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ABSTRACT

This report is one in a collection of summaries of instructional development efforts by faculty at Michigan State University (MSU) to improve undergraduate education. Most of these exploratory efforts are aimed at improving the conditions for learning in a specific course or subject matter area, and were conducted by individual faculty under the direct auspices and support of the MSU Educational Development Program (EDP). This report describes only those instructional development efforts that were in progress from July 1969 through June 1970. The first part of the document deals with the function, organization and operation of the Educational Development Program and the second discusses projects funded by EDP by subject matter area. The subject matter areas include anatomy, biochemistry, business, educational psychology, a training program for graduate teaching assistants, humanities, landscape architecture, microbiology, music, physical education, experimental psychology, social work, teacher education, and zoology. The final section discusses projects not funded by EDP but which affect educational development. (HS)

Educational Development at Michigan State University

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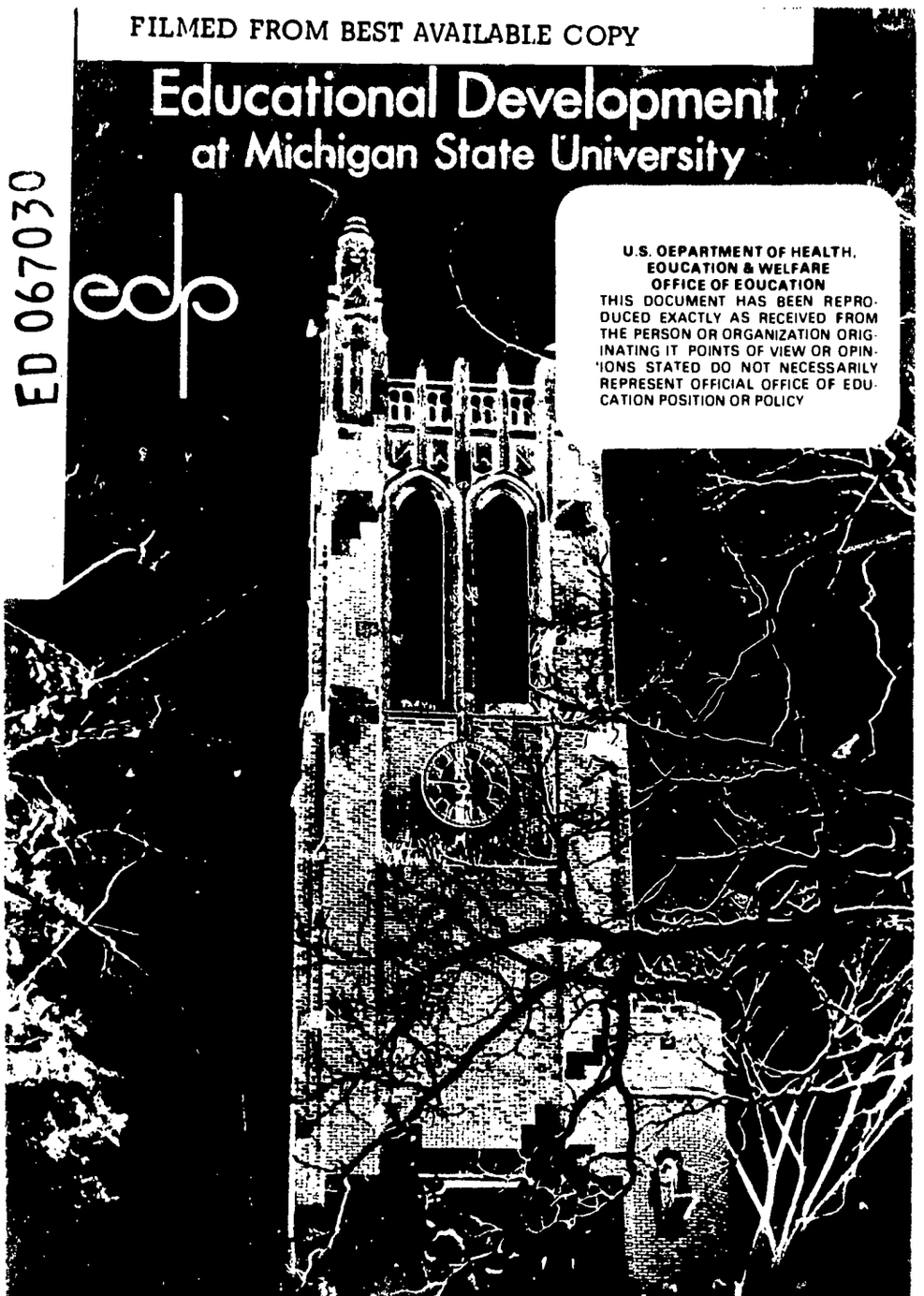
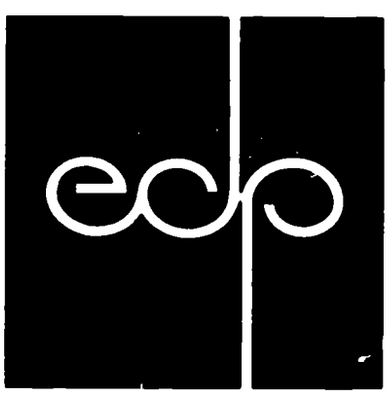


A compendium of reports describing educational developments in the disciplines and professional schools at Michigan State University.

Prepared and distributed by the Educational Development Program.

report no. 3 spring 1971



Educational Development at Michigan State University

No. 3
Spring 1971

Prepared and distributed by the Office of the Educational Development Program Michigan State University

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A GLOSSARY OF ACRONYMS

Some readers of this document may find it overloaded with acronyms, some of which are local MSU terms. To increase communicability, a glossary of some of these acronyms is included.

AVT - *Audio-Visual-Tutorial*

A teaching methodology in which audio visual media are used to present information to a single learner in a carrel. Rate of presentation is learner controlled.

CCTV - *Closed Circuit Television*

A television distribution system in which taped programs or programs originating "live" in a studio or classroom are simultaneously distributed to other classrooms via coaxial cables.

EDP - *Educational Development Program*

The agency at Michigan State University which functions as a catalytic agent in developing improved undergraduate educational opportunities.

EPC - *Educational Policies Committee*

A standing faculty committee of the University serving in an advisory capacity to the Provost and other agencies of the University.

ES - *Evaluation Services*

The agency at Michigan State University whose function is to coordinate, operate and consult on student, faculty and program evaluation.

GTA - *Graduate Teaching Assistant*

A graduate student who has instructional responsibility in a formally offered course at the University.

IDS - *Instructional Development Service*

The University agency responsible for providing supporting services to faculties and departments seeking to improve instruction.

IMC - *Instructional Media Center*

An arm of the Instructional Development Service, which provides media support, production, development and consultation services.

LS - *Learning Service*

An arm of the Instructional Development Service which provides consultation on design of instruction, objectives, and the evaluation of instructional systems.

SIRS - *Student Instructional Rating System*

A University-wide system for gathering, analyzing, and distributing data on student evaluation of faculty teaching.

SLATE - *Structured Learning and Teaching Environment*

A teaching methodology involving structured presentation of information to a single student, evocation of responses and provision of feedback. Information is self-paced, presented via multi-media in a carrel; responses are often made in a workbook.

VTR - *Video Tape Recorder*

A tape recorder, often intended to be "portable," capable of recording and playback of television video and audio.

FOREWORD

This report is a collection of summaries of instructional development efforts by faculty at Michigan State University (MSU) to improve undergraduate education. Most of these exploratory efforts are aimed at improving the conditions for learning in a specific course or subject matter area, and were conducted by individual faculty under the direct auspices and support of the MSU Educational Development Program (EDP). These EDP Projects are reported in Part II of this report, while The Function, Organization, and Operation of The Educational Development Program are described in Part I.

Another set of exploratory efforts were conducted by a variety of University agencies, again, to improve undergraduate education. These efforts cut across disciplines and affect undergraduate education University-wide. Although not directly supported by the Educational Development Program, these activities are of sufficient importance to warrant inclusion in this report of instructional development activities, and are described in Part III of this document.

The report style is intended to be as factual and objective as possible; to bring serious instructional problems out into the open and describe how MSU faculty and administration have attempted to solve them. This report will serve its purpose if it provides a source of useful information for college faculty and forms a basis for dialogue on improving undergraduate education.

This report describes only those instructional development efforts which were in progress from July, 1969, through June, 1970. Two previous reports summarized the developmental activities from 1964-1968 and 1968-1969. Comments and requests for copies of this or earlier reports are encouraged. Please write to.

Dr. Robert H. Davis, Assistant Provost
Director, Educational Development Program
428 Hannah Administration Building
Michigan State University
East Lansing, Michigan 48823

The reports in this document were written and compiled by Allan J. Abedor, Specialist in the Office of the Educational Development Program.

PART I

THE FUNCTION, ORGANIZATION, AND OPERATION OF THE

EDUCATIONAL DEVELOPMENT PROGPAM

THE FUNCTION, ORGANIZATION AND OPERATION OF THE EDUCATIONAL DEVELOPMENT PROGRAM

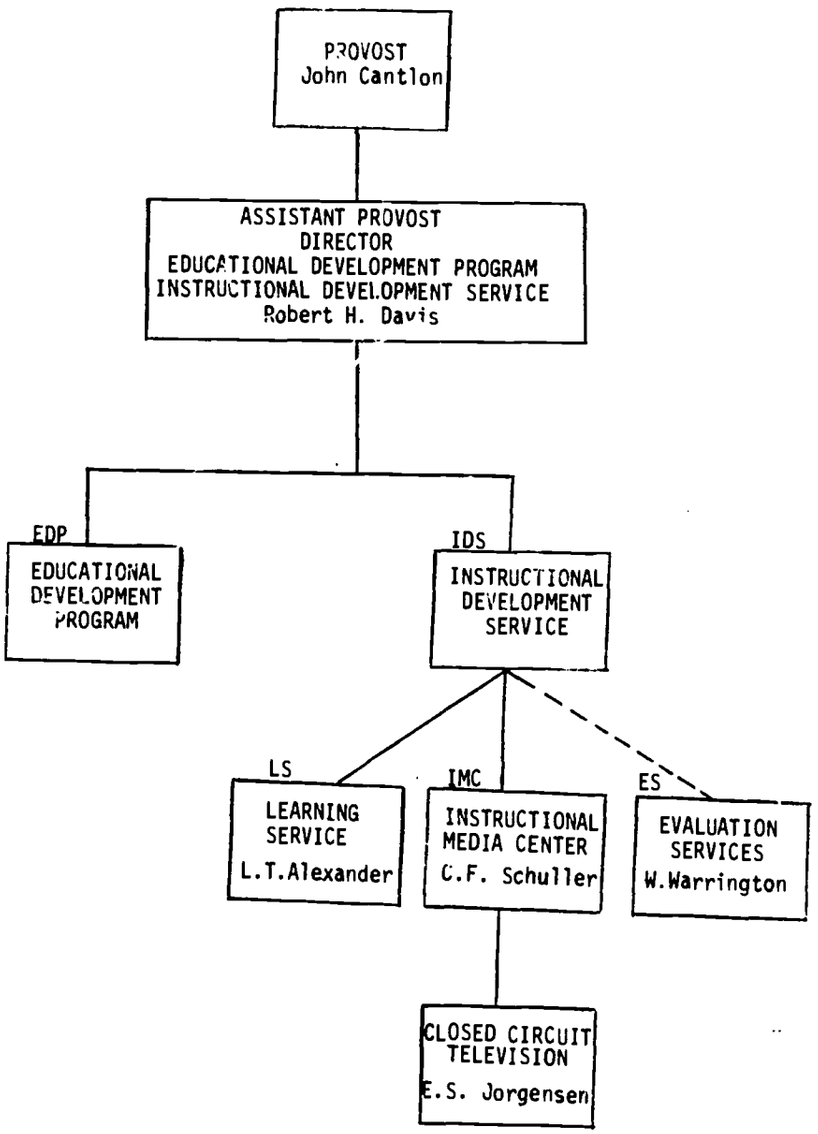
Function

The Educational Development Program is a division of the Provost's Office responsible for the improvement of educational opportunities provided MSU students. A succinct statement of program objectives is the following:

> The Educational Development Program is devoted to the development and implementation of educational principles and procedures at Michigan State University which preserve and improve undergraduate education in the face of increasing enrollments, limited financial resources, and an explosive increase in the amount and complexity of knowledge.
>
> The functions of EDP are:
>
> 1. To identify major problems in the areas of the curriculum, the learning-teaching process and the utilization of the faculty, financial and physical resources.
>
> 2. To stimulate and conduct research which will suggest solutions to identified problems.
>
> 3. To undertake projects and studies which give promise of improving both the quality and efficiency of the undergraduate program.
>
> 4. To support and provide service to groups interested in experimentation with new procedures and methods in learning and teaching.
>
> 5. To facilitate implementation of faculty and administration approved solutions to problems.
>
> 6. To identify and communicate progress in research, experimentation and implementation.

