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**ANNUAL PROGRESS REPORT**  
Grant No. AID/csd-2945  
Fiscal Year 1973

**CENTER FOR EDUCATIONAL TECHNOLOGY**

College of Education  
Florida State University  
Tallahassee, Florida  
September 1974

## **FORWARD**

The Center for Educational Technology (CET) was established within the Florida State University, College of Education as a research, training, and service organization. Through this Center FSU has committed itself to applying a systems approach to the utilization of educational technology in solving educational problems.

In May 1971 the U.S. Agency for International Development awarded a grant to FSU under Section 211(d) of the Foreign Assistance Act. This grant enabled the University to be of greater service to agencies and institutions faced with problems of educational development, costs, and opportunities.

This Annual Progress Report, while initially designed as a report on the utilization of the grant funds, also incorporates descriptions of a great variety of activities conducted by CET. Included is both a summary of activities for fiscal year 1971-1972 (FY 72), and a detailed account of activities for fiscal year 1972-1973 (FY 73). While this report does not reflect the total University's interest in the use of technology in education, it may be used in interpreting the competency, exploratory directions, and interests of CET in solving basic educational problems.

Those of us directly associated with CET welcome opportunities to learn from and contribute to the development of strategies and efforts directed toward problems that lend themselves to innovative and scientific approaches in the field of education.

I am pleased to share this Annual Progress Report with you. It contains a brief historical record of CET's efforts in the field of educational technology.

Robert M. Morgan  
Director  
Center for Educational Technology  
415 N. Monroe Street  
Tallahassee, Florida

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## **SUMMARY**

**TITLE:** A Grant to Strengthen at Florida State University its Center for Educational Technology

**GRANTEE:** Florida State University

**DIRECTOR:** Dr. Robert M. Morgan

### **Statistical Summary**

211(d) Annual Report, 1 July 72 - 30 June 73

Period of Grant: May 1, 1971 to June 30, 1976

Amount of Grant: \$1,000,000

Expenditure for Report Year: \$316,000 Accumulated: \$535,000

Anticipated for Next Year: \$265,000

### **Narrative Summary**

The following major accomplishments in relation to Grant objectives have been achieved during the two year life of the Grant. Specific activities and accomplishments are detailed by fiscal year in the attached report.

#### **OBJECTIVE 1: THE UNIVERSITY RESOURCE CENTER**

The Center for Educational Technology was established as an official organizational unit in the College of Education, Florida State University so that new programs in educational technology could be developed and implemented; to insure interdisciplinary faculty approaches; and, to centralize responsibility for meeting the objectives of the Grant as well as other priority goals of the College of Education. Regular faculty members have been assigned to the Center, new professional and technical staff have been recruited, and select graduate students have been associated with this program. The Center is now a viable organization.

Specialized technical support facilities including a Multimedia Lab, Technical Information Lab, and Computer Applications Lab have been developed and are functional parts of the research and training program of the College.

**OBJECTIVE 2: SPECIALIZED TRAINING PROGRAMS**

The University has provided a greater number and variety of training opportunities for both U.S. and foreign personnel in the field of educational technology. Four distinct types of training programs have been developed and implemented. They are: (1) specialized campus research and work experience; (2) new formal courses in specialized areas, and a new graduate degree program; (3) specialized workshops and non-credit courses both on and off campus; and (4) individualized training and orientation for high level educational personnel who wish to familiarize themselves with the context and possible applications of educational technology.

**OBJECTIVE 3: RESEARCH AND MODEL BUILDING**

Research into literature and into records of the current uses and applications of educational technology has been undertaken. Attempted innovations in particular educational activities and in wide-spread geographical areas have been analyzed and reviewed. Specific designs of "models" for the solution of particular educational problems have been prepared. While much of this "in-house" research effort has been supported by Grant dollars, particularly significant research efforts by Center personnel both at home and abroad have been funded from non-211(d) resources. The research and model building has involved both Center staff and students, and has been an integral part of the training programs of the Center.

**OBJECTIVE 4: LINKAGES AND LIAISONS**

The Center, throughout the existence of the Grant Agreement, has been actively engaged in the establishment of meaningful and mutually supportive relationships with both domestic and overseas institutions involved in the examination, evaluation, and application of educational technology. These interinstitutional ties have evolved at CET's initiative as well as at the initiative of the other institutions. Significant non-Grant supported action programs have also evolved during FY 73.

**OBJECTIVE 5: CONSULTATIVE AND OTHER SERVICES**

The Center program, its resources, and its personnel have been increasingly involved in receiving and orienting official visitors who have expressed an interest in the use of educational technology in the solution of their own problems. The staff has also offered consultative advice and made formal professional presentations when requested to a variety of U.S. and foreign agencies, association, and institutions. Special efforts have been made to relate all of these experiences to furthering the competency of the staff and students of Florida State University, and to being of service to others, particularly to agencies and AID missions in developing countries.

## 1 / BACKGROUND OF THE REPORT

Most educators, political leaders, and ordinary citizens of nearly all nations in the world are in agreement on at least one issue -- the inadequacy of their educational system. In the socially and economically advanced nations as well as in the developing nations, educational systems increasingly cost more, and respond less adequately to the needs of their societies. Societal problems, advancing technology, growing urbanization, increasing demands for educational opportunities, and rapid changes in the nature of manpower needs have in effect rendered obsolete and irrelevant much that is traditionally honored in conventional educational practice.

There are, however, current developments in education which offer promising solutions to problems faced in this sector, even though they are not yet in wide operational use. There are research findings and developments in the social and behavioral sciences plus those in management science and industrial/military training which appear to have much promise for and applicability to education. This research and development has led to the emergence of a "technology of education." This technology has been identified as an innovative process requiring a high level of educational engineering in planning for educational change and improvement.

Technological innovations in education, however, must be placed in a proper perspective if they are to be appropriately exploited, and if they are to make the contribution which their cost demands. Educational technology has been defined in many ways and the words seem often to connote equipment, hardware, and mechanical apparatus. However, for purposes of developing new approaches to the solution of national problems and for the training of specialists in this area, *educational technology is herein defined as the systematic integration and utilization of knowledge, research and invention in the facilitation of the human learning process.*

In 1971, Florida State University requested and received 211(d) Grant support from the Agency for International Development to enlarge and make more specific the capability of the University to perform work in the field of educational technology with particular emphasis on the applicability of its resources to the solution of current educational problems.

The following report presents the Grant objectives, the strategies, and criteria developed by the University for establishing a "center of competence," the activities and accomplishments for both FY 72 and FY 73 as they relate to each objective, and a general review of both the internal and external impact of program activities and efforts during the life of the Grant thus far. The sources and levels of program expenditures for FY 73 are discussed, and a plan of work for FY 74 is included.

Summary financial tables reflect the amounts of both 211(d) Grant money and non-211(d) monies that have been devoted to this specialized program effort. An indexed set of appendices contains detailed supporting information related to specific activities and are referred to within the report.

It was agreed between the Florida State University and the Agency for International Development that major problems of educational development must be examined in representative domestic and international environments to identify whether such problems are consciously faced by the decision makers concerned, and to ascertain whether an effective application of educational technology would be the best means to employ in the solution of those problems.

This five-year Grant was agreed upon to enable the University to build upon and increase its existing capabilities to do research and experimentation, to train educational personnel, and to provide appropriate services related to educational technology both at home and abroad.

The Florida State University prepared and submitted its first comprehensive report on the variety of institutional activities related to this Grant at the end of FY 1972. This second annual report is designed to present both a summary of accomplishments for the first year of the Grant, and a more detailed description of FY 1973.

## 2 / STATEMENT OF GRANT OBJECTIVES

### Original Grant Objectives

As originally stated in the Grant Agreement, the principal objectives of this Grant are "to enable the University to strengthen its capability:

- a. To plan and carry out a program of applied developmental research in the subject area which is designed to integrate present knowledge and work toward closing current knowledge gaps in the field.
- b. To design and organize systematic approaches, alternative models and optional arrangements for the application of educational technology under the differing circumstances and interests of the various developing countries.
- c. To provide educational and training opportunities for a broad spectrum of U.S. and foreign personnel, ranging from complete advanced degree work to short-term training for a variety of special purposes.
- d. To develop an information center on educational technology which will be a library of significant research from throughout the world, books, and relevant documents as a basic intellectual resource for a variety of purposes.
- e. To establish strong and mutually reinforcing relationships with the growing number of national and international institutions, organizations, activities, and projects involved in educational technology for the developing countries.
- f. To serve as a basic intellectual resource center within the U.S. which, through its increase in competence facilitated by this Grant and other resources, will be better able to undertake a variety of research, planning, consulting, and other performance tasks required by AID and other donors, the developing countries, and the various other entities involved in the subject area."

**Restatement of Objectives**

Some of the original Grant objectives have been combined, restated, and their order rearranged. This has been done to make the objectives more consistent with the manner in which the University has proceeded in carrying out the Grant's mission, and to provide a more efficient means of reporting specific accomplishments. However, it should be noted that these rearrangements in format are not intended as any substantive change in the original Grant objectives. This restatement of Grant objectives is as follows:

To enable the University to strengthen its capacity:

1. To serve as a basic intellectual, informational, and technical resource center through the improvement of its personnel, technical information library, and specialized technical facilities. This will provide the resources necessary to undertake a variety of research, planning, and consulting and other performance tasks required by AID and other donors, the developing countries, and the various other entities involved in the subject area.  
(This is a combination of Original Objectives "d" and "f")
2. To provide educational and training opportunities for a broad spectrum of U.S. and foreign personnel, ranging from complete advanced degree work to short-term training for a variety of special purposes.  
(This is a verbatim statement of Original Objective "c")
3. To plan and carry out a program of applied developmental research directed toward integrating present knowledge and closing current knowledge gaps in the field of educational technology. This includes efforts to design and organize systematic approaches, alternative models, and optional arrangements for the application of educational technology under the differing circumstances and interests of the various developing countries.  
(This is a combination of Original Objectives "a" and "b")
4. To establish strong and mutually reinforcing linkages and liaisons with the growing number of national and international institutions, organizations, activities, and projects involved in utilizing educational technology in the solution of educational problems in the U.S. and abroad.  
(This is a restatement of Original Objective "e" which incorporates a few word changes to make it more specific.)

5. To develop a variety of service capabilities in educational technology that can be made available to U.S. and foreign institutions and agencies as well as to AID and other interested entities. These services encompass providing consulting services, sponsoring seminars, hosting visitors, providing technical support for ongoing University programs, and participating in national and international professional conferences.  
(This portion of Original Objective "f" related to planning and consultative services was made a separate objective and expanded to incorporate all other professional services.)

### **3 / PROGRAM DEVELOPMENT**

#### **Developmental Strategies**

In attempting to achieve the stated Grant objectives, the Florida State University defined the following developmental strategies:

- To establish an administrative and organizational unit within the College of Education called the Center for Educational Technology; to channel both 211(d) Grant monies and non-211(d) University monies and resources to support its growth and program development as the responsible University entity for achieving both 211(d) Grant Objectives and other related University goals in the area of educational technology.
- To recruit and employ additional professional specialists in the field of educational technology; to free presently employed University staff for more concentrated work in the area; and, to provide stipends for carefully selected graduate students from both the U.S. and developing countries. These increased resources will be utilized for basic teaching, research, and service in a multidisciplinary approach to the application of educational technology.
- To design, develop, and procure the needed technical resources for support of teaching, research, production, demonstration, and service programs essential to expanding the University's capability in the field of educational technology.
- To develop and implement needed short-term service training programs in specialized areas of educational technology outside the context of regular degree programs of the University; and to mobilize and coordinate University-wide resources for the development of specialized formal courses and degree programs within the program offerings of the University.
- To establish strong and mutually reinforcing professional linkages with national and international institutions and organizations, and with activities and projects utilizing educational technology in the solution of basic educational problems.
- To determine priorities for and to implement a program of applied developmental research in the field of educational technology relevant to organized University teaching, and to both selected problems of developing countries and specialized problems within the U.S.

- To develop a variety of service capabilities within the University that can be made available to others as they attempt to utilize educational technology in the solution of current problems; these services to incorporate technical assistance, informational exchange, interinstitutional projects, and special studies--funded when appropriate by either 211(d) monies, non-211(d) University resources, or the resources of other national or international agencies or institutions.

#### **Criteria for the Use of Grant Funds**

As envisioned in the above strategies, 211(d) funds have and are being used to pay for the services of professional staff, support for graduate research assistants, and for the development and procurement of essential demonstration and resource facilities in the University. Expenditures also are made to help bear the cost of special instructional and office equipment, domestic and international travel, educational materials and supplies, and secretarial and clerical support assistance. On occasion, foreign and domestic advisors to the Center, and foreign consultants on particular problems are also supported. It should be clearly noted that although the University Contract office maintains accurate records and makes official reports on each individual expenditure chargeable to the 211(d) Grant, in day-to-day program operation 211(d) funds, State funds, and funds from contract and/or project sources are jointly used to support particular activities occurring in the implementation of this program.

Criteria for the use of 211(d) funds have been established, and are reflected by positive answers to the following questions:

Does the proposed expenditure contribute to the achievement of one or more of the stated Grant objectives.

Do the proposed expenditures establish a continuous type of activity or commitment within the University that can and will be assumed and continued after the expiration of the 211(d) Grant.

Are the on-campus activities and programs, initially funded by 211(d), of the nature that attract the attention of and involve other major professional units in Florida State University to the extent that University non-211(d) resources are utilized for their support and expansion.

Do the disbursements support the development of a concern for, and an expertise in, the solution of educational problems in the developing world as recognized and defined by the Agency for International Development and other official and responsible U.S. Agencies and institutions.

**Are the Grant-supported research and study efforts focused on problems which, if solved, would provide transferrable knowledges, skills, techniques, materials, etc., applicable to the solution of similar problems in other settings.**

**Do the off-campus activities and services, initially funded by 211(d) funds, focus on the development and application of educational technology in environments where potential non-211(d) resources exist for specific program development and implementation and where there is present an attitude of receptivity for educational innovation.**

#### **4 / PROGRAM ACCOMPLISHMENTS**

At the time of preparing this report, the 211(d) Grant-supported program in Florida State University has been operative through two fiscal years. Although a first-year report has been filed, this Second Annual Report will present a statement of accomplishments for both years. This procedure is followed to enable the reader to evaluate both the individual accomplishments of the current year as well as to reflect the continuum of program development. Since a detailed report of the first year's activities is already on file in AID/Washington, only summary statements of the pertinent parts of that report are incorporated herein.

Specific accomplishments for FY 74 are presented in this report under categories that relate directly to the Grant objectives. It is noted, however, that some of the University strategies stated above relate to all objectives, while others pertain only to particular objectives. All accomplishments are identified in relation to the fiscal year in which they were achieved.

## University Resource Center

To enable the University to strengthen its capacity to serve as a basic intellectual, informational, and technical resource center through the improvement of its personnel, technical information library, and specialized technical facilities. This will provide the resources necessary to undertake a variety of research, planning, and consulting and other performance tasks required by AID and other donors, the developing countries, and the various other entities involved in the subject area. (Objective 1)

### Organizational Structure

#### FY 72 Accomplishments

As contemplated in the Grant Agreement, and in the developmental strategies, in early 1971 Florida State University took the necessary administrative steps to establish an "organizational" unit within the University for centralizing responsibility for program development as envisioned in the Grant Objectives. A Center for Educational Technology was created in the already existing Educational Research Institute of the College of Education. This action was taken since the Institute already had Regents' approval and the establishment of the "Center" required only administrative action. This enabled the University to develop an early identity for the program, and to provide a framework in which already available personnel could plan for program development.

Prior to the 211(d) Grant, Florida State University had assembled considerable strength in most of the relevant streams of academic activity related to educational technology, and had already employed a highly qualified, though limited number of professional personnel in the field. This existing capability was located mainly in the College of Education, but scattered throughout a variety of Departments and organizational divisions therein. The University and the College of Education had had a long-standing commitment to international programs and had recently been participating in a variety of developmental efforts utilizing educational technology. The University, at the time of the Grant, was actively engaged in research projects, in providing consultants, and in contributing to educational development efforts in India, Colombia, Brazil, Japan, Germany, Lebanon, Korea, Turkey, and other countries. These efforts, while of value, were not as systematic, as well coordinated, or as sophisticated as was thought possible. Grant funds enabled the University to implement an essential reorganization, and to provide the basic resources for a new concentration of effort to solve these deficiencies.

In summary, the following organizational accomplishments were achieved in FY 1972:

- A Center for Educational Technology was officially established as a subsystem of an existing research institute.
- A Center Director was selected with authority to administer and develop activities, programs, and personnel.
- Official Advisory Groups, both University and International, were selected and activated to counsel Center staff and other responsible University officials on program development.
- Appropriate on-going University projects and their resources related to Grant Objectives were reassigned to the Center to become a part of its over-all program.
- Arrangements were made for basic housing for the Center's specialized activities and for additional personnel and graduate students.
- The Center was commissioned by the University to build a program of activities -- (research - training - service) -- that would achieve an agreed upon set of objectives related to educational technology.

#### FY 73 Accomplishments

FY 73 was a year of reorganization for the College of Education within the Florida State University. This reorganization (detailed in other official University reports) was designed to change the structure of the College so that new kinds of programs and interdisciplinary faculty relationships could emerge; and to ensure that the organizational structure reflected and supported the priority goals of the College.

During this year the College moved from an organizational structure encompassing 17 subject-oriented Departments and a number of research institutes and centers into a structure embodying four major program divisions whose functions would be supported, enhanced, and extended by four special offices directly responsible to the Dean of the College. The Center for Educational Technology was placed in the "special" office category to stress the interest of the College in International Education and at the same time to relate those interests to the University's leadership in the field of educational technology.

These changes reflected several months of College-wide faculty planning and received both administrative sanction and Regents' approval. The Center for Educational Technology thus became an official agency for the College of Education program and for the University. These actions were finalized just before the end of the report year.

In summary, the basic organizational accomplishments during FY 73 were as follows:

- The assignment of the Center for Educational Technology to a continuing and more significant role in the College of Education structure. (See Appendix A: Organization)
- The merging of additional organization units from the previous College of Education structure into the Center for Educational Technology, i.e., Office of International Education, Computer Assisted Instruction Center, etc.
- The reorganization of the Center to serve broader responsibilities within the College program. (See Appendix A: Organization)
- The identification of the following major College-wide functions of the Center with regard to educational technology:
  - A. To provide short-term non-degree programs in educational technology
  - B. To provide short-term consulting services
  - C. To engage in planning for large-scale educational development and reform projects
  - D. To conduct research and development activities which are related to educational technology problems
  - E. To establish linkages with national and international groups and institutions which share similar goals with the Center
  - F. To summarize research and development findings and to distribute these to relevant foreign and domestic agencies and to instructional units within the College.

### **Personnel Resources**

The previously stated Grant Objectives and the defined University strategies both projected an increase in the numbers of professional staff devoting time and efforts to research, training, and services in the field of educational technology. Additional support staff, and an increase in the numbers of graduate students were also a part of the proposed plan. (See Appendix B: Personnel, for Vitae of professional staff and listings of all staff positions for FY 72 and FY 73.) In order to identify and recruit such personnel, Grant funds were assigned to the Center for Educational Technology, and the personnel actions taken are reported herein.

Increases in the quality of staff resources are reflected by the Vitae as well as by the increased professional activities which are presented in other sections of this report. A conscious effort has been made in this report to reflect increased University support in making non-211(d) Grant financed personnel available to this special effort.

#### **FY 72 Accomplishments**

- Professors from the Departments of Elementary Education, Educational Administration, Science Education, Higher Education, Educational Research, and Social Studies Education became the first staff associated with the newly formed Center for Educational Technology. In nearly every instance these staff members functioned on a released-time basis, although there was some Grant support for them during particular quarters, or for specific services. Eight such professors were initially affiliated with the Center.
- Ten new staff members were employed in other professional capacities.
- 211(d) Grant funds were used as stipends for an average of 15 graduate assistants during each quarter of the fiscal year.
- Seven support staff positions (secretarial-clerical, etc.) were established. Six of these were funded by 211(d).

#### **FY 73 Accomplishments**

**NOTE:** All staff positions (professional, technical, graduate, and clerical) may have been supported by State contract and/or 211(d) funds during FY 73.

- In addition to the academic staff positions and personnel reported for FY 72, four additional academic positions were added to the Center staff. Of these professors, three have been supported by 211(d) funds during FY 73.

- Three new professional staff positions were established during FY 73, two of which were supported by 211(d) funds.
- The use of 211(d) funds for support of graduate assistants was continued in FY 73 and an average of twelve students per quarter were supported. However, non-211(d) funds were used to support additional graduate students.
- While six new support staff positions were added to the Center during FY 73, none of these were supported by 211(d) funds.

Although there has been the normal University turnover in graduate students, the professional personnel of the University in educational technology has remained very stable. Those few individuals who have departed have moved to positions with greater responsibility in the same area, and replacements have been easily attracted to this special effort at Florida State University.

#### **Technical Facilities**

One of the strategies defined by the University for strengthening its capacity as a resource center was to increase the quantity and quality of technical facilities needed for the support of training, production, research, and demonstration activities. The specific facilities that needed to be established and/or expanded were of two basic types: media facilities (hardware) and informational/instructional materials (software). Resources of this nature have been and are available in both the general University services and the College of Education. However, due to the specialized and extensive nature of the activities undertaken by CET, it was necessary to develop two new technical facilities devoted wholly to specific programs related to educational technology. These facilities are located within physical space provided for the Center for Educational Technology.

#### **FY 72 Accomplishments**

- A Multimedia Lab was designed and the following facilities were established: instructional technology demonstration room; still-photography lab; graphics design area; engineering design and maintenance area; prototype construction shop; and, a partially completed closed-circuit television studio. The purpose of the Multimedia Lab is to serve as a technical resource for conducting specialized training and research in areas of educational technology, and to develop prototype methods of utilizing media to improve educational systems. A unique feature of this Lab is the cost-effective, yet flexible, design of the facility itself. (See Appendix C: Facilities for complete description and equipment listing.)

- A Technical Information Lab was established to collect, exchange, and disseminate materials on educational technology; and, to serve as a depository for CET publications and instructional materials. A full-time professional librarian was assigned to the Lab. Major emphasis was placed on procuring physical space and equipment and on beginning acquisition of books, journals, research reports, reference collections, and special documents covering all areas of educational technology.

