DOCUMENT RESUME

ED 257 431 IR 011 618

AUTHOR	Teeter, Thomas A.
TITLE	A UALR Computer Literacy Project to Determine Curricular Goals and Objectives.
INSTITUTION	Arkansas Univ., Little Rock.
PUB DATE	Mar 85
NOTE	100p.; Best copy available.
PUB TYPE	Viewpoints (120) -- Reports - Evaluative/Feasibility (142)
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	*Computer Literacy; Computers; Computer Software; *Curriculum Development; Curriculum Enrichment; *Departments; *Educational Resources; Higher Education; *Intellectual Disciplines; *Objectives; Position Papers
IDENTIFIERS	*University of Arkansas Little Rock

ABSTRACT

The results of a study assessing departmental plans for hardware and software acquisitions, faculty development activities, and curricular modifications aimed at increasing student computer literacy at the University of Arkansas at Little Rock (UALR) are reported. The study involved reviewing departmental definitions of computer literacy generated within the past academic year; reviewing college and departmental plans for activities aimed at helping students reach computer literacy; interviewing each academic department offering a baccalaureate degree to assist in the codification of computer literacy needs; developing and submitting departmental goal statements to the faculty for their review and approval; and conducting an inventory of computing equipment available for instruction in each academic unit (the inventory results are reported in Appendix A). An introduction, review of related activities in other schools, a list of procedures, definitions of selected terms, and a taxonomy of educational objectives are followed by goal statements, objectives, future plans, and lists of current instructional equipment for departments within the following colleges and schools: Business Administration, Communication, Education, Engineering Technology, Fine Arts, the Graduate School, Law, Liberal Arts, Sciences, and the Graduate School of Social Work. Results and conclusions, recommendations, a departmental index, and a selected bibliography complete the report. (THC)

A UALR COMPUTER LITERACY PROJECT

TO DETERMINE CURRICULAR GOALS AND OBJECTIVES

UNIVERSITY OF ARKANSAS AT LITTLE ROCK

by

Thomas A. Teeter
March, 1985

TABLE OF CONTENTS

INTRODUCTION

A major trend in higher education today is the incorporation and utilization of computer technology by practically every academic discipline. From graphic design to business simulation, the computer has become a powerful, valuable tool for both education and work. Thus, computer literacy must be considered a necessity for students in higher education today.

Dr. James H. Young, Chancellor of the University of Arkansas at Little Rock (UALR), has strongly committed the university to providing an appropriate level of computer literacy for each graduate. Important steps toward the achievement of this goal have been taken. A large university academic computer system has been acquired and is now operational. Computer laboratories that provide access to the academic computer have been developed. In addition, numerous micro-computer laboratories have been established by various departments, schools, and colleges within the University.

These equipment acquisitions represent a quantum jump both in commitment and computing capability for the university. Incredible though it may seem, most micro-computers purchased today provide computing power (128K RAM) equal to that of a large institutional computer of 1974. Computer technology has improved at a rate beyond the ability of most institutions to keep pace. UALR's recent activity in hardware acquisitions should be viewed as an advantage that allows the institution to enter a new generation of computer capability.

Simultaneous with the decision to acquire the equipment needed to provide computer literacy for students came the decision to identify the specific curricular experiences needed for students to become literate in their chosen academic fields. In 1983, Chancellor Young asked UALR deans and department chairpersons to develop definitions of computer literacy for each college and department. This request initiated the institution's first university-wide effort to address computer literacy at the level of specific programs of study. Later, during the the 1984-85 budget preparation process, Chancellor Young asked that departments and colleges develop distinctiveness plans to help students become computer fluent. Academic units requested computing equipment, personnel, and maintenance support for micro-computer laboratories needed for specific applications. Distinctiveness plans were reviewed and evaluated by the campus central administration. Several proposals were funded for the 1984-1985 school year.

Dr. Joel Anderson became UALR's Provost in July, 1984. Soon after that date he convened a meeting of several faculty interested in computer technology and its applications in higher education. This group recommended that the institution begin to focus on student outcomes relative to computer literacy. They reasoned that students now come to the university with increased levels of sophistication in the use of computers because of the growing availability of micro-computers in the home and in the elementary and secondary schools of Arkansas. To ensure that these students have an opportunity to build upon their computer skills it would be necessary, the group advised, that the faculty

integrate the use of computers into academic programs.