Organization

In order to conserve its modest resources for academic development projects, the EDP office does not duplicate any organization or capability already present in the University. Organizationally located within the Office of the Provost, EDP operates with a staff of a Director, a Specialist, and one secretary. Beyond this small core staff, EDP depends on three University agencies which are coordinated to provide necessary consultative and support services for the planning and implementation of faculty conducted projects: the Instructional Media Center, the Learning Service and Evaluation


PROVOST
John Cantlon
ASSISTANT PROVOST
DIRECTOR
EDUCATIONAL DEVELOPMENT PROGRAM
INSTRUCTIONAL DEVELOPMENT SERVICE
Robert H. Davis
EDP
EDUCATIONAL DEVELOPMENT PROGRAM
IDS
INSTRUCTIONAL DEVELOPMENT SERVICE
LS
LEARNING SERVICE
L.T.Alexander
IMC
INSTRUCTIONAL MEDIA CENTER
C.F. Schuller
ES
EVALUATION SERVICES
W.Warrington
CLOSED CIRCUIT TELEVISION
E.S. Jorgensen

Services. Two of these three agencies (Learning Service and the Instructional Media Center) are collectively titled the Instructional Development Service (IDS). Although Evaluation Services does not report directly to IDS, it represents a significant campus-wide resource for instructional improvement.

The Learning Service consults with any department or faculty member on increasing the efficiency of student learning. It brings to bear on each problem current knowledge regarding variables which influence the learning process (e.g., motivational factors, individual differences in learning styles, student attitudes and values), and it assists in the design of instructional procedures that make use of all appropriate media and relevant techniques. The Learning Service will also lend assistance in identifying critical areas where innovations might produce the greatest improvement, and it will aid in the development, implementation and testing of instructional innovations and ideas. It serves EDP projects through consultation with faculty members who are interested in defining course objectives, specifying required behaviors, exploring new teaching techniques or relating test results to teaching practices.

The Instructional Media Center is responsible for the coordination and development of instructional applications of audio-visual media, including closed circuit television, and the improvement, through research and development, of programs and materials designed for instructional purposes. It serves EDP projects through consultation on and production of instructional media and materials as well as design of learning environments.

Evaluation Services serve teaching departments in the evaluation of student and faculty performance and the improvement of course examinations. It serves EDP projects through consultation on evaluation design and analysis of evaluation data.

Operation

The Educational Development Program functions on a project base in much the same manner as other funding agencies. An operating budget from the University general budget is allocated to support projects submitted by faculty members. Projects may involve curricular change, course revision, modification of instructional procedures, or review of college/department operating procedures. Normally a faculty member works with consultants from the Learning Service, Evaluation Service and Instructional Media Center in the development of a proposal. After approval by the appropriate department chairman and college dean, the proposal is submitted to the EDP office for evaluation and review. If questions arise, suitable faculty experts discuss the proposal with the submitting individual or group.

Four general criteria have been established against which all proposals are evaluated. These are, first, the number of students affected. In general, EDP is concerned with those courses and departments which serve the largest number of students. Second,

the project must evidence an experimental or innovative approach to curriculum or instruction. EDP does not seek to promulgate traditional procedures but instead seeks new and improved methods of solving instructional problems. Third, the project must seem potentially applicable to other academic areas in the University. Projects which are so specific and narrow as to have little generalizability to other units of the University are generally refused. Fourth, the project must possess the capability for evaluation. Procedures for evaluation are built into all projects and faculty are required to submit final reports describing project outcomes.

After approval, projects are typically supported by EDP through their experimental phase or until sufficient data has been collected for objective assessment. All funds are transferred directly to the department or college concerned. Upon project completion and a favorable evaluation, EDP recommends that the project be integrated into the ongoing curriculum.

Historical Summary

The EDP functions, organization and operational procedures described above have evolved gradually over the past nine years. Almost a decade ago in March, 1961, Michigan State University committed itself to the establishment of a "Seven Point Program" for the improvement of undergraduate education. One of the key points in that program called upon the University "to put to use discoveries already made concerning the learning process." Two years later in February, 1963, the Educational Development Program (EDP) was established and in July of 1964, EDP received a three-year grant for $440,000 from The Ford Foundation. Simultaneously, the expertise on campus in applied human learning and instructional media was brought together under a second group known as the Instructional Development Service (IDS). Reporting through a single director to the Provost, EDP and IDS have in the past nine years worked closely with the faculty of the University on hundreds of individual projects. The following summaries of instructional development projects include only those actually funded by EDP or conducted under its auspices from July 1, 1969, to June 30, 1970. No effort has been made to describe the many consulting, teaching, production and media distribution services rendered by IDS to the University at large. Since 1963, EDP and IDS have been under the direction of Dr. John Dietrich. Last year, Dr. Dietrich became the Assistant Provost for Academic Planning and Dr. Robert H. Davis became the Director of both the Educational Development Program and the Instructional Development Service.

PART II

PROJECTS FUNDED BY EDP ORGANIZED BY SUBJECT MATTER AREA

PROJECT TOPIC: American Thought and Language

Development of a reading skills laboratory for freshman comprehensive English courses

PROJECT DIRECTOR: Mrs. Jane Featherstone

BACKGROUND:

Students entering the University who are deficient in reading, writing, listening and grammar skills are required to start with the first course in the comprehensive English series, ATL 101. Until recently, the needs of ATL 101 students could be met through a multi-section conventional course using a small class discussion/lab teaching model. During the last two years, however, entering students have become far more heterogeneous, due to the influx of educationally deficient youth from urban areas. These students often lack reading and writing skills and possess non-standard language patterns.

In order to accommodate increasing numbers of more heterogeneous entering students, University College established a learning resources center in which students could develop reading and writing skills on an independent study basis. However, it was felt that extant "off the shelf" materials were inadequate for achieving specific ATL 101 course objectives (reading speed, comprehension, vocabulary, grammar and listening skills, etc.) with the diverse student population. Therefore, Mrs. Jane Featherstone obtained funds from the MSU Educational Development Program (EDP) to develop software "packages" (multi-media instructional modules) to use in ATL 101.

PROJECT DESCRIPTION:

Analysis of course objectives revealed that reading skills were the most fundamental. Therefore, the major effort was devoted to production and acquisition of sets of materials to improve reading speed and comprehension. Commercially available materials were evaluated for applicability in ATL 101 by a reading specialist and several doctoral students in educational media. Materials which were acceptable, or modifiable, were purchased and developed into instructional modules. Each finished module consisted of 30-45 minutes of instruction and drill, presented via audio tapes, filmstrips, and workbooks. Teachers' guides for ATL 101 faculty were also developed.

Students' reading difficulties were diagnosed by an overall screening instrument. Students falling below criterion were referred to a reading specialist who performed individual diagnosis and prescribed treatments from the available modules. A total of 5 modules have been completed.

PROJECT STATUS:

This project is undergoing further development. The individual diagnosis and treatment technique was implemented on a limited scale but due to severe time constraints, a formal evaluation of the project was not performed. Anecdotal data from students, lab instructors, and the reading diagnostician indicate that moderate gains in reading speed and comprehension were achieved and students enjoyed not being tied to a formal class structure. The project is currently undergoing a formal evaluation using funds provided by a second EDP grant. Experimental comparisons are being conducted between students using the diagnosis/prescribed modules and students not using these modules. Results of the evaluation should be available by March 1, 1971.

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PROJECT TOPIC: Anatomy

Structured learning and teaching environments in Gross Anatomy, emphasizing 3 dimensional materials

PROJECT DIRECTORS: Dr. Bruce E. Walker & Dr. Robert Echt

BACKGROUND:

Increasing enrollments and high faculty turnover were seriously reducing the effectiveness of the basic anatomy course (AH 316). Size of enrollment had forced abandonment of a lecture/lab teaching model, and adoption of a five lecture per week model. Faculty commitment to a basic course was difficult to obtain, so the teaching responsibility was rotated among faculty members. Variations in teaching style, course content, and examinations were causing concern.

Attempting to remedy this situation, an earlier EDP grant (1967-68) provided funds for SLATE development; the individualized multi-media mode of instruction to reinstate the laboratory portion of the course and give some needed standardization of objectives, content and exams. Ten SLATEs were developed and experimentally evaluated. Students participating in these SLATEs did significantly better than non-participants. However, these results were open to question due to the use of volunteer students, and other lack of controls.

At this time, course objectives were revised and a second EDP grant obtained (1968-69) to revise and improve the SLATEs. Under this grant, eight SLATEs were developed, using some of the materials from earlier SLATEs. A new focus, however, was an attempt to provide anatomy students with manipulative experiences in the SLATE laboratory which would reinforce lecture concepts -- and increase understanding of anatomical concepts beyond the rote memory level. These eight SLATEs were finished in May, 1969.

PROJECT DESCRIPTION:

The third, and latest (1969-70) EDP grant was secured in order to evaluate the 8 new SLATEs. Working with the Learning Service, Drs.Walker, Echt, and several grad students developed instruments to evaluate student attitudes, and performance of lab and lecture objectives. A suitable experimental design involving several treatment and control groups was developed. Instruments were administered in a pilot study, then revised. Finally, several experimental comparisons were conducted and appropriate statistical tests computed. The results of all this work have been frustrating, because the data showed no significant difference in learning between the experimental (SLATE + lecture) and control (lecture only) groups. Attitudinal data did show a significant difference in favor of the SLATE treatment.

PROJECT STATUS:

The project was completed in July, 1970, and the SLATEs implemented into the departmental curriculum. The results of the evaluation phase were interpreted as indicating the inadequacy of existing instruments to measure subtle, but important differences in learning between SLATE + lecture and lecture only teaching models. In other words, it is extremely difficult, if not impossible, to develop a valid instrument which is sensitive to measuring the differences afforded by the manipulative aspects of the SLATE experience. Additional work will continue on refining the SLATEs as well as considering "out of class performance" as a measure of effectiveness. A notable result of this project, however, has been curricular, e.g., elimination of much rote memorization and emphasis on broad, systemic anatomical concepts.

* * * * * *

PROJECT TOPIC: Animal Husbandry

Development of structured learning and teaching environments to prepare students for live animal laboratories

PROJECT DIRECTOR: Dr. Harold Henneman

BACKGROUND:

Animal Husbandry 111 provides students an overview of livestock producers' problems encompassing beef cattle, sheep, swine and horses. In the laboratory, live animals provide experience in working with livestock as the students study anatomy and conformation. The annual enrollment is approximately 300 students, mainly majors in Animal Husbandry or Veterinary Medicine. Many students have a farm background, but many are from the city. This heterogeneity of background caused problems in action laboratories. It was felt that more meaningful learning would occur in the action

labs if students could enter the lab with some minimal level of familiarity with vocabulary and anatomical concepts. Therefore, the decision was made to develop a series of self-instructional AV "prep labs" emphasizing vocabulary and anatomy of the four species. Criterion performance in the prep lab would be prerequisite to attendance at the action lab. The planned instructional model would then include large group lectures, self-instructional prep labs and small group action labs.

PROJECT DESCRIPTION:

The initial project called for development and evaluation of 30 prep labs and installation of 10 carrels over a three-year period. The first year (1967-68) concentrated on specification of objectives and design and production of visuals for 8 prototype lessons. The second year (1968-69) focused on development of visuals for 4 additional lesson units (for a total of 12), and the design of AV carrels. In 1969-70, six dual carrels were installed and each equipped with 3 Carousel projectors and tape recorder. The tapes and student workbooks were completed and the SLATE units were used during Spring quarter 1970.

PROJECT STATUS:

At this writing, a total of 14 SLATE units have been completed and integrated into the course. Preliminary tryouts have been conducted of several SLATE units by using representative students from the AH 111 class. Revisions have been incorporated as suggested by students as resources allowed. As a result of these efforts, student performance in the action lab has improved significantly, mean achievement scores on exams covering SLATE material improved from 69.5% to 90.5%, and student attitudinal data has shown strong acceptance of the course and the teaching methodology.

* * * * * *

PROJECT TOPIC: Biochemistry

Structured learning and teaching environments in an introductory biochemistry course

PROJECT DIRECTOR: Miss Ruth M. Allen

BACKGROUND:

Students entering the beginning biochemistry course typically have a heterogeneous background in requisite chemistry and organic chemistry concepts. Moreover, the language and symbolism of biochemistry are somewhat unique, and before the student can understand overall concepts in the discipline, he must first master a good deal of new vocabulary, specialized terms, formulae and cycles.

The instructional problems of heterogeneity of background and comprehension of new symbology were heightened by motivational problems brought on by the depersonalized nature of the large lecture instructional model (5 lectures per week, 200 students). Typically, then, a beginning student spends a great deal of time learning symbols, through lectures and readings and was often "turned off" by this process.

PROJECT DESCRIPTION:

In a concerted effort to remediate these difficulties, Miss Allen developed 27 self instructional multi-media units over a three-year period. The rationale which led to this development was that if students could learn the basic vocabulary and symbology through the use of self instruction instead of didactic lectures, it would then be possible to reduce the number of lectures and/or devote more time to teaching the broader implications of biochemistry. In short, if basic information could be learned through a set of carefully sequenced self instructional units, then more advanced concepts or applications of a motivational nature could be presented in optional lectures.

The first two years of this project were developmental/experimental attempting to assess the feasibility of the self instructional model in biochemistry. The first year (1967-68) Miss Allen worked in conjunction with the biochemistry faculty, the MSU Learning Service, and a Title VI-B institute to develop an extensive set of behavioral objectives and several prototype SLATE units.

The second year (1968-69) focused on evaluation of the first 9 SLATEs and development of several others. The evaluation consisted of tracking 1/2 of the class through SLATEs and 1/2 through conventional lectures for 1/3 of the term; then comparing data on a common final exam as well as attitudinal measures. Learning measures showed significant differences in favor of the SLATEs only for low ability students. Attitudinal measures, however, showed a consistent and significant difference in favor of SLATEs for all types of students.

With the encouraging data from the evaluation, the project was continued into its third and final year (1969-70). During this time Miss Allen developed the remainder of the 27 SLATEs and revised the prototype units as required. The final instructional model which evolved used 3 SLATEs and one lecture/large group presentation per week plus an introductory motivational experience consisting of a 3-screen multi-media presentation.