#### FY 73 Accomplishments

- Multimedia Lab: At the end of FY 73 this facility was complete in terms of basic equipment and capabilities. However, it should be noted that it will be continually expanded and updated in terms of acquiring new staff and specific items of equipment when needed. The FY 73 accomplishments related to the Multimedia Lab are as follows:
  - A. The Audio/Television Production/Training System was completed. It is housed in the Multimedia Lab television studio. However, most of the equipment is built into prototype consoles that can be taken out of the Center and used for production in remote locations. See Appendix C: Facilities for FY 73 additions.
  - B. Although the Super 8 mm cinematography equipment was purchased during FY 72, it was not utilized until FY 73. This capability is now operationalized and staffed by a full-time cinematographer.
  - C. The graphics capability of the Multimedia Lab was expanded and improved through the construction of a prototype graphics design and production unit. This is a specially designed table containing projection equipment and graphics materials. With this unit, graphics for slide/tape storyboards and other types of visual materials can be produced with a reduction in both time and cost.
  - D. Several television monitors were installed in the facilities housing the Center to allow for the simultaneous use of a variety of videotape modules. An intercom system linking the training room monitors with the Multimedia Lab television control room was also installed.
- Technical Information Lab: During FY 73 a special effort was made by appropriate Center staff in clarifying the role of this facility in relation to both University and non-University clientele. Due to the expanded role of the Center within the University and the corresponding increase in the number of its project activities, a new internal statement of mission for

this facility as well as expanded capabilities were agreed upon. The FY 73 accomplishments are:

A. The role of the Technical Information Lab was defined as follows:

- To serve as a resource base for Center research activities by acquiring information and materials appropriate to conducting such studies
- To disseminate all official CET distributions of project reports, research studies, and other information related to Center efforts in applying educational technology in specific situations
- To support training programs by acquiring needed instructional materials and serving as a check-out center for CET-produced materials (both printed and audio/visual)
- To maintain contact and exchange information with institutions involved in programs related to those of CET
- To serve as an orientation center for visitors to CET.

B. New and additional space related to the above mission of the Lab was acquired and the Technical Information Lab was organized and moved to these new facilities.

C. Study carrels wired for media use were installed in the Lab to serve the needs of visiting scholars and graduate students doing special research and study in relation to Center programs.

D. The librarian was provided with student assistants to meet the needs and demands of the expanded facility and the growing demands identified in the role above.

E. A variety of additional materials related to Educational Technology and to implementing the Center's programs were acquired. (See Appendix C: Facilities for inventory summary.)

- Computer Applications Lab: As a result of the reorganization of the College of Education, the Computer Assisted Instruction (CAI) Center was assigned to the Center for Educational Technology. Because of the change in its mission, its name was changed to the Computer Applications Laboratory (CAL). In its former CAI capacity it was predominately

responsible for administering computer-based University courses. In its present capacity as the CAL, it is primarily a research facility directly supporting CET Grant objectives, projects, and activities, and serving in the Center as a resource for College of Education Divisions and faculty who are undertaking research related to computer uses in education. These research efforts range from single studies, to special short-term experimental sessions, to trial implementations of full length courses. In conducting these types of research, the Lab utilizes instructional display capabilities of 12 cathode ray tube terminals and 14 typewriter terminals, collecting a variety of data for evaluation. The computer programs then permit sorting, merging, etc. of data as desired, printing out results for study or for further analyses. This facility was established by the University at an original cost of approximately \$340,000 of non-211(d) funds.

Throughout these research activities, the Lab maintains a hands-on graduate training program providing experience in conceptualizing, developing, implementing, evaluating, and revising instructional programs under public schools, university, and interinstitutional auspices. One of the major interests of the Lab is the conceptualization of prototype models with an emphasis on simulating operations for evaluation, revision, and recommendations.

Given the Lab's research, modelling, and training activities, the following objectives are descriptive of its goals within CET:

- A. To conduct basic research which represents the intersection of learning processes with current educational tasks, using the most advanced technology.
- B. To continue graduate training as a component of instructional systems.
- C. To participate in the design of prototype course models reflecting the conceptual aspects of instructional science and technological aspects of multimedia, computer-controlled devices.
- D. To develop advanced computer-based learning systems that provide advantages in student learning, instructional management, and cost effectiveness. (See Appendix C: Facilities for equipment and system configurations.)

## Training Programs

To provide educational and training opportunities for a broad spectrum of U.S. and foreign personnel, ranging from complete advanced degree work to short-term training for a variety of special purposes. (Objective 2)

In trying to achieve the Grant Objectives and in the implementation of its own strategies, the University has provided a greater variety of training opportunities for both U.S. and foreign personnel in educational technology. Four distinct types of training programs have been developed: (1) supplementing graduate degree programs with specialized research and work experience related to specific problems in the field of educational technology; (2) developing new formal University courses in specific areas of educational technology, and designing new graduate degree programs for training U.S. and foreign specialists in educational technology; (3) providing specialized workshops and non-credit courses which are designed for developing particular skills in educational technology that will be used for solving a specific educational problem within a U.S. or foreign school system; and, (4) providing individualized training for high level educational personnel who have already completed formal degree training but who wish to familiarize themselves with new ideas and possible applications in the field of educational technology.

The design and implementation of these training programs are funded by both 211(d) and non-211(d) University support. The unique aspect of these training programs is that they are continually updated and are usually designed for particular groups to meet specific skill development needs.

### FY 72 Accomplishments

- Graduate students, already reported, were supported by 211(d) funds to pursue supervised research and study in various fields of educational technology. Abstracts of their major research activities are provided in Appendix E: Research.
- Three new formal graduate courses were developed for the College of Education by both 211(d) and non-211(d) supported University faculty. (See Appendix D: Training.)
- A variety of specialized workshops and non-credit courses were specifically designed and conducted by the CET staff for organized groups from the U.S. and abroad. The instructional materials for these programs were designed and developed by 211(d) supported staff. However, the

actual training activities were normally funded by non-211(d) University resources. The majority of these programs were workshops conducted at CET. A few were conducted on-site either in the U.S. or in a foreign country. Many of these specialized non-formal training programs are only one component of a larger project directed toward solving a particular educational problem. (See Appendix D: Training for project summaries and participants.)

#### FY 73 Accomplishments

- Continued support was given to graduate students to pursue supervised research and study in educational technology. Abstracts of their research activities are provided in Appendix E: Research.
- A graduate student seminar was developed for those students working on projects or studying in areas specifically related to Center and 211(d) Grant activities. This seminar provides one means of developing specialized competence for conducting research and working on problems related to specific applications of educational technology in solving both domestic and foreign educational problems.
- A new doctoral degree program for training specialists in international development education was proposed to and approved by the College of Education. Those designing the program were 211(d) supported University faculty. However, implementation of the new program will be funded by the State of Florida/FSU resources. (See Appendix D: Training for description of the Comparative Development Education Program.)
- Short-term workshops of the types reported under FY 72 were made available to a variety of additional groups, the actual training programs being funded by non-211(d) University resources. Various amounts of input during the planning and design of instructional activities were provided through 211(d) support in terms of staff time and technical resources. (See Appendix D: Training for Project Summaries and Participants.)
- A new type of program offered during FY 73 was that of providing individualized training for high level education officers. Support for the travel and expenses of these "visiting scholars" is funded by non-University resources. However, the coordination and supervision of their training program is funded by the 211(d) Grant. (See Appendix D: Training for a description of the program and FY 73 participants.)

## Research and Model Building

To plan and carry out a program of applied developmental research directed toward integrating present knowledge and closing current knowledge gaps in the field of educational technology. This includes efforts to design and organize systematic approaches, alternative models, and optional arrangements for the application of educational technology under the differing circumstances and interests of the various developing countries. (Objective 3)

The doing of applied developmental research has been and continues to be basic to the University's efforts to build a significant competency in the field of educational technology. Personnel associated with the Center for Educational Technology were charged with responsibility for both planning and implementing a series of new and additional research efforts in this area. The University staff, including those assigned to the Center for Educational Technology, were already engaged in significant research activities so the challenge was not only to initiate new programs but to also analyze the present University efforts, and to develop a plan for filling in essential knowledge gaps.

Center personnel have devoted efforts to research in a variety of situations: research into literature on the uses and applications of educational technology; into attempted innovations in particular subject areas and geographical areas; and into the solution of significant educational problems. While much of this research and study has contributed to Center-wide efforts in relation to achieving Grant objectives, it is not reported in formal writings. It has, however, directly contributed to the formulation of research guidelines. "Model building" -- the precise design and portrayal of one or more alternative means by which specifically identified problems might be solved -- has been accepted as an important way in which research efforts could be reflected in plans for action. These "model building" efforts have ranged from models that relate to a single instructional program effort, to the more complex problems of the reform of a national educational system. Their focus has been on the use and application of educational technology as a cost-effective approach, as well as a technical approach to the solution of real problems. While most of the research and model building efforts were initiated "in-house," some have been carried out in response to specific requests from outside agencies, and some major efforts have been carried out under contract. Some research designs are reflected in proposals for projects submitted by the Center to both AID and other potential fund sources.

The staff at the Center for Educational Technology has been encouraged to develop research activities that encompassed broad enough categories to include both the Center-directed/Grant-supported research, and University non-Grant supported research. Their efforts have been funded from both 211(d) and University non-211(d) resources. Those activities reported herein have been solely or partially funded by 211(d) funds.

#### FY 72 Accomplishments

- Support was given to graduate students preparing Doctoral dissertations directly related to the application of educational technology. (See Appendix E: Research for Abstracts.)
- Research on special problems in educational technology was conducted in connection with contracted-project obligations of the University. (See Appendix E: Research.)
- Support was provided for research by individuals or small groups of University professors related to specialized problems. (See Appendix E: Research for Monographs and Models.)
- The Center's Technical Lab established collections of current research in the field of educational technology, and other technical information documents (books, monographs, pamphlets, etc.).
- A comprehensive plan to be used in guiding Center research efforts was developed.
- The Center's Multimedia Lab designed and built two prototypes for the support of in-house training programs and for the development of specialized media facilities. These were audio/video study carrels and portable consoles for housing audio/video equipment.

#### FY 73 Accomplishments

- Sponsorship of doctoral level research projects was continued.
- Investigation of specific problems by professional University staff was continued.
- Specific research proposals were designed in critical areas of educational technology for presentation to responsible University officials and/or outside sources of funding.

- A draft model for a National University Center for Educational Technology was developed.
- Center personnel participated in both domestic and international symposiums and conferences devoted to identifying research problems related to educational technology. (See Appendix F: Services for Conferences.)
- Two new prototypes were designed by the Multimedia Lab. These were a carousel projector/graphics table for producing slide-tape modules, and a 20-station conference table with multimedia control devices and bilingual capability at each station.
- In doing applied developmental research and model building, and in order to integrate present knowledge and close knowledge gaps in the field of educational technology, the following areas of analysis, investigation, and design have been established:
  - A. Examination of various techniques for the design of instruction such as needs assessment, task analysis, performance specifications, delineation of entry behavior, and development of criterion items.
  - B. Examination of techniques for the development of instruction such as the selection of appropriate media, design of alternative learning models and activities, sequencing of instruction and use of existing materials to teach specific objectives.
  - C. Examination of techniques for the validation of instruction such as empirical development models, formative evaluation techniques, and the use of student data for material revision.
  - D. Examination and development of simplified procedures and techniques such as techniques for converting traditional instruction to performance-based instruction.
  - E. Development of models and proposals for alternative delivery systems such as radio, television, multimedia instruction, peer tutoring, etc.
  - F. Design of models for the training of specialists and the doing of advanced research in specific areas of educational technology.

- G. Examination and development of possible applications of educational technology in specific aspects of non-formal education.
- H. Analysis of cost-effectiveness and efficiency of various types of sophisticated media.
- I. Examination and development of computer-based instruction models that have possible application in both developed and less developed educational programs.
- J. Application of fundamental research findings, completed elsewhere, to the educational technology problems as viewed by the Center.

## Linkages and Liaisons

To establish strong and mutually reinforcing linkages and liaisons with the growing number of national and international institutions, organizations, activities, and projects involved in utilizing educational technology in the solution of educational problems in the U.S. and abroad. (Objective 4)

The Center, throughout the existence of the Grant Agreement, has been actively engaged in the establishment of meaningful and mutually supportive relationships with both domestic and overseas institutions involved in the examination, evaluation, and advancement of educational technology. These interinstitutional ties have evolved at CET's initiative as well as at the initiative of the other institutions.

If the mesh between another institution and CET is close and compatible in terms of foci of interest and innovation, of materials development and personnel, and the embarking upon joint action programs, actual linkages are established. Very careful consideration is given to the establishment of full linkage relationships because this implies a commitment on both sides to become involved in problems of mutual concern in educational technology on a sustained and active basis over a period of years. This commitment in terms of research, materials, and personnel will seek to produce innovative answers to problems and contribute to the "state of the art" in educational technology. Therefore, it is not something to be undertaken or terminated lightly.

If it is felt that both parties would benefit from a sustained exchange of information, visitation when possible and convenient, and perhaps at some point, a more active level of interaction between the two, then a liaison relationship is formed. Naturally, the kind of liaison relationship established with any given institution is subject to change depending on developmental trends and conditions. Some liaison relationships are short lived, while others may continue for long periods and on occasion develop into formal linkages.

The following statements of accomplishments reflect the major efforts of the University that most directly relate to the achievement of this objective.

### FY 72 Accomplishments

Institutional linkages and liaisons established in FY 72 are only identified below by name, since they were detailed in the Annual Report already submitted.

### LINKAGES

**COLOMBIA:** University of Antioquia

**ETHIOPIA:** Ministry of Education, Curriculum Development and Educational  
Mass Media Center

**KOREA:** Ministry of Education, Korean Educational Development Laboratory

**ORGANIZATION OF AMERICAN STATES**

**THAILAND:** Ministry of Education, Department of Vocational Education

**ZAIRE:** National University of Zaire, Center for Interdisciplinary Research  
in Education, Faculty of Psychology and Pedagogy, Kisangani Campus

### LIAISONS

**BRAZIL:** Instituto de Pesquisas Espaciais

**EL SALVADOR:** Ministry of Education

**GUATEMALA:** Ministry of Education, Basic Village Education Project

**KOREA:** Korean Institute for Research in the Behavioral Sciences

**LEBANON:** American University of Beirut

**LIBERIA:** Ministry of Education, Kakata Rural Teacher Training Institute

**PANAMA:** Ministry of Education

**PERU:** Catholic University, Center for Educational Media for Development

**PERU:** National Institute for Research and the Upgrading of Teachers

**SINGAPORE:** The Southeast Asian Regional Center for Educational Innovation  
and Technology

**TUNISIA:** Institute of Educational Sciences

**UGANDA:** Ministry of Education

**FY 73 Accomplishments**

## LINKAGES

The linkages established during FY 72 have been *continued* throughout FY 73 and their present status is reported below:

**COLOMBIA:** University of Antioquia.

There has been an exchange of formal letters concerning cooperative efforts between FSU and the University of Antioquia, College of Education. However, development of specific joint action programs has been delayed due to the intermittent closing of the University of Antioquia.

**ETHIOPIA:** Ministry of Education, Curriculum Development and Educational Mass Media Center.

There has been a continued exchange of information and a commitment made to developing a joint action program in the application of educational technology. The exploratory activities of CET personnel are supported by 211(d) funds.

**KOREA:** Ministry of Education, Korean Educational Development Institute.

This linkage has now resulted in a contract with Korea to be totally supported by non-211(d) funds. (Note that the name was changed from Korean Educational Development "Laboratory" to Korean Educational Development "Institute.")

**ORGANIZATION OF AMERICAN STATES.**

CET is continuing to provide non-formal training programs for personnel sponsored by OAS, and also assists in coordinating selected academic programs of degree seeking OAS sponsored students. These programs are totally supported by non-211(d) funds.

**THAILAND:** Ministry of Education, Department of Vocational Education.

CET is maintaining close contact with Thai officials in relation to the training program provided for Thai educators during FY 72. Recently a follow-up visit was made to Thailand under the training contract and several Thai officials visited CET. These activities are supported by non-211(d) funds.

**ZAIRE:** National University of Zaire, Center for Interdisciplinary Research in Education Development.

Intervisitation of personnel and joint planning efforts are continuing for developing a joint action program directed toward the improvement of this Center in Zaire. Specific ways of utilizing educational technology in the Center are being sought. These activities are jointly funded by 211(d) and Zaire.

The following *new* linkages were established during FY 73 for the purposes described below:

**BRAZIL:** Ministry of Education.

A joint action program is being anticipated for the purpose of developing a Center for Educational Technology within the University of Brasilia, College of Education. Also, a close working relationship has been established with PRONTEL, a Ministry of Education agency responsible for the coordination and evaluation of television, radio, and cinema education. Initial contact activities have been supported by 211(d) to date. However, any formal programs resulting from this linkage will be supported by non-211(d) funds.

**PERU:** National Institute for Research and the Upgrading of Teachers (INIDE).

During FY 72 this relationship was a liaison and has now become a linkage resulting in a series of formal contracts for providing training in educational technology for various groups of Peruvian educators. Also, CET has been asked to assist them in creating INIDE's capability for producing materials to be used for in-service teacher training. These activities are all supported by non-211(d) funds.

#### LIAISONS

The following liaisons, begun in FY 72, are still *continuing*. Thus, there has been a sustained exchange of information and visits between CET and these organizations. Sources of support for maintaining each of these relationships is indicated below:

**BRAZIL:** Institute de Pesquisas Espaciais (non-211(d))

**COLOMBIA:** Accion Cultural Popular (ACPO) (211(d))

**EL SALVADOR:** Ministry of Education (non-211(d))

**GUATEMALA:** Ministry of Education, Basic Village Education Project  
(non-211(d))

**KOREA:** Korean Institute for Research in the Behavioral Sciences (non-211(d))

**LEBANON:** American University of Beirut (non-211(d))

**PANAMA:** Ministry of Education (non-211(d))

**PERU:** Catholic University, Center for Educational Media for Development  
(non-211(d))

**SINGAPORE:** Southeast Asian Regional Center for Educational Innovation  
and Technology (211(d))

During FY 73 the following *new* liaisons were established. The general interest areas for each are indicated below:

**ARGENTINA:** National Radiophonic Education Program (INCUPO).

This is a private organization functioning in eleven northern provinces of Argentina. (It is also one of the ALER members.) CET is interested in assisting them in the evaluation of the effectiveness, cost, and expansion of their radiophonic education program. To date, CET activities have been supported by 211(d) funds.

**CALIFORNIA:** Far West Regional Laboratory.

Information has been exchanged in relation to the Lab's interest in applications of educational technology in career education. Recently representatives of the Lab visited CET for further discussions.

**CALIFORNIA:** University of California at Berkley, College of Education.

This University recently received a 211(d) Grant in educational finance. The purpose of this liaison is to consider how CET and UC can cooperate in specific project activities of mutual interest. To date, CET activities have been supported by 211(d) funds.

**CALIFORNIA:** University of California at Los Angeles.

UCLA has a 211(d) Grant from the Latin American Bureau of AID. As a result of this, CET has established contact with their Office of Vice President for International Education to review possible areas of

cooperation in activities carried out in Latin America. CET activities have been supported by 211(d) funds.

**CALIFORNIA:** Stanford University, Communications Department.

Stanford's 211(d) Grant in Educational Communications is directly related to educational technology. Thus, CET is interested in seeking ways to coordinate activities of mutual concern and maintain an exchange of relevant information. CET activities have been supported by 211(d) funds.

**COLOMBIA:** Association of Caribbean Universities and Research Institutes.

This Association has a Center for Educational Technology in Bogota. The Director of that Center visited CET to get information on the workshops and programs for training educational technologists. In addition to sending people from the Caribbean region here for training, there is an interest in using CET's training programs as a model to be adopted/adapted by the Association to develop training programs for its member institutions in the Caribbean region. No 211(d) funds are being used in this liaison relationship.

**ETHIOPIA:** Haile Selassie First University.

CET is exploring, with the President of this University, the possibilities of establishing a Center for Research in Educational Technology and providing Florida State University graduate training to support the long-range educational development plans as proposed in a recent national educational sector review. Also being discussed is the possibility of CET providing special training programs for their personnel. The activities of CET have been supported by 211(d) funds.

**KOREA:** Seoul National University, College of Education.

CET is discussing, with the Dean of the College of Education at Seoul National, the possibilities of establishing an exchange program of professors and joining research activities in areas of mutual interest. Activities of CET personnel have been supported by 211(d) funds.

**LATIN AMERICA:** Association for Radiophonic Education (ALER).

This is an independent, international organization of private radio schools (approximately 19) which was organized during 1972 to provide coordination and development of radio education in Latin America. Possibilities are being discussed for CET's cooperation in the research and design for an evaluation of their school programs. To date, CET's activities have been supported by 211(d) funds.

**LEBANON: Ministry of Education, Center for Educational Research and Development.**

This is a newly developed research center responsible for nationwide curriculum improvement, teacher education, and installation of new technological, innovative approaches to the solution of Lebanon's educational problems. CET is interested in ways to cooperate with the Center and exchange relevant information. CET's activities have been supported by 211(d) funds.

**MICHIGAN: Michigan State University.**

As a result of MSU's intensive work in non-formal education and CET's interest in the application of educational technology in this area, plans are underway to develop a joint program to be carried out in Ethiopia with the Ministry of Education. The planning activities of CET are supported by 211(d) funds.

**PERU: Peruvian Institute for the Promotion of Education (IPFE).**

This is a private educational development institute which sponsors and coordinates the academic study of individual scholars. FSU has accepted several of these scholars. Also, CET has provided consultation regarding their survey on the status of educational technology in Peru. These activities are all supported by non-211(d) funds.

**SPAIN: Ministry of Education, National Research Center for the Development of Education.**

This Center is located on the campus of the City University of Madrid and utilizes its faculty and computer space. It has received some support from UNESCO in terms of being provided the services of various experts and international consultants. There is currently an interest in exploring the possibilities of technical assistance from CET in defining the goals of the Center and coordinating program activities. Activities of CET personnel to date have been supported by non-211(d) funds.

**UTAH: Brigham Young University.**

This University is currently involved with the MITRE Corporation in a project called TICCIT which involves the use of computers in television. CET is interested in using the data concerning this television system and developing at FSU a similar prototype system that would be applicable to developing countries. This would be a 211(d) funded activity.

### AID RELATED LINKAGES AND LIAISONS

By virtue of the 211(d) Grant itself, the Center for Educational Technology has and maintains a linkage relationship in the Technical Assistance Bureau of AID/Washington. This report is a direct result of that linkage. CET has also established linkage relationships, through official contracts, with the Latin American Regional Bureau, USAID/Korea, and USAID/Thailand.

Liaisons have been established with a number of overseas AID missions, the most significant of which are those in:

Brazil	Guatemala
Colombia	Peru
El Salvador	Thailand/USAID/RED
Ethiopia	Zaire

### **Consultative and Other Services**

**To develop a variety of service capabilities in educational technology that can be made available to U.S. and foreign institutions and agencies as well as to AID and other interested entities. These services encompass providing consulting services, sponsoring seminars, hosting visitors, providing technical support for ongoing University programs, and participating in national and international professional conferences. (Objective 5)**

The University has interpreted the meeting of this objective as providing a variety of consultative services -- both those in answer to specific requests, and those initiated by Center staff that seemed to hold promise for the establishment of linkages and liaisons that would contribute to the achievement of other stated objectives of the program. Grant funds have been used to support these official consultations.