The UALR Computer Literacy Project was conceived by the faculty advisory group called together by Provost Anderson. The primary purpose of the project was, therefore, to determine departmental goals and objectives for students to reach computer fluency. Secondary purposes of the project were to assess the institution's current status in attaining departmental goals, to identify areas of need, and to recommend a course of action. In brief, this study was undertaken to determine what faculty at UALR believe graduates need to know about computers and how best to achieve these goals.

REVIEW OF RELATED ACTIVITIES

A review of literature was conducted to identify activities for developing computer literacy at other American and European institutions of higher education. A computer search was conducted of the BRS (Bibliographic Retrieval Service) ERIC (Educational Resources Information Center) data base of educational journals and documents. Copies of those documents and journal articles relevant to the project were secured and reviewed.

The review of documents on computer literacy in higher education indicated that incorporation of computer applications into the college curriculum has developed at two levels. First, numerous institutions of higher education have taken steps individually to ensure that students become computer literate. The following activities described by Brown (1983) are

representative of efforts individual institutions have made to help students use computers.

HAMLINE UNIVERSITY - required computer literacy of all students which may be demonstrated by testing, course work or a self-paced computer assisted short course.

ROLLINS COLLEGE - made computer literacy a graduation requirement.

MARYMOUNT MANHATTAN COLLEGE - incorporated computer literacy in the liberal arts curriculum.

DREXEL UNIVERSITY - required that all freshmen buy their own microcomputers.

PEPPERDINE UNIVERSITY - developed programs to ensure that faculty and students become computer literate.

CARNEGIE-MELLON UNIVERSITY - developed a network of IBM micro-computers to provide access to computing equipment for all faculty, staff, and students.

A second level of activities to incorporate computer applications into the curriculum of higher education has occurred through the development of systems networking. Two systems have made an impact in higher education: PLATO (Programmed Logic for Automatic Teaching Operations) and TICCIT (Time-shared, Interactive, Computer-Controlled Information Television).

PLATO, based at the University of Illinois, is marketed by Control Data Corporation. PLATO is perhaps the best known computer assisted instructional system in the world. Jenkins and Dankert (1981) reviewed a project at Mercer University to evaluate PLATO IV. The trial demonstrated that university students did use the PLATO system and that they generally had favorable attitudes about the computer

curriculum. The heaviest user of the system was the chemistry department where students used computerized simulations and practiced skills that were later applied in the laboratory.

TICCIT, developed at the University of Texas, is a computer assisted instructional system that provides instruction in English and mathematics. The system incorporates a management function that tracks student progress. The Educational Testing Service evaluated TICCIT in a university environment and concluded that students in TICCIT mathematics classes held their own when compared with students from lecture sections on the same content. Students taking English courses favored TICCIT over other instructional methods such as discussion, tutorial, and lecture.

Activities to incorporate computer applications in the curriculum have increased dramatically. A national non-profit consortium of more than five-hundred institutions of higher learning, EDUCOM, was organized in 1964 to promote cooperative efforts in the use of computer technology. EDUCOM initiated in 1983 a computer literacy project to promote the exchange of insight and information regarding computer literacy in higher education.

The effort of the UWLR Computer Literacy Project is thought to be unique. Other institutions have focused on computer assisted instruction, computer managed instruction, narrow applications in specific disciplines, or the acquisition of personal computing equipment. The focus of

this project, however, has been on curricular goals and objectives for computer literacy. All institutional academic degree programs were studied and computer literacy objectives were developed for each program.

PROCEDURES

The following procedures were used in the completion of this project.

1. Departmental definitions of computer literacy generated at UALR within the past year were reviewed.

2. College and departmental distinctiveness plans were reviewed for activities aimed at helping students reach computer literacy.

3. A structured interview was conducted with each academic department offering a baccalaureate degree. In some instances the interview was conducted with representatives of a total college or school. The purpose of the interview was to assist departments and colleges in the codification of computer literacy needs.