PROJECT STATUS:

The techniques of utilizing self instructional multi-media units and optional lectures has to a large degree alleviated student heterogeneity and motivation problems. Attitudinal data have consistently shown students favor the SLATEs over the lectures and learning data

have shown SLATEs to benefit low ability students. Total student motivation is improved as evidenced by increased enrollments in the course. Moreover, the relationships between GTAs and undergraduate students have improved since GTAs are available in the SLATE labs for face-to-face interaction. In sum, the SLATEs have been shown to be a viable instructional system and EDP has recommended their integration into the departmental curriculum.

* * * * * *

PROJECT TOPIC: Biological Science Education

Development of an audio-visual-tutorial course in biological sciences for elementary school teacher trainees

PROJECT DIRECTOR: Dr. Jean Enochs

BACKGROUND:

With the emergence of sophisticated science curricula in elementary and secondary schools (PSSC; BSCS: et al.) it was recognized that the training of pre-service teachers should include a systematic exposure to basic science concepts, and ability to utilize the newer curricular materials. With this general objective in mind, the MSU Science-Math Teaching Center initiated a new course to teach basic science concepts and manipulative skills to elementary teacher trainees.

Working on a three-year development timetable, Dr. Enochs coordinated with Education and Natural Science curriculum committees and organized a prototype Bio Sci 202 which utilized a conventional lecture/lab instructional model. However, the intent was to gradually refine this prototype course into an audio-visual tutorial (AVT) model similar to the S. N. Postlethwait model developed at Purdue University. This model utilizes optional large group lectures, small group oral quiz sections, and emphasizes individualized study labs and small oral quiz sections.

PROJECT DESCRIPTION:

The first year of development (1967-68) focused on selecting course curricula, defining objectives, and identifying the learning experiences most appropriate for the optional lectures, independent study labs and small quiz sections.

The second year of development (1968-69) was devoted to design and revision of software (slides, tapes, films, and workbooks) for ten four-hour, individual study AVT lessons. In addition, 42 carrels were designed and installed to cover the projected enrollment of 500-600 students per term. Materials and equipment were tested during the Summer Term, 1969, so the course would be ready for Fall term, 1970. However, software development took longer than anticipated, and several AVT lessons were not finished until shortly before actual class use.

The third year of development (1969-70) focused on completion of AVT lessons; implementation, evaluation and revision of the AVT method and materials. Throughout the year, equipment problems were numerous, primarily due to the use of a particular brand of cartridge tape recorder. To improve program compatibility with public schools, lowest cost AV equipment had been installed. In retrospect, this was a mistake, as the dollar savings were eroded by large repair bills, not to speak of the inconvenience of having a number of carrels out of commission. The ten AVT lessons were generally effective as measured by student achievement and attitudinal measures. The small oral quiz sections proved difficult to implement and evaluate as some students felt that too high criteria of performance were expected, and the sheer logistics of coordinating small (7-8 students) quiz sections for 600 students was a major problem. Nevertheless, the small quiz section was recognized by students and faculty alike as making a major contribution to the total learning experience.

PROJECT STATUS:

Now in its fourth year, the Bio Sci 202 AVT project has been fully implemented and integrated into the Science-Math Center curricula. Equipment problems are gradually being ironed out, and AVT lesson content continuously revised based on lab instructor and student feedback. During the three years, there has been a change in attitude, cognitive knowledge of and performance of science skills -- along with a reduction in student anxiety about teaching science in the elementary schools. In other words, using the AVT method has resulted in the student teachers learning more, learning it better and gaining self-confidence in their biological science teaching ability.

* * * * * *

PROJECT TOPIC: Business

Video taped instruction in a beginning typing course

PROJECT DIRECTOR: Dr. Robert Poland

BACKGROUND:

In 1964, the Educational Development Program funded the production of 35, 2" video tapes for a one-term sequence in beginning typewriting (BOA 234). Tapes were transmitted from CCTV to specified classrooms with TV monitors and appropriate typing equipment. This group-paced instructional technique was very successful, with students achieving significantly greater speed and accuracy in the same instructional time.

In 4 years of continuous usage, the original tapes deteriorated and the decision was made to remake the tapes and at the same time alter the content to improve instructional effectiveness and further reduce instructional time.

PROJECT DESCRIPTION

The current project had three aspects: (1) revision of the original 35 television lessons into a "package" of 20 to be used with commercially produced (disposable) typing manuals; (2) production of 5 television lessons which cover "general" information such as composing at the typewriter, letter formats, centering, etc.; (3) copying the 25 lessons on one inch video tapes for investigating the feasibility of their use in business school and high school typing instruction. Lesson content was reduced from 45 minutes to 20 minutes by shortening drill sessions and deleting unnecessary review.

PROJECT STATUS:

Television production was completed on schedule and several evaluations have been conducted. Off-campus tryouts of the materials have been made in several schools resulting in very favorable attitudinal and skill achievement data. On-campus, pre- and post-test skill and attitudinal data corroborate the off-campus evaluations. Several schools have purchased copies of the tapes for inclusion in the business curriculum. The 1" VTR format and loss of resolution did not seem to materially affect student learning, and provided the additional benefit of in-class teacher control in the test schools. At present, BOA 234 is using the CCTV system to distribute the newly developed lessons to typing classrooms.

One-inch video tape playback in individual M.S.U. typing classrooms was not judged reliable enough to warrant a complete change to this mode at present, but a test is planned using a single class section.

* * * * * *

PROJECT TOPIC: Communication

A study of the communication patterns in Justin Morrill residential college

PROJECT DIRECTORS: Dr. R. V. Farace and Dr. C. D. Morris

BACKGROUND:

One of the major tasks of higher education is to organize the communication environment of students, faculty, and administration in such a way that both the institution's goals, and individual's goals, are promoted efficiently. The "communication environment" of higher education includes such aspects as: (1) the teaching or communication "style" of instructors across a variety of disciplines and physical classroom arrangements; (2) the extent and nature of interaction between students and faculty, both in and out of the classroom; and (3) the extent and nature of the students' interaction with members of the larger community including on and off-campus activities.

To develop data relative to the relationship between the communication environment and the institutional goals, EDP funds were provided to Drs. Farace and Morris to investigate the communication patterns of Justin Morrill College.

PROJECT DESCRIPTION:

The researchers focused on developing data relevant to five aspects of the JMC communication system: (1) interaction among students; (2) interaction between faculty and students; (3) interactions with persons who are neither faculty nor other JMC students; (4) student use of the mass media; and (5) faculty interaction.

Three procedures were used to gather the data: open ended interviews, questionnaires, and "diaries." After the data were gathered, the communication content was analyzed and chi-square contingency tables were constructed to relate the variables.

PROJECT STATUS:

The project is completed and a full report has been published: "The Communication System in Justin Morrill College."

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PROJECT TOPIC: Educational Psychology

A programed A-V method of teaching observation skills to teachers, psychologists, and social workers

PROJECT DIRECTOR: Dr. Stephen L. Yelon

BACKGROUND:

Precise observation and accurate reporting are vitally important in both research and teaching. However, training in observational skills is often treated haphazardly in professional training of teachers, psychologists, sociologists and child development personnel. Moreover, conventional observation training has several pitfalls in that the observational setting is very complex (a classroom or clinic); reports are given to an instructor who has no idea what behavior was observed and hence can provide no feedback to the observer trainee as to the adequacy of the report; observation periods are random, there is slight chance that "desired" behaviors will actually be observed.

To remediate these difficulties Dr. Yelon proposed a systematic observer training program for elementary and secondary school teachers built around a set of mediated (presented through media) behaviors. The behavior to be observed is presented through films (and hence can be reviewed by the novice observer many times). The instructor is aware of the behavior presented and has a valid basis for critique of the student report. Trainees report observed behavior in behavioral terms in accordance with a criterion checklist. The materials provide immediate feedback to the trainee as to the adequacy of the report. Trainees are led through a carefully sequenced set of mediated observations of increasing difficulty.

PROJECT DESCRIPTION:

A total of 20 mediated observation modules were developed over a 2-year period. During the first year, unit objectives were developed, scripts written and the major film production accomplished. (To reduce production costs, rehearsals were recorded on video tape and when all parties were satisfied the scene was shot on 16mm film.)

After prototypes were finished, experimental evaluation was conducted. Two groups were compared; one using the prototype materials and the other using a set of placebo materials. Measures of learning (observational skills) and attitude both showed significant gains.

During the second year, a field test of the materials was conducted. An intact class of MSU students utilized the materials and conducted observations. Measures of learning the observational and reporting skills were consistently high. However, attitudinal data were mixed. Students felt some units were too long and redundant. Steps were then taken to reorganize and clarify the faulty units and streamline the whole procedure. A single media (8mm film loops) will be used in the final version, and the number of modules has been reduced.

PROJECT STATUS:

The observational modules and attendant procedures will be experimentally integrated in two MSU courses.

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PROJECT TOPIC: Evaluation of Faculty

Development of a University-wide student instructional rating form and supporting services

PROJECT DIRECTORS: Dr. Willard Warrington; Mr. Wallace Berger; Mr. Stanley Cohen; and Dr. Leroy Olson

BACKGROUND:

Although Michigan State University has made student instructional rating reports available to faculty for over twenty years, past forms have been subject to numerous criticisms. Faculty and students were not adequately involved in determining the content of earlier instructional rating reports. Items included on past forms often did not measure various aspects of the learning situation and no items were addressed to the problems of laboratory and recitation sections. No system had been developed for providing normative data and indicating trends in student attitudes, so that faculty members could determine their standing relative to other faculty teaching similar courses.

To correct these deficiencies, the Educational Development Program provided a grant in 1967 to two graduate students in Psychology who

undertook the development of a new student instructional rating report in cooperation with Evaluation Services.

PROJECT DESCRIPTION:

As a first step, students and instructors in a wide range of courses were interviewed. The interviews were of the "critical incident" type; e.g., for faculty, "compare and contrast your best and worst students;" for students, "compare and contrast your best and worst instructors." All interviews were content analyzed on a question-by-question basis. The content analyses resulted in 1,300 key phrases and sentences, which were rewritten in an item format suitable for an evaluation form. To these were added items from the existing student instructional rating report and items from other institutions. As a result, 250 experimental items were constructed.

A random sample of faculty and students were then requested to rate the items by responding to four questions about each item. In general these questions, which differed for faculty and students, had to do with such factors as the utility, acceptability, ambiguity, relevance, and appropriateness of the items. A total of 1,286 questionnaires were mailed to students of which 611 were returned and were usable. Fifty-six items were selected from those which were judged as relevant, warranting inclusion on an evaluation form, and capable of meaningful evaluation by 80% of the combined student and faculty sample.

In the winter of 1968, a pilot version of a student instructional rating report form consisting of the items developed by the procedures described and eleven biographical items was distributed to students in psychology, mathematics, and natural sciences, resulting in 2,841 usable returns. An intercorrelation matrix of 52 of the evaluation items was item factor analyzed using a Varimax solution. Of the 52 items factored, 33 showed relatively clean structure and accounted for 21% of the variance using a five factor solution. The five factors appeared to be related to: (1) instructor characteristics such as involvement and attitudes toward teaching; (2) students' interest and performance in the course; (3) student-instructor interaction in terms of personal communication; (4) difficulty of course material; and (5) organization of course materials and lecture presentation. On the basis of this other information, four items were selected per factor for an initial form. As the result of additional studies, two of the 20 items were later replaced by other items.

By the Spring of 1969, the final version of the new student instructional rating report was ready for testing in the College of Agriculture, College of Engineering, College of Social Science, and University College, which together administered 8,012 forms to their students. A five factor solution indicated that the structure remained stable and the pattern of item loadings was essentially identical to that of earlier studies.

Using similar procedures to those described above for general teaching, a set of three items concerned with laboratory instruction were developed for inclusion on the final version of the student instructional rating report.

Along with this new form, which has now been adopted by the Academic Council, an automated norming and scoring procedure was developed. Provisions have been made for: (1) generating and updating a normative data base so that a faculty member can determine his relative standing on an item and compare his evaluation with a comparable pool of instructors; (2) an accounting record of form usage; (3) replacing current items or adding experimental items; and (4) displaying trends.

PROJECT STATUS:

Since adoption by the Academic Council in 1969, the SIRS form and associated scanning, processing and norming procedures have been in constant use. Table 5 of the SIRS Research Report #1 summarizes the number of instructor administrations (4292) and the number of student responses to the SIRS Form (151,399) from Winter term, 1969, to the most recent norm update on February 10, 1971. SIRS Research Report #1 includes a tabulation of SIRS responses for Winter term, 1970, which may be used as an all-university norm. This report also includes analyses of SIRS responses by level of course, required elective, recommended-not recommended, and indicated grade point average.

Studies in progress include a regression analysis of Winter term, 1970, SIRS responses with various background factors as independent variables, and a factor analysis of Winter term, 1970, responses to determine the stability of the SIRS Composite Variables.

Experimental forms are also being developed to more specifically relate to large lecture sections, laboratory sections, and small discussion-oriented classes or seminars. These forms will be made available if there is sufficient demand for them. Assistance in developing, scanning, and processing forms developed by individual departmants is also available.