In addition to the specific consultations as discussed above, the Center program, its resources, and its personnel have been increasingly involved in receiving and orienting official visitors who have expressed an interest in the use of educational technology in the solution of their own problems. Only on very special occasions have Grant funds been used to bring any visitors to the Center. However, Grant supported staff and Center resources have certainly been utilized in their visitation programs. An average of two visitors per week for periods of one-five days have been received in the Center.

To maintain professional currency with associations and personnel in the field of educational technology and related fields, Grant funds have been utilized to enable Center personnel to attend both national and international conferences. On a number of occasions Center personnel have presented official papers related to the subject area.

Center personnel have designed and conducted a series of "special seminars" for Center-associated graduate students and staff, and have invited other University students and personnel to attend. These seminars have been an avenue through which new ideas and developments in the utilization of technology could be presented and informally discussed. They have also been a vehicle for hearing first-hand reports on the efforts of Center Staff and visiting experts who have responsibility for significant programs. These seminars have not required the direct expenditure of any funds.

**FY 72 Accomplishments**

- More than 20 short-term official bilateral and multilateral consulting activities were engaged in by representatives of the Center for Educational Technology.
- More than 50 visitors from both U.S. and foreign institutions and agencies were received in the Center and oriented to both its capabilities and its approach to the application of educational technology in the solution of educational problems.
- More than 10 national and international conferences related to research, teaching, and service significant to current developments in educational technology were attended by representatives of the Center.
- Fifteen single session seminars were held in the Center for graduate students, visitors, and faculty members to emphasize and provide information on new developments, current research findings, and particularly unique activities in the field of educational technology or international educational activity.

**FY 73 Accomplishments**

- CET continued to carry out a variety of off-campus consultations. More than 30 such activities involving representatives from 17 agencies and institutions were undertaken. (See Appendix F: Services for Consulting Activities.)
- More than 100 visitors were welcomed into the Center and oriented to its program and the use of educational technology for problem solving. (See Appendix F: Services for Visitors.)
- Seventeen national and international conferences were attended by CET staff. Formal presentations by CET staff were made on eight occasions. (See Appendix F: Services for Conferences.)
- Fifteen seminars on a variety of subjects were presented in the Center to provide up-to-date and current reports to graduate students, visitors, and for CET and other interested staff members. (See Appendix F: Services for Seminars.)

## 5 / IMPACT OF THE GRANT SUPPORTED PROGRAM

While the specific accomplishments listed above and the details of activities presented in the Appendices reflect a great variety of accomplishments creditable to Grant support, they do not present a cohesive picture of the impact of the Grant on (a) total institutional organization and operation, (b) the increased and/or changed involvement of institutional resources of the program, or (c) the partnership relations at home and abroad that have been developed for the applications of educational technology to particular problems.

In the interest of both brevity and clarity, this section of the report will present a series of positive statements organized under the above indicated categories to enable the reader to "get the picture" without the clutter of details that were essential to other portions of the report.

### University Program

With the signing of the Grant Agreement the University made a commitment to mobilize its existing resources, and to add others to develop a "center of competence" in the field of educational technology. A "center" for Educational Technology has been administratively created with essential housing, staff, and administrative support. Regular academic faculty, with recognized expertise in the field, have been identified with this Center; and new staff have been recruited and assigned to increase University competency to teach, to do research, and to provide services in the areas of educational technology.

In order to have the Center for Educational Technology maintain its integrity as a functional part of the total College of Education program, and to develop an interdisciplinary approach to the application of educational technology, University faculty members have been associated with this effort in three distinct manners:

1. The Center Director, reporting directly to the Dean of the College, is one of twelve members of the Executive Steering Committee. This Committee is made up of the Heads of the Administrative Divisions of the College who, together with the Dean, finally decide policy on all College programs. The Director of the Center also maintains his faculty position and teaching responsibilities in a College Division.
2. Faculty members who devote more than fifty percent of their time to Center activities, projects, and programs (and are housed in the Center) are carefully selected for their competence in educational technology as well as their teaching assignments in the University, and are identified as "Center Staff," while their academic appointments are in regular Divisions of the College. Their collective teaching is done at present in

ten different educational specialties representing educational psychology, educational administration, educational foundations, elementary education, secondary education, higher education, social studies education, educational research, instructional systems, and adult education.

3. College of Education faculty and faculty from other Colleges of the University, who devote less than 50% of their time to the Center programs, are identified as "Center Associates." Their services are provided to the Center when needed, but more importantly, the Center provides them an opportunity to move outside their disciplines into a multidisciplinary effort of educational problem solving.

Decisions were made that University training programs, in the field of educational technology, would be offered through three organizational avenues:

Formal course work and degree programs, though taught and directed by Center Staff or Associates, would always be offered in and through the academic divisions of the University, and subjected to normal College and faculty approvals.

Short-time intensive specialized non-credit training would be designed and offered both on campus and off by Center Staff and Associates through Center approval programs. These programs are coordinated with the appropriate academic unit.

Extension courses approved by the University in the field of educational technology would be carried off-campus by the Center Staff for credit through the normal procedures approved by the Continuing Education Division of the University.

The University off-campus contracted-project activities related to educational technology which were underway at the time of the Grant Agreement were assigned to the Center, and the responsibility for completing these and entering into appropriate agreements for other such efforts are a function of the Center.

The Center for Educational Technology's facilities, personnel, and programs are used as a research and experience base by a variety of graduate students, individual professors, college programs, and local school systems, and has now caught the attention of officials in the State University System as having potential for service to other higher education institutions within the State. This is in addition to its documented service to developing nations abroad.

This extended staff capability, the expanded physical and material resources, and the ability to mobilize and focus a multidisciplinary effort on the solution of particular problems was stimulated by and made possible through the use

of Grant support. The impact of the program on the University has been far reaching, problem oriented, and substantive. The program success thus far has assured an official University commitment to a continuation of the effort for the foreseeable future.

#### **Use of Resources**

The 211(d) Grant has stimulated many changes in the allocation of University resources in relation to the area of educational technology. This is true in relation to both the increased expenditures for support of the programs, and to the reconfiguration of internal systems for use of available resources. The additional facilities and staff either directly funded from the Grant or jointly funded from the Grant and other sources have provided additional expertise and a number of technical services and resources that are being used by other College of Education programs.

New formal courses and new degree programs relative to educational technology and to international education have been introduced, and other University programs have been abolished or deemphasized so that faculty personnel could actively participate in concentrated efforts on Grant objectives to develop a multidisciplinary approach to the use and application of educational technology.

Existing University facilities and equipment have been administratively redeployed to become part of a coordinated effort to develop a broader and better balanced program of research and service in educational technology.

Graduate students from a variety of disciplines and specialties have been systematically provided with basic research and work experience in the field of educational technology, in addition to formal study related to their own areas of concentration.

Not only are all Divisions in the College of Education represented in the policy making and program implementation of the Center for Educational Technology, but Center staff representatives are also serving on most of the major committees within the College and the University. While it is difficult to measure the results of this cross-fertilization of ideas, it has been both pervasive and significant for College-wide program development.

#### **Capability Utilization**

A great number of additional institutional linkages and liaisons both at home and abroad have been made possible by the Grant funds. These professional contacts have resulted in a number of University contracted projects to be implemented by the Center for Educational Technology. The University has exercised great care in selecting only those which held the potential for utilizing and extending its recognized capabilities, and for contributing to significant

breakthroughs in the state of the art in educational technology.

In delivering contract services, regularly employed University personnel have been utilized and every opportunity for applied developmental research has been exploited. Additionally, projects have been used by the Center in providing meaningful work experiences for appropriately qualified Ph.D. candidates associated with the program.

The Center for Educational Technology has developed a priority list of project-type activities which appropriately fit the capability and resources of the University. Chief among these are (1) educational systems planning and management, (2) multimedia facilities planning and design, (3) instructional materials design and production, (4) specialized training, and (5) research on application and effects of new models of instruction and evaluation.

The Grant has made it possible for CET personnel to explore and discuss pertinent needs and opportunities for the application of educational technology with a number of responsible officials in developing countries. This in turn has made possible the development of a priority list of concerns and countries where the University capability is needed and where resources might be available to support joint efforts. Chief among these concerns have been the potential of defined uses of educational technology for cost reduction in both formal and nonformal educational programs, and the development of research and training capabilities within the countries themselves. Significant projects and opportunities have been established in Asia, Africa, Latin America, and Europe.

Grant support has definitely contributed to the establishment and maintenance of a Center that has attracted the interest of, and visits from, responsible educational officers and representatives of many countries around the world. Foreign students have come to the Center for graduate study and degrees and have returned to responsible positions in their own country. Joao Oliveira, is now serving as Director of Prontel in Brazil; Bernardo Restrepo, Universidad de Antioquia; Rene Carradine, Universidad del Valle, Cali, Colombia. In addition, such U.S. personnel as Clifton Chadwick of OAS and David Sprague of AID, have been trained in the program and have assumed responsible positions in organizations devoting their time and energies to the problems of foreign countries. During the coming years the Center expects to see a growing list of such examples as these. Further, the few staff members who have left the Center have moved to more responsible positions by virtue of their experience with this program.

On balance, the University believes that the Grant objectives are being achieved, and that while much has been done, much more remains to be done. The Plan of Work for FY 74 indicates central efforts that will be undertaken by the University in relation to this program.

## **6 / SOURCES OF FUNDS AND LEVELS OF PROGRAM EXPENSES**

In support of the program of the Center for Educational Technology, the University has had available, and has used, funds in varying amounts from several different sources. There have, of course, been the regular appropriations from the State of Florida for University operation. The College of Education has channeled portions of these funds into support of the program. These particular resources have been used to support staff positions, physical facilities, library requisitions, travel, equipment, and a whole complex of required university backstopping and administrative services. No effort has been made in this report to itemize or particularize all of these expenses as they relate to this program. However, the total of these special items of state-line expense has been estimated in the EXPENSES appendix to show summative relationship between State and other sources of support. University State support represents approximately 41% of the total.

The support provided by the 211(d) Grant during the report year was projected in the FY 73 Plan of Work and the accompanying estimate of expenditures submitted in FY 72, and has constituted an essential support element in program operation during this report year. Although specific FY 73 accomplishments have already been associated with direct or indirect support from 211(d), the EXPENSES appendix summarizes the amount spent on particular classifications and line items of expenditures. As reflected, there is a previously anticipated increase in the use of 211(d) resources in FY 73 over those of FY 72. The rationale for this increase can be stated very simply. Maintaining the FY 72 "status quo" in FY 73 in terms of personnel and other support costs has required at least an 8 to 10% increase due to increases in salaries and services. Additional staff, new equipment, and an expansion of Center programs and activities account for the balance. In terms of FY 71 dollar estimates and in consideration of the unexpected inflation, it is now estimated that the original Grant amount will not cover costs of the full five-year development as was planned. The University will request and justify an increase in Grant funding during FY 74. This proposal will reflect funds needed for achieving already agreed upon objectives, and support for new instruction in the field.

During FY 73, however, the funds expended from this Grant represented approximately 28% of the total program costs.

Another source of program support has been from agencies, institutions, and organizations not directly funded by either the 211(d) Grant or by the University. Contract-for-services relationships have been established with the following organizations or countries:

1. Organization for American States
2. AID - Latin American Bureau
3. AID - Asian Bureau
4. Republic of Korea
5. U.S. Department of Defense
6. Peru
7. Brazil

The services provided by the Center under these contracts have been reflected in other sections of the report. The sources above provided funds for the services which they received, although it is recognized that some 211(d) funds as well as some University State funds may have been spent for Center planning efforts and initial liaisons with one or more of the sources. It is further recognized that these sources also spent their own funds for support of their planning efforts with CET, and these expenditures are not taken into account in this report. Funds actually received from these sources for support and development of the University program in educational technology represents approximately 31% of the total program effort.

## 7 / PLAN OF WORK

At the end of fiscal year 1972 a Plan of Work for fiscal year 1973 was developed. Since it has been submitted in detailed form, only a summary of that plan is included in this section.

After receipt of the guidelines for report preparation, and following overall conferences with AID/Washington personnel, the Plan of Work for FY 74 is submitted in quite a different format. It is organized under the five major objectives of the Grant.

The anticipated amount of 211(d) funds to be used in relation to each item of the Work Plan has been estimated. While it is anticipated that non-211(d) resources will be utilized in the achievement of this Plan of Work, neither the estimated amounts of these resources nor the purposes to which they will be devoted have been included.

Although the University personnel directly involved in implementing the Grant supported program believe that the Center for Educational Technology has now become a viable institution within the Florida State University, there is also the recognition that many program activities and services should be continued and strengthened, and that a variety of new activities should be undertaken. While both these courses are being pursued, it should be noted that the Grant dollars used for support of the Center during FY 74 will be less than those used in FY 73, both in terms of actual dollars and in percentage relationship to the total University effort.

### PLAN OF WORK - FY 1973 (Summary)

#### Institutional Changes

##### CET - Operation and Administration

The Center plans to reorganize itself into divisional units. Additional Research Associates and supporting staff will be added according to new organizational needs. It is anticipated that CET will also relocate its present offices in response to its need for expanded facilities. The Center will view its first year's experiences as a basis for preparing a statement of evaluation measures for assessing Center accomplishments.

##### Academic Program Development - Proposed

CET will attempt to utilize its expertise and experience in designing a graduate program for training International Development Education officers. A proposal of this program will be presented to the College of Education for approval.

### **International Program Development**

#### **Overseas Program Activities - Continuing**

The interinstitutional linkages and liaisons already established with responsible entities in the following countries will be continued: Korea, Zaire, Ethiopia, Lebanon, Thailand, Panama, and Colombia.

#### **Overseas Program Activities - Proposed**

A continuing effort will be made to respond to the interest being expressed by BRAZILIAN officials on broader and improved applications of educational technology there.

CET's interest in the application of educational technology to rural environments, which is being advanced by research ties with the University of Antioquia, will continue to be examined in terms of working with action oriented programs in the area of radio education in COLOMBIA.

Contacts will be established in PERU with the Catholic University's new Center for Educational Technology to explore joint program possibilities, and to determine mutual benefits to be derived from closer interinstitutional linkages and working relationships.

### **International Symposium**

Plans will be developed for CET to sponsor an International Symposium to be funded cooperatively by CET-211(d), AID, and other interested sources.

### **Research**

In the coming year major emphasis will be placed on internal research activities directed toward the application of current knowledge and the development of new ideas in the field of educational technology. Specific plans for the coming year are as follows:

Training Materials Development, Tryout, and Revision.

**Research Activity and Model Building** involving reviews of relevant literature in educational technology, the design and implementation of pilot studies directed toward defining the potential role of auditory media, and preparation and dissemination of publications relating Center studies and activities.

**Training**

Improved training strategies will be developed through a reordering of the total resources of the Center and the College of Education.

Continued support of graduate assistantships will be provided and CET training materials will be translated into basic English, Spanish, Portuguese, and Korean.

**Service**

**Multimedia Lab**

Additional technical personnel, equipment, and modified facilities will be provided in support of the training and research programs of CET.

**Technical Information Lab**

Increased emphasis will be placed on the procurement and cataloging of relevant materials and publications, as well as the improved services the TIL can offer in support of the program.

## **PLAN OF WORK - FY 74**

The research, service, and training activities of the Center for Educational Technology to date have been varied in scope as well as geographically dispersed. They have, nevertheless, been largely exploratory in nature, both in terms of "targets of opportunity" and in terms of assessing its own capabilities in special situations and its ability to respond to already identified needs.

Center personnel, however, are concerned about and plan to develop during FY 74, criteria for the more careful selection of future program direction and program emphasis. These proposed criteria will be generalized from applied experience, identified research needs, and expressed interests in the field of educational technology. They will be used as guidelines for further capability development in the Center. They will also be used to identify the explicit areas of program concentration, as well as the geographical areas most responsive to service from the Center.

Although the initial proposal for the establishment of CET implied such criteria, the past two years of development have shown that a more careful and specific delineation of criteria is essential for the Center to achieve its basic mission, both within the University, and in providing service to agencies seeking expert assistance from the University in the field of educational technology.

The activities envisioned for FY 74 and listed below will be supported by 211(d) Grant funds. Even though the amount of 211(d) resources to be used relative to each planned activity have been estimated and presented in the financial section of this report, it should be noted here that non-211(d) resources will also be required for their full implementation.

The Grant objectives in this Plan of Work are used below as a framework for categorizing and listing the major planned activities to be carried out with Grant support. While the objectives are not arranged in any order of priority, the activities listed under each objective are so arranged. Each activity, however, is considered to be of significance in achieving the overall objectives of the Grant.

### **OBJECTIVE 1: UNIVERSITY RESOURCE DEVELOPMENT**

- The Center will make an organized assessment of total College of Education faculty resources relative to educational technology, including staff specializations and meaningful experiences in international education. A "Staff Resources" publication will be developed identifying this capability and experience. In addition, a computerized system will be

devised to identify such personnel resources in relation to particular problems of research, training, and service for particular areas of the world.

- Technical support resources will be expanded in both the Multimedia Lab and the Technical Information Lab. These expansions will be in terms of books, media equipment, and relevant instructional materials. A bilingual simultaneous translation capability in the Multimedia demonstration lab will be installed and, depending on space availability, additional cinematography and editing equipment will be procured. Plans are also underway to convert the present black/white TV film chain to a color chain. Concentrated efforts will be made to more effectively utilize these capabilities and the existing computer capability of the Center in special training and research activities.
- A special 211(d) Grant coordinating staff will be identified from presently employed Center personnel. Because of a growing number of Center activities funded from other sources, this staff will plan, monitor, and make periodic evaluative reports on the use of 211(d) resources and the results achieved through their use.
- Special efforts will be made during FY 74 to integrate the special competencies of the Center in the field of educational technology into the regular teaching and research programs of the University and the State. This will involve developing organized programs of information and services to both the instructional units of the University and to the responsible research agencies within the University and the State. These programs will include such specific activities as formal presentations concerning the present applications of educational technology as carried out by the Center, and proposals for the experimental use of educational technology in the solutions of particular and pressing problems faced by other responsible units and agencies.

## OBJECTIVE 2: TRAINING PROGRAMS

- Specialized short-term training programs in particular areas of educational technology will be designed and conducted by Center staff. Some of these will be new and responsive to particular educational problems, while others will be adaptations of previous instructional and training experiences of the Center. Special programs will be developed in response to particular requests from developing country officials and in such cases will be funded by non-211(d) resources. Other programs will be developed by the Center from the generalized need that exists in the subject area and will be made available to interested personnel both at home and abroad. These efforts will be partially supported by Grant resources. Program areas will include instructional design, evaluation techniques, project monitoring procedures,

and specific techniques in the use of media and multimedia delivery systems.

- New and revised undergraduate and graduate course offerings in both the broad areas of instructional systems and international development education will be designed and/or revised and taught by Center staff in the formal degree program of the University. Center associated personnel have been selected by their faculty colleagues to head both of these academic programs within the University structure and major portions of programs content will be taught by Center staff. A brochure identifying the purposes, content, and personnel included in these programs will be developed during FY 74.

- Instructional materials for use with a variety of delivery systems will be designed and tested. These will include both new materials and a variety of adaptations of off-the-shelf products. While the major development effort will be funded by non-211(d) resources (since they will relate to specific problems of particular agencies and/or countries), these prototype instructional materials and models are usually limited to the application of technological innovations in particular problem situations. During FY 74, Grant support will be used to generalize and particularize their applicability to unspecified instructional situations.

- A relatively unstructured individualized orientation-training-study opportunity for visiting educational officials interested in broadening their understanding of educational technology was made available in the Center during FY 73. This has been referred to as a "Visiting Scholar Program" in this report. During FY 74 this program will be formalized by a careful identification of its objectives, the opportunities for both formal and informal instruction that are available in the Center, the experience elements that are recommended to be included, and the time and cost constraints that are involved in participating in such a program.

### OBJECTIVE 3: RESEARCH AND MODEL BUILDING

- A series of targeted monographs related to educational technology will be planned and produced by Center personnel during FY 74. These publications, while based on research and applications carried on in connection with past Center efforts, will be focused on specialized areas that contribute to the diffusion of new and innovative approaches to the solution of basic education problems. While the complete series is not planned at the time of this report, subject areas that have been agreed upon cover such general topics as: the methodology of introducing innovations into traditional educational settings; radio as a basic instructional delivery system; developing research and instructional centers

for educational technology in new universities; the application of educational technology to non-formal education; an expanded role for peer tutoring; and, the need for national and international networks of expertise in educational technology. Grant support will be utilized for staff time and for producing initial manuscripts.

- A carefully designed research plan for the application and evaluation of low-cost educational technology will be proposed and implemented on an international scale if the special funding anticipated is forthcoming. Grant funds will be used to support the design of a special investigation into the evaluation and the potential expansion of the use of radio in both formal and non-formal educational settings, particularly in the Latin American countries. Present contacts and collaboration with specific national governments, with ALER, INCUPO, and ACPO, and with major public and private universities in the Latin American region will be pursued for the implementation of such a research study.
- Continued research into the application of the computer systems approach to instructional design and management will be undertaken and reported. The possible uses of the computer in a variety of administrative systems, as well as in instruction, will also be investigated. While Grant funds will only be used to support initial staff planning of such research, the Center staff anticipates receiving other resources for in-depth studies and reports of research in this area.
- A number of current bibliographies relating to particular educational problems will be produced by Center personnel and Grant supported graduate students. Graduate theses and dissertations produced by Grant supported students will be made into Center publications where appropriate. These specialized research efforts in the field of educational technology will include studies in such special areas as cost effectiveness, non-formal evaluation, educational technology terminology, radio education, ITV, computer usage, special instructional program designs, etc.
- Practical and applied model building will be undertaken in relation to specialized training and systems application in answer to specific needs. Theoretical models will also be proposed in relation to recurring problems that involve the application of educational technology. Examples of the practical model could be one for the "The Application of Low-Cost Educational Technology to non-formal education in an Arawja setting in Ethiopia" or "A Model for the Evaluation of the Teleducation Program in Brazil." Theoretical models will range from specific instructional designs in classroom settings and in teacher training, to the more sophisticated management models for total systems reform. While Center efforts in applied model building will be almost totally supported from non-211(d)

resources, such resources will be utilized for support of the theoretical efforts to be undertaken.

#### **OBJECTIVE 4: LINKAGES AND LIAISONS**

- Center personnel will provide initiative and leadership in establishing cooperative relationships between and among U.S. institutions having similar competence and parallel service interests in the application of educational technology to the solution of educational problems in the developing world. This cooperation would include institutions already having received 211(d) Grants for development in this or related fields of specialization, as well as other institutions whose interests are compatible. CET will actively promote exchanges of program information, interinstitutional visitations, and one or more seminars for the achievement of this objective. Grant funds will be utilized to support CET's participation in this activity.
  