4. Departmental goal statements were developed and submitted to the faculty for review, consideration, and approval. The revised goal statements approved by each department are included in the text of this report.

5. An inventory of computing equipment available for instruction in each academic unit was conducted during the interview process. A summary of the results of this inventory are reported in Appendix A.

6. An assessment was made of short-range departmental

plans for hardware and software acquisitions, faculty development activities, and curricular modifications aimed at increasing student computer literacy. These plans are reported in the text of this report.

DEFINITION OF SELECTED TERMS

The following definitions were used throughout the project.

BASIC - a computer language used by many small computer systems. BASIC means Beginner's All-purpose Symbolic Instruction Code.

Computer literacy - has developed to represent an understanding of computers which differs from expertise. As a working definition for this project, computer literacy was defined as an understanding of those things that every well educated person needs to know about computers.

Computer fluency - builds upon literacy skills so that students use the computer in the performance of the functions of the discipline or profession. Different disciplines had developed different meanings for computer literacy and fluency, however. These definitions were refined and expanded during the interview process.

Disk Drive - a peripheral machine that stores information.

DOS - means Disk Operating System and is a collection of programs designed to help use disk drives.

Graphics - pictures and illustrations generated by a computer program.

Hardware - the physical apparatus that make up a computer.

Interface - the connection of one computer device or system to another.

K - an abbreviation for Kilo-byte used to denote 1024 units of stored material.

Language - a set of compiled, unified, or related instructions that are acceptable to a computer.

Micro-computer - a small computer system.

Program - coded instructions that tell the computer how to perform a specific function.

Software - the programs and documentation that make the computer function.

Terminal - a computer work station that allows access to the main academic computer.

Word processor - a text editing program that allows electronic writing and correcting of documents.

A TAXONOMY OF EDUCATIONAL OBJECTIVES

Early in the development of the structured interview format, a decision was made to use a systematic scheme to help departments determine appropriate curricular objectives for degree programs. The classification system used was the taxonomy of educational objectives for the cognitive domain developed by Dr. Benjamin Bloom. It arranges learning objectives on a hierarchy according to difficulty and complexity of the learning task.

Bloom's six levels of cognition are summarized below:

1. KNOWLEDGE: This level of thinking requires students to recall facts or locate information. It may include knowledge of terminology, specific facts, conventions, trends, sequences, criteria, methodology, principles, theories, or universal abstractions.

2. COMPREHENSION: This level of cognition requires that students understand facts they have learned. Comprehension may include the processes of translation, interpretation, or extrapolation. These first two levels in Bloom's taxonomy of cognition, knowledge and comprehension, constitute the building block upon which more complex thinking is built.

3. APPLICATION: This category of thinking involves the application of what the student has learned (knowledge and comprehension) to a situation which is new to the student rather than one where an answer is recalled. This level represents the beginning of the creative thinking process.

4. ANALYSIS: The fourth level of cognition

requires the ability to breakdown information into parts. Analysis is the ability to examine information and assign it to a prescribed category. The process could involve an analysis of elements, relationships, or organizational principles.

5. SYNTHESIS: This level of thinking requires students to bring together more than one bit of information, idea, concept or skill in the creation, production or invention of something new.

6. EVALUATION: Evaluation, the highest level of cognition, requires students to make judgments based on evidence and to support their decisions with data.

THE INTERVIEW

Bloom's Taxonomy of Educational Objectives in the cognitive domain provided a framework for the design of appropriate departmental objectives for students. Throughout the interview process deans, department chairpersons, and faculty were encouraged to incorporate computer literacy goals with Bloom's taxonomy of thinking skills.

At each departmental interview, faculty were presented with a list of twenty-three topics commonly mentioned in the literature of computer literacy activities at other institutions. The faculty were asked to make two kinds of judgments about each topic. First, the faculty determined whether a computer literacy topic or skill was one needed by graduates of departmental degree programs. Secondly, if the topic or skill was important, the faculty were encouraged to consider the level of Bloom's Taxonomy at which students should attain the information.

The interview process may be explained best through example. One of the twenty-three computer topics that each department considered was that of computer programming. If the faculty determined that computer programming was NOT important for graduates of the degree programs the interview proceeded to the next topic. If it was determined that programming was an appropriate skill for graduates to possess, the faculty were asked to specify the level at which students should demonstrate competence. Would it be sufficient, for example, to simply know that programs make computers execute specific functions or should students have the ability to write, analyze, or evaluate programs.