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PROJECT TOPIC: Graduate Teaching Assistants: A Training Program

Development of an effective training program for GTAs based on principles of self-directed learning and video taped feedback of teaching behavior

PROJECT DIRECTORS: Dr. Lawrence T. Alexander and
Dr. Robert H. Davis

BACKGROUND:

Teaching assistants are responsible for a substantial share of the undergraduate instruction at virtually every large college and

university in the country. Approximately 20% of all undergraduate student credit hours at Michigan State are produced by teaching assistants. The trend for the future is for graduate teaching assistants to assume an even greater proportion of the teaching function because the number of faculty members available is not keeping pace with the increased student enrollment. It is clear that the overall quality of undergraduate instruction depends, to a considerable degree, on the teaching capabilities of graduate assistants. Identifying ways and means of improving this capability is a high priority need in order to maintain a satisfactory level of instruction for current students and to ensure adequate preparation of college faculty for the future.

PROJECT DESCRIPTION:

Michigan State University has initiated a two-year project, supported by the Esso Foundation and EDP, to experiment with a variety of instruments and procedures for training graduate teaching assistants. The objective is to develop a set of procedures which the trainees can learn without supervision and which can be adapted to satisfy the particular training requirements of the various academic departments.

The training program focuses on self generated goals and self generated practice in which the trainee learns to identify classroom problems and explore alternative solutions to them. The trainees practice organizing and presenting subject matter in their own discipline, identifying and discriminating among cues which indicate student learning progress, and modifying their instructional behavior depending on the nature of these cues.

Each trainee teaches a regularly scheduled course in an experimental classroom; every class session is video taped. The trainee reviews each tape and selects a segment for presentation and discussion in a weekly, low threat, debriefing at which only the other trainees and the training director are present. Each trainee assumes responsibility for leading the discussion of his own performance and for specifying future behavioral objectives he will attempt to achieve. Other feedback data are also available for discussion: a verbal behavior interaction analysis, a task analysis, and a summary of student responses.

PROJECT STATUS:

During the first, or developmental year, a set of procedures and materials were developed. Certain modifications were made, and during the second year the revised procedures and materials were field tested over three terms using a different group of trainees (different disciplines) each term. The results of this evaluation were very encouraging, in that attitudinal and teaching performance measures both indicated unquestionable improvement in teaching skills. The training program does appear to provide trainees with objective performance feedback and the opportunity to analyze his behavior under non-threatening conditions. It further encourages him to take

responsibility for his own learning, and by developing a problem solving approach to instructional processes, enables him to develop sufficient skill to continue improving on his own. This program will be used by the MSU Geography Department, and further development is being conducted in order to apply the technique to in-service faculty training.

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PROJECT TOPIC: Human Environmental Design

Development of a programed text-workbook and self-instructional modules in textiles, clothing and related arts

PROJECT DIRECTOR: Mrs. Nancy G. Harries
Co-Worker: Mr. Thomas Harries

BACKGROUND:

In early 1968, the Human Environment and Design Department of the College of Human Ecology began a three-stage revision of their "core" textiles curriculum. (1) Overlapping content was to be eliminated; (2) "survey" opportunities for majors and non-majors were to be accommodated; and (3) increasing specialization and differentiation were to be provided for HED majors.

The net result of this curriculum study was agreement on general goals for a new introductory "core" course designated HED 170. This was to be a freshman level, consumer-oriented textiles course (evaluating textile products on the basis of serviceability concepts of durability, comfort, care and aesthetic appearance), and was an adaptation of an existing course, TRA 270. Mrs. Nancy Harries and Tom Harries submitted two EDP proposals to develop objectives and implement several alternative teaching strategies for the new course. Anticipated course output is 2,400 credit hours per year.

PROJECT DESCRIPTION:

The first project utilized a "systems approach" for development of the "core" course. It was determined that students would be viewed as individuals who must acquire a repertoire of responses (behavior); that students would be responsible for this acquisition and that faculty would provide the resources to facilitate this process; and that more than one medium of communication/instructional technique was necessary to establish the desired repertoire of behaviors.

Under this rationale, Mr. and Mrs. Harries, working in conjunction with Learning Services, Instructional Media Center, Testing and Evaluation, and other faculty (1) specified all course objectives in behavioral terms, (2) developed a programed textbook, and (3) developed recitation exercises which integrate and synthesize the PI text. Lectures are still used to supplement the programed instruction and recitation experiences.

Evaluation of the new teaching model, including the PI text and laboratory projects, was conducted on a pilot group of 40 students. Attitudinal and cognitive gain measures were developed, and comparisons showed consistent differences in favor of the new method. Long range evaluation is now in progress using all 170 textile classes.

The following year, Mr. and Mrs. Harries requested EDP funds to develop 10 CCTV scripts for programs to replace the lectures in designated portions of the course. Since much of the content of the proposed CCTV programs would be shot on 16mm film on location, outside financing is being sought. Several symposia were held on campus, and video tape segments are being used in the course lectures.

PROJECT STATUS:

The restructured "core" course has been fully integrated into the departmental curriculum. The programed text and laboratory exercises are being further refined and the programed package, including fabric packets, will be sold commercially when completed. Student attitudinal and learning data continues to be very favorable. The scripts for the CCTV presentations were developed and will be adapted to a single-concept film loop format. Initially, ten film loops are to be produced through the book publisher for distribution as a supplement to the programed text.

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PROJECT TOPIC: Humanities

Development of a music "track" in the existing Humanities course framework

PROJECT DIRECTOR: Dr. Conrad Donakowski

BACKGROUND:

Traditionally, Humanities has included the study of music as well as fine arts and literature. However, in recent years the study of music has not received emphasis in the Humanities sequence. Therefore, the Humanities Department felt it desirable to rectify this situation by establishing a music "track" within the departmental offerings. The music track would (1) attempt to bring music to the forefront of the student's interest, (2) relate music to the other fine arts and literature in various epochs of history, and (3) awaken in the students an awareness of the influence of music on the human condition.

PROJECT DESCRIPTION:

A committee of the Humanities faculty developed a syllabus of instruction for the music portion of the undergraduate Humanities course. In order to implement the syllabus, a number of student

listening centers were to be established in various dormitories on campus, as well as in the main Library and University College. EDP funded the acquisition of numerous records, tapes and several items of recording and playback equipment so that Humanities faculty could develop special tapes for use in the student listening centers. These tapes and records would then form the basic music listening experience requisite to the course.

PROJECT STATUS:

Humanities faculty have developed a number of tapes, and the Music track will be implemented fall term, 1970. The required number of listening centers have not been installed in the dorms, so students will utilize the Library and University College Listening Centers. Evaluation of the project will be conducted at the end of fall term, and further development will depend on the evaluation data.

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PROJECT TOPIC: Industrial Arts

Development of self-instructional A-V materials for use in learning shop equipment operation

PROJECT DIRECTOR: Mr. Thomas W. Burt

BACKGROUND:

The Industrial Arts curriculum in secondary teacher education currently includes several areas such as: (1) woodwork; (2) metalwork; (3) arts and crafts; and (4) printing. Each of these skill areas have component equipment which must be mastered by each pre-service teacher (band saw, welding torch, ceramic oven, etc.). Previously, each piece of equipment was taught in a laboratory on a tutorial (1-1) or small group demonstration basis. The tutorial teaching model, while it is often successful, is highly repetitive and time consuming for the faculty concerned -- and can only handle very limited numbers of students.

The Industrial Arts faculty was, therefore, interested in exploring some alternative teaching models which would increase efficiency and reduce the repetitive nature of instructing equipment skills, but not compromise personnel safety or the quality of learning.

Therefore, Mr. Burt, in conjunction with the Industrial Arts faculty and undergraduate students, began an analysis of curriculum objectives. This analysis revealed that the requisite equipment operating skills had both cognitive objectives (nomenclature; operating and safety procedures, etc.) as well as perceptual-motor objectives (e.g., guilding wood through a sawblade). It became clear that a good deal of lab time was being spent on the cognitive component at the expense of the perceptual-motor component. It was hypothesized that if the cognitive objectives could be mastered through independent study prior to the lab, faculty instruction

could then focus on the crucial perceptual-motor objectives in the lab. This would result in much more efficient use of faculty time, and provide an increase in the total number of students which could be accommodated.

To explore this hypothesis, an undergraduate student (Mr. Dan Preston) on his own initiative, developed two prototype self-instructional (SLATE) units. Informal tryout of these self-instructional materials showed the potential for this technique, at least for specific cognitive objectives, and prompted Mr. Burt to submit a formal EDP proposal to develop 16 additional SLATE units.

PROJECT DESCRIPTION:

Mr. Burt proposed development of four SLATEs each, in woodwork, metalwork, arts and crafts, and printing, for a total of sixteen. Initial development work concerned obtaining a consensus among department faculty on specific procedures to be taught for the various machines. This proved to be a more difficult and time consuming task than anticipated. For each machine considered, the total task was analyzed into prerequisites; cognitive and perceptual-motor objectives. Scripts were developed, and tape recordings and slides were produced for 16 SLATEs.

PROJECT STATUS:

EDP funding has terminated, but it is likely that development will continue for several years before SLATEs are implemented into the Industrial Arts curriculum on a large scale. All 16 SLATEs are in prototype configuration; e.g., slides and tapes are finished, but have not been revised on the basis of formal tryouts with the representative students. Heavy workload and budgetary cutbacks are likely to result in a "stretchout" of this project over several years. The concept of self-instruction in Industrial Arts seems feasible, but development is costly and time consuming.

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PROJECT TOPIC: Institutional Research

A survey of student income and expenditure patterns

PROJECT DIRECTORS: Dr. Paul L. Dressel and Dr. Gordon Miracle

BACKGROUND:

The University newspaper (State News) contacted Dr. Miracle, who is an economist, regarding ways and means of increasing their one-half million dollar income from advertising. After some deliberation, it was determined to survey MSU student income and expenditure patterns -- noting commodities purchased and where they were purchased. This hard evidence could be presented to prospective advertisers showing the market potential for their products.

Funding for this project came from the State News, EDP, the Department of Advertising, and the Office of Institutional Research (who was also interested in data on student income and expenditures).

PROJECT DESCRIPTION:

Stratified samples of students were randomly selected (from student numbers). A total of 674 students participated in six separate Student Consumer purchase panels. A combination of personal and telephone interviews, and student "diaries" provided the raw data. Categories of students were correlated with categories of expenditures and a very comprehensive data analysis was run by the MSU Computer Center. The six panels varied in length from 2 to 26 weeks.

PROJECT STATUS:

All data have been collected and initial computer analyses run. Dr. Miracle has analyzed the data and prepared a 50-page report. An enormous data base has been collected, and additional analyses will be run throughout the next year. Following these second level analyses, another report will be published.

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PROJECT TOPIC: Landscape Architecture

Structured learning and teaching environments used to improve learning of landscape architecture history and development

PROJECT DIRECTORS: Dr. Myles Boylan and
Mr. Richard Rigterink

BACKGROUND:

The majority of Landscape Architecture courses are taught in the traditional "studio" model; one instructor and 20-30 students meet several times per week in a lecture/lab/tutorial situation. While studio instruction typically achieves a high quality of learning, only limited numbers of students can be accommodated. Faced with constantly increasing enrollments and relatively fixed resources (faculty and facilities) the department was forced to reappraise their extant teaching models and course offerings to determine how to gain efficiency without compromising quality.

Initial explorations of this problem with MSU Learning Service revealed that many aspects of the instruction in the "studio" could be provided equally as well in larger groups, or individually, in structured lessons presented in learning carrels (SLATEs).

Since all the LA faculty had themselves learned using the "studio" model, they are biased in its favor and would be very resistant to a unilateral change in the name of efficiency. Therefore, the

decision was made to explore a SLATE/lecture instructional model in a course where maximum teaching flexibility was possible. The course selected was LA 202, History of Environmental Design, serving 50-60 students per term.

The instructor in LA 202 (Mr. Rigterink) consented to participate in 10 tutorial seminars on instructional systems and SLATE design, given by MSU Learning Service and IMC. The product of these intensive seminars was a prototype SLATE unit for LA 202. This initial development convinced Mr. Rigterink and other departmental faculty that use of SLATEs was feasible in LA, and worthy of further exploration.

PROJECT DESCRIPTION:

In December, 1969, Mr. Rigterink obtained EDP support and in conjunction with MSU Learning Service and IMC began the design, production and evaluation of 7 additional SLATEs. Behavioral objectives and criterion referenced exams were developed and a programed sequence of slide/tape/workbook materials was produced.

Workbooks provided for note taking as well as other active responses (sketching, reasoning, discriminations, etc.) were formated to provide immediate feedback as well as branching loops. During development, the materials were tried out with graduate students and revised if serious problems were encountered. Due to time constraints, it was not possible to conduct formal evaluation of all SLATEs with the target population.

PROJECT STATUS:

Several SLATEs were used provisionally for one term in LA 202. Anecdotal and questionnaire data from this trial indicated that students could achieve the intended objectives, but that often they were "turned off" by the didactic treatment. This may be caused by the idiosyncratic/"artistic" nature typical of LA students, or by the fact that the materials were overly programed. In any case, further development involving evaluation and revision is warranted before departmental implementation.

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PROJECT TOPIC: Mechanical Engineering

Development of video tape recorded "prep labs" in fluid mechanics

PROJECT DIRECTOR: Dr. John F. Foss

BACKGROUND:

Students in fluid mechanics must be familiar with highly specialized equipment and procedures to successfully complete their laboratory experiments. Since lab space, time, and equipment are limited, and since one lab instructor (GTA) must serve many students, the sheer

logistics of an experiment often seriously reduces the effectiveness of laboratory periods.