- Through already established linkages and liaisons, both bilateral and multilateral, Center personnel will initiate and participate in the establishment of some type of informal "International Network of Centers for Educational Technology" to improve the state of the art and to better coordinate specialized efforts toward solution of particular problems in particular areas of the world. This activity is envisioned to incorporate the U.S. institutions already mentioned and will include such international entities as AID, OAS, The National Teleducation Program (PRONTEL), INNOTECH, UNESCO, and the Latin American Federation of Radiophonic Schools (ALER); and, such National universities and research institutes as the Korean Educational Development Institute (KEDI), Central Educational and Development Institute (CERD) of Lebanon, the University of Brasilia, the University of Madrid, the Center for Interdisciplinary Research for Educational Development (CRIDE), Kisangani Campus, the National University of Zaire, and many others.
  
- A direct linkage will be established with Accion Cultural Popular (ACPO) in an effort to analyze and evaluate their program in Colombia, and to design a plan of action for improving their future efforts in the field of radio education. CET, at the request of ACPO, will serve as an instrument of diffusion for significant elements of this historic effort in Colombia as these elements may be generalized for application elsewhere.

**OBJECTIVE 5: CONSULTATIVE AND OTHER SERVICES**

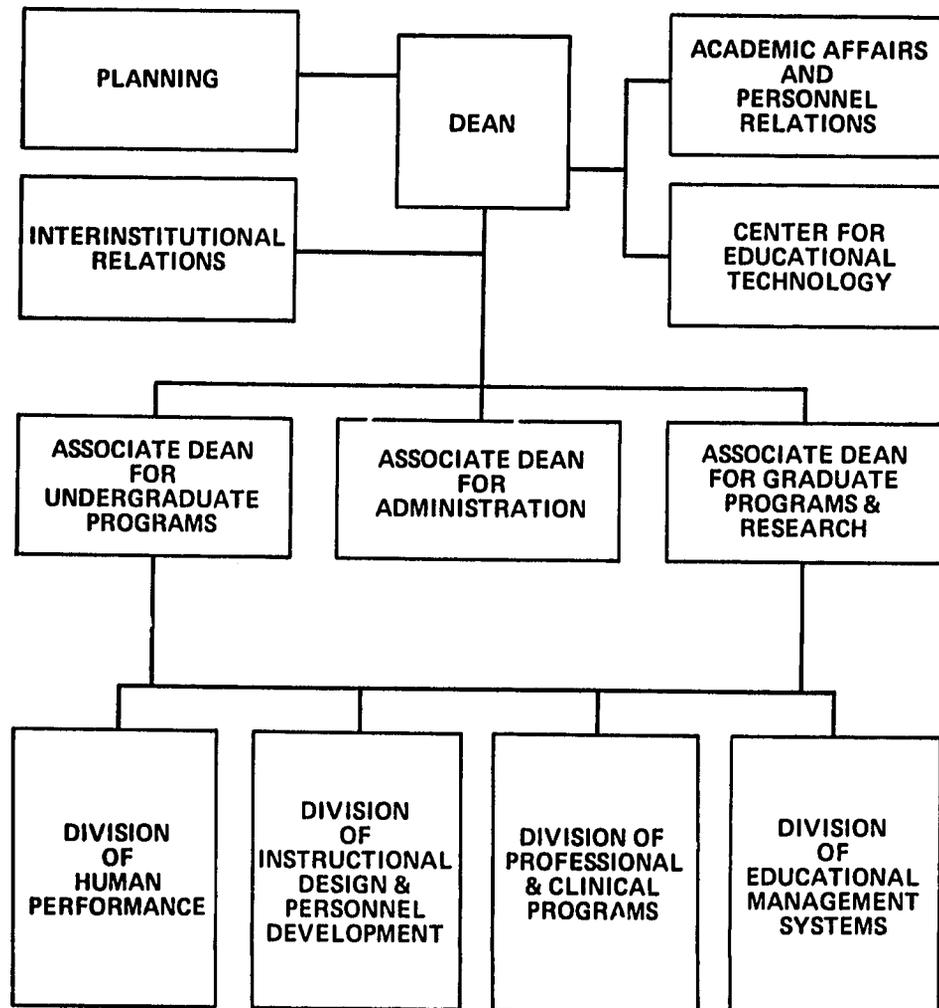
- Center representatives will consult, when requested, with appropriate agencies and institutions in select developing countries on the design of "Centers" for specialized training, research, and services to their own constituency in the field of educational technology. Such invitations are anticipated from the University of Brasilia, the Catholic University of Peru, the Haile Salassee I University in Ethiopia, the University of Madrid, the University of Antioquia, Colombia, and the National University of Zaire.
  
- Center staff members will participate in National Association meetings on a select basis as these meetings may relate directly to specialized activities in the area of educational technology and comparative and developmental education. Papers will be presented on invitation. Grant support will be utilized for this activity when appropriate.
  
- Consultations will be held with key educational leaders from foreign countries both in Florida and in the subject country when this liaison will contribute to the stated objectives of the program. Limited Grant funds will be used to support priority concerns only.
  
- The Center will conduct a series of seminars for staff and graduate students largely devoted to "country educational reform efforts." Visitors to CET from countries like Korea, Thailand, Brazil, Lebanon, England, Japan, etc. will be scheduled for presentations. These presentations will be taped and become a part of the Technical Information Lab resources for research and planning.

In closing, it should be noted that the numbers of the professional, technical, and support staff of the Center will be increased during FY 74. This increase will be accomplished at the same time that 211(d) resources for overall Center support are being decreased by approximately 35% as compared to FY 73. Increased University support from non-211(d) sources will be made available to accomplish this expansion of personnel resources.

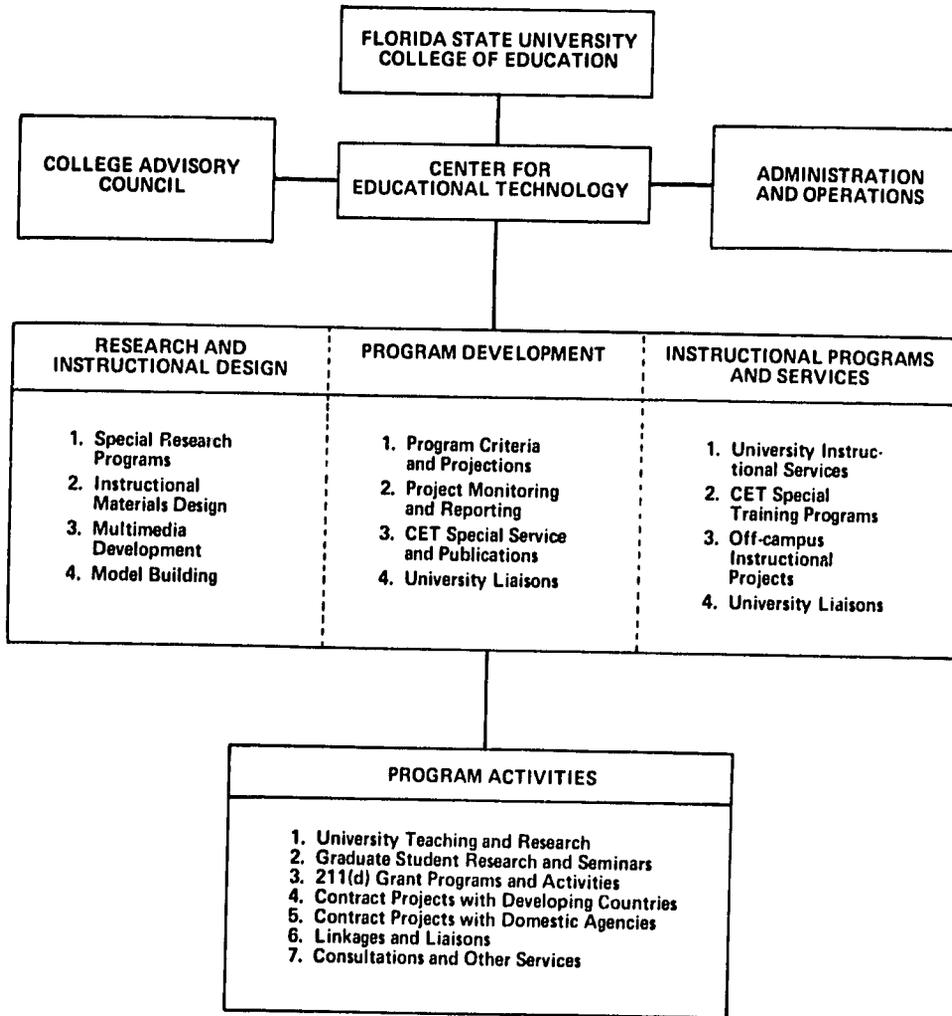
**Appendix A: Organization**

College of Education Organization Plan  
CET Functional Organization  
CET Personnel Assignments

College of Education Organization Plan



**Center For Educational Technology  
Functional Organization  
Fiscal Year 1973**



**CENTER PERSONNEL ASSIGNMENTS**

**CENTER OFFICE**

- 1 - Director
- 1 - Staff Assistant
- 1 - Receptionist
- 1 - Secretary

**ADMINISTRATION AND OPERATIONS**

- 1 - Director
- 1 - Secretary
- 1 - Clerical Assistant

**DIVISION OF PROGRAM DEVELOPMENT**

- 1 - Director
- 1 - Associate Director
- 1 - Editorial Assistant
- 1 - Secretary
- 3-5 - Faculty Associates

**TECHNICAL INFORMATION LAB**

- 1 - Librarian
- 1 - Student Assistant

**COMPUTER APPLICATIONS LAB**

- 1 - Director
- 1 - Assistant Director
- 1 - Computer Programmer
- 1 - Duplicator Operator
- 1 - Secretary

**DIVISION OF RESEARCH AND INSTRUCTIONAL DESIGN**

- 1 - Director
- 2 - Research Associates
- 1 - Secretary
- 3-5 - Faculty Associates

**MULTIMEDIA LAB**

- 1 - Director
- 1 - Engineer
- 1 - Photographer
- 1 - Cinematographer
- 1 - Graphics Artist
- 1 - Clerical Assistant

**DIVISION OF INSTRUCTIONAL PROGRAMS AND SERVICES**

- 1 - Director
- 3 - Research Associates
- 2 - Secretaries
- 3-5 - Faculty Associates

**Appendix B: Personnel**

CET Professional Staff  
CET Professional Staff Vitae  
Graduate Student Assistants  
CET Support Staff Positions

**CET PROFESSIONAL STAFF**

**FY 72**

**PROFESSORS**

Branson, Robert K.  
Briggs, Leslie J.  
Gagne, Robert M.  
Grant, Sydney R.  
Kraft, Richard H. P.  
Massialas, Byron G.  
Morgan, Robert M.  
Rideout, William M., Jr.

**SENIOR RESEARCH ASSOCIATES**

\*Burr, William  
Durstine, Richard M.  
McLanahan, John W.

**RESEARCH ASSOCIATES**

Rayner, Gail T.  
\*Sprague, David

**PROJECT ASSOCIATES**

McMurtrey, David B.  
Wilkey, James F.

**TECHNICAL ASSOCIATES**

Fulmer, Carolyn G.  
\*Hathway, James

**TECHNICAL SUPPORT STAFF**

Payne, Dorothy S.

**FY 73 ADDITIONS**

**PROFESSORS**

Story, Bascom H.  
Tennyson, Robert D.

**SENIOR RESEARCH ASSOCIATES**

No Additions

**RESEARCH ASSOCIATES**

Garland, Estela  
Hannum, Wallace H.  
James, Thomas G.

**PROJECT ASSOCIATES**

Johnson, Barbara

**TECHNICAL ASSOCIATES**

Brown, R. Chris

**TECHNICAL SUPPORT STAFF**

Adams, Paul

**\* STATUS CHANGES**

Dr. William Burr terminated his employment with CET during FY 72 and is now District Coordinator of the Prep Program Kaiserslautern, Germany.

**58 Appendix B: Personnel**

**Mr. James Hathway is no longer employed by CET as he has a full-time position with another Florida State University project.**

**Dr. David Sprague terminated his employment with CET during FY 72 and is now with the Technological Assistance Bureau of AID Washington.**

### **CET PROFESSIONAL STAFF VITAE**

**ROBERT M. MORGAN** is the Director of the Florida State University Center for Educational Technology, and Professor of Educational Research in the College of Education. He also serves as a continuing member of the Executive Steering Committee for policy determination of the College of Education programs. As Director of the Center for Educational Technology, he is responsible for all personnel, policies, and programs of the Center.

Dr. Morgan received a B.S. Degree (1955) and an M.S. Degree (1956) in Psychology from the Oklahoma State University, and a Ph.D. Degree (1958) in Psychology from Ohio State University.

Prior to joining the Florida State University faculty as Professor and Head of the Department of Educational Research and Testing in 1968, he had a broad and varied professional experience. He served as professor of Psychology at Oklahoma State University, Ohio State University, and at the University of New Mexico. He has also served as a special lecturer in Educational Technology at the Catholic University of America, Washington, D.C.

In addition to his teaching experience, Dr. Morgan has had extensive management experience in private industry with both the General Programmed Teaching Corporation of California and the Educational Systems Division of Litton Industries in College Park, Maryland. These responsibilities included giving leadership to large numbers of professional personnel in initiating, developing, and applying innovative systems of Educational Technology in the solution of domestic problems.

In 1967 Dr. Morgan was invited to join the U.S. Office of Education where his responsibilities were related to the development of instructional materials, planning research programs, and developing administrative policies.

His professional training and experience have covered a broad spectrum of creative research into educational innovations pertaining to all aspects of educational technology, and he has participated in developing both public and private applications of these research findings throughout the U.S. and in several foreign countries.

Dr. Morgan has authored and coauthored many professional contributions to the field of educational technology and educational reforms. He has provided consultative assistance to a variety of public and private educational agencies both in the U.S. and abroad, and has given direction to special projects for educational improvement in foreign countries located in Europe, Asia, Africa, and Latin America.

## **60 Appendix B: Personnel**

**PAUL E. ADAMS** is a professional photographer for the Florida State University, Center for Educational Technology Multimedia Laboratory. In addition to photographing and developing slides, black/white prints, and graphic designs for Center for Educational Technology publications, he also assists in producing instructional materials for training programs. He is available as a Center consultant in photographic techniques and equipment.

Mr. Adams received his A.A. Degree from Central Florida Junior College. He will complete his B.A. Degree in 1974 at Florida State University with a major in communications and Asian studies, and a minor in Japanese.

Prior to joining the Center for Educational Technology staff, Mr. Adams worked as a photographer for various types of publications including advertisements and high school yearbooks. He was a news correspondent for the Orlando Sentinel Newspaper during 1971 (covering school board news), and contributed photographs to several other Florida newspapers.

He has also served as a media advisor to journalism classes in a local high school. While in college, his activities as editor of the Literary Magazine and as photography editor of the Yearbook won him the Lewis H. Chazel Journalism Award.

**ROBERT K. BRANSON** is the Director of the Division of Research and Instructional Design in the Florida State University Center for Educational Technology, and is also Professor of Educational Research in the College of Education. He is responsible for guiding Center efforts in the areas of research and the design of instructional materials for training specialists in educational technology.

Dr. Branson received a B.S. Degree (1956) and an M.S. Degree (1957) in Psychology from Oklahoma State University, and a Ph.D. Degree (1969) in Experimental Psychology from Ohio State University.

Dr. Branson has had considerable experience in management and as a consultant. As vice president and cofounder of General Programmed Teacher Corporation, he supervised a large staff in the research, development, and production of materials for such publishers as Ginn, Britannica, and South Western. Later he served as product manager and center director for Litton Industries. He received national recognition for his leadership in fiscal, operational, and planning activities for the Parks Job Corps Center in Pleasanton, California.

He is noted for his publications on programmed instruction and the systems approach to learning and for many years has been a consultant in these and related areas to universities and corporations. His practical teaching experience

includes Oklahoma State University, Ohio State University, Louisiana State University, and Florida State University.

**LESLIE J. BRIGGS** is a Professor of Instructional Systems in the Florida State University College of Education. He contributes services to the Center for Educational Technology through consulting and research activities.

Dr. Briggs received a B.S. Degree in Political Science-Education from Kansas State College (1941), an M.S. Degree in Psychology from Kansas State University (1942), and a Ph.D. Degree in Psychology from Ohio State University (1948).

Since joining Florida State University, Dr. Briggs has served as Chairman of the Instructional Systems Committee and as a member of the committee developing an undergraduate program for College of Education students which will provide for their service training and articulate with the graduate program. He has been the project director or principal investigator for numerous studies sponsored by such agencies as the U.S. Office of Education, the U.S. Naval Training Devices Center, the Office of Naval Research, the U.S. Air Force, the Pacific Telephone Company, and Chance-Vought, Inc. His views on teaching machines, programmed learning, audiovisual and multimedia instruction, and vocational education are widely respected. Today, Dr. Briggs is a major contributor to the development of the field of educational technology.

Prior to joining the Florida State University faculty, Dr. Briggs held several positions in industry and government. While in the Air Force, he combined the technique of adjunct autoinstruction with the techniques of programmed instruction, simulation, and task analysis, resulting in development and evaluation of a wide range of means for automated instruction. Later, at the American Institutes for Research in the Behavioral Sciences, Dr. Briggs was the principal investigator and project supervisor for research and development projects related to the design of instruction. While there, he produced the first two key monographs dealing with a model for the design of instruction.

**R. CHRIS BROWN** is the Engineer for the Florida State University Center for Educational Technology Multimedia Laboratory. In this capacity, he is responsible for maintaining the audio/video facilities and providing technical assistance in systems design and recording procedures. Mr. Brown has helped design and supervise the construction and installation of electronic multimedia equipment including: television systems; audio systems; projection systems; and control systems. He is also responsible for the maintenance of the equipment in the Multimedia Laboratory.

## 62 Appendix B: Personnel

Mr. Brown received a B.S. degree in Electrical Engineering from the University of Tennessee (1972).

Mr. Brown has extensive background in audio design and application, and engaged in video systems design while employed by Signal Engineering and Sales, Inc. He has also served as a consultant in the field of audio design.

**RICHARD M. DURSTINE** is a Research Associate in the Florida State University Center for Educational Technology. He is currently based in Rio de Janeiro, Brazil on assignment with the Latin American Regional Contract to develop methods for better use of quantitative information in the management of educational systems.

Dr. Durstine received a B.S. Degree in Industrial Management (1954) and engaged in one year of graduate study in mathematics at the Carnegie Institute of Technology. He received his Ph.D. Degree (1959) in Applied Mathematics from Harvard University.

While in Brazil Dr. Durstine has also provided advisory services to the National Center for Human Resources of the Brazilian Ministry of Planning; Brazil's National Program for Teleducation (PRONTEL); and various agencies of the Brazilian educational system. In addition, he has served as an advisor to the Peruvian Ministry of Education.

Prior to joining the Florida State University staff, Dr. Durstine had a variety of professional experiences, some of which include: Mathematician for Westinghouse Research Center in Pennsylvania; technical staff member of the Mitre Corporation in Massachusetts; staff member of the Guayana Project (Venezuela) of the Joint Center for Urban Studies of MIT and Harvard University; and lecturer and research associate in the Center for Studies in Education and Development at Harvard University.

**CAROLYN G. FULMER** is a Research Associate in the Florida State University Center for Educational Technology and is currently assigned to the Division of Program Development. She is responsible with the Division Director for designing, developing, editing, and producing reports on major Center activities and programs. She also assists in initiating and producing Center for Educational Technology informational newsletters, slide/tape presentations, fact sheets, and brochures.

Mrs. Fulmer received her B.S. Degree (1969) in English from the University of South Florida, and an M.A. Degree (1970) in Higher Education from the Florida State University. She is currently pursuing a J.D. Degree in Law from Florida State University.

In addition to her present assigned responsibilities, since joining the Center Mrs. Fulmer has served as editor and writer for other Center activities. She has had experience in developing and writing instructional materials for various aspects of media design and production. This has included the development of programmed instruction texts, slide/tape presentations, and instructional television programs as well as a workbook series for multimedia workshops.

Prior to joining the CET staff, Mrs. Fulmer worked as a Director of Residence Hall Programs at Spring Hill College in Alabama and as a staff member of the Upward Bound Program in Tampa, Florida. She has also held an Assistant Counselor position in the Division of Student Affairs at Florida State University.

In addition, she has served privately in an editorial capacity for several Florida State University faculty members in the manuscript preparation of textbooks and teaching manuals.

**ROBERT M. GAGNÉ** is a Professor of Education in the Division of Instructional Design and Personnel Development in the Florida State University College of Education.

Dr. Gagné received an A.B. Degree (1937) in Psychology from Yale University, an M.S. Degree (1939) in Psychology from Brown University, and a Ph.D. Degree (1940) in Experimental Psychology from Brown University.

Dr. Gagné has been actively engaged in research on human learning for many years. His college teaching career began at Connecticut College for Women. During World War II, he served as an Aviation Psychologist, engaged in the development of tests of motor and perceptual functions in the classification of aircrew members.

He returned to college teaching at Pennsylvania State University and again at Connecticut College, where he also carried out a research project on the learning and transfer of skills. For eight years thereafter, he held the position of Technical Director in two Air Force laboratories engaged in research programs dealing with learning and methods of technical training.

From 1958 to 1962 Dr. Gagné was a Professor of Psychology at Princeton University, where he carried out a series of studies on the acquisition of knowledge and collaborated with the University of Maryland Mathematics

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Project in studies of mathematics learning. From 1962 to 1965, he was the Director of Research of the American Institutes for Research, where he was concerned with general supervision of research programs on human performance, instructional methods, educational objectives, design and evaluation of curricula, and educational procedures. His writings during this period dealt particularly with methods of instruction, problem-solving, and the conditions of learning. From 1966 to 1969 he was a Professor in the Department of Education, University of California, Berkeley, in the field of educational psychology. In this position, he directed local efforts to establish a regional educational laboratory, managed a program of graduate training in educational research, and continued his research on the learning of school subjects.

Dr. Gagné has published widely on the topic of human learning and is best known for his book, *The Conditions of Learning*.

**ESTELA B. GARLAND** is a Research Associate in the Division of Instructional Programs and Services of the Florida State University Center for Educational Technology. In this position she designs and directs workshops in the application of educational technology to the development of multimedia instructional materials. She has also been instrumental in translating many educational materials into Spanish for use in CET workshops and for dissemination.

Dr. Garland received a B.A. Degree (1967) in Teacher Education, an M.A. Degree (1971) in Adult Education, and a Ph.D. Degree (1972) in Educational Technology from the Catholic University in Lima, Peru. She has done additional graduate work in Audiovisual Education and Educational TV at Teachers College, Columbia University, New York.