A summary of each departmental interview follows in this report. The summaries have been grouped together by school or college and generally follow a four part format. First, each departmental summary contains a goal statement. This statement attempts to define in general terms the department's definition of computer literacy and whenever possible to describe an approach to accomplish the departmental goal. Second, the summary attempts to state specific curriculum objectives that should be expected of students to ensure computer literacy. Third, the summary addresses short-range plans of the department to accomplish computer literacy goals. Finally, each summary reports on the current status of instructional computing equipment that is managed within each department.

THE COLLEGE OF BUSINESS ADMINISTRATION

Robert Culpepper, Acting Dean

Marian McNulty, Associate Dean

The College of Business Administration offers baccalaureate degree programs in the following areas:

Accounting	Administrative Services
Advertising	Economics
Finance	General Business
Industrial Management	Management
Personnel Management	Marketing
Computer Information Systems	

A graduate degree program is offered in Business Administration.

The College of Business Administration (CBA) has an established micro-computer center committee that has developed literacy and fluency goals for faculty and for students in each degree program offered through the college. In general, the college has accepted the responsibility for developing in students both computer literacy and computer fluency skills through each major field curriculum. All CBA majors are required to complete a core course in introductory business data processing, which provides students with both classroom instruction and laboratory programming practice. Selected software packages for business are also used extensively.

The four departmental reports that follow DO NOT represent official planning documents approved by the College of Business Administration. Rather, these reports are informal interview summaries which attempt to extend and

refine the levels of computer fluency presented in the College of Business Administration Statement on Computer Fluency as revised and approved by the College in October, 1984.

ACCOUNTING

Jack White, Acting Chairman
Kenneth Goosen
Thomas Oxner
James Gauntt, Jr.

GOAL STATEMENT

The Department of Accounting, in cooperation with other departments in the College of Business, has determined the basic computer literacy skills all students should possess prior to graduation. For degree programs in the department, students are expected to gain a general understanding of the elements and capabilities of the electronic computer, computerized business data and word processing applications, and attain familiarity with a logical programming language. In addition, students should have the ability to use a keyboard terminal as a device to enter data and to use available software to perform simple statistical and financial analysis of business problems. All accounting majors are expected to be users of commercially available software designed for advanced statistical analysis, computer based accounting, data base management, and financial analysis and planning.

OBJECTIVES

* Students will acquire knowledge of specific computer terminology.
* Students will understand how computers work and how they can be used to address everyday problems.
* Students will recognize the advantages and disadvantages of computers applications to general accounting procedures.
* Students will determine appropriate security measures to insure maintenance of ethical standards and account integrity.
* Students will acquire the problem solving skills of flowcharting and structured programming.
* Students will develop simple accounting programs using a logical programming language.
* Students will apply computer simulation techniques in addressing accounting judgment situations.
* Students will know the principles and theories necessary to establish data files and data reports.
* Students will use VisiCalc or other spread sheet software to solve problems in budgeting, cost/volume/profit analysis, and cost allocation.

FUTURE PLANS

Most members of the Accounting faculty are computer users and have computer fluency skills above the level expected of undergraduate students. A survey of all faculty in the College has indicated that faculty would like to have future staff-development seminars focus on specific business applications through the use of commercially available software.

Accounting faculty hope to incorporate computer technology and state-of-the-art accounting software into more of the major courses whenever appropriate, efficient and economically feasible. The faculty agree, however, that computer skills do not readily fit into all aspects of the curriculum.

INSTRUCTIONAL COMPUTING EQUIPMENT

Accounting students have access to a college

micro-computing laboratory with twenty-five TRS-80, Model III micro-computers. The college is now considering the possibility of purchasing IBM PC's for the laboratory.