In 1968, under an EDP grant, Dr. John Foss and Mr. Stanley Kleis began initial development work on materials for use in self-instruction multi-media carrels (SLATEs). The intent was to reduce the amount of lab time required to teach procedures and to introduce students to the equipment in a standardized format. After analysis of course objectives, number of students, and available resources, it became clear that VTR would be a better instructional mode because of group viewing capability, instant replay, and lower costs. Plans were then made to develop the video tape preparation laboratories the following year.

PROJECT DESCRIPTION:

In 1969, Dr. Foss continued project development, with the help of the Learning Service, under a second EDP grant. Having developed course objectives the previous year, the major effort was directed towards production and evaluation of 14 video tape prep labs and accompanying manuals. In conjunction with MSU CCTV and the IMC, graphics were produced and each prep lab recorded. An evaluation plan was developed in coordination with the MSU Learning Service. Each lab was implemented on a trial basis, evaluated, and revised.

Each video tape demonstrates the optimal technique for a specific experiment, and is viewed immediately prior to the actual lab period. Playback on a portable video tape recorder permits flexible time scheduling, smaller lab sections (12 students, 1 instructor) and increased student control and involvement. For example, students can stop the experiment for "instant replay" and clarification by the instructor. Each student may also preview each experiment as many times as needed. Furthermore, after performing the actual experiment, students may review the prelab tape for comparative data. One other advantage of this system is that it standardizes the quality of presentation for all sections despite differences in competence and training among graduate student lab instructors.

PROJECT STATUS:

The project was completed in August, 1970, and has been permanently integrated into the departmental curriculum. Marked increases in students' lab performance have been noted, particularly the lower ability students. Attitudinal data shows a general acceptance of the technique, with some ambivalence at not being able to get the same information "live." A saving of 50% of instructor's time has been achieved, with a concomitant increase of student performance level.

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PROJECT TOPIC: Microbiology

Acquisition and use of single concept films to supplement labs

PROJECT DIRECTOR: Dr. C. L. San Clemente

BACKGROUND:

This project grew out of a need to develop a "core" of beginning courses in microbiology. High faculty turnover in beginning courses was reducing course continuity to the detriment of both major and non-major microbiology students. Furthermore, faculty were wasting excessive time preparing to teach beginning courses; time which could be better used in the research lab. Therefore, some means was sought to develop a "core" of standardized materials which various instructors could draw upon for use in the beginning courses. It was hoped that this would lead to development of a "core" curriculum in microbiology which would reduce instructor workload and improve course standardization and continuity.

PROJECT DESCRIPTION:

Encyclopedia Britannica Educational Corporation has available 37 color, silent, 8mm film loops concerning the diversity of bacteria, physiology and life processes, field and laboratory techniques. These films were purchased to form the core of standardized materials, and to allow students to supplement the present lecture/laboratory teaching model. The films were used in MPH 301, an introductory course in microbiology, enrolling 140 medical technology and interdepartmental biology majors. Other courses which will use the film loops anticipate an enrollment of several hundred students.

PROJECT STATUS:

Formal evaluation of the film loops was conducted using a student opinionnaire. Both formal and informal feedback from the students indicate the films are very useful. Moreover, faculty acceptance of the films has been high, and it is probable that through the use of these materials, a "core" program will evolve. As new films appear, the department intends to increase the film library.

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PROJECT TOPIC: Music Education

Development of an integrative teaching model (self-instruction, lecture and lab) for achieving cognitive, affective and skills objectives in music education with elementary teacher trainees

PROJECT DIRECTOR: Dr. Robert G. Sidnell

BACKGROUND:

Music 135 is a 3 credit hour service course for teaching basic music concepts to elementary education majors. Traditionally, it has used a conventional lecture teaching model. However, various music skills involving listening, actual performance on several instruments, and techniques for integrating music into the elementary school classroom, were impossible to achieve in the conventional lecture course involving 360 students per term. Moreover, the affective component, or "appreciation" of music and its relationship to the child and his environment, had been neglected. To remediate these problems, Dr. Sidnell proposed the development of a four component instructional model, revising both the content and methodology of the course to reflect a performance orientation.

PROJECT DESCRIPTION:

In 1969, Dr. Sidnell obtained EDP support, and in conjunction with the Music faculty, began development of a performance oriented, four component instructional model. Behavioral objectives and criterion measures were developed for each component:

1. Individual listening component: 27 self-instructional audio tapes, plus a 175 page workbook/listening guide to accompany the tapes, were developed. Skills in discriminating timbre, duration, pitch, dynamics, musical forms and thematic elements are learned through the programed format tapes + listening guides.

2. Skills/performance component: In laboratory sections, students are provided opportunity to produce music in a variety of media (singing, piano, guitar, ukelele, marimba, xylophone and recorder). Self-administered rating forms (cards) are used to guide student progression towards desired level of music performance. Final performance is evaluated by graduate teaching assistants.

3. Cognitive component: Using the "B-STEP" behavioral objectives, a 470 frame programed text on music fundamentals was developed to supplement the large group lectures and labs.

4. Affective component: An attempt was made, primarily through lectures, to develop attitudes and appreciation for music in elementary education. Techniques for integrating contemporary music into the curriculum were presented.

PROJECT STATUS:

Since this project represents a major departure from conventional music education for elementary teachers, additional development is necessary. Additional audio "drill" tapes will be developed, and refinements to the music fundamentals programed text will be

made. In addition, Dr. Sidnell has proposed development of 8 video tapes showing actual music instruction and performances in elementary schools -- in order to attack the "affective" course objectives.

In general, however, moving from the passive lecture model to the active listening, performance lab and lecture model has proven very successful. Notable differences in exam performance on cognitive as well as psychomotor (music performance) objectives has been achieved. Attitudinal data shows a positive trend. Students appear to have a much firmer grasp of musical concepts, and should be much better able to influence interest in and appreciation of music in elementary students.

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PROJECT TOPIC: Music: Form Analysis

Development of a programed course in music form and analysis

PROJECT DIRECTOR: Dr. Jere Hutcheson

BACKGROUND:

A previous EDP grant had provided funds and consulting services for the development of a programed textbook in music harmony. This text was extremely successful and has received nationwide acclaim. This initial success prompted Dr. Hutcheson to apply the programed instruction technique to the subject of musical form. The material is to be incorporated into the Music 180 series and 280 series. Reinforcement of the material during lecture may be left to the discretion of the instructor. Because of the self-instructional nature of the programed format, a much greater number of objectives may be achieved in the course (50% more objectives will be included in the course when the text is finished).

PROJECT DESCRIPTION:

EDP funds were allocated to pay for reproduction costs and secretarial assistance. The textbook will be over 600 pages long (17 chapters) and cover such topics as music vocabulary; nomenclature; structure and form analysis. The textbook is designed to be used in conjunction with the study of harmony. Many musical examples are incorporated in the book. (Audio recordings may be used, but are not part of the project. Live performance is also optional.)

PROJECT STATUS:

All chapters have been written, critiqued for content accuracy, and revised once. All of the material (17 chapters) has been tried out with the students and revised a second time based on item analysis of student responses and results of class quizzes. The 17 chapters have been distributed to students and integrated into the Music 180 and 280 series. The last revision expands the material

to 19 chapters. The last two chapters are not presently available to the students because of the lack of funds in the 1970-71 grant.

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PROJECT TOPIC: Music: Voice

Task analysis of the teaching of voice with major revision of traditional 1-1 tutorial model

PROJECT DIRECTOR: Mr. Gean Greenwell

BACKGROUND:

Teaching of voice has traditionally used a 1-1 tutorial model. In 1967, the Music Department determined that due to increased enrollments, this model would have to be changed to a more cost/effective model. An earlier EDP grant provided funds for tape playback equipment so that students could be guided through certain skills in singing. However, this model was not satisfactory because students were not able to diagnose their own problems concerning the skills. As a result of this effort, Mr. Greenwell and other voice faculty essentially "task analyzed" the process of teaching singing, and determined that many elements could be "lifted" out of the 1-1 tutorial model and placed in a group model. Initially, groups of four were used. This was very successful, and after further task analysis of teaching voice the present model was evolved. This model uses group lectures, large laboratory (30-40 students) and individual one-half hour laboratory (1-1 tutorial).

The course is for voice majors who presumably will become choral directors or professional singers. Enrollment is now 30-50 students per term. However, these same 30-50 students take the course for three terms. Course objectives include breathing, Italian diction, stage demeanor, phonation, etc. Evaluation at the end of each term is provided by a "jury" of music faculty who listen to the live performance of the students. Considerable improvement in student performance has been noted since the new model has been adopted.

PROJECT DESCRIPTION:

The presently funded EDP project is the development of a programed text "class manual" for each of the specific units in the freshman course. These units include "Italian Diction," "phonetic alphabet," "anatomical parts of the voice mechanism," etc. The use of this programed text is expected to further reduce the formal teaching time required in lectures, and allow greater time spent in the voice laboratories where student performance can be monitored and improved.

PROJECT STATUS:

All programed chapters in the manual have been completed and are

undergoing revisions. When revisions are complete, the manual will be published and integrated into the structure of the freshman voice course. Formal evaluation of the text is not complete, but preliminary data indicate adequate achievement of programed objectives, with a consequent reallocation of class time into the voice lab.

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PROJECT TOPIC: Physical Education

Use of high speed motion picture photography for longitudinal study of growth and development

PROJECT DIRECTOR: Dr. Gale Mikles

BACKGROUND:

Several courses in the department as well as various athletic teams and research projects needed high speed (500+ frames per second) photography of specific physical activities. This was seen as an ongoing need; therefore, Dr. Mikles proposed that EDP funds be used to purchase a high speed motion picture camera and departmental resources would be used to cover film, crew, and processing costs.

PROJECT DESCRIPTION:

The camera and attendant accessories were obtained and a crew trained in their use. Over 10,000 feet of film was shot for several different projects in the department; including courses in mechanics, growth and development; athletics such as track, wrestling, and baseball. In addition, the acquisition of the camera allowed recording baseline and interval data for a 5-year longitudinal study of the motor development of normal and abnormal children.

PROJECT STATUS:

The camera is successfully being utilized by the HPR department and has proven a valuable source of data for several departmental projects.

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PROJECT TOPIC: Physical Education: First Aid

Revision of video taped course on first aid

PROJECT DIRECTOR: Dr. Gene Kenney

BACKGROUND:

Several years ago the teaching model of the basic first aid course was changed from lecture/demonstration/practice, to a closed circuit television presentation followed by supervised practice. This change was made largely due to the logistics involved in serving multiple

sections (e.g., television combined films, lecture, and demonstrations into a single media and thereby reduced the number of setups required). Moreover, it was felt that television could provide closeups and other effects not possible in conventional instruction.

However, the field of first aid constantly changes to reflect new developments in medicine. Therefore, Dr. Kenney requested EDP funds to revise and update the video tapes used in HPR 331 (first aid).

PROJECT DESCRIPTION:

Several new films, filmstrips, audio tapes and demonstrations were edited into the existing video tapes (external heart massage, emergency childbirth, controlling bleeding, treatment of burns). These changes were then reflected in the laboratory practice.

PROJECT STATUS:

All revisions have been completed and are currently in use. There was some concern over the loss of resolution and color on the black and white TV presentation. However, lab performance has not been affected, and it is interesting to note that fewer students faint or get sick during black and white TV presentations than when full color films are used.

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PROJECT TOPIC: Physical Education: Swimming

A systems approach to development of an intermediate course in swimming

PROJECT DIRECTOR: Dr. Robert Singer

BACKGROUND:

Many offerings in the educational curriculum are still being taught under highly antiquated conditions using traditional teaching methods. Criticism of such practices have resulted in some attempt to evaluate teaching weaknesses, with an implementation of more acceptable and appropriate procedures. Current writings in educational psychology suggest a behavior modification approach dependent on the application of learning systems analysis. Whereas so-called "academic" offerings have met the challenge enthusiastically, performance areas, such as physical education, industrial technology, and home economics, have often been reluctant to attempt the application of the systems approach in teaching various skills.

Therefore, the purpose of this investigation is to apply the systems approach to the learning of motor skills; more specifically, tasks related to intermediate swimming. Systems analysis will suggest the appropriate teaching techniques to be employed. Also, the

effectiveness of the program will be evaluated with a detailed comparison of entry behavior to terminal behaviors.

PROJECT DESCRIPTION:

An intermediate swimming class for women non-physical education major students will serve as the experimental unit. The subjects will number approximately 30, and the class will meet during the spring quarter, 1970, in the Women's Intramural Building.

Entry variables will be assessed: fear of water, body build, anxiety level, level of aspiration, motor abilities, and entry level of swimming skills. The following represent the general behaviors that will be taught and measured: body control in water, entrance to water, elementary back stroke, crawl, side stroke, water safety, and attitudes in and understandings of swimming. Very specific analyses and measurements will be made in each area as to entry and terminal behaviors.

Each task has been analyzed according to sequence of actions, knowledges needed, relevant cues, and the relative impact of cognitive, affective and psychomotor abilities. In each unit task, information to be provided before, during, and following practice has been determined. Modeling, through demonstration and loop films (the latter continually available for student reference during the instructional period) and immediate knowledge of results, offered through a partner's guidance and video tape replay, will be provided each class period.

Various learning theories will be implemented in this study to enhance the learning process. Social facilitation theory is invoked by the use of students working in pairs, alternating as performer and instructor. Modeling behavior and relevant cue isolation is brought about through the continual access students have to loop films and check lists. Operant conditioning, with the principle of feedback of primary importance, is demonstrated with the use of immediate video tape replay and the partner's comments and directions.