Prior to joining the CET staff, Dr. Garland was a Professor of Communications and Educational Broadcasting at Catholic University, Lima, Peru. She has an extensive background in all aspects of educational radio and television. She has authored numerous articles and delivered lectures in Latin America, Europe, and the United States.

In addition to the foregoing activities, Dr. Garland is a member of the National Commission of Teleducation in Peru, and former Chairwoman of a Subcommittee for the Educational Reform Commission of the Peruvian Ministry of Education.

**SYDNEY R. GRANT** is the Director of the Division of Instructional Programs and Services at the Florida State University Center for Educational Technology. Dr. Grant is also a Professor of Foundation Studies of Education and presently is the Director of the Latin American Regional Contract.

Dr. Grant received his B.S. Degree in Education from the City College of New York (1950), his M.A. Degree in Spanish Language and Literature from the National University of Mexico (1951), and his Ed.D. in Supervision and Curriculum Development from Teachers College, Columbia University (1961).

Prior to coming to FSU in 1969, Dr. Grant worked for four years as the Associate Chief of Party of the Teachers College Columbia University US/AID Contract Team in the Ministry of Education in Peru, assisting in the areas of supervision and curriculum development and teacher education.

Dr. Grant has also had considerable experience at all levels in U.S. public education, having served as a teacher, Assistant Principal, Director of Instruction, and Assistant Superintendent for Instruction in New York City, New Jersey, and in the State of Washington. He also served for twelve years as an instructor of special graduate courses in the Adult and Teacher Education Programs of the City University of New York.

In addition to the foregoing activities, Dr. Grant has served as a consultant, as a member of the Florida State University Survey Team in South Korea (Summer 1970), and as a participant in the Panamanian Ministry of Education-Florida State University Workshop (1971). He recently returned from a TDY assignment with the Ministry of Education in Peru.

**WALLACE H. HANNUM, JR.** is an Assistant Professor in the Florida State University College of Education as well as a Research Associate in the Division of Research and Instructional Design in the Center for Educational Technology. His responsibilities include the supervision and training of Latin American students and the designing and conducting of research on educational technology with emphasis on low cost technology (radio). He is also involved in developing training in instructional technology.

Dr. Hannum received a B.A. Degree (1966) in Psychology, and an M.Ed. Degree (1968) in Educational Administration from Auburn University. He received a Ph.D. Degree (1973) in Educational Research from Florida State University.

Prior to joining the CET staff, Dr. Hannum taught psychology in the School of Education at Florida Agricultural and Mechanical University, and conducted research in the University's Laboratory School. He also taught educational psychology at Auburn University. As a research associate with the Anniston, Alabama Public Schools, he conducted inservice teacher training and evaluation of special projects. He was also a part-time instructor of Economics at Jacksonville State University.

Dr. Hannum's publications include articles on computer-managed instruction, project management, and various topics associated with his research.

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**THOMAS G. JAMES** is a Research Associate in the Division of Instructional Programs and Services of the Florida State University Center for Educational Technology. His responsibilities in the Division include the design and direction of training workshops in instructional technology, advising foreign and domestic students in advanced degree programs at Florida State University, and off-campus consulting and training services.

Dr. James received his B.A. Degree (1969) in Psychology and his Ph.D. Degree (1973) in Educational Research from Florida State University. His major area was instructional systems with specialties in instructional design and learning from verbal information.

Prior to his current position with CET, Dr. James was a graduate research assistant at the Computer Applications Laboratory. During his stay at CAL he participated in proposal writing activities, performed on contractual efforts, and conducted both basic and applied research. The funded projects on which Dr. James has worked include a computer-assisted instruction reading project for educable mentally retarded students in Wakulla County, Florida; the development of adaptive instructional models for Air Force training; and the simulation of a performance contingent algorithm for the Air Force's Advanced Instructional System. His research activities include work on affective factors in computer-assisted learning, performance contingent pacing, and organizational factors in memory and their influence on learning from verbal information.

**BARBARA F. JOHNSON** is Assistant Director of the Computer Applications Laboratory of the Florida State University Center for Educational Technology. She is responsible for the conceptualization, implementation, and evaluation of assigned research, model design, and training activities in the Laboratory. She is also involved in proposal and technical report writing.

Ms. Johnson received her A.B. Degree (1945) in Journalism from Louisiana State University and her M.A. Degree (1968) in English Education from Florida State University. Presently she is an ABD Doctoral Candidate in Educational Research at Florida State University.

Prior to joining CET, Ms. Johnson was the Director of the U.S. Department of Labor Public Service Careers Program at Florida State University. She has also served as a professional writer for the Computer-Assisted Instruction Center at Florida State University, and a Technical Instructional Specialist for the Wakulla County School system. In addition, she has taught English and served as a curriculum writer for the Palm Beach County Board of Public Instruction.

Ms. Johnson has helped to prepare numerous articles and reports dealing with various appreciations of computer-assisted instruction.

**RICHARD H. P. KRAFT** is an Associate Professor of Educational Administration in the Florida State University, College of Education. As an educational economist, he teaches, advises, and consults in the areas of planning, cost-effectiveness, operations research, human resource planning, and economic growth budgetary processes and quantitative methodologies. He serves as a consultant to the Center for Educational Technology on projects requiring expertise in these areas.

Dr. Kraft received a B.A. Degree (1953) and an M.A. Degree (1954) in Economics from the University of Munich. He received an M.B.A. Degree (1962) and a Ph.D. Degree (1967) in Economics of Education from the University of California.

Before coming to Florida State University, Dr. Kraft was a Research Specialist and Lecturer at the University of California at Berkeley. He was also an instructor at Modesto Junior College, Modesto, California and an Economist for the Robert Bosch Corporation in San Francisco. Before coming to the United States, Dr. Kraft served as an Economist for the British Petrol Company, Ltd. in Hamburg, Germany.

He has published in the Florida Journal of Educational Research, Educational Technology Magazine, International Review of Education, Journal of Economic Research, Review of Education, et al. His writings during the past ten years have dealt particularly with questions of resource allocations, costs and benefits of education, and methods of manpower planning. He has been actively engaged in research on manpower planning in the United States and in developing countries.

**BYRON G. MASSIALAS** is a Professor of Social Studies Education in the Florida State University College of Education. He also serves as an advisor to the University's Center for Educational Technology in the areas of curriculum, instructional media, and materials development. He has particular expertise in the area of teaching methods.

Dr. Massialas received a B.A. Degree (1957) in History from Butler University, an M.A. Degree (1958) in Political Science, and a Ph.D. Degree (1961) in Education and Social Science from Indiana University.

Before coming to Florida State University, Dr. Massialas was an Associate Professor of Education as well as the Director of the Social Science Research Training Program at the University of Michigan. He has also been an Assistant Professor of Education at the University of Chicago and an Instructor in Social Studies at Indiana University.

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Dr. Massialas has published extensively, particularly on the subject of the inquiry approach to teaching. He is also interested in population education and has been involved in population research for the Agency for International Development as well as the Population Reference Bureau, Inc.

**JOHN W. MCLANAHAN** is the Director of Administration and Operations at the Florida State University, Center for Educational Technology, and is responsible for Center administrative policies and finances. He also manages fiscal operations of contract projects and participates as a technician in particular aspects of project implementation.

Dr. McLanahan received a B.A. Degree (1960), an M.A. Degree (1961), and a Ph.D. Degree (1965) in Psychology from the University of Cincinnati.

Prior to joining CET, Dr. McLanahan was employed for two years by the Bunker-Ramo Corporation, where he conducted research in aviation psychology at Randolph AFB in Texas. In this position he performed systems evaluations of pilot control-display concepts for all-weather flight operations.

For the next six years, he was a Staff Psychologist in the international research operations division of the Behavioristics and Decision Sciences Laboratories of HRB-Singer, Inc. During this period he spent five years in Vietnam, Thailand, Korea, and other developing Asian nations as a technical advisor and behavioral science consultant to U.S. Department of State and Department of Defense organizations and to agencies and institutions of foreign governments. His research in these countries included a number of attitudinal studies and the development and field-testing of methodologies and techniques for evaluating educational and informational systems on foreign adult populations.

Dr. McLanahan has substantial experience in the technical and fiscal management of research programs as well as in all aspects of managing international research programs and activities.

**DAVID B. MCMURTREY** is the Director of the Florida State University, Center for Educational Technology Multimedia Laboratory. He was responsible for the design and establishment of the Laboratory, and coordinates the media production activities of the Center. He also serves as a Center consultant on technical aspects of media systems design and utilization.

Mr. McMurtrey is a graduate of Ringling School of Art, Sarasota, Florida (1964). His major area of study was Commercial Design.

Prior to his association with CET, he served as Production Coordinator for "Child-Structured Learning in Science," a research and development project of the Department of Science at Florida State University.

As the first Art Director of the Georgia Educational Television Network, he was directly responsible for all visual aspects of the Network's production center and its nine interconnected stations. He was also Executive Producer-Director of "Science One," a series of elementary science programs.

Mr. McMurtrey actively participated in the development and production of over 800 instructional television programs, many of which have been distributed nationally. He is a former State Director of the National Association of Educational Broadcasters, and was a founding member of its Graphics Area Special Interest Group. His primary interests are in the design of instructional resources, facilities, and media.

In addition to the foregoing, Mr. McMurtrey has designed and illustrated numerous books and other printed materials. He coprepared "Television Antenna Systems," a guide for public school superintendents and principals developed under a grant from the U.S. Office of Education. He was Art Director of the award winning films, "Ode to an Uncertain Tomorrow," and "New Directions." He also designs houses, interiors, furniture, office and production space, and exhibits.

**DOROTHY SHINGLES PAYNE** is Librarian for the Technical Information Laboratory of the Center for Educational Technology, and is responsible for organizing and coordinating the acquisition and dissemination of materials on educational technology. Concurrently, she supplies support for the Division of Program Development and Planning.

Mrs. Payne received a B.A. Degree in Library Science from Florida A & M University. In addition, she is certified to teach Sociology and has done graduate work in secondary education with emphasis in psychology. Prior to joining the Florida State staff, Mrs. Payne was Personnel Specialist for the Energy Systems Division of the Olin Corporation.

From 1961 to 1969 she served as Librarian and Social Studies teacher in the public high schools of Taylor County (Perry), Florida, where she was involved in many school and community activities. She was a charter member of the Taylor County Improvement Club, Inc., and was instrumental in organizing the local Head Start Program. These activities won her several awards and special recognition.

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**GAIL T. RAYNER** is an Assistant Professor in the Florida State University, College of Education, as well as a Research Associate in the Division of Research and Instructional Design in the Center for Educational Technology. She is responsible for development of instructional materials and has directed and coordinated training programs in educational technology for foreign students. She also serves as an advisor to graduate students.

Dr. Rayner received a B.A. Degree (1954) in Government from George Washington University, an M.N.A. (1962) from the University of Florida, and a Ph.D. Degree (1972) in Educational Research from Florida State University.

Prior to joining CET, Dr. Rayner did research on attitude scales and computer-managed instruction at the Florida State University Computer-Assisted Instruction Center. Her nonacademic experience includes financial analysis for the Prudential Insurance Company and positions of President and Assistant Treasurer of concerns engaged in portfolio management. Dr. Rayner has also published several articles dealing with educational systems and computer-managed instruction.

**WILLIAM M. RIDEOUT, JR.** is an Associate Professor of Developmental Studies in Education in the Florida State University, College of Education. He is also a Research Associate in the Center for Educational Technology, Division of Program Development. Since his appointment, Dr. Rideout has worked with the Office of International Education and has taught within the Departments of Social Studies Education and Foundations of Education. He has also assisted the Center for Educational Technology in establishing interinstitutional linkages and relationships with developing countries and in dealing with questions concerning the exchange of technological information.

Dr. Rideout received a B.A. Degree (1951) in History from Stanford University, an M.A. Degree (1956) in International Relations from the School of Advanced International Studies of Johns Hopkins University, an M.A. Degree (1967) in History, and a Ph.D. Degree (1971) in International Developmental Education from Stanford University.

Before coming to Florida State, Dr. Rideout was the Assistant Director of the Stanford International Development Education Center. While at Stanford, he taught in the School of Education.

Dr. Rideout has also held various posts with the Agency for International Development. He has been the Assistant Training Officer in Tunis, Tunisia and Leopoldville, Zaire. He served in London as the Assistant AID Coordination Officer and in Washington as the Deputy Regional Program Coordinator for Africa. His international experience also includes service as a Research Associate

at the University of Rangoon in Burma. Dr. Rideout has published several articles dealing with education in Africa.

**BASCOM H. STORY** is the Director of the Division of Program Development in the Florida State University Center for Educational Technology and is concurrently serving as a Professor of Higher Education in the College of Education. He is responsible for planning and proposing new program directions and professional linkages and liaisons for the Center. He and his staff monitor, review, and evaluate all Center projects and activities, and assist in designing and developing official reports relative to these programs.

Dr. Story received a B.A. Degree in Political Science from North Texas State University (1934), an M.A. Degree in Educational Administration from Southwest Texas State University (1942), and a Ph.D. Degree in Educational Administration and Curriculum Development from the University of Texas (1949).

Prior to joining the Florida State University faculty, Dr. Story had a varied career both domestically and internationally. His domestic U.S. experience includes classroom teaching at the elementary, secondary, undergraduate, and graduate school levels in Texas, Tennessee, and New York. He has had administrative experience as a school principal, a school superintendent, and as Deputy State Commissioner of Education in Texas, and as Dean of the College of Education and Dean of the Graduate School in Memphis State University.

Dr. Story joined the U.S. Foreign Service in 1958 and has served the Agency for International Development in Washington as Director, Office of Education and Manpower Planning; in Ethiopia, and later serving in Nigeria, the Philippines, and in Washington, D.C. as Peace Corps Director of University Relations and Training. He took leave of absence from the government in 1965-66 to assist a major U.S. industry in establishing an educational products/service business, becoming the first Vice-President and General Manager of the Educational Systems Division of Litton Industries.

In addition to his service in and contributions to U.S. education, Dr. Story has pioneered in institutional development in several foreign countries. He was closely associated with the initial establishment of Haile Selassie I University in Ethiopia and has most recently assisted in the development of several Republic of Korea institutions, namely, the Korean Institute for Research in the Behavioral Sciences, the Korean Educational Development Institute, and the Korean Advanced Institute of Science. His specific interests in Educational Technology are focused on, but not limited to, the areas of Strategies for Educational Change, Administrative and Management Systems, and Institution Building.

**ROBERT D. TENNYSON** is the Director of the Computer Applications Laboratory of the Florida State University Center for Educational Technology. He is also an Assistant Professor of Educational Research in the College of Education. He is responsible for conducting research in the uses of computers in educational environments. This research includes the design and development of instructional materials, research in the area of learner and instructional strategies, studied and implemented management systems to utilize the total capabilities of computer facilities, and the training of experts and nonexperts in the application of computers based upon a systems approach to instructional design.

Dr. Tennyson received a B.S. Degree (1964) in History from Brigham Young University, an M.A. Degree (1969) in Psychology from San Fernando Valley State College, and a Ph.D. Degree (1971) in Psychology and Computer Science from Brigham Young University.

Prior to joining CET, Dr. Tennyson was the Acting Director of the Center for Computer-Assisted Instructional Research. He also taught high school for five years in California. Dr. Tennyson has published several articles about Instructional systems and design. In addition he has written three books; *Concept Learning*, *Principles of Instructional Psychology* with M. David Merrill, and *Concept Teaching, an Instructional Design Guide* with M. David Merrill.

**JAMES F. WILKEY** is a Research Associate in the Division of Instructional Programs and Services of the Florida State University Center for Educational Technology. He is responsible for the design and development of workshops in programmed media that will provide systematic application of techniques in instructional technology to the total production process of instructional materials. His duties also include the administration of such programs.

Currently, Mr. Wilkey is assigned to CET's Korean Project and has completed ten months consultant work at the Korean Educational Development Institute (KEDI) in Seoul, Korea. At Florida State University he is now supervising the design and implementation of training programs for KEDI instructional systems designers and I-TV production staff.

In addition to providing training in instructional systems design and management, the workshops operated under Mr. Wilkey's supervision give "hands-on" training in such media as: programmed instructional television, audio tutorial techniques, slide/tape presentations, 8mm film program design and production, and the writing of programmed instructional texts. Students attending the workshops come from various developing countries, and they are vitally concerned with obtaining specific skills in the aforementioned areas in order that they may contribute to the educational and economic development of their countries.

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Mr. Wilkey was formerly head of curriculum development for Litton Industries and manager of the instructional television station for the Job Corps' vocational training program in Pleasanton, California. In other positions with Volt Technical Corporation, American Airlines, and General Dynamics, he designed and conducted industrial training programs in scriptwriting, training materials design, programmed media production, and the preparation of training manuals.

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### GRADUATE STUDENT ASSISTANTS

#### FY 72

As indicated in the FY 72 Annual Report, 15 graduate assistantships were supported by 211(d) funds. These positions were filled by a cumulative total of approximately 30 students during the year.

#### FY 73

The following 44 graduate students have worked, studied, and done research in relation to a variety of activities in the CET program during FY 73. The names asterisked indicate those students who have been associated with the Center throughout the academic year. Others either finished their degrees during the year or dropped out of school for personal reasons. Also listed are those students who began their graduate work during the year.

Monies paid to the students as stipends were derived from the University state budget, from contracts between the University and other agencies, and/or from 211(d) Grant funds.

### GRADUATE STUDENTS

Ahn, Sang Kee	Jarrar, Samir
Anderson, Steven	Kieffer, Leigh
Baidya, Tara	Kim, Sang Ho
*Bianconi, Inez	Klein, Jerry
Briseno, Gabriela	Lee, Anna
Clark, Dwayne	*Lee, Chong Joe
Convey, John	*Na, Youn Soon
*Cooney, David	Niemeyer, Vincent
Drewfs, Paul	Olivier, Phillippe
*Eaddy, Pamela	*Park, Youngsun
Ellis, June	Ramaswamy, Thirumalai
*Epstein, Kenneth	Rasco, Ronald
*Furman, John	Ryan, Tony
Garlichs, Ethlyn	Song, Yoo Jae
*Goycoolea, Paz	Southard, Margarida
*Green, Ethel	Steve, Michael
*Grise, Phillip	Stone, John
Hardy, Roy	Stone, Vathsala
Heinrich, Darlene	Tam, Peter
Hines, William	Taylor, Susan
James, Barry	Thomas, David
James, Thomas	*Wildman, Terry

**CET SUPPORT STAFF POSITIONS**

**FY 72**

- 1 - Staff Assistant to the Director
- 1 - Receptionist Position (211(d))
- 1 - Secretarial Positions (211(d))
- 1 - Clerical Positions (211(d))

**FY 73 ADDITIONS**

- 4 - Secretarial Positions
- 1 - Computer Programmer Position
- 1 - Duplicator Operator position

**Appendix C: Facilities**

Multimedia Lab  
Technical Information Lab  
Computer Applications Lab

## MULTIMEDIA LAB

### Functional Description

The CET Multimedia Lab is an operational element of the Center. It derives its goals from the objectives of the 211(d) Grant and the policies of the College of Education. The mission of this facility is to support the Center in the systematic design, production, evaluation, and demonstration of new educational systems. This includes:

- applications of instructional media research to the production of prototype instructional modules
- media support for research projects and workshops
- assistance in the development of training programs in media technology for graduate and foreign students
- design and development of new systems for production and delivery of educational software.

The facility consists of an instructional technology demonstration room, a studio, a still photography lab, and an engineering design and maintenance area. All elements of this facility are directed toward the development of low cost media programming. The physical facility is designed to serve as a model production and dissemination system.

**DEMONSTRATION FUNCTION:** The instructional technology demonstration function of the Multimedia Lab became operational in January of 1972. This facility is presently being used for both training and demonstration purposes. It houses a full range of instructional equipment and devices which are arranged in such a way as to make possible not only viewing and response to instruction but also limited production of simple instructional prototypes. The equipment includes: 16mm projection w/magnetic record capability; super 8mm projectors w/magnetic record capability; slide/tape systems; filmstrip projectors; filmstrip cassette projectors; reel-reel audio tape recorders; audio cassette recorders and playback units; video cassette recorder; 1/2 inch video recorders and film-disk and cassette systems. Most of the equipment is capable of allowing for student response. In selecting equipment for this facility, preference was given to devices which offered a viewing/listening capability plus a recording capability in order to increase flexibility and maximize potential utilization of the equipment. In addition to the above, other equipment is available for individual student use away from the Center for a variety of activities from individual study to actual production of instructional prototypes.

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The demonstration room is designed to accommodate 15 persons using mediated carrels and an additional 15 persons using the conference/group viewing area, or the room can be converted into a large demonstration or instruction area which will accommodate 35 persons. Attached to the demonstration room is a projection booth which allows for large screen multimedia presentations to groups of visitors and CET trainees. Provisions have been made to allow for the addition of other innovative and useful devices as they become available (e.g., individual student-response system or computer terminals when they are within the economic reach of the Center and judged effective tools of instructional technology). The demonstration equipment is housed in prototype media carrels developed at the Center. Requests for the blueprinted designs of the carrels have been received from organizations within the University and have been honored. In addition, the facility and its equipment have been reviewed by planners of a new College of Education media utilization laboratory for FSU and have strongly influenced the design and equipment configuration of that lab which will be used cooperatively by all of the College's instructional units.

**STILL PHOTOGRAPHY LABORATORY:** This lab became completely operational in June 1972. It is staffed by one experienced full-time photographer. The facility includes a complete photo-darkroom which is equipped with an excellent photo-enlarger with three lenses, necessary timers, safe lights, ventilation system, an automatic processing unit, and a large stainless steel sink with an automatic water temperature control system. Though the darkroom is of small physical dimensions, its efficient layout allows for several people to work together while processing film and making photographic prints. Thus, interested students can gain valuable "hands-on" experience in the production of instructional photographic materials under the supervision of a professional photographer. The equipment in this facility includes a complete range of still photographic cameras and a super 8mm motion picture camera. In addition, there are associated items of equipment such as a photo print dryer, a dry-mount press, portable studio lighting kit, and other miscellaneous items.

**AUDIO/TELEVISION PRODUCTION/TRAINING SYSTEM:** This facility is scheduled for completion in August 1972. It will be one of the most unique aspects of the Multimedia Lab because of its operational flexibility and low cost, both of which make it an ideal model for developing countries or any fledgling system with limited resources. Although the system is housed with a Studio/Learning Lab and appears to be rather conventional in terms of function, it is not. Each major element of the system was designed to be completely self-contained and portable with the exception of the film chain and a stationary equipment rack.

This facility is staffed by a full-time electronics engineer whose responsibilities include operation and maintenance of the system, consultative assistance in the design of new systems for developing countries, and training supervision related to systems design and operation.