ECONOMICS AND FINANCE

Ralph Shull, Chairman

GOAL STATEMENT

The Department of Economics and Finance, in cooperation with other departments in the College of Business, has determined the basic computer literacy skills all students should possess prior to graduation. For degree programs in the department, students are expected to gain a general understanding of the elements and capabilities of the electronic computer, computerized business data and word processing applications, and attain familiarity with the BASIC programming language. In addition, students should have the ability to use a keyboard terminal as a device to enter data and to use available software to perform simple statistical and financial analysis of business problems. All majors are expected to be users of commercially available software designed for advanced statistical analysis, financial analysis and planning, and economic modeling and simulation. In short, the computer fluency goal of the department is that all students be able to use commercial software to carry out the responsibilities of an economist or financial advisor.

OBJECTIVES

* Students will acquire knowledge of computer terminology.
* Students will identify the most common parts of a computer and name the functions of each.
* Students will differentiate the advantages and disadvantages of computer use in a variety of business applications.
* Students will determine the appropriateness of using a computer in a variety of everyday applications.
* Students will use the BASIC language to develop simple computer programs.
* Students will be proficient users of commercially available stock portfolio analysis packages such as the Standard and Poor's Stock Package.
* Students will develop matrices to solve economic or financial problems using commercial spread-sheets such as VisiClac or FastCalc.
* Students will use standard statistical packages for the micro-computer to analyze economic and financial problems and to evaluate solutions.
* Students will use mainframe statistical packages such as SPSS and SAS to analyze economic and financial problems requiring large data files.

FUTURE PLANS

The department views the computer as a tool to facilitate the work of professionals in the fields of economics and finance. Computer literacy and fluency require that graduates be able to use commercially available software appropriate to the disciplines. Over half of the faculty in the department are now computer fluent and competent to guide students through the acquisition of those objectives specified above.

The department hopes to acquire additional software packages in macro-economics, micro-economics, and financial simulations for incorporation into specific courses. Numerous new programs are becoming available in these areas that would greatly benefit majors in economics and finance.

INSTRUCTIONAL COMPUTING EQUIPMENT

Students in the Department of Economics and Finance have access to twenty-five TRS-80 Model 3 micro-computers in a college wide computer laboratory. In addition, the students have access to all university academic computing facilities.

MANAGEMENT

Burt Madden, Acting Chairman
Rod Neal

GOAL STATEMENT

The Department of Management, in cooperation with other departments in the College of Business, has determined the basic computer literacy skills all students should possess prior to graduation. For degree programs in the department, students are expected to gain a general understanding of the elements and capabilities of the electronic computer, computerized business data and word processing applications, and attain familiarity with the BASIC programming language. In addition, students should have the ability to use a keyboard terminal as a device to enter data and to use available software to perform simple statistical and financial analysis of business problems. All Management majors are expected to use commercially available software designed for advanced statistical analysis, data base management, financial analysis and planning, and operations research and decision support.

OBJECTIVES

* Students will understand the place of computer hardware, operating system and software in the broader context of systems organization and management.
* Students will acquire knowledge of computer terminology.
* Students will identify the most common parts of a computer and name the functions of each.
* Students will differentiate the advantages and disadvantages of computer use in a variety of business applications.
* Students will determine the appropriateness of using a computer in a variety of everyday applications.
* Students will use the BASIC language to develop computer programs.
* Students will be proficient users of commercially available word processing packages such as Scripsit and Super Scripsit.
* Students will develop matrices to solve managerial problems using commercial spread-sheets such as VisiCalc.
* Students will use standard statistical packages for the micro-computer to analyze problems and to evaluate solutions.
* Students will use mainframe statistical packages such as SPSS and SAS.
* Students will use commercially available graphic software to develop pie charts, histograms, and other visual presentations of managerial data.
* Students will apply computer modeling techniques as a tool in the analysis of data, linear programming, and forecasting.

FUTURE PLANS

The department views the computer as a tool to facilitate the work of professionals in the field of management. Computer literacy and fluency require that graduates be able to use commercially available software appropriate to the discipline. Most of the faculty in the department are now computer fluent and competent to guide students through the acquisition of those objectives specified above.

The department hopes to acquire additional simulations software for simulated inventory strategies, waiting line

situations, and for determining the effects of small changes in operating practices on profits. This software would be incorporated into major field courses. Numerous new programs are becoming available in these areas that would greatly benefit majors in management.