Entry and terminal behaviors will be evaluated and compared to determine the effectiveness of the program. Entry characteristics will be analyzed as they relate to terminal behavior to determine relationships and suggest directions for experimentation and individual channeling.

PROJECT STATUS:

Preliminary data indicate student performance on all measures were significantly improved. Attitudinal data shows high acceptance of the technique by students. A major problem was logistics of the rather large and cumbersome "portable" VTR. Smaller and more reliable equipment is needed. Project status is uncertain due to the resignation of project director.

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PROJECT TOPIC: Physical Science Education

Self instructional modules for elementary and middle school teacher trainees in the physical sciences

PROJECT DIRECTORS: Dr. William V. Hicks and
Dr. William Walsh

BACKGROUND:

Rapid growth in the field of science, coupled with increased use of sophisticated curricular materials, made it necessary to upgrade the quality of science education for prospective elementary, secondary, and middle school teachers. Towards this end, the staff in elementary science teaching methods, in cooperation with the Science-Mathematics Teaching Center faculty, proposed the development of a set of independent modules (self-paced lab exercises) which would allow students of various backgrounds and interests to increase science teaching skills, reduce apprehension, and perhaps improve attitude towards science in general.

PROJECT DESCRIPTION:

In 1968, a series of 8 self-paced modules were developed. These units were designed to appeal to a wide variety of student interests and backgrounds and were programed to operate on a flexible scale of conceptual and equipment sophistication. One module, for example, involved student participants in a simple sequential use of a reasoning approach method common to a well-known science curriculum experimental program. In contrast to this one-half hour module, another self-instructional unit involved two-one hour lessons on the observation, recording, and interpreting the behavior of small animals to environmental stimuli. Fifty modules have been planned, some involving programed television and computer experiences.

In 1969, the 8 initial prototype modules were evaluated using a class of 200 students. Attitudinal and learning data were collected, and both measures suggested strong acceptance of the technique by students. Students commented that implementation of a reservation type schedule in the lab helped them to improve their study habits, and stop "cramming."

PROJECT STATUS:

Initial evaluation indicated that the units were not completely self-instructional, although intended to be so. Therefore, subsequent use of the modules will necessitate the presence of a qualified lab attendant (GTA) to answer questions and provide logistic support. Existing modules are undergoing further refinement, although the program has been fully implemented in the College of Education teacher training program. Students are clearly demonstrating increased proficiency in conducting simple scientific

experiments, increased cognitive knowledge of science concepts, and a pro-science attitude shift.

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PROJECT TOPIC: Political Science

A restructuring of teaching methodology in political science research methods to allow students greater freedom and responsibility for their own learning

PROJECT DIRECTOR: Dr. Frank A. Pinner

BACKGROUND:

This project represents a major effort to remedy serious attitudinal and motivational problems by making changes in teaching methodology. Social Science majors are required to take a sequence of courses in research methodology. Many students regard this requirement as superfluous, and because of the emphasis on quantitative methods, unusually demanding. The generally negative attitude towards this sequence tends to bring out the worst in student behavior patterns; e.g., excessive preoccupation with grades instead of concepts; attempts to "beat the system," rather than learn the material; and hostility against the authorities who "require" the courses.

Many of these problems were compounded by the depersonalization and passivity brought about by sheer size (N = 100 to 175 per quarter) and dependence on the familiar lecture, text, and test instructional model.

In order to tackle this complex set of problems, Dr. Pinner received EDP funds in 1967, 1968, and 1969, to implement and evaluate a complete restructuring of course methodology and content. The reorganization had four objectives:

1. Create a community of workers instead of a passive audience.

   University students tend to have the same characteristics as mass media audiences (passivity and atomization) differing mainly in that they are held accountable (by exams) for some portion of the information they receive. This passive "set" was to be radically changed by student participation in genuine social science research projects of real scientific significance.

2. Create a "team" organization to reduce personal isolation and increase social responsibility.

   Students were assigned to teams, matched with respect to GPA and interests, which were to perform research projects. The hope was that peer group interaction and coordination

of expertise would increase student involvement. Teams each had one superior student and one with previous quantitative background. Grades would be assigned on the basis of the "team" project and an individual final examination.

3. Confront the "teams" with legitimate research problems which could only be solved if team members acquired the necessary intellectual tools.

   The purpose of this task assignment was to generate strong motivation to acquire the concepts and problem solving "set" required for research, and to demonstrate that knowledge is not a "given," but the product of social process.

4. Provide for greater interpersonal contact between students and faculty and provide more efficient utilization of faculty time.

   It was felt that utilizing faculty and GTA advisors for each "team" would facilitate this objective.

PROJECT DESCRIPTION:

The first year of this project was essentially exploratory. with the innovations being implemented on a pilot basis. The results of this phase showed both the problems and potential of the new methodology. For example, communication between teams and instructor was difficult and time consuming; some team members "goofed off" and team morale and research suffered; the students were disappointed by the meagerness of their research results -- and it was not possible to tell whether the absence of predicted relationships in student research reflects real world conditions, flaws in the design or execution, or poor choice of variables; both students and instructors spent a great deal more time on the course, but this extra time was not reflected in better "grades" or greater achievement on the final exam or significant research results. It was, in a word, frustrating, although many students indicated informally that they appreciated the opportunity actually to conduct research and interact face to face with faculty.

The following year several changes were made in the course structure, and a sophisticated experimental control group comparison was made. The major course changes involved streamlining the internal communications and data processing logistics of team efforts; monitoring and reorganizing teams with low morale, or low motivation; assigning undergraduate team monitors, as well as GTA and instructor team advisors; and selection of research projects more in keeping with undergraduate capabilities.

The major differences between experimental and control groups was that the experimental class used the team structure and inductive style lectures and generated its own research studies. Control groups used deductive style lectures and individual term papers; and they were assigned secondary analyses of existing data. A

common final exam and attitudinal and cognitive complexity measures were the dependent variables.

Analysis of this experimental comparison was conducted the third year of project development. A very comprehensive battery of instruments were developed; including measures of belief and attitude structure, alienation and integration; assessment of group processes; cognitive complexity; motivation and interest measures. A total of 750 variables (including final exam and pretest scores) were examined. The results of this analysis were, for the most part, discouraging. The major effect hypothesized was an interaction between course structure and student motivation, attitude, and achievement. However, the changes in course structure did not seem to result in significant differences in motivation or achievement, when examining group means. But when students are partitioned into sub-groups, it became apparent that variance was increased in the experimental group; that some students were "turned on" and did better, while others were "turned off" and did worse -- thus statistically masking the effect of the experimental treatment.

PROJECT STATUS:

The future of the innovations developed in this project are uncertain. The cost of implementing this instructional model is high, and the method seems potent with only certain types of students. Whether or not these students will be given the opportunity is a departmental decision, yet to be made. It may be that many of today's students are not ready for small group, inductive, student directed methodology, for a variety of reasons, and that a single exposure to such a methodology in 16 years of education is an inconclusive test. In any case, this project represents a three-year concerted effort to deal with the very complex set of problems associated with a "required" course at a large university.

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PROJECT TOPIC: Psychology: Experimental

Use of optional quizzes, exam retakes and taped lectures to improve learning in introductory course in experimental psychology

PROJECT DIRECTORS: Dr. Stanley C. Ratner and
Dr. M. Ray Denny

BACKGROUND:

Psychology majors are required to take the 5 credit beginning course in experimental psychology, PSY 200. The large enrollment (350 students per term), use of 5 lectures per week (with no labs), and high informational content had combined to give the course a demanding yet depersonalized nature with consequent low student morale and motivation.

PROJECT DESCRIPTION:

In an attempt to remediate some of these problems, Drs. Ratner and Denny obtained EDP funds to introduce three innovations in the course: (1) offering optional, non-graded, self-scored, "Friday quizzes" on the week's lectures and text assignments; (2) tape recording all lectures and making these tapes available to students in the MSU Library; and (3) optional retakes of midterm exams. The quizzes were designed to give students practice on taking tests; provide feedback on adequacy of learning; and help students identify important course concepts. The quizzes were 15 minutes in length, and typically required the student to fill in key words in paragraphs describing important concepts. Immediate feedback and discussion of wrong answers was provided by a GTA, or faculty member, to the assembled students.

While the Friday quizzes, tapes, and midterm retakes were optional, results of using these techniques are very encouraging. Student utilization of tapes and quizzes steadily increased throughout the year, often with over 90% participation in the optional quizzes. Very pronounced and positive correlations were noted between achievement on optional quizzes (student graded) and final course grades (based on mid-term and final exam scores). Moreover, several unplanned benefits also occurred, such as student/faculty interpersonal relations improved by informal discussions following the 15 minute quizzes, and in achieving course content, a sense of teamwork gradually evolved.

PROJECT STATUS:

It is obvious that introduction of optional quizzes, feedback, taped lectures and exam retakes have improved student achievement and furthered student/faculty relationships. Dr. Ratner has proposed continuation of these initial innovations and, in addition, the systematic collection and analysis of achievement and attitudinal data. If the data collected in PSY 200 continues to show impressive gains in student achievement and corollary increases in attitudinal measures, through the relatively inexpensive techniques described, the Psychology Department will certainly adopt this instructional methodology for PSY 200. In addition, these techniques may have wide generalizability for other large lecture courses throughout the University.

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PROJECT TOPIC: Psychology: Motivation and Study Skills for Academically Disadvantaged

An exploratory effort to develop a course capable of assisting the academically disadvantaged in gaining necessary motivation and study skills

PROJECT DIRECTOR: Dr. Andrew M. Barclay

BACKGROUND:

An increasing number of academically disadvantaged students are being admitted to the University. To avoid lowering academic standards, or covertly creating a double standard, these students must be provided an opportunity to learn the study skills requisite to success in University work. For this reason, the MSU Psychology Department is developing a course (PSY 107) for academically disadvantaged undergraduate students. As originally proposed, the course would provide three distinct learning experiences for the student: (1) a basic "core" of study and test taking skills; (2) an analysis of student motivation towards study and university life, examining attitudes and interpersonal behavior which degrade academic performance; and (3) application of basic conditioning practices to improve motivation and study skills.

PROJECT DESCRIPTION:

In the summer of 1969, research was conducted to assess students who might be taking the course, and determine general teaching methodology and learning objectives. It was felt that the basic core of study and test taking skills were amenable to structured self-study, which would then free faculty to concentrate their attention on the problems of motivation. Thus the proposed teaching model utilized a self-instructional study skills laboratory and seminar-interaction groups guided by psychology faculty.

An EDP project was approved to support development costs for 5 SLATEs (audio-visual mediated learning carrels) in the skill areas of reading, note taking, listening, composition, and test taking. SLATE development was handled by two graduate psychology majors under the direction of Dr. Barclay.

PROJECT STATUS:

The original enrollment in PSY 107 was 150 students, most of whom were black sophomores. The students had a 1.00 or lower ("D") grade point average; scored below the .02 percentile on the MSU Academic Aptitude Tests; and received previous academic counseling and/or tutorial assistance. Initially, the course was oriented towards black students, but has been expanded to include all types of students. Current enrollment is 280 students, split 50-50 between blacks and whites.

Currently, students are participating in seminar interaction groups and group study skills laboratories. The SLATEs have not been developed to the prototype stage; therefore, the study skills aspect of the course is not self-instructional, but is being handled in a conventional face-to-face group method.

The status of the project is uncertain at this time because it gradually became clear that the basic problem of disadvantaged students was not lack of study skills -- but lack of motivation to perform the skills they had. Thus development of a core study

skills program of SLATEs only begged the question, it did not answer it. The major outcome of this project was the recognition that the real problem of "disadvantaged" students is probably motivation and, therefore, there is a need for greater commitment of human resources to establish trust and a feeling that someone in the University "cares." SLATEs and attendant programed/technological instruction tend to generate just the opposite feeling. The Psychology faculty concerned with this project feel that skill acquisition will come as a natural by-product of increased motivation to study.

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PROJECT TOPIC: Psychology: Sensitivity to Children

Development of video taped excerpts of child and adult behavior to sensitize teachers and social workers to correct and incorrect techniques

PROJECT DIRECTOR: Dr. Gary E. Stollak

BACKGROUND:

Many professions such as teaching, social work, clinical psychology, and parenthood itself, require sensitivity and competence in handling the emotional needs of children. However, formal attention given this topic in professional training programs is often didactic rather than performance oriented. To remediate this problem, Dr. Stollak proposed a strategy in which students would view on CCTV a wide range of child behaviors -- each of which would be handled "sensitively" and "insensitively" by an adult. Having viewed these examples, students would then apply what they have learned, in dealing with live children. Segments of each student's interaction with a child would be video taped and played back at discussion sessions to provide immediate feedback on sensitivity and attendant child care. This combination of video tape examples, student performance, and video replay of student performance would then form the teaching model for a new course designed to teach sensitivity to children.

PROJECT DESCRIPTION:

Approximately 50 one-hour video tapes were recorded to provide clear examples of sensitive and insensitive handling of such emotions and behavior as: aggression; creativity; curiosity; worry; affection; fantasy; and dangerous behavior. A longitudinal technique was used, where 20 children 4-6 years old interacted individually with 20 undergraduate students, for 25 sessions. Each 5th session was video taped, and examples of appropriate handling of each type of behavior was edited into 5 one-hour video tapes. Each of the edited tapes was coded so any given category of behavior could be quickly located.