The physical facility in which this system is housed consists of: a small (17' x 30') Studio/Learning Lab which has been acoustically treated; a production control room which contains a small isolated audio announce booth; an engineering office and shop; and a properties storage room.

#### Multimedia Lab Equipment

##### DEMONSTRATION EQUIPMENT:

- 1 - Eastman Kodak AV-105M 16mm Projector
- 1 - Eastman Kodak M100-A Super 8mm Sound Projector
- 1 - Eastman Kodak MFS-8 Super 8mm Projector
- 1 - Bolex SM8 Super 8mm Sound Projector
- 1 - 3M Sound Slide System
- 1 - CBS Laboratories/Viewlex Projector
- 1 - Kalavox Sound/Slide System (used w/carousel projector)
- 4 - Eastman Kodak Ektagaphic Model B 35mm Slide Projector
- 2 - Eastman Kodak Carousel 860 Slide Projector - Zoom Auto-Focus
- 1 - Technicolor 1000B Super 8mm Cartridge Movie Projector
- 1 - Technicolor 820 Silent Super 8mm Projector
- 1 - Dukane Model 28A29 Cassette A-V Matic Tape Sound Filmstrip Projector
- 2 - Viewlex V-1 No. V-175 Single Frame 35mm Filmstrip Projector
- 1 - Viewlex Previewer Jr. Model 2
- 1 - Viewlex "Little Giant" V-85
- 4 - Coxco/Respondex Model RB-30S Student Responders
- 1 - Coxco Sound/Slide Machine Model
- 4 - Ampex Micro 5 Stereo Cassette Tape Decks
- 1 - Ampex Micro 86 Stereo Cassette Tape Recorder
- 5 - Shure Model SA-1 Stereo Headphone Preamplifiers
- 2 - Sony CV-2600 Video Tape Recorders
- 2 - Sony 51UWP 8" Television Monitors
- 2 - GE 18" Monitor/Receivers

##### PHOTOGRAPHIC EQUIPMENT:

- 1 - Mamiya C 220 Camera 2/80mm f2.8 lens and 55mm f4.5 lens
- 1 - Olympus Pen FT/35mm SLR Camera 2/fs.5 38mm Copy lens
- 1 - Nikon Photomic FTN, Body, Black 35mm Camera

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- 1 - 55mm Auto-Micro Nikkor-P Lens 2/M2 ring
- 1 - 24mm f2.8 Auto-Nikker Lens
- 1 - 50mm f1.4 Auto-Nikker Lens
- 1 - 85-205 Auto-Vivitar f3.8 Zoom Lens
- 1 - Linhof High Universal Copy Stand
- 1 - Linhof Folding Copy Light Outfit
- 1 - Polaroid MP-3 Camera Head w/56" Column and Base
- 1 - Lighting Assembly for MP-3
- 1 - 127mm Rodenstock Ysaron Enlarging Lens for MP-3
- 1 - Seal Jumbo 150 Dry Mount Press
- 1 - Pakonomy Table Top Print Dryer
- 1 - Igento 24" Papercutter
- 1 - Hervic-Quartz Location Lighting Kit
- 1 - Fotorite D Professional 14" Processor
- 1 - Leedal Stainless Steel Sink w/splashwall and stand 28x84x5
- 1 - Beseler 45MX (Photosound) 8mm 4x5" Enlarger
- 1 - 50mm f2.8 El-Nikkor Enlarging Lens
- 1 - f5.6 80mm El-Nikkor Enlarging Lens
- 1 - 150mm f5.6 El-Nikkor Enlarging Lens

### **CINEMATOGRAPHY EQUIPMENT:**

- 1 - Beaulieu 400 SM Super 8mm Motion Picture Camera w/Angenieux 8-64 Motorized Zoom Lens (f1.9), Macro and Servo-Neglomatic (Automatic Exposure System)
- 1 - Craig Pro Editor-Viewer
- 1 - Craig KE Super 8 Projector-Editor
- 1 - Supersound Super 8 Film Stripper
- 1 - Maier Hancock 816 S Hot Film Splicer

### **AUDIO/TELEVISION PRODUCTION/TRAINING SYSTEM EQUIPMENT:**

Video Production Control Console - which is completely portable and self-contained and, therefore, may be used for both studio and remote production. It contains:

- video production switcher special effects unit
- waveform monitor
- four camera control units
- four camera monitors
- preview monitor
- program (line) monitor
- audio microphone mixer
- audio master line input mixer
- film chain remote controls
- VTR remote control

- RS-170 Sync Generator
- associated with the video console are two vidicon cameras which are equipped with tally lights, intercom, and zoom lenses, and - a third camera which can be used with the console or a portable one-half inch video tape recorder

Stereo Audio Production Console (portable, self-contained unit) - which may be used independently of the video console; or it may feed one line input of the audio mixer into the video console; or, via the routing equipment within the control rack, one or more of the machines within the audio console may feed the video console while the stereo audio mixer is being used to feed one of the free machines within the console. This unit contains:

- two stereo 1/2 track audio tape recorders
- one stereo cassette recorder
- one stereo turntable
- a custom stereo audio mixer with seven switchable line or mix inputs

Two One Inch Tape Recorder Consoles - each of which contains its own video and audio monitor. These units may also be used in studio or remote locations. Each unit is equipped with electronic editing which increases flexibility and range of production.

Film Chain Island - which contains two carousel 35mm slide projectors and one 16mm film projector with both magnetic (playback and record) and optical sound. The film chain feeds the fourth camera input of the video console and/or the RF modulator for distribution to locations within the building.

Stationary Equipment Rack - which contains audio-video routing equipment and an RF modulator for closed circuit signal distribution to various terminating points within the building.

In addition to the above listings, this system also includes the following:

- 1 - Portable Quartz Lighting Kit
- 1 - Studio Floor Monitor
- 2 - CV-2200 Sony Videotape Recorders
- 2 - GE 18" Monitor/Receivers
- 1 - Sony VO 1600 Video Cassette Tape Recorder

FY 73 ADDITIONS - To Television System

- 1 - ADC Audio Dual Patch Panel
- 1 - Dolby Unit
- 1 - Audio Cassette Deck

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- 1 - 1/4 inch 4 track audio recorder
- 1 - 8 input, 4 output audio mixer
- 1 - portable stereo system
- 1 - portable 19" color receiver
- 1 - 80 watt audio power amplifier

**TECHNICAL INFORMATION LAB MATERIALS**

The following is a summary of the materials acquired by the Technical Information Lab during FY 72 and FY 73. Approximate numbers of volumes are shown under general categories of collections.

	CATEGORY	APPROXIMATE NO.
<b>REFERENCE BOOKS:</b>	Encyclopedias	56
	Dictionaries	10
	Special Subject References (Educational)	10
	Directories, Guides and Handbooks	40
<b>JOURNALS:</b>	Research	18
	Audio/Visual	5
	Psychology	4
	Newspapers	25
	Teacher Ed.	2
<b>RESEARCH REPORTS:</b>	M.A./Ph.D. Theses	24
	Government	25
	Individual and Project	30
<b>BOOKS:</b>	Educational Technology	90
	Educational Management	40
	Educational Media	55
	Teaching Methods	38
	Evaluation	35
	Other	50
<b>SPECIAL COLLECTIONS:</b>	Equipment Categories	5
	Film Categories (Microfiche, Tape Recordings)	2,000
<b>OTHER:</b>	Mimeographed Collected Articles, E. Tech	105
	Instruc. Design & Programmed Instruction	100
	Teacher Ed.	150
	Educational Activities Reports: Govts. & Institutions of Foreign Countries	250
	Instructional Curriculum Materials (Language Arts, Math & Social Studies)	20

## COMPUTER APPLICATIONS LAB

### Equipment Configuration

Florida State University's CAL currently supports three computers dedicated to research on all aspects of the use of computer technology for the furtherance of educational goals. Research on computer-assisted instruction, computer-managed instruction, CAI system development, testing paradigms, human learning, and other problems characterize this commitment.

Available equipment, as diagramed on next page, includes an IBM 1500 Instructional System consisting of an 1800 central processing unit, a 1502 station controller, sixteen 1510 CRT displays, each with a keyboard and a light pen, one 1518 typewriter, and six 1810 disk drives with removable disk packs of 1,024 million bytes each. Additional peripherals include two 2401 tape units, one 1442 card read/punch, and one 1443 line-printer. Some pertinent technical specifications of the capacity and performance of the above data processing components are as follows:

- The 1800 CPU has 32K 16-bit words and has a cycle time of two microseconds.
- Each 1810 disk drive has a data transfer rate of approximately 36KB.
- The 2401 tape units have a transfer rate of 30KB.
- The 1442 card read/punch reads cards at the rate of 400 cpm and punches cards at a rate from 98 cpm to 390 cpm, depending on the number of columns punched per card.
- The 1443 lineprinter has a character set of 52 characters, a line width of 120 columns, and a printing speed of approximately 240 lpm.

The second computer in the CAL installation is a Digital Equipment Corporation PDP/8 680 Communication System which is interfaced to the IBM 1500. The purpose of this is to provide the 1500 with a capability of supporting a mix of 16 remote or local teletypes. The 680 CPU contains 4K 12-bit words and has a cycle time of 1.5 microseconds. The teletypes operate at a rate of 110 baud.

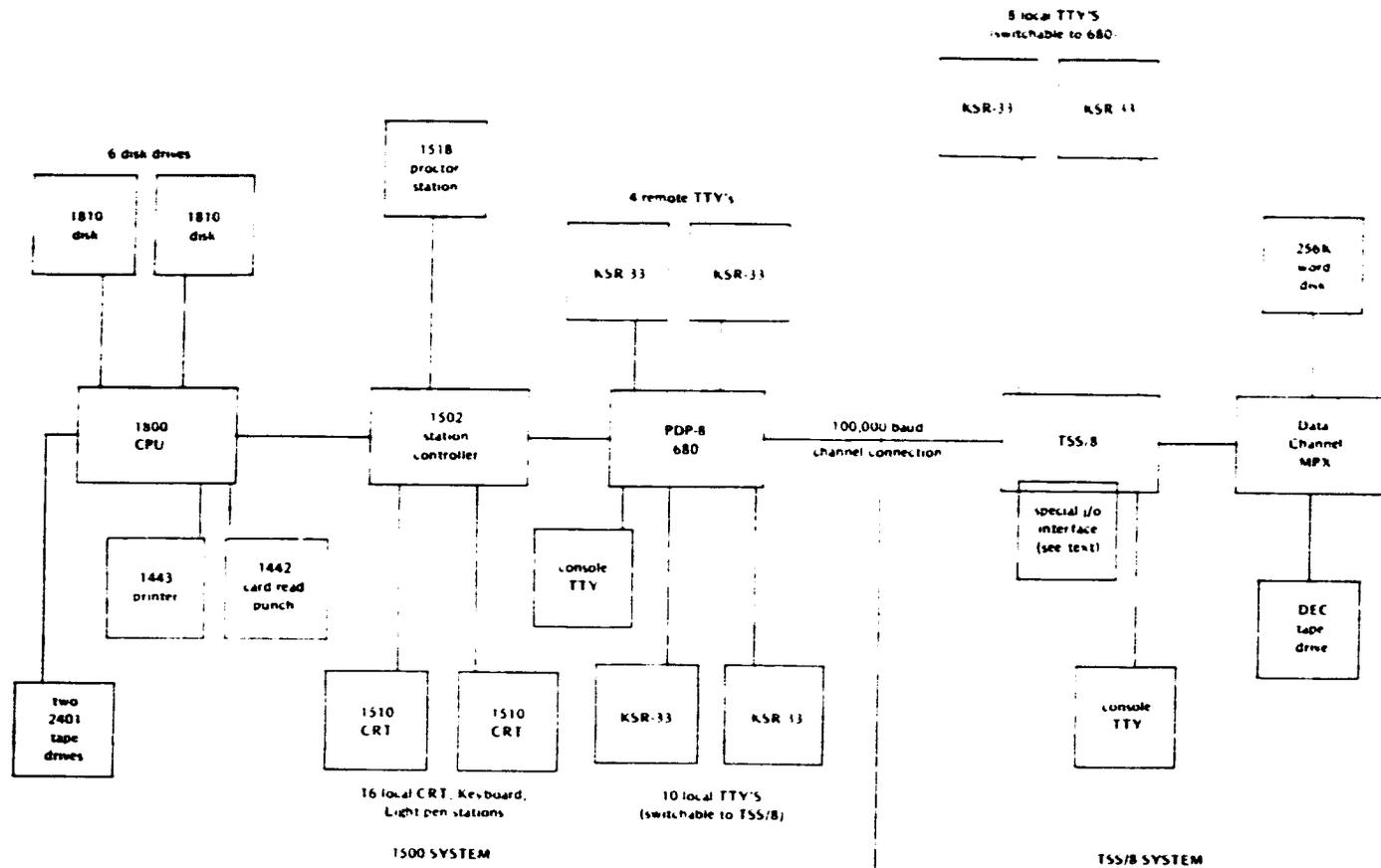
The third computer is a PDP/8 timesharing system which on its own supports 16 teletypes. The TSS/8 system includes a high-speed paper tape reader (300 characters per second), a high-speed paper punch (50 characters per second), one 256K-word disk to support the timesharing system, and a recently added DEC tape drive with a transfer rate of one word per 12.8 microseconds. The

TSS/8 handles teletypes at the rate of 110 baud each. In addition, there is a 100,000 baud channel connection between the TSS/8 and the 680 to provide flexibility of the system.

A special interface was added to the TSS/8 to control output to 64 binary electronic digital processes and 12 inputs from binary processes. For example, the TSS/8 can turn on or off 64 devices and receive on/off or yes/no input from 12 devices.

CAL equipment is equipped with an instructional support system for the 1500 system upon which all student responses are uniquely identified and recorded, and the Lab staff has developed a data management system which compresses, sorts, merges, and summarizes this data for analysis purposes. The staff has also created a batch mode disk monitor system, the heart of which is a relocating, linking loader, and has developed special analysis programs in FORTRAN IV. (The approximate value of computer equipment and support facilities is \$340,000.00.)

System Configuration



**Appendix D: Training**

New Courses - FY 72

Project Summaries and Participants

New Doctoral Degree Program - FY 73

Visiting Scholar Training Program

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### NEW COURSES FY 72

#### *Education's Role in the Development of Population Awareness*

This course deals in general as well as in specific terms with the part education may play in the development of national population programs. Various models and approaches will be examined and evaluated.

#### *Education and Minority Groups Abroad*

A pervasive world wide problem is how national educational systems relate to minorities and their needs. This course considers, on a comparative case study basis, how other educational systems deal with indigenous minorities and attempts to evaluate the results.

#### *Seminar in Project Management*

The mission of this course is to provide senior graduate students in education with skills for managing educational Research and Development projects. Topics covered in the course include: marketing strategies, project planning, contracting, budgeting, reporting, monitoring, and project personnel management.

## **PROJECT SUMMARIES AND PARTICIPANTS**

### **FY 72 Training Projects**

#### **SYSTEMS TRAINING FOR INPE PERSONNEL**

In the summer of 1971, the Brazilian Government contracted CET to provide an educational systems training program for its Instituto de Pesquisas Espaciais (INPE), which is that country's space agency. Brazil sought this assistance from CET in support of its geostationary communications satellite program and other Brazilian efforts to improve their educational programs on a nationwide basis. Six educational specialists from INPE were sent to the Center for two months to participate in a specialized and intensive workshop in the systematic design of educational programs, and another workshop in the development and evaluation of programmed instructional materials. While at the Center, the participants applied the systems approach in developing a predeployment plan for a satellite to be used for educational purposes. Since returning to Brazil, the six member team has designed its own workshop for training others in the development of programmed instruction, which is the multiplier effect that CET strives to achieve as an additional benefit from all of its technical assistance efforts to developing countries.

#### **DEVELOPMENT OF EDUCATIONAL TECHNOLOGY IN LATIN AMERICA**

Under contract to AID, CET assisted Brazil, Colombia, Guatemala, and Panama in improving their educational systems. Specific objectives of the contract were: (1) to promote small scale experimentation designed to examine ways to lower unit costs for educational achievement; (2) to prepare guidelines for educational planning; and (3) to provide technical advisory assistance in the application of information management systems to education. The research studies were conducted by Latin Americans as an integral part of the AID sector loan program. FSU's assistance consisted of training Latin American educators in educational technology workshops on site in selected Latin American countries, providing technical assistance to the countries, and providing educational facilities planning materials for use throughout Latin America.

#### **TECHNICAL ASSISTANCE TO LATIN AMERICAN COUNTRIES IN THE DESIGN OF INSTRUCTIONAL SYSTEMS (OAS I)**

The Organization of American States (OAS) sent eleven Latin American educators to FSU in mid-1971 for one year of training in the design of instructional systems. The training program consisted of selected course

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work in the College of Education and relevant practical experiences provided through the students' participation in on-going projects of the Center and the College. Two students have been extended to complete graduate degrees. Four have already completed Masters degrees. Six students were selected to go to Argentina as trainee consultants on a workshop and evaluation project being prepared there. When these students return to their jobs some of them will enter at a higher level. They will be available to be called upon individually or together as a team to act as international consultants for the OAS. Their cumulative specialty areas include evaluation, educational research, communications, teacher training, systems planning, media engineering, media administration, and educational planning.

### **DEVELOPMENT OF EDUCATIONAL MEDIA SPECIALISTS FOR LATIN AMERICAN COUNTRIES (OAS II)**

The Center has contracted with the Organization of American States to provide a one year training program in educational technology and media development for twelve Latin American participants, which started in March 1972. Most of the participants will take one or two courses per quarter in the specialty area chosen to pursue through the program. Specialty areas will include educational research, educational systems, evaluation, educational administration and management, and adult education. In addition, all students will participate in a CET designed workshop in the systematic development, implementation, and evaluation of multimedia instructional materials in the English, Spanish, and Portuguese languages. Upon completion of their training at FSU, the participants will return to their respective countries and apply various aspects of educational technology to their jobs and train others. Materials developed by the participants as part of their workshop training at CET will be used by OAS for a workshop in Buenos Aires.

### **DEVELOPMENT OF PROGRAMMED INSTRUCTION FOR VOCATIONAL EDUCATION IN THAILAND**

The Royal Government of Thailand with assistance from AID has undertaken a major project to upgrade and expand its vocational education programs in order to provide trade and industrial training opportunities to larger segments of its urban poor and rural populations. CET, through a contract from AID, assisted Thailand in its efforts by training a group of six vocational educators in the systematic development, implementation, and evaluation of programmed instructional textbooks and manuals. To accomplish this, the six member team participated in a workshop designed by CET. During this training program the Thai participants developed five programmed instruction textbooks on vocational subjects such as auto

mechanics, electricity, electronics, agriculture, and animal husbandry. A plan for implementing and evaluating the programs in Thailand was established in which CET will provide follow-up activities. After returning to Thailand, the Thais will work together as a group in the Department of Vocational Education in the Ministry of Education to: (1) validate and publish the programs, (2) develop additional programs, and (3) train other Thais in programmed instructional materials development and evaluation to increase the number of skilled programmers in Thailand.

#### FY 73 Training Projects and Participants

##### DEVELOPMENT OF EDUCATIONAL TECHNOLOGY SPECIALISTS FOR LATIN AMERICAN COUNTRIES (OAS III)

In March 1973 the Center for Educational Technology contracted with the Organization of American States to provide a one year training program in educational technology and media development for nine Latin American participants. Most of these participants are full-time students seeking Master's Degrees at Florida State University. They are enrolled in either the Division of Instructional Design and Personnel Development, or the Division of Educational Management Systems in the College of Education. Their special areas of study include: educational research, instructional systems, adult education, educational administration and management, and teacher education. In addition to formal coursework, all students participate in two CET seminars. One is designed to prepare them to function as change agents upon return to their countries, and the other gives them an opportunity to become involved in and/or familiar with on-going projects of the Center and College of Education. Upon completion of their training at FSU, all participants are expected to return to their countries and apply the educational technology skills they acquired to the solution of specific educational problems. They will also assist in teaching others what they learned in their training programs at FSU/CET.

##### PARTICIPANTS:

Hugo Bustamante - Bolivia  
Armando Dufey - Chile  
Elsie Lequizamon - Colombia  
Liliana Muhlman - Argentina  
Wanda Pire Nogueira - Brazil  
Clementina Rodriguez G. - Colombia  
Carmen Siri - El Salvador  
Nora M. Sotomayor - Costa Rica

## DEVELOPMENT OF EDUCATIONAL TECHNOLOGY IN LATIN AMERICA

Under contract to AID, CET assisted Brazil, Colombia, Guatemala, Panama and Peru in improving their educational systems. Specific objectives of the contract were: (1) to promote small scale experimentation designed to examine ways to lower unit costs for educational achievement; (2) to prepare guidelines for educational planning; and (3) to provide technical advisory assistance in the application of information management systems to education. The research and development studies were conducted by Latin Americans as a related part of the AID sector loan program. FSU's assistance consisted of training Latin American educators in educational technology and research at its campus, conducting an educational technology workshop on site in Panama, and providing technical assistance to the countries.

### PARTICIPANTS:

Elvia Lammerts van Bueren - Panama  
Rebeca Herrera Addison - Panama (continued from FY 72)  
Rene Corradine - Colombia (continued from FY 72)

## TRAINING IN INSTRUCTIONAL DESIGN FOR PERUVIAN MINISTRY OF EDUCATION

The Center for Educational Technology, in coordination with the Peruvian Institute for the Promotion of Education, has developed a program for training in-service educators from the Ministry of Education in the basic techniques of task analysis, instructional design, selected multimedia, and evaluation. In February 1973 ten Peruvian educators from the National Institute of Research and Educational Development came to CET for a ten week program in the aforementioned areas. Since their return to Peru, the group members have worked as a team in curriculum materials development and in the elaboration of instructional materials for in-service education. A second group of Peruvians is scheduled to arrive for similar training in October 1973. A unique feature of the program is that it is carried out entirely in the Spanish language.

### PARTICIPANTS:

Mario Acha  
Jose Carlos Anicama  
Celia Maria Carreno  
Glicerio Contreras  
Wilfredo Huertas  
Luis Palomino  
Gorki Tapia  
Miguel Rolando Vizarraga  
Cesar Vizcarra  
Elva Anita Casas

## DEVELOPMENT OF INSTRUCTIONAL SYSTEMS/MATERIALS FOR KOREAN EDUCATIONAL PROGRAM

The Korean Ministry of Education has contracted CET to provide technical assistance to its Korean Educational Development Institute in relation to its Educational Reform Program. As one activity under this contract, CET is conducting a workshop to train eight staff members of KEDI in various aspects of instructional materials design, production, evaluation, and management. This training program is specifically directed toward the areas of instructional systems, programmed instruction, instructional television, and management by objectives. The skills being taught are directly related to the tasks to be carried out in the five-year plan for educational reform which is being implemented by KEDI. While at CET, the participants are developing prototype instructional modules in a variety of subject areas which will be used in implementing Korea's new instructional television system. Upon their return to Korea, these people will work within KEDI to direct and coordinate the design and production of additional instructional programs.