INSTRUCTIONAL COMPUTING EQUIPMENT

Students in the Department of Management have access to twenty-five TRS-80 Model 3 micro-computers in a college wide computer laboratory. In addition, the students have access to all university academic computing facilities.

MARKETING AND ADVERTISING

Richard Carr
Conway Rucks

GOAL STATEMENT

The Department of Marketing and Advertising, in cooperation with other departments in the College of Business, has determined the basic computer literacy skills all students should possess prior to graduation. For degree programs in the department, students are expected to gain a general understanding of the elements and capabilities of the electronic computer, computerized business data and word processing applications, and attain familiarity with the BASIC programming language. In addition, students should have the ability to use a keyboard terminal as a device to enter data and to use available software to perform simple statistical and financial

analysis of business problems. All Marketing and Advertising majors are expected to use commercially available software designed for advanced statistical analysis, modeling and simulation, and word processing.

OBJECTIVES

* Students will use commercially available word processing packages.
* Students will know computer terminology.
* Students will identify the parts of a computer and name the functions of each.
* Students will differentiate the advantages and disadvantages of computer use in a variety of business applications.
* Students will determine the appropriateness of using a computer in a variety of applications.
* Students will use the BASIC language to develop computer programs.
* Students will develop matrices to solve advanced statistical analysis commercial spread-sheets such as VisiClac.
* Students will use academic computer's statistical packages such as SPSS and SAS.
* Students will use commercially available graphic software to develop charts and other visual presentations of data in sale and marketing analysis.
* Students will apply computer modeling techniques as a tool in time series sales forecasting.
* Students will employ data base management software to record customer data and analyze sales activities and accounts.

FUTURE PLANS

The department hopes to integrate computer applications into upper lever courses required of majors. These courses could include Sales Operations, Marketing Research, Physical Distribution, and Business Policy. Infusion of computers in the classroom, however, will require faculty development in both general applications and specific topics appropriate to the fields of marketing and advertising.

THE COLLEGE OF COMMUNICATION

Mary Jean Thomas, Dean

The College of Communication offers baccalaureate degree programs in the following areas:

Communicative Disorders
Journalism
Radio/TV/Film
Speech Communication

Graduate degree programs are offered in the following areas:

Communicative Disorders
Interpersonal and Organizational Communication
Journalism

COMMUNICATIVE DISORDERS

James Montague, Chairman
Mark Weatherton

GOAL STATEMENT

The Department of Communicative Disorders has defined computer literacy as the utilization of existing speech, language, and hearing software with personal computers. This literacy should include the use of software to interface the microcomputer with communicative data gathering instrumentation for digital and analog speech spectrum analysis, language analysis, testing and fitting of hearing aids, voice recognition, speech synthesis, sign language, biofeedback, non-vocal communication, and phonological disorders.

Graduate students should also be able to use the computer to access informational data bases such as MEDLINE. In addition, students should be able to run inferential

statistical programs necessary in research projects and theses. Computer literacy (except for the most basic concepts) and fluency are viewed by the department as functions of the Communicative Disorders faculty.

OBJECTIVES

* Students will evaluate software available for speech spectrum analysis, language analysis, testing/fitting hearing aids, voice recognition, speech synthesis, sign language, biofeedback, non-vocal communication, and phonological disorders.
* Students will acquire the conventions of programming in BASIC to understand better how computers operate.
* Students will use commercially available graphic software such as Easy Graph to make data presentations.
* Students will at the graduate level be proficient users of the computer and speech spectrum analyzer.
* Students will at the undergraduate level know how the computer and the speech spectrum analyzer interface to evaluate speech patterns.
* Students will develop computer data files necessary to track clients and generate data reports using the files.
* Students will at the graduate level use spread sheet software for managerial and accounting purposes.
* Students will at the graduate level use the academic computer for statistical analysis using SPSS and SAS.
* Students will at the graduate level access national data bases such as MEDLINE, MEDLAR, and ERIC.
* Students will know the advantages and disadvantages of using verbal analysis software such as LINDQUIST in diagnosing voice problems.

FUTURE PLANS

The department hopes to incorporate computer skills in courses such as Disorders in Articulation, Audiology, and Amplification for the Hearing Impaired. One major obstacle that has hindered the department reaching its goals for computer literacy has been the lack of easy access to the academic computer and the lack of micro computers available to students and faculty.