PROJECT STATUS:

The 5 one-hour video tapes are currently being used in an experimental course, "Sensitivity to Children." GTAs and faculty are utilized as discussion leaders for 5-10 undergraduate students (total enrollment is 160). Each undergraduate has obtained a volunteer child, with whom he interacts once a week, after having seen the video tape examples. Video feedback and discussion are regularly scheduled. Formal evaluation of this teaching model is not yet completed. However, informal feedback from students and faculty indicate wide acceptance of the technique and far better learning of the sensitivity skills.

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PROJECT TOPIC: Social Science Research

An "omnibus" survey of students, faculty and administrators on a range of current issues

PROJECT DIRECTOR: Dr. Philip M. Marcus

BACKGROUND:

Universities and other complex organizations often suffer from a lack of internal communication. The many diverse groups forming the organization do not formally communicate and may often work at cross purposes or engage in counterproductive activities because of misunderstanding or lack of communication with other groups.

To determine how best to improve internal communications within the university, a special committee was formed in March, 1969. This committee invited a proposal from Dr. Marcus in which he outlined a procedure for conducting a semi-annual "omnibus" poll of problems and opinions from university personnel (students, administrators, and faculty). The survey was not intended as a referendum, or endorsement of any given position, but instead represented an information gathering device so that all groups could better understand the social context in which people's opinions arise, and point to significant issues which must be handled in the future by representatives of all university groups.

PROJECT DESCRIPTION:

In October, 1969, EDP funds were authorized to commission the "omnibus" survey proposed by Dr. Marcus. This was the first large scale survey undertaken by the newly formed Survey Research Unit, and a major effort was expended in training personnel, and "debugging" the administrative, data gathering and analysis procedures. The first survey was conducted Winter Term, '970, to a stratified sample of approximately 2500 students, 500 faculty and 500 administrators. The instrument contained approximately 100 questions developed on the basis of numerous selected interviews, and covered such topics as purposes, operations, and participation in the

university, and a demographic profile of respondents. The results of this survey were published in June, 1970.

During Spring Term, 1970, the large scale demonstrations and student "strike" provided an opportunity to gather invaluable data on the issues surrounding the strike. Dr. Marcus, therefore, initiated a second survey sampling over 2000 students, faculty and administrators, on over 100 relevant questions. The results of this survey were published Fall Term, 1970.

PROJECT STATUS:

The information produced by the two "omnibus" surveys is undergoing study at this time, essentially from a cost-benefit standpoint. That is, the potential communication and decision making benefits are being weighed against the cost, to determine if and when other "omnibus" surveys should be made. A large data base has been generated which can be examined from many perspectives, and which represents a unique and potentially significant input into the communication and decision making process.

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PROJECT TOPIC: Social Work

Structured learning and teaching environments used to replace field trips in social work course

PROJECT DIRECTOR: Dr. Clayton T. Shorkey

BACKGROUND:

The existing course (SW 367) attempted to familiarize 180 students per year with the organization and functions of selected social agencies, institutions and social welfare programs in Michigan to prepare the students for two terms of field instruction (SW 467) in community placements. The original model taught by one faculty member and three graduate assistants included field trips and guest lecturers. This model became inadequate due to the large number of students required to take the course. Scheduling difficulties for field trips as well as inconvenience for agencies visited, and the lack of control over the content of material learned from speakers and on field trips resulted in the decision to eliminate the field trips and speakers and to accomplish these learning experiences using audio-visual SLATEs (audio visual mediated experiences in self study carrels).

PROJECT DESCRIPTION:

The project involves the development of 7 SLATEs including public assistance programs, child welfare programs, medical social work programs, institutional programs, school social work programs, family service programs, and community mental health programs. The project

objectives are: (1) to save student and faculty time, (2) improve overall learning (since all students will "visit" all agencies in the SLATE model), (3) provide coordination and common objectives for each small group discussion section, and (4) provide valuable teaching materials for the whole department, particularly the GTAs who have specialized in a narrow area and need familiarization with the broad spectrum of social work. When completed the SLATEs will also be used to prepare first year graduate students for field placement.

PROJECT STATUS:

Five of the seven SLATEs have been developed to the prototype stage and were used Fall Term, 1970, for purposes of evaluation. Changes have been made in these units to insure clarity of information presentation and to increase student success on the post-test. The five units are being tested (Winter Term, 1971) to determine the effectiveness of the units related to scores on the post-test.

Preliminary data indicates some ambivalence as to the effectiveness of the SLATE model. Some students feel "cheated" by not being able to go on "live" field trips (although they recognize the logistical impossibility of visiting "live" the agencies portrayed in the SLATEs). However, over 90% of the 60 students evaluated have scored 90% or above on the post-test following a session of one hour or less with the unit. It seems likely that the SLATE experience will provide students with a better conceptual grasp of the whole system of interrelated social agencies, as opposed to first-hand knowledge of one or two agencies. The final configuration and teaching model of SW 327 is still being developed, but inclusion of the seven SLATEs is highly probable.

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PROJECT TOPIC: Social Work: Counseling

Development of a viable program training graduate students to counsel undergraduate Social Work majors

PROJECT DIRECTOR: Dr. Thomas Ruhala

BACKGROUND:

Increasing enrollment in Social Work was causing stress in the area of academic advisement. Faculty were pressed with normal academic duties and consequently the frequency and duration of advisement contacts was lower than desired. Dr. Ruhala proposed the development of a training program which would train part-time college graduates to become competent academic advisors to the undergraduate Social Work majors. This, it was hoped, would reduce the advisement load of faculty, save faculty time, reduce the number of advisement errors, and increase the frequency of undergraduate advisement.

PROJECT DESCRIPTION:

Qualified advisors were selected and in conjunction with Social Work faculty developed a series of 3 manuals describing admissions procedures and degree requirements for Social Work majors. The development of these manuals provided the necessary background for advisement. Regular office hours were scheduled and student utilization was larger than expected. Advisors were assigned to one level of student in order to increase each person's special competence.

PROJECT STATUS:

No formal evaluation of this project was conducted. However, informal feedback data from students showed very strong acceptance of this innovation. Considerable saving of faculty time has resulted, and fewer technical and time wasting errors have been noted. Since advisement is more readily available, students with problems other than curricular are identified and directed to the appropriate MSU agency (health center, student counseling center, etc.). In short, major gains in advisement efficiency have been obtained. Both faculty and students save time, students receive better advise, they take it, and are pleased with getting the "straight word" regarding their major field. It is likely that this technique will be continued indefinitely in the School of Social Work.

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PROJECT TOPIC: Teacher Education

Systematic development of a new teaching model for teacher trainees integrating self study modules, simulation, small group discussion, lectures, and mastery learning

PROJECT DIRECTOR: Dr. Judith Henderson

BACKGROUND:

Education 200 is the first and largest of four "core" courses in the professional training program in education. It serves as an advanced organizer for all training to follow by providing an introduction to the major concepts, principles, and skills requisite to becoming a teacher. With an enrollment of over 4,000 students per year, ED 200 is not only the largest course in the College, but certainly one of the most difficult to conceptually organize and administer.

Using an instructional model of 3 large lectures (N = 600) and 2 quiz sections (N = 40) per week, a serious problem had developed. The problem was a discontinuity between course objectives, examinations, and what was taught. Rapid turnover of six guest lecturers (specialists in their field) and difficulty in coordinating 20 graduate student small group leaders, typically resulted in an

idiosyncratic approach to course objectives, content, and examinations. Operationally, the course was organized around the interests and competencies of individual lecturers and quiz section leaders.

Recognition of this problem led to the formation of a development group headed by Dr. Henderson. Using a "systems" approach, this group worked for one year developing a comprehensive and cohesive curriculum and methodological plan. This plan proposed a totally new ED 200 instructional system, including:

(1) An overall Teacher Education conceptual model which would guide the derivation of instructional objectives, content, strategies, and media.

(2) Specification of criterion referenced behavioral objectives, the attainment of which would demonstrate competency in planning and implementing instruction and which become requisite to course completion.

(3) Specification of several instructional methodologies for achieving these objectives, including: (a) large group presentations; (b) SLATEs, multi-media (self-instruction), including in-basket simulations; (c) small group interation; and (d) some field experience (experimental at the present time).

(4) Specification of design parameters for instructional materials to be used in each of the selected methodologies.

(5) Specification of design parameters for both formative and summative evaluation of the entire instructional system, as well as student achievement.

(6) A strategy for achieving interface with existing course procedures and content.

PROJECT DESCRIPTION:

The development group recognized the enormous scope, complexity and cost of implementing the proposed instructional system, and the necessity of gradually "phasing in" proposed changes.

The first phase of implementation received EDP support in August, 1969. During this phase a variety of developmental activities took place, including: (1) Development of four SLATE units to the prototype stage (slides, tape and workbook complete); objectives and scripts were completed for three others; and 12 carrels constructed. The four prototype SLATEs were tried out experimentally during the Summer Term, 1970, and revised on the basis of tryout data. (2) An "in-basket" simulation of teacher assessment activities was designed, produced and integrated into the existing course structure. (3) A student handbook of relevant course materials and programed sequences

was developed. (4) A 3 screen multi-media "extravaganza" was developed in an attempt to "turn on" students. (5) An experimental section (N = 100) was formed to validate the instructional materials and evaluate the feasibility of the small group/simulation/independent study instructional strategy. Attitudinal and achievement data from the experimental group supported the hypotheses that the small group (N = 12) individual study, and simulation model, increased both learning and motivation.

PROJECT STATUS:

The project is entering the second phase of implementation (its second year of development). Funding comes from a second EDP grant, monies from the College, and a $50,000 USOE grant. This phase focuses on: (1) development of 15 single concept films on teaching and teaching problems; (2) seven additional SLATE units; (3) validation and revision of previously developed materials; (4) implementation of small group sessions with maximum enrollment of 15; and (5) performance oriented criterion objectives, based on the "Teacher Education Conceptual Model." This means that students must achieve a grade of "B" on early objectives before proceeding to later ones; i.e., a "mastery" model.

During this phase, an interim instructional model has been adopted consisting of 1 large group presentation (N = 450) and 2 small group (N = 15) sessions per week. With over 900 students in the course per term, implementing the small group concept (N = 15) has required extensive GTA training and coordination of physical facilities. In addition 42 audio visual carrels have been installed and the independent study aspect of the new instructional model is being implemented, as validated materials become available.

Again, as in earlier years, the magnitude, complexity and logistics of the developmental effort are enormous. Significant progress is being made and the ED 200 instructional system is essentially on schedule in achieving the goals outlined in the original 1969 plan.

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PROJECT TOPIC: Television & Radio: Curriculum Study

An analytic study of the junior and senior television and radio curriculum which led to revision and integration of departmental offerings

PROJECT DIRECTOR: Dr. Robert Schlater

BACKGROUND:

Current senior level courses in Television/Radio (TR 485, 486, 496, and 497) have considerable overlap in the subject matter covered. Topics such as station management (TR 485), programing (TR 486), federal and state laws (TR 496), and responsibilities of broadcasters (TR 497) are interdependent and interactive to some extent.

Therefore, the TR Department thought it beneficial to examine the course content of each of these four with the thought of combining them into a multi-term "core" course rather than a series of fragmented modules.

Preliminary investigation showed that the senior level courses could not be realigned without considering the whole "system," e.g., the entire TR curriculum leading up to these senior courses. With 411 majors in TR (doubled enrollment since 1966) and no increase in faculty or resources imminent, an evaluation of existing curricula and resources was needed.

PROJECT DESCRIPTION:

An EDP proposal was submitted to provide for faculty release time to conduct the curriculum study. The project began by reviewing the literature on curriculum change models. Next, a detailed flow chart of the course content of each of the senior level courses was developed. From these flow charts, a two-dimensional matrix showing all the concepts taught in the senior level course was developed. From this matrix, redundancies were eliminated, prerequisites were identified, and the entire 4-year curriculum revised. A final matrix showed learning objectives hierarchically sequenced, over time, from the entering freshman to the senior level. Initially started as an analysis of the senior level TR curriculum, the project evolved into an analysis of the prerequisites, which then led to an analysis of the total TR curriculum.

PROJECT STATUS:

The curriculum study was completed and recommendations for additions, deletions and combining courses were approved by the University Curriculum Committee. The new curriculum was implemented beginning Fall, 1970. An additional benefit of the project was a higher level of faculty enthusiasm, cohesiveness, and commitment to teaching.

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PROJECT TOPIC: Television & Radio: Fundamentals

Task analysis and development of a self instructional radio laboratory and attendant materials

PROJECT DIRECTOR: Dr. Robert Schlater

BACKGROUND:

Due to larger enrollments (180/year) the existing laboratory facility in the radio course (TR 272) was becoming physically inadequate to accommodate course requirements. The course served TR majors as well as serving advertising, communication, etc. The teaching model used was two, two-hour lecture/laboratory combination sessions, taught in the radio lab itself. The lab could only accommodate 20 students, and since enrollment was 60 per term, three sections were

convened, two times a week. Instead of building a larger laboratory it was suggested that the TR 272 faculty analyze the content and methodology of the course to determine if teaching models other than lecture/lab combinations might be used. A proposal was submitted and EDP funds were authorized to provide faculty release time and a GTA to perform this analysis, after which, a new and possibly more efficient teaching model might be implemented.

PROJECT DESCRIPTION:

Essentially, a task description and task analysis of the teaching in TR 272 were proposed. From this description and analysis, a rational trade-off decision could be made as to the optimal teaching methodology, sequence, and allocation of faculty and lab resources.