### PARTICIPANTS:

Dai Huyn Kim	Do Soon Park
Hong Son	Jin Sung Kim
Jung Sun Hahn	Soon Jeong Hong
Won Ho Cho	Yung Kye Byun

## TRAINING IN EDUCATIONAL TECHNOLOGY FOR U.S. ARMY PERSONNEL

During the summer of 1973, CET provided a training program in educational technology for fifteen U.S. Army officers. This program lasted four weeks and was designed to provide the participants with an overview of educational technology as well as an in-depth examination of specific topics. The basic curriculum consisted of:

1. A systems approach to instructional design and development;
2. Theories of learning relevant to instruction;
3. Computers in education and;
4. A variety of seminars on critical topics related to Army training and educational technology.

Upon returning to their assignments the officers will be expected to supervise and participate in the empirical design, development, evaluation, and implementation of instructional programs. It is anticipated that this training program and the ones to follow it will be of unique importance to Army training because the personnel trained at CET will form a core of specialists which will affect Army training for many years to come.

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**PARTICIPANTS:**

LTC Paul Bue	Mr. Bert Channon
CPT John Davis	Mr. Bernard Gervais
MAJ John Kelly	LTC Malcolm McDonald
LTC Joseph Ottinger	LTC Calvin Phillips
LT Michael Rogers	LT Thomas Rogers
CPT Orville Smidt	LTC Jack Squier
LTC Anthony Vinhall	

## **NEW DOCTORAL DEGREE PROGRAM**

### **Description of Comparative Development Education Program**

#### **Program Rationale**

The Doctoral Program which leads to the Ph.D. or Ed.D. is designed to prepare university instructors, administrators, researchers, and curriculum leaders who operate on an international and intercultural level to bring about significant educational change. The program is designed to fulfill a growing need in training personnel to work on problems of international development education. The graduates of this program will occupy appropriate positions in colleges and universities, in international agencies (e.g., UNESCO, SIDA, AID, UNFPA, World Bank, OECD), state, local, and national governments, research and development centers (e.g., KEDI, CERD), and private industry.

The program seeks to enable students to acquire competencies as follows:

A thorough knowledge and understanding of the social, economic, and political basis of international development education;

A thorough knowledge and understanding of the substantive concepts and tools of investigation in educational technology, educational planning, and educational management, utilizing a systems framework;

A thorough grounding in the general curriculum and instruction field including the development, design, and implementation of a national or regional program, either through formal or nonformal education;

Ability to synthesize the experiences from the foregoing and to apply them to an ongoing international or domestic field project;

Knowledge with and skill in the design, preparation, and execution of a research study in a problem area in the field;

Acquaintance with the various international agencies and organizations and knowledge of the procedures and practices involved in cooperating with them.

A predisposition to inquire continuously into the significant problems of educational innovation in developing nations and to seek personal and career satisfaction by conducting research and field studies which aim in bringing about justifiable educational change.

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### Program Objectives

The objectives of the Program fall into three general categories as follows:

Objectives relating to the training of students in degree or non-degree course sequences;

Objectives relating to research and development efforts;

Objectives relating to services and technical assistance.

### Program Requirements

While it is possible to obtain master's and advanced master's degrees, the program's focus is placed on the Ph.D. The requirements leading to this degree are encompassed in the following five components:

COMPONENT	APPROXIMATE RANGE OF CREDIT HOURS
1. College of Education Courses	20 - 30
Educational Management Instructional Systems Evaluation Statistics - Research Design	
2. Core (Major)	50 - 60
The core is comprised of courses distributed among three areas: Area A - social, cultural, political, and economic bases of educational development; Area B - educational planning and management; Area C - educational technology, instructional design and curriculum development.	
3. Cognate Field	12 - 16
(Includes M.A. specialty or minor)	
4. Planned International Field Experience	6 - 12

The field experience is a basic element in the program and will involve a minimum of one quarter. It may include more than one experience and may be done either continuously or intermittently. It may be done in the U.S. or in foreign countries. It may be paid for by the candidate or he may be paid for this contribution.

The field experience envisioned will be designed and agreed upon by the degree candidate and his committee and will in every case be individualized to extend the professional competency sought by the candidate. In this respect, flexibility becomes the key characteristic for this component of the program.

The field experience will not substitute for other areas of the core requirements, but it will directly relate to one or more of them. Credit hours (6-12) may be earned in a planned international field experience. Additional credit may be earned if the field experience relates to dissertation preparation.

Types of field experience available in the program will be:

- (a) Regular teaching or administrative assignments in foreign institutions or foreign school systems;
- (b) Short-term consultation to foreign officials on special educational problems;
- (c) Workshop and conference participation on problems of educational development in a foreign country;
- (d) Organized research studies relative to particular problems facing educational development in foreign countries;

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- (e) Participation in on-going programs of social services with foreign countries;
- (f) Individual research on problems approved by foreign institutions and/or entities.

The following avenues will be utilized in providing the above listed field experience opportunities:

- (a) Regular FSU international projects (individual professors, CET, others)
- (b) U.S. Government agencies programs (AID, USIS, Peace Corps, Department of State)
- (c) International agencies (UNDP, World Bank, UNESCO, OAS, OECD, others)
- (d) Private agencies - Foundations - Social Services Organizations
- (e) FSU - cooperative undertakings with other U.S. institutions (regional accrediting agencies - professional associations, other universities, U.S. industry)
- (f) Contacts directly with foreign governments or foreign institutions.

Prior to assignment to a field experience, the candidate will develop, with his committee, a prospectus on the Planned International Field Experience which will include:

- (a) Description of work to be done (including particulars as to his role - time involved - sponsorship - cost elements, etc.)
- (b) Statement of the relevance of the experience to his objectives and program

- (c) Outline of criteria by which he and his committee can evaluate the experience
- (d) FSU involvement (credit - responsibility - representation, etc.)

In order to contribute to the general education of students in the College of Education as well as in other colleges and to provide a base for local recruitment into this program, a three-course sequence will be offered. These courses selected from each of the three core areas will be team-taught by CET staff. The courses are:

Comparative and International Development Education  
Regional Seminars in International Development Education

Educational Technology for Developing Nations

5. Dissertation	18
Total Hours:	106 - 136

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### **VISITING SCHOLAR TRAINING PROGRAM**

The visiting scholar training program is basically a service program that CET makes available for high level education officers who already have advanced degrees and a significant position within an educational system or agency. Such people are considered by CET to be "visiting scholars." The training experiences for each visiting scholar are individually designed to take into account the position the participant holds and the environment in which he works. However, the general objectives of these training programs are to: (1) acquaint the visiting scholar with the special educational technology capabilities in Florida State University's College of Education; (2) provide organized, intensive, directed study in the systems approach, instructional design and delivery systems, media applications, computers in education, and recent relevant research concerning these and other areas of educational technology; and, (3) acquaint the participant with CET's efforts in applying educational technology to improve educational systems in selected countries throughout the world. Listed below are the visiting scholars who participated in this program during FY 73:

Ms. Wania Botelho  
Brazilian Educator  
Human Resources Office  
USAID Brazil  
March 1, 1973 - May 11, 1973

Mr. Marvin Hurley  
Education and Training Officer  
USAID Mission, Lima, Peru  
March 23, 1973 - April 23, 1973

Mr. Eric Prabhakar  
Specialist  
Division of Methods, Materials and Techniques  
UNESCO, Paris  
February 16, 1973 - March 29, 1973

**Appendix E: Research 101**

**Appendix E: Research**

Graduate Research Abstracts  
Contracted Project Research  
Monographs and Models

## GRADUATE RESEARCH ABSTRACTS

### FY 72

Abstracts of the following dissertations were presented in the FY 72 Annual Report:

Chadwick, Clifton B. *A Systems Analysis and Design for the Development of Educational Technology in a Developing Country: The Case of Argentina.*

Rayner, Gail T. *An Empirical Study of a Methodology for the Revision of Systematically Designed Educational Materials.*

Restrepo, Bernardo. *A Study of the Effectiveness of Individualized Instruction and Flexible Schooling as Compared to Conventional Instruction and Traditional Schedules of Schooling in Colombian Rural Education.* Prospectus for dissertation.

Sprague, David M. *An Empirical Investigation of the Relationship Between Media Preference and Learner Performance.*

Srisopa, Anan. *Methodology for Forecasting Manpower Requirements as a Basis for Long Range Educational Planning.*

### FY 73

Cooney, David T. *The Foreign Student Program in Florida Public Community Junior Colleges: Present Status and Future Development.*

The purpose of this study was to determine the current administrative policies and practices of Florida public community colleges with regard to their foreign student programs; to determine the perceptions of community college presidents, trustees, and foreign student advisors of an ideal foreign student program; and to compare the current programs with the ideal program.

All 28 Florida public community colleges participated in the study and returned data showed 1,787 non-resident foreign students currently enrolled in the target colleges. The following conclusions were drawn:

1. There are sufficient numbers of foreign students in Florida community colleges to warrant special attention to the programs designed for their benefit.

2. All Florida community colleges do not follow the same policies and practices in the foreign student programs.
3. The attitudes of community college presidents, trustees, and foreign student advisors are generally positive in relation to a foreign student program in Florida community colleges.
4. There are differences in the attitudes of community college presidents, trustees, and foreign student advisors, but they are in degree of feeling rather than in differences of opinion.

Hannum, Wallace H. *A Study of Select Factors Influencing the Retention of Rules.*

The retention of subject matter knowledge has been one of the primary goals of formal education. Obviously if the learning that occurs in school is to be of use to the individual on subsequent occasions, it must be retained. There have been many studies of retention of school subject learning that have indicated a considerable loss over various time periods.

The purpose of this study was to investigate several factors that may influence retention. There have been many studies of the retention of information or knowledge, but few studies dealing with the retention of intellectual skills such as concept and rule learning. There is an indication that the retention of intellectual skills is greater than the retention of information. This study examined the retention of three rules from physics related to electricity that were learned under three conditions of original learning: expository, meaningful context, and overlearning.

All conditions of learning were presented individually in printed booklets. The expository condition presented the rules in a linear large step programmed fashion including examples and problem sets. In the meaningful context condition the statement of the rules and the examples were related to practical, everyday situations. The overlearning group worked problems to a more stringent criterion of five consecutive correct problems rather than two before terminating the learning.

Seventy-two undergraduate students majoring in education at Florida State University and Florida Agricultural and Mechanical University participated in the study. The students were brought to a common criterion on the original learning, with the exception of the overlearning group, and were measured for retention after a one-week time interval. There were three

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conditions for the measurement of retention, under the presence of a strong retrieval cue, a weak cue, and no cue.

The results indicated that there was a considerable loss in the ability to apply the rules after the seven-day interval. The loss was equivalent for all conditions of original learning. The presence of a weak retrieval cue increased the retention slightly but not a statistically significant amount. The presence of a strong retrieval cue increased the retention a statistically significant amount.

This study found some evidence for the facilitating effect of a strong retrieval cue on retention of rules regardless of the condition of original learning. No evidence was found to indicate that the learning of rules in a meaningful context or overlearning influences the retention of rules.

James, Thomas G. *The Effects of Subjective Organization and Paragraph Organization on the Recall and Retention of Meaningful Prose Materials.*

In this investigation two measures of subjective organization were examined to determine their relationship with one another, with verbal ability as measured by scores on the Florida Ninth Grade Test, and with the immediate recall and retention of prose material. Additionally, five methods of structuring prose passages were evaluated in terms of the amount of learning obtained from each and the relationship between performance on them and verbal ability.

The results showed that the two measures of subjective organization were unrelated and that there were no differences between the passage organization conditions on immediate free recall nor on a recall retention test. However, on a recognition retention test the passage consisting of forty unrelated sentences resulted in the highest scores. There was a moderate and positive relationship between performance on the experimental passages and verbal ability, but performance on these passages and subjective organization were unrelated.

These findings were discussed in terms of the structural characteristics of the passages which could have caused a decrease in the amount of learning obtained from the organized passages. In addition, methodological differences between this research and prior work were examined, but these were deemed inadequate to account for the obtained results.

It was recommended that further research in this area concentrate on the structural characteristics of text in an effort to determine those characteristics which yield meaningful differences in performance. Furthermore, it was recommended that dependent variables which have a more direct relationship to school learning than free recall be examined.

When these steps are taken the research effort in this area could return to an examination of the measurement of individual differences in subjective organization and their possible influences on learning from prose.

Oliveira, Joao Batista. *Simulation and Analysis of the Effects of Alternative Transition Coefficients on Student Flows.*

In this dissertation two models were developed and related. The first model simulates the flow of students through an educational system. In the particular example presented, the educational system of the Estado de Minas Gerais in Brazil was illustrated. The other model illustrated a methodology for planned change, and will be commented upon later.

The simulation model was developed according to the most recent developments in the field of modeling and its main advantage is the fact that it incorporates the sophistication of computer simulation techniques with the simplicity required in any model intended to be useful and understandable for decision makers. Moreover, it can be further developed to incorporate several options which may be useful in different situations and for alternative planning purposes.

Four simulation runs were alternatively studied. One corresponded to the actual MG plans, as stated in the reform documents. The others presented variations in two critical transition coefficients, namely enrollments and graduation rates in the first grade. The choice of these two coefficients was justified in terms of their critical importance in the case of the MG educational system.

The results obtained illustrated the medium-term effect of alternative decisions for the future, as well as the effect of specific decisions on the change in the flow of students throughout the system. Discussion of the results highlighted the main contributions and usefulness of the information obtained for the planner and decision makers. The value of this information was illustrated within each simulation and by comparing alternatives.

A broader framework for considering available educational technologies within plausible cost-effective alternatives has been presented in Chapter VI. The implications of the present dissertation for the integration of planning and decision making have also been discussed. A model for the adoption and implementation of such changes by a typical educational system in order to cope with growing quantitative and qualitative demands has been delineated in Chapter VII.

**Restrepo, Bernardo. *Individualized Instruction and Flexible Schooling: An Experimental Study.***

The purpose of this study was to determine the effects of individualized instruction and a flexible schooling approach upon the internal effectiveness of the Colombian rural school. Packages of individualized instruction were designed, developed, and evaluated and the teachers of the third grade level in the target schools were trained in the techniques of management of individualized instruction.

Several hypotheses were advanced. It was expected that if instructional materials, prepared according to an accepted model of instruction, were delivered to the teachers and they were trained in techniques of management, their satisfaction would increase. It was also expected that the materials, the teachers' special training, and the flexible schooling system would produce higher achievement and more favorable student attitudes toward education. It was further expected that, as a consequence of the previous effects, the school dropout rate would be reduced, and the parents' attitudes toward education would improve.

The subjects for the study were the third graders of 24 schools, the selection of which followed a complex procedure of stratified sampling. All the schools were located within a radius of 60 miles of the city of Medellin. Half of them used a flexible schooling system and half a rigid system. The instruction within these schools was evenly divided between those who used individualized instruction, those with instruction by objectives, and those with conventional instruction. The results supported the stated hypotheses in all cases.

**CONTRACTED PROJECT RESEARCH**

**FY 72**

**EDUCATIONAL CHANGE THROUGH SYSTEMS PLANNING FOR THE  
REPUBLIC OF KOREA**

The University, under contract to AID, assisted the Republic of Korea to systematically redesign its primary and middle school systems to make their educational programs maximally supportive of national goals in the social and economic sectors. An initial survey of Korea's social and economic needs and educational resources was conducted by a joint FSU/ROK team in 1970. Subsequently, in 1971 the Korean Government formed the Korean Educational Development Institute (KEDI) to implement the findings of that survey. With continuing technical advisory assistance from FSU, KEDI is currently conducting systems planning activities for major educational reform. Future plans call for establishing a model school for try-out of a prototype educational system being designed by KEDI. Being considered in the instructional approach for this system are such techniques as programmed instruction, individualized instruction, and instructional television. Some of the objectives for the prototype system are more rapid advancement of students through the system, an increase in the number of students which the system can accommodate, and lower costs per student.

**FY 73**

**DEVELOPMENT OF MATERIALS FOR A SEMINAR ON EDUCATIONAL  
TECHNOLOGY AND CURRICULA**

In November 1972 the Organization of American States contracted the Center for Educational Technology to develop the instructional materials for use in a Spanish language workshop for educators from all over Latin America. The objective of the workshop was to provide high level educational administrators with the appropriate information about concepts, techniques, and practices in educational technology to enable them to make policy decisions about the use of educational technology in their countries. The week-long workshop was held in May 1973 in Bogota, Colombia. Seventy educational administrators from all over Latin America participated. The participants made use of slide/tapes, workbooks, and selected reading material. They were introduced to a variety of theories in educational technology as well as examples and methods. Since May, several other groups have participated in the workshops, and many more requests for the workshop have been received. The workshop is currently being prepared in English and Portuguese.

**RESEARCH, DEVELOPMENT, AND EVALUATION EFFORTS IN  
EMPIRICALLY DESIGNED INSTRUCTION FOR THE COMBAT ARMS  
TRAINING BOARD**

In May 1973 the U.S. Army contracted CET to research present use of educational technology in Military training and suggest ways it may be used in the future. Four separate efforts were undertaken:

(1) analysis of Army schools and recommendations on implementing educational technology; (2) the development of exemplary prototype audiovisual lessons; (3) the development of a prototype diagnostic test; and (4) the development of doctrine and necessary training materials to provide the required instructional development skills recommended in task one. Each of these tasks is supplemental to or an extension of work already undertaken by CET. Their completion should provide valuable new information and materials which will be useful to the Center. Particularly useful will be the training materials which will cover all state of the art techniques currently being used in the design, development, management, and evaluation of instruction. The prototype lessons are based on analyses of low-cost production and development procedures. Particularly, special techniques for conducting tryouts and the collection of formative evaluation data will be emphasized. It is expected that completion of the final task will require about two years.

## MONOGRAPHS, PAPERS, AND MODELS

### FY 72

Abstracts of the following papers were presented in the FY 72 Annual Report:

Hannum, Wallace. *A Study of Rule Retention and Accessibility.*

Kumar, Krishna. *The Design and Development of Optimal Educational Policies.*

### FY 73

## MODELS

Briggs, Leslie J. and Dodl, Norman. *Teacher Training Module Development.*

With support from several funding agencies outside FSU, and internal support through the Center for Educational Technology, the College of Education Dean's Office and Division of Instructional Design and Personnel Development, Drs. Dodl and Briggs are developing, and have completed some of, the following clusters of generic teacher preparation modules for use in pre-service and in-service teacher training programs:

#### Individualized Instruction Modules

- Varieties of Individualization (Introductory Module)
- Selecting Individualized Instruction Pattern to fit Learner and Task Characteristics
- Organizing the Environment for Individualized Instruction
- Selecting Appropriate Resources for Individualized Instruction
- Performance Assessment for Individualized Instruction

#### Formative Evaluation Modules

- Principles of Formative Evaluation (Introductory Module)
- Formative Evaluation Applied: Instructional Materials Development
- Formative Evaluation Applied: A Basis for Redirecting Learners
- Formative Evaluation Applied: Instructional Systems Design

#### Instructional Planning Modules

- Alternative Models of Instruction
- Independent Study or Group Instruction
- Instructional Events
- Sequencing Instruction

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### Outcomes of Instruction Modules

- Outcomes: Planned; Possible; Unplanned (Introductory Module)
- Writing Worthwhile Performance Objectives (from Vargas)
- Task Analysis

### Taxonomies of Capabilities and Performance Related to Outcomes Modules

- Function of Taxonomies in Instruction
- Taxonomy: Cognitive - Bloom
- Taxonomy: Instructional - Gagné/Briggs
- Taxonomy: Affective - Krathwohl
- Taxonomy: Teacher Competencies - Dodl, et al.

### Interaction Analysis Modules

- Why Interaction Analysis (Introductory Module)
- Group Verbal Interaction - Flanders
- One to One Teacher Pupil Interaction - Brophy/Good
- Non-verbal Interaction

### Portal School Cluster Module

- Interning in the Portal School
- Negotiating Competency Assessments
- Interpersonal Aspects of Teaming

### *CET. Model for the Development of a National University Center for Educational Technology.*

The Center for Educational Technology has prepared a general draft model for developing a National University Center for Educational Technology. It is conceived of as a multidisciplinary program located within a National University having a direct relationship with a National Department or Ministry of Education which is seeking to apply educational technology as a cost-effective means of solving educational problems. The specific purpose of the university program will be to provide a Master's Degree, and above, program in educational technology, offering specialization in several different areas. In addition, research and service activities are planned for as both university-related efforts and as a part of an interface with other universities, lower schools, government agencies, and the community at large. It is proposed that the program will enroll approximately 200 selected graduate students. These students will be solicited from and intended for high level positions in educational administration and instruction. The program as described would greatly facilitate the production of trained personnel and research in educational technology and, furthermore, would create an effective vehicle for expanding the transmission of knowledge, new educational models, and educational design and planning expertise to both the planning and

implementing agencies within a national program. It would also provide a continuing flow of expertly trained personnel for assignment into responsible positions with the operational school systems in the nation.

#### MONOGRAPHS

Branson, Robert K. and Morgan, Robert M. *Educational Technology: State of the Art.*

This monograph was prepared in relation to a research and development project conducted by CET under contract with the U.S. Army (reported under "Contracted Project Research" in the RESEARCH appendix.)

#### PAPERS

CET. *Educational Radio: A Review of the Literature.*

In January 1973 CET undertook to investigate the uses of radio for educational purposes. The investigation was to cover both the prior and projected use of radio as an instructional medium. The initial step in the study was to review the literature concerning educational radio. Major areas of interest included the use of programmed instruction principles, the use of various types of supporting materials, the use of supporting persons in different roles, formal and non-formal applications, individual difference variables such as degree of literacy, and others. The review covered material written about radio from 1924 to the present. It included articles about projects done in 23 countries in addition to the U.S. It was found that radio can be a highly effective instructional medium. However, very little instructional material has been prepared specifically for use with radio. The review focused on the potential use of instructional radio by the developing countries. It was found that radio could solve some of the problems encountered by developing countries trying to provide instruction to remote areas. It overcomes the problems of limited access and personnel. It is also inexpensive and can be operated by a small staff. With this review as a foundation, CET expects to conduct a more extensive review followed by several preliminary studies prior to taking the project to developing countries.

Hannum, Wallace. *A Study of Select Factors Influencing the Retention of Intellectual Skills.*

One major purpose of schools is to teach intellectual skills (concepts, rules, problem-solving) to students for their later use as a productive member of society. In view of the importance of these intellectual processes a study was designed and carried out to examine variables associated with

the retention of a specific intellectual skill (rule learning). These variables include the use of meaningful context and overlearning (practice) during initial learning and the use of retrieval cues during retention to stimulate the recall of the previously learned rules. The results indicate that rules are readily learned with or without a meaningful context or practice beyond several correct applications of the rule. Forgetting was substantial when retention was measured after a one-week interval unless a strong retrieval cue was used. In the presence of a strong cue students were able to correctly apply the previously learned rules. There is the suggestion that variables influencing the learning of intellectual skills are different from the variables influencing the learning of information and that previously learned intellectual skills may not be forgotten but rather may not be accessible at the time of retrieval.