Another thrust in helping students reach computer fluency is that of interfacing highly task specific instrumentation in communicative disorders with the micro-computer. Software is available commercially that provides computers the ability to analyze and interpret data gathered through existing diagnostic instruments.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department has no computing facilities available for instruction.

JOURNALISM

Emmanuel Paraschos, Chairman
Luther Sanders
Jay Friedlander
Jeanne Norton
Wat Hopkins
Alice Spencer

GOAL STATEMENT

The Department of Journalism has defined computer literacy as the functional use of a computer terminal for text creation, text editing, text storage, headline writing, phototypesetter commanding and basic page or advertisement designing. The primary goal is that journalism graduates understand video display terminals for news writing and copyediting. Such procedures involve not only text creation and editing but also typesetting and publication design and are used in both print and electronic media.

OBJECTIVES

* Students will employ computers in text creation and editing in the News Editorial, Broadcast Journalism, Public Information, and Professional and Technical Writing undergraduate programs of the journalism department.
* Students will generate headlines using the computer in the News Editorial and Public Information sequences of the journalism degree program.
* Students will use the computer in phototypesetting in the News Editorial, Public Information, and Professional and Technical Writing sequences of the journalism program.
* Students will understand the uses of computer graphics and other computer generated visuals in the Broadcast Journalism sequence of the degree program.
* Students will use large-screen terminals for page and advertisement design or pagination in the News Editorial and Public Information sequences of the program.
* Students will access national data base wire services such as the Associated Press, United Press International, and standard library information utilities for news background information.
* Students will understand computer applications related to the creation of data files for information storage and retrieval.
* Students will use the computer as a basic tool of research while enrolled in the graduate degree program.

FUTURE PLANS

The Department of Journalism has an outstanding bid on nineteen micro-computers, three with dual disk drives, four printers, and one computer driven phototypesetter and pagination (page layout and design) equipment. This hardware will be networked to simulate in a laboratory an electronic newsroom. The laboratory will help students become users of state-of-the-art software encountered in professional journalism.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department presently has no general computing equipment for instructional purposes. As noted above the department is in the process of developing a simulated newsroom using a micro-computer network.

RADIO, TELEVISION, AND FILM

Donald Singleton, Chairman

GOAL STATEMENT

The Department of Radio, Television, and Film has defined computer literacy to include students' use of computers for management, programming, production, broadcast news, and research. In general, the faculty feel that the computer fluency skills required should be incorporated into the curriculum of majors.

OBJECTIVES

* Students will use data base management software for such purposes as inventory control, personnel data, and program logs.
* Students will use spread sheet programs for budgeting purposes while enrolled in the management sequence of the program.
* Students will be knowledgeable of commercially available software designed for traffic control, program inventory, and communication control.
* Students will understand digital electronics as required to operate programmable switchers, machine to machine interface still store utilization computer generated images and effects and other applications.
* Students will use word processing software to generate and edit text and to transmit messages to on-air personnel.
* Students will utilize statistical packages designed for the micro-computer as well as programs such as SPSSx designed for the academic computer.

FUTURE PLANS

The department plans to integrate computer applications into such courses as Advanced Television Production, Broadcasting Management, and Telemedia Sales. Workshops to help the faculty learn word processing as well as software

available on the academic computer would facilitate the incorporation of computers into the classroom.

Specialized software commonly used in broadcasting should be purchased and made available for student use. This software should include programs on broadcast scheduling and control.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department now owns one DEC Rainbow micro-computer. A modem allows the faculty to access the main academic computer for research projects.

SPEECH COMMUNICATION

John Gray, Chairman

GOAL STATEMENT

The Department of Speech Communication has defined computer literacy as the functional use of a computer terminal, knowledge of and ability to use statistical packages capable of performing both descriptive and inferential statistics, interpretation of output from these packages, and the ability to use word processing. Computer literacy for students is a high priority for the department. Over the next four years the department hopes to involve all students in computer applications during their program of study. Four faculty members work with computers on a regular basis and one professor is a recognized computer authority. Knowledgeable faculty have