Initial analysis of course objectives and content revealed considerable material was being taught in lab which could just as efficiently be taught in lecture, or independent study. Specific tasks, such as operation of equipment (tape recorder, turntable, etc.) were analyzed in detail and flow charts developed. From these flow charts, it became readily apparent that entry skills and concepts could be taught in lecture/discussion sections outside of the laboratory. In addition, the flow charts provided a guide as to the optimal sequence of course content and were the basis of a self-instruction manual which was written and published for sale to students enrolled in the course.

PROJECT STATUS:

After task description and analysis, the teaching model adopted was one two-hour lecture and one two-hour lab (run by a GTA), plus independent study in the lab using "practice kits" (these kits contained production materials, and assigned problems of increasing difficulty). Essentially the course objectives are unchanged, the major change being in teaching method.

The new method "freed up" the lab 6 hours per week, plus TR faculty were released from the repetitive burden of teaching the same material three times. Evaluation of both written and production exams showed that student learning was improved, primarily in the production aspect. Student attitudinal scales showed a sharp increase favoring the new methodology. The technique of task analysis has proven effective in suggesting efficiency oriented changes, and is likely generalizable to many other disciplines.

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PROJECT TOPIC: Zoology: Developmental Biology

Structured learning and teaching environments developed for the lab course in developmental biology

PROJECT DIRECTOR: Dr. John R. Shaver

BACKGROUND:

The introductory laboratory in developmental biology deals with the morphogenesis of vertebrates (frog, chick, and pig). Because of limited lab facilities and large enrollment (175 per term), multiple lab sections are taught by graduate teaching assistants. At the beginning of each lab period, graduate assistants present an introductory orientation demonstrating the lab materials, procedures, and important concepts. Individual and group use of the lab materials followed the orientation.

This model led to variability between sections in instructional technique, lack of standardization regarding content and procedures, different grading practices, and difficulty in dealing with excessively bright or slow students. Furthermore, the section size and scarcity of equipment precluded the opportunity for extensive individual work.

To remedy these problems, the Department of Zoology proposed an EDP project to develop a series of structured learning and teaching environments using audio visual carrels (SLATEs) which would provide a standardized "prep lab" for each laboratory period. The prep labs would essentially replace the graduate student orientation phase of the labs, and would, therefore, allow GTAs to concentrate on individualized instruction.

PROJECT DESCRIPTION:

The course was restructured so that GTAs were relieved of their group presentation responsibilities and could concentrate on individualized instruction in the labs. The information formerly presented by GTAs would be presented in the SLATEs. In addition, a discussion section was included in the new teaching model so through interaction, progress of each student could be monitored, questions answered, and learning enhanced.

Over a two-year period, 24 carrels were installed; a total of 13 SLATEs were developed (slides, tapes, and workbooks); and a completely new lab manual developed. These SLATEs were evaluated experimentally several times, and in each case both attitudinal and learning data favored the SLATE treatment.

PROJECT STATUS:

The 13 developmental biology prep labs are fully integrated into the Department curriculum, although additional development is continuing. Based on a one-year trial, the course objectives and examinations are being revised. The total effect of the project has been (1) a noticeable increase in efficiency in the microbiology labs, because the students are better prepared; (2) a great savings of GTA time; (3) more favorable attitude towards the course and subject matter shown by students.

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PART III

PROJECTS NOT FUNDED BY EDP BUT WHICH

AFFECT EDUCATIONAL DEVELOPMENT

PROJECT TOPIC: Reorganization of Undergraduate Education

Study of alternative patterns of organization of undergraduate curricula and teaching resources

PROJECT DIRECTOR: University Educational Policies Committee (EPC)

BACKGROUND:

In February, 1967, a Committee on Undergraduate Education was appointed by President Hannah whose charge was to review the entire undergraduate educational program, identify major problems and set forth recommendations. Later that year, after intensive survey and deliberation, the committee presented its report containing 78 recommendations. Since then, many recommendations have been implemented, however, many problems persist -- for example, whether or not to create a degree granting College of General Studies, or whether to alter the general education requirements of the University.

In light of these and other complex issues, the Provost in October, 1969, requested the University Educational Policies Committee to reassess and make recommendations both as to priorities and as to procedures for studying and resolving each problem in organization of undergraduate education.

PROJECT DESCRIPTION:

The Educational Policies Committee organized into five subcommittees, each responsible for analysis and recommendations in their specified area: (1) administration, policies and priorities; (2) general education; (3) residential colleges; (4) instructional quality; and (5) admissions. Each subcommittee conducted data gathering and deliberations and presented several interim reports to the committee of the whole. A total of 31 recommendations were made in the final report, which was submitted to the Provost for review and implementation.

PROJECT STATUS:

The EPC report to the Provost has sparked several new proposals for reorganizing undergraduate education, developed by various colleges and faculty on campus. The various proposals have been reviewed individually by the Provost and EPC but no action has yet been taken.

The organization of undergraduate education represents a very complex system of interlocking issues, which will require continuing deliberation and analysis in order to resolve.

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PROJECT TOPIC: Living Patterns in Residence Halls

Study of alternative patterns of living in residence halls

PROJECT DIRECTOR: Dr. John Dietrich (Assistant Provost for Academic Planning)

BACKGROUND:

In the Spring of 1970, students in one of the residence halls demanded an increased degree of self-determination regarding dormitory organization and governance, coed living patterns, and relationships between residential life and academic life.

PROJECT DESCRIPTION:

A special commission was formed of five students and five administrators to study this problem and make recommendations to the Office of the Provost. During its 400 man hours of deliberations, the commission did not become immersed in adversary patterns. Rather, it became a group of cooperative human beings with many different points of view who dedicated themselves to the questions of how living conditions, living patterns and the relationships between living and learning in the academic situation might be improved. Seven recommendations were offered, each representing a consensus of the entire commission.

In general, the commission recognized the value of increasing self-determination and proposed establishment of several alternative living patterns and organizational structures.

As a result of these recommendations, the administration sought to determine the attitude of parents and students on these issues for possible reorganization of living patterns in other residence halls on campus. In the Summer of 1970 the Office of Student Affairs conducted a parent-student survey of all students returning or entering the residence halls at MSU. The survey sought to determine opinions on living patterns for men's and women's halls and on a variety of housing options, on the basis of which a comparable range in choices could be offered meeting the satisfaction of students and parents.

Results of the survey indicate preferences among students and parents for a broad spectrum of living patterns from extremely restrictive to extremely liberal. The University therefore intends to develop a campus-wide plan making a range of residence living patterns available from which choices can be made and where resolution of differences in desired choice between parent and student will be their responsibility. This plan is in the development stage at the present time.

PROJECT STATUS:

The development of a wide range of alternative living patterns is

a long term project, the results of which will probably be implemented in stages as resources permit. At present, several residence halls have adopted differential living patterns which offer students a range of options from restrictive to liberal.

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PROJECT TOPIC: Self Study: College of Education

Analytic study of all aspects of the College function and operation

PROJECT DIRECTOR: EDP Committee

BACKGROUND:

"Departmental" studies have been conducted under the general auspices of the Educational Development Program for the past six years. These studies seek to analyze all aspects of departmental operations including a wide range of specific topics such as leadership, budgets, curriculum, teaching models, advisement, etc. Normally a committee is formed to conduct the study. The committee includes key faculty members, the Chairman of the Department and/or Dean of the College, one or more representatives from the Office of the Provost, and other selected faculty. The study normally requires at least one year to conduct, is based on factual information and data supplied by institutional research, provides a series of recommendations to the University, and becomes the planning base for the unit being studied and the Office of the Provost.

PROJECT DESCRIPTION:

The College of Education study was begun in the Fall of 1969. It is the first attempt to study a college using the model originally developed for departments. For a number of reasons, the departmental model has not been entirely satisfactory and new methods have had to be developed.

PROJECT STATUS:

It is expected that the entire study will be completed by September, 1971.

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PROJECT TOPIC: Self Study: Department of Art

Analytic study of all aspects of Department function and operation

PROJECT DIRECTOR: EDP Committee

BACKGROUND:

"Departmental" studies have been conducted under the general auspices

of the Educational Development Program for the past six years. These studies seek to analyze all aspects of departmental operations including a wide range of specific topics such as leadership, budgets, curriculum, teaching models, advisement, etc. Normally a committee is formed to conduct the study. The committee includes key faculty members, the Chairman of the Department and/or Dean of the College, one or more representatives from the Office of the Provost, and other selected faculty. The study normally requires at least one year to conduct, is based on factual information and data supplied by Institutional Research, provides a series of recommendations to the University, and becomes the planning base for the unit being studied and the Office of the Provost.

PROJECT DESCRIPTION:

The Department of Art study was begun in June, 1968.

PROJECT STATUS:

The study was completed in April, 1970, with many recommendations having been implemented. For example, EDP is currently supporting the development of an introductory "core" course which will be open to all undergraduates. This experimental core course will be designed to provide a broad based series of art experiences for undergraduate non-art majors and to help identify promising students for further art study.

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PROJECT TOPIC: Faculty Code of Teaching Responsibility

Development of a code of professional teaching responsibilities

PROJECT DIRECTOR: University Educational Policies Committee (EPC)

BACKGROUND:

The Office of Ombudsman was established to hear and rectify legitimate student complaints. During the 1967-68 school year the Ombudsman reported to the Educational Policies Committee that many student complaints centered on what can only be called unprofessional conduct of some faculty members; i.e., grading injustices, ineffective methods of instruction, unfair final exams, personal controversies with faculty, class cutting by instructors, rudeness, failure to keep office hours, failure to respond to correspondence, accusations by faculty of academic dishonesty, etc. The Ombudsman suggested that EPC undertake the preparation of a Code of Professional Conduct or Code of Professional Ethics setting forth general standards governing each faculty member's obligation to the University, with reference to his relations with students in his classes. Such a code would not be concerned with his professional competence as a scholar, but rather with his responsibilities as a teacher.

PROJECT DESCRIPTION:

A subcommittee of the Educational Policies Committee was formed to study this problem and make recommendations. After considerable deliberation, a Code of Professional Conduct was developed, approved by EPC, and adopted by the Academic Council of the University. As such it is obligatory for all teaching faculty. A verbatim statement of the code is included.

Faculty Code of Teaching Responsibility:

The teaching responsibilities of the instructional staff are among those many areas of university life which have for generations been a part of the unwritten code of "scholars and gentlemen." Now, however, along with other formerly unwritten contracts, it seems appropriate to set forth these responsibilities in the form of a code. The provisions of such a code are so reasonable to learned and humane men that it may appear redundant or unnecessary to state them. However, the University conceives them to be so important that the performance of the instructional staff in meeting the provisions of this code shall be taken into consideration in determining salary increases, tenure, and promotion.

1. Instructional staff members are responsible for stating clearly the instructional objectives of each course they teach at the beginning of each term. It is expected that each instructional staff member will direct his instruction toward the fulfillment of these objectives and that examinations will be consistent with these objectives. Instructional staff members are responsible to orient the content of the courses they are assigned to teach to the course descriptions approved by the University Curriculum Committee and the Academic Council.

2. Instructional staff members are responsible for informing students in their classes of the methods to be employed in determining the final course grade and of any special requirements of attendance which differ from the attendance policy of the University.

3. It is expected that graded examinations and papers will be provided to the student for inspection and discussion. Thus, final examinations will be retained for one term to provide the opportunity for review with the instructor, if the student so desires. It is expected that examinations will be graded within a sufficiently appropriate time to make the examination a part of the student's learning experience.

4. All instructional staff members are expected to meet their classes regularly and at scheduled times. In case of illness or any other emergency, the instructor will notify the department chairman so that appropriate action may be taken.

5. All instructional staff members whose responsibilities involve students, are expected to schedule a reasonable number of office hours for student conferences. Office hours should be scheduled at times convenient to both students and instructors with the additional option of prearranged appointments for students when there is a schedule conflict. The number of office hours is to be determined at the appropriate administrative level, and office hours should be a matter of common knowledge.

6. Instructional staff members who are responsible for academic advising are expected to be in their office at specified hours during the period of each enrollment. Arrangements will also be made for advising during registration.

Hearing Procedures:

1. Students may take complaints relative to instruction directly to the departmental chairman or his designate. If the chairman is unable to resolve the matter to the student's satisfaction, the chairman is obligated to refer unresolved complaints, in writing, to the departmental committee charged with the responsibility of hearing such complaints. A written report of the action or recommendation of that group will be forwarded to the Ombudsman, to the student, and to the instructional staff member within ten working days of the receipt of the complaint.

2. Complaints relative to instruction coming to the Ombudsman will be reported to the department chairman, in writing, when in the Ombudsman's opinion a hearing appears necessary. It will be the responsibility of the departmental chairman or his designate to refer such unresolved complaints to the departmental committee charged with the responsibility of hearing such complaints. A written report of the action or recommendation of that group will be forwarded to the Ombudsman, to the student, and to the instructional staff member within ten working days of the receipt of the complaint.

3. Students wishing to appeal a departmental action or recommendation may do so as outlined in Provision 2.2.8.1. of the Academic Freedom Report. "These departmental and college committees shall be the sole agencies for hearing complaints of this kind. A student may appeal the ruling of a departmental committee to the college committee. But there shall be no appeal beyond the college committee except to the dean of the college, who may ask, upon a showing, that a given case be reconsidered."

PROJECT STATUS:

The code became effective in the 1969-70 school year. Since then the Ombudsman has reported that both channels of appeal in the code are being used effectively, that student use of the code is increasing, and that students and faculty are becoming more aware of their joint responsibility in the educative process. In other words, the effect of the code has been to alert both students and faculty to previously implicit responsibilities and provide grievance channels for serious complaints.

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