**Appendix F: Services**

Consulting Activities  
Visitors  
Conferences  
Seminars

### **CONSULTING ACTIVITIES**

Specific consultations, relative to the role and application of educational technology, between the staff of CET and representatives from the following agencies were carried out in FY 73. Some of these consultations were initiated by CET, but were more often invited by the below listed agency representatives. They may usually be classified as one-time activities and do not represent a continuing linkage or liaison as reported in Chapter 4.

1. American Council on Education, Washington, D.C.
2. Ford Foundation, New York
3. Rockefeller Foundation, New York
4. Sloan Foundation, New York
5. Far East Regional Laboratory, California
6. UNESCO, Paris
7. AID/Regional Technical Aids Center, Mexico City
8. Latin American Association of Radio Schools (ALER), Argentina
9. American University of Beirut, Lebanon
10. University of Florida, Gainesville, Florida
11. Peace Corps/Department of State/Washington, D.C.
12. Bureau of Education and Cultural Affairs  
Department of State, Washington, D.C.
13. Southeast Asian Regional Center for Educational Innovation and  
Technology, Singapore
14. Office of Educational Sciences, Tunisia
15. World Bank, Washington, D.C.
16. Institute of Educational Sciences, Tunisia
17. U.S. Dependent Schools, European Area, Department of the Army,  
Karlsruhe, Germany
18. City University of Madrid, Spain
19. Colorado State University, Fort Collins, Colorado
20. National Society For Performance and Instruction, San Francisco

## VISITORS

During FY 73 the Center for Educational Technology had more than 100 visitors with every continent represented. Many of these visitors were high level officials or dignitaries in government and educational positions. The following list is not an exhaustive listing of all visitors, but does reflect a sample of the type of people who visited CET and the geographic regions that were represented.

Mrs. Irene Jara de Solorzano  
Director of the Colombian Institute  
of Pedagogy Research  
Bogota, Colombia

Ato (Mr.) Haile Yesus  
Assistant Minister  
Ministry of Education  
Addis Ababa, Ethiopia

Dr. Sergio Gama de Almada  
Chief of Planning and Control  
University of Brasilia  
Brasilia, Brazil

Paulo Guimaraes  
Dean, Faculty of Education  
University of Brasilia  
Brasilia, Brazil

Rizza Araujo Porto  
Chief of Coordinators  
Ministry of Education  
Brasilia, Brazil

Dra. Irma Lanzas de Chavez Velasco  
Director of the National Educational  
TV Network  
El Salvador

Ms. Vilma Casas  
Lima, Peru

Dr. Joaquin Paez G.  
Director, Educational Technology Project  
Caribbean Universities and Research  
Institutes (UNICA)  
Bogota, Colombia

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Dr. Sai Bhanuratana  
Deputy Director-General,  
Elementary and Adult Education Dept.  
Ministry of Education  
Bangkok, Thailand

Dr. Kowit Vorapipatana  
Chief, Adult Education Division  
Ministry of Education  
Bangkok, Thailand

Dr. Mihia Bomwisho  
Dean, Department of Education  
University of Zaire  
Kisangani, Zaire

Dr. Teodora Revilla de Rocha  
President of Universidad Nacional  
de Educacion  
Lima, Peru

Dr. David Sprague  
AID Technical Assistance Bureau  
Washington, D.C.

Ms. Annette Buckland  
AID Technical Assistance Bureau  
Washington, D.C.

Dr. Cliff Block  
AID Technical Assistance Bureau  
Washington, D.C.

Dr. Edda Eisenlohr  
Department of Teaching  
Research and Documentation  
Deutsche Stiftung fur Entwicklungslander  
(German Foundations for Developing  
Countries)  
West Germany

Antonio Rodrigues Coelho  
Chief of the Dept. of Evaluation  
and Control  
Ministry of Education and Culture  
Brazil

Dr. Howard Lusk  
Chief, Human Resource Development  
USAID  
Brasilia, Brazil

Fr. Enrique Nardelli  
Director General of INCUPO  
Argentina

Ing. Enrique de la Piedra  
Instituto Peruano de Fomento Educativo  
(Peruvian Institute for Educational  
Development)  
Peru

Mr. Marvin Hurley  
Education and Training Officer  
USAID  
Lima, Peru

Dr. Joseph Kanner  
Assistant to the Chief of Staff  
for Communications and Electronics  
U.S. Army

Dr. William Schmick  
Far Western Laboratory  
Berkeley, California

Dr. John Clayton  
OAS  
Washington, D.C.

Kim, Ho Gwon  
Vice Director Korean Educational  
Development Institute  
Seoul, Korea

Dr. Lee, Young Duck  
Director Korean Educational  
Development Institute  
Seoul, Korea

Walt Adamson  
Executive Vice President  
Bridgewater State College

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**Adegoke Adewole  
Executive Secretary of the African  
Social Studies Project  
Nigeria**

**Dr. Richard Niehoff  
Associate Dean for International  
Development  
Michigan State University**

**Waddi Haddad  
Under-Secretary of Education  
Beirut, Lebanon**

**Miss Mildred Cullen  
Teacher Educator  
University of Durham  
England**

**Eric Prabhakar  
UNESCO  
Paris**

**John Tiffin  
CEDO  
England**

**Lt. Col. John Goetz  
Chief of Training Technology  
Combat Arms Training Board  
Ft. Benning**

**William Deterline  
Deterline Associates  
Palo Alto, California**

**CONFERENCES: NATIONAL AND INTERNATIONAL**

The following list is illustrative of the types of conferences attended during FY 73 by CET professional staff. Several staff members made presentations at particular conferences. The titles of these papers are indicated below the appropriate conference.

American Educational Research Association  
February, 1973  
New Orleans, Louisiana

Association of Education and Communications Technology Annual Conference  
April, 1973  
Las Vegas, Nevada

Southern Association of Colleges and Schools  
April, 1973  
Atlanta, Georgia  
PAPER: *Criterion Referenced Measurement*

Society for Applied Technology Conference on Cost-Effective Education  
February, 1973  
Washington, D.C.

Organization of American States Conference  
February, 1972  
Mexico City, Mexico  
May, 1973  
Bogota, Colombia  
March, 1973  
El Macaro, Venezuela

Friedrich Ebert Foundation  
September, 1972  
Ixmiuilpan, Mexico  
PAPER: *Economical Problems of Teleducation in Latin America*

National Comparative and International Education Annual Conference  
March, 1973  
San Antonio, Texas  
PAPER: *Women in Transition: Zaire and Ethiopia*

International Conference on Education for Teachers  
July, 1972  
London, England

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AID Regional Educational Conference  
April, 1973  
Alexandria, Virginia

Comparative and International Education State Annual Conference  
May, 1973  
Gainesville, Florida  
PAPER: *CET's Role at Florida State University*

American Association for the Advancement of Science  
June, 1973  
Mexico City, Mexico  
PAPER: *Educational Technology in International Development*

National Seminar on Educational Goals  
October, 1972  
Seoul, Korea

National Society for Performance and Instruction  
May, 1973  
San Francisco, California

Federation of American Societies in Experimental Biology Annual Convention  
1973  
Atlantic City, N.J.  
PAPER: *Applications of Computers in Education*

American Psychological Association Annual Convention  
April, 1972  
Honolulu, Hawaii  
PAPER: *Competencies Needed in the Conduct of Quality  
Educational Research and Evaluation: Implications  
for Training*

Tennessee Education Association  
March, 1973  
Memphis, Tennessee

National Security Industrial Association  
February, 1973  
Washington, D.C.  
PAPER: *An Educational Reform Project in the Republic of Korea*

## SEMINARS

In addition to regular presentations by CET staff members on all project activities, the following list is illustrative of the personnel and subjects involved in special seminar presentations to the CET staff and graduate students during FY 72. Other FSU faculty and students were invited to attend all seminars.

Howard Lusk  
Chief, Office of Human Resource Development  
USAID, Brazil  
*Brazilian Education*

Haile Yesus  
Assistant Minister of Education  
Addis Ababa, Ethiopia  
*Educational Sector Planning*

Dr. Irma Chavez  
Director of National Educational Television  
Network, El Salvador  
*The Status of Instructional Television in  
El Salvador*

Dr. Richard Durstine  
FSU Representative in Latin America  
*Information Management Systems in  
Developing Countries*

Waddi Haddad  
Director of CERD and  
Under Secretary of Education, Beirut  
*Educational Development in Lebanon*

Drs. Camarota, Guimaraes, Porto and de Almeida  
Educators for University of Brasilia  
*Role of Educational Technology in Brazilian  
Education*

Dr. Robert Tennyson  
Director of Computer Applications Laboratory  
Florida State University  
*Computer Assisted Instruction*

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**Dr. Eric Prabhakar**  
UNESCO, Paris  
*UNESCO Programs and Priorities*

**Colloquium**  
Florida State University  
CET/Social Studies Education  
*Comparative Developmental and Civic Education*

**Professa Maria D. Bigich**  
Kiev State Pedagogical Institute of  
Foreign Language, U.S.S.R.

**Dr. Robert Branson**  
Florida State University  
*The Use of Radio as an Instructional Medium*

**Dr. Robert M. Morgan**  
Florida State University  
*Educational Research*

**Mr. James Wilkey**  
Florida State University  
*Korea's Educational Reform Program*

**Dr. Bascom Story**  
Florida State University  
*Educational Sector Reviews in Developing Countries*

**Dr. Sydney Grant**  
Florida State University  
*Educational Technology in Latin America*

**DEMONSTRATIONS**

**3M Company**  
Sound Page System  
*Sound on Slide System*

**Cook Consultants**  
*Verispeech Expander-Compressor Cassette Recorder*

**Xerox Corporation**  
*Microfiche Reader-Printer*

**Appendix G: Expenses**

**Source of FY 73 Funding**

**Report of Expenditures**

**Line Item Expenditures and Projections**

**FY 73 Distribution of Expenditures by Objectives**

**FY 74 Estimated Distribution of Expenditures by Objectives**

**FY 73 Salaries From Grant Support**

**FY 74 Estimated Salaries From Grant Support**

**Graduate Student Stipends From Grant Support**

## SOURCE OF FY 73 FUNDING

Source	Amount (\$ in Thousands)	Approximate Percentage Total
Florida State University	460	41
AID Grant - 211(d)	319	28
Contracts*	346	31
Totals	1,125	100

\* Contracts between Florida State University and the following:

- |   |                                    |
|---|------------------------------------|
| 1. Agency for International Development | 2. Organization of American States |
| (a) Latin American Bureau               | 3. United States Army              |
| (b) Office of International Training    | 4. Republic of Korea               |
| (c) USAID - Korea                       | 5. Government of Peru              |

**LINE ITEM EXPENDITURES AND PROJECTIONS**  
 (Actual<sup>1</sup> and Projected)  
 \$ in Thousands  
 Under Institutional Grant No. AID/csd - 2945 (FY 1972-FY 1976 Inclusive)  
 Review Period July 1, 1972 to June 30, 1973

Line Item	Expenditures to Date		Projected Expenditures			Totals
	FY 73 Period Under Review	FY 72-FY 73 Cumulative Total	FY 74	Year FY 75	FY 76	
Salaries (see attached data)	177	294	190	70	19	573
Student Stipends (see attached data)	41	80	32	20	13	145
Consultative Services	3	8	3	3	1	15
Travel	21	34	20	9	6	69
Educational Equipment	48	73	25	5	2	105
Educational Materials	1	4	5	3	1	13
Office Supplies and Other	28	45	20	10	5	83
<b>Totals</b>	<b>319</b>	<b>538</b>	<b>295</b>	<b>120</b>	<b>47</b>	<b>1,000</b>

1. Official reports of expenditures under this Grant are prepared and submitted by FSU Contract Office. The above is CET's best available data at time of this report. Figures have been rounded to the nearest thousand.

**FY 73 DISTRIBUTION OF EXPENDITURES BY OBJECTIVES**

(\$ in Thousands)

All Amounts Except Totals Are Estimates

Grant Related Activities	FY 73 211(d) Funds	FY 73 Non-211(d) Funds
Objective 1 - University Resource Center (a) Administrative Staff Time (b) Equipment and Materials (c) Other Costs	60	345
Objective 2 - Training Programs (a) Staff Time (b) Special Materials (c) Graduate Stipends	100	200
Objective 3 - Research & Model Building (a) Staff Time (b) Special Materials (c) Graduate Stipends	80	120
Objective 4 - Linkages & Liaisons (a) Staff Time (b) Travel (c) Other Costs	45	80
Objective 5 - Consultative Services and Others (a) Staff Time (b) Travel (c) Other Costs	34	61
<b>TOTALS</b>	<b>319</b>	<b>806</b>

**FY 74 ESTIMATED DISTRIBUTION OF EXPENDITURES BY OBJECTIVES**

(\$ in thousands)

Grant Objectives and Related Activities FY 74		Personnel Staff & Studies	Equipment & Materials	Travel	Office Supplies and Other	Total
Obj. No. 1 Univ. Resources	1. Organized Assessment of FSU Staff Resources	5	2		2	9
	2. Expansion of Technical Resources	5	15			20
	3. Grant Coordination by Center Staff	10		2	3	15
	4. Special Services to Univ. Program	10				10
Obj. No. 2 Training Programs	1. Short Term Training Programs	10		2	5	17
	2. Formal Course Offerings	20			1	21
	3. Instructional Materials Development	10	5		1	16
	4. Visiting Scholar Program	10	1		1	12
	5. Graduate Stipends For Training	16				16
Obj. No. 3 Research & Models	1. Monographs	20	5		5	30
	2. Research Design	15	1		1	17
	3. Computer Research Design	5				5
	4. Graduate Stipends For Research	16				16
	5. Model Building	15	1		1	17
Obj. No. 4 Linkages & Liasons	1. U. S. Institutional Linkages	10		3		13
	2. International Network	10		3		13
	3. ACPO Linkage	10		3		13
Obj. No. 5 Consultation and Other	1. International Consultations	10		3	3	16
	2. National Professional Meetings	5		2		7
	3. Key Foreign Leaders	5		2		7
	4. Special Seminars	5				5
Totals		222	30	20	23	295

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**FY 73 SALARIES FROM GRANT SUPPORT**

Position Title, Salary Range and Personnel	Estimated Number of Man- Months Worked in Program	Percent Salary Support From 211(d) Grant
<b>PROFESSORS (Salary Range-- \$16-36,000)</b>		
Branson .....	12	80
Briggs .....	3	0
Gagne .....	1	0
Grant .....	12	0
Kraft .....	2	0
Massialas .....	2	100
Morgan .....	12	38
Rideout .....	12	80
Story .....	10	67
Tennyson .....	3	0
	<u>\$162,000</u>	<u>\$78,000</u>

Position Title, Salary Range and Personnel	Estimated Number of Man- Months Worked in Program	Percent Salary Support From 211(d) Grant
<b>SENIOR RESEARCH ASSOCIATES</b>		
(Salary Range-- \$17-30,000)		
Durstine . . . . .	12 . . . . .	0
McLanahan . . . . .	12 . . . . .	52
<b>RESEARCH ASSOCIATES</b>		
(Salary Range-- \$13-22,000)		
Garland . . . . .	11 . . . . .	0
Hannum . . . . .	12 . . . . .	8
James . . . . .	2 . . . . .	0
Rayner . . . . .	12 . . . . .	8
<b>PROJECT ASSOCIATES</b>		
(Salary Range-- \$8-16,000)		
Johnson . . . . .	3 . . . . .	33
McMurtrey . . . . .	12 . . . . .	66
Wilkey . . . . .	12 . . . . .	14
<b>TECHNICAL ASSOCIATES</b>		
(Salary Range-- \$8-12,000)		
Brown . . . . .	12 . . . . .	95
Fulmer . . . . .	12 . . . . .	75
	<u>\$144,000</u>	<u>\$43,000</u>

Position Title, Salary Range and Personnel	Estimated Number of Man- Months Worked in Program	Percent Salary Support From 211(d) Grant
<b>TECHNICAL SUPPORT STAFF</b> (Salary Range- \$6-12,000)		
Adams - Photographer . . . . .	10 . . . . .	100
Payne - Librarian . . . . .	12 . . . . .	92
	\$15,000	\$15,000
<b>SECRETARIAL-CLERICAL STAFF</b> (Salary Range- \$3,600-6,000)		
One Receptionist Position . . . . .	12 . . . . .	100
Three Secretarial Positions . . . . .	24 . . . . .	100
Two Clerical Positions . . . . .	36 . . . . .	100
	\$29,000	\$29,000
<b>SHORT-TERM SPECIALISTS FOR PARTICULAR PROGRAM REQUIREMENTS</b>		
	\$12,000	\$12,000
<b>TOTALS:</b>	<b>\$362,000</b>	<b>\$177,000</b>

**FY 74 ESTIMATED SALARIES FROM GRANT SUPPORT**

Position Title, Salary Range, and Personnel	Expected Number of Man- Months to Be Worked in Program	Expected Percent Salary Support From 211(d) Grant
<b>PROFESSORS (Salary Range-- \$16-40,000)</b>		
Boutwell	3	0
Branson	12	60
Briggs	3	50
Dick	3	0
Gagne	6	20
Grant	12	0
Kraft	2	0
Massialas	2	0
Morgan	12	25
Rideout	12	75
Story	12	67
Tennyson	12	33
	<u>\$208,000</u>	<u>\$84,000</u>

Position Title, Salary Range, and Personnel	Expected Number of Man-Months to Be Worked in Program	Expected Percent Salary Support From 211(d) Grant																																				
<b>SENIOR RESEARCH ASSOCIATES</b> (Salary Range--\$17-30,000)																																						
Durstine . . . . .	12 . . . . .	0																																				
McLanahan . . . . .	12 . . . . .	50	<b>RESEARCH ASSOCIATES</b> (Salary Range--\$13-22,000)			Garland . . . . .	12 . . . . .	0	Hannum . . . . .	12 . . . . .	30	James . . . . .	12 . . . . .	0	Rayner . . . . .	12 . . . . .	0	<b>PROJECT ASSOCIATES</b> (Salary Range--\$13-22,000)			Johnson . . . . .	12 . . . . .	90	McMurtrey . . . . .	12 . . . . .	15	Wilkey . . . . .	12 . . . . .	50	<b>TECHNICAL ASSOCIATES</b> (Salary Range--\$8-12,000)			Brown . . . . .	12 . . . . .	65		<u>\$170,000</u>	<u>\$50,000</u>
<b>RESEARCH ASSOCIATES</b> (Salary Range--\$13-22,000)																																						
Garland . . . . .	12 . . . . .	0																																				
Hannum . . . . .	12 . . . . .	30																																				
James . . . . .	12 . . . . .	0																																				
Rayner . . . . .	12 . . . . .	0	<b>PROJECT ASSOCIATES</b> (Salary Range--\$13-22,000)			Johnson . . . . .	12 . . . . .	90	McMurtrey . . . . .	12 . . . . .	15	Wilkey . . . . .	12 . . . . .	50	<b>TECHNICAL ASSOCIATES</b> (Salary Range--\$8-12,000)			Brown . . . . .	12 . . . . .	65		<u>\$170,000</u>	<u>\$50,000</u>															
<b>PROJECT ASSOCIATES</b> (Salary Range--\$13-22,000)																																						
Johnson . . . . .	12 . . . . .	90																																				
McMurtrey . . . . .	12 . . . . .	15																																				
Wilkey . . . . .	12 . . . . .	50	<b>TECHNICAL ASSOCIATES</b> (Salary Range--\$8-12,000)			Brown . . . . .	12 . . . . .	65		<u>\$170,000</u>	<u>\$50,000</u>																											
<b>TECHNICAL ASSOCIATES</b> (Salary Range--\$8-12,000)																																						
Brown . . . . .	12 . . . . .	65		<u>\$170,000</u>	<u>\$50,000</u>																																	
	<u>\$170,000</u>	<u>\$50,000</u>																																				

Position Title, Salary Range, and Personnel	Expected Number of Man-Months to Be Worked in Program	Expected Percent Salary Support From 211(d) Grant
<b>TECHNICAL SUPPORT STAFF</b> (Salary Range--\$6-12,000)		
Adams . . . . .	12 . . . . .	. 67
Payne . . . . .	12 . . . . .	100
Petty . . . . .	12 . . . . .	60
Reynolds . . . . .	12 . . . . .	0
Watson . . . . .	12 . . . . .	0
	<u>\$47,000</u>	<u>\$21,000</u>
<b>SECRETARIAL-CLERICAL STAFF</b> (Salary Range--\$3,600-\$9,000)		
Staff Assistant Position . . . . .	12 . . . . .	0
Four Secretarial Positions . . . . .	48 . . . . .	50
Three Clerical Positions . . . . .	36 . . . . .	35
One Receptionist Position . . . . .	12 . . . . .	100
Three Clerical Assistant Positions . . . . .	36 . . . . .	100
	<u>\$57,000</u>	<u>\$35,000</u>
<b>TOTALS:</b>	<b>\$482,000</b>	<b>\$190,000</b>

### GRADUATE STUDENT STIPENDS FROM GRANT SUPPORT

The following named 28 Graduate Assistants received some support from 211(d) Funds in FY 73. Graduate Assistants in Florida State University are assigned on a half-time (20 hours per week) basis. The Center associated Graduate Assistants were paid within the range of \$250 - \$400 per month and were paid from both 211(d) and non-211(d) resources. Those paid from 211(d) are grouped below according to the number of months they were reimbursed from Grant funds.

#### 9 Months to 12 Months

Lee, Chong Joe  
Park, Youngsun

#### 3 Months to 6 Months

Bailya, Tara  
Cooney, David  
Eaddy, Pamela  
Green, Ethel  
Grise, Phillip  
Hardy, Roy  
Hines, William  
Jarrar, Samir  
Kim, Sang Ho  
Lee, Anna  
Ryan, Tony  
Song, Yoo Joe  
Stone, Vathsala

#### 6 Months to 9 Months

Ahn, Sang Kee  
Bianconi, Inez  
Epstein, Kenneth  
Garlich, Ethlyn  
Na, Youn Soon  
Olivier, Phillippe  
Wildman, Terry

#### Less Than 3 Months

Briseno, Gabriela  
Convey, John  
Furman, John  
Niemeyer, Vincent  
Ramaswamy, Thirumalai  
Stone, John

While approximately \$41,000 of 211(d) funds were used to pay stipends to an average of 12 graduate students per quarter, these funds were actually distributed during the fiscal year to the graduate students named above, and for the periods indicated.