. The Menstrual History.	56	1.89	1.23	7	43	20	14	16	29	79	21
2. The Gynecological Examination	57	1.93	1.25	7	42	19	14	18	30	73	27
3. Puerperium Evaluation	57	1.81	1.20	7	49	12	20	12	25	72	28
4. Spontaneous Abortion	57	2.00	1.39	9	44	11	12	24	27	74	26
5. Prenatal Care	57	1.67	1.26	12	51	7	18	12	22	86	14
6. Early Diagnosis of Pregnancy	57	1.84	1.13	5	49	9	30	7	27	67	33
7. Identification of the High Risk Pregnancy	60	2.25	1.31	7	32	15	23	23	38	81	18
8. Gynecological History	59	1.83	1.22	7	49	12	19	13	28	79	21
9. Vulvovaginitis	60	2.08	1.37	7	45	5	20	23	30	73	27
10. Ectopic Pregnancy	60	2.15	1.34	8	37	7	28	20	33	78	22
11. The Obstetrical History	60	1.90	1.24	6	47	12	20	15	28	79	21

1.94

E. VIDEO CASSETTES (T.V. TAPES)	N	MEAN	S.D.	0	1	2	3	4	N	%Yes	%No
1. Postpartum Hemorrhage	59	2.47	1.61	5	34	7	17	37	36	89	11
2. Fetal-Maternal Incompatibility	59	2.14	1.47	10	41	3	17	29	29	83	17
3. The Impotent Husband	56	1.73	1.21	7	55	7	18	13	22	63	37
4. The Frigid Wife	56	1.71	1.16	7	54	9	21	9	23	65	35
5. Development of the Female Reproductive System											
A. The Migration of the Primordial Sex Cells Into the Genital Ridge	59	1.78	1.33	10	51	8	12	19	23	52	48
B. Differentiation of the Gental Ridge into the Ovary of the Full Term Fetus	60	1.65	1.27	10	57	8	8	17	21	57	43
C. Form Changes and Descent of the Ovaries	59	1.56	1.21	10	59	8	9	14	19	53	47
D. Development of the Uterine Tubes, Uterus and Vagina	57	1.51	1.81	11	61	7	9	12	17	59	41
6. Pelvic Examination	58	2.17	1.43	9	40	5	19	27	31	84	16
7. Normal Labor	59	2.59	1.38	5	29	5	24	37	39	87	13

	N	MEAN	S.D.	0	1	2	3	4	N	%Yes	%No
8. Prolongation of Labor	58	2.10	1.45	9	43	7	12	29	29	86	14
9. Normal Delivery	60	2.60	1.37	5	28	5	25	37	40	83	17
10. Clinical Pelvimetry	60	2.30	1.41	6	37	7	20	30	34	74	26
11. Pre-Eclampsia/Eclampsia	60	2.47	1.49	8	32	5	15	40	35	97	3
F. PRINT MATERIALS (OBJECTIVES, WORKBOOK, POST-TEST AND ANSWER KEY)		2.62									
1. The Menopause	60	1.68	1.26	13	49	5	23	10	23	70	30
2. Drugs Used in Menopause	58	1.50	1.20	16	53	5	17	9	18	67	33
3. Introduction to the Pharmacology of Estrogen	58	1.41	1.21	19	53	3	16	9	17	71	29
4. Background of Normal Lable	58	1.60	1.27	14	54	3	17	12	19	74	26
5. Diagnostic Dilemma, Pre-Eclampsia and Eclampsia	60	1.83	1.36	11	47	7	17	18	25	80	20
6. Prolongation of Labor Due to Uterine Dysfunction	58	1.81	1.38	12	50	3	17	18	22	83	17

	N	MEAN*	S.D.	0	1	2	3	4	N	%Yes	%No
7. Female Pelvic Examination	58	1.90	1.37	9	50	7	12	22	24	79	21
8. Normal Labor	58	1.95	1.37	9	48	3	19	21	25	84	16
9. Normal Delivery	58	1.90	1.35	9	50	3	19	19	24	83	17
10. Clinical Pelvimetry	58	1.66	1.22	12	50	9	19	10	22	73	27

1.72

*0 = Not Available
1 = Did Not Use
2 = Skimmed Briefly
3 = Reviewed for Main Ideas
4 = In Depth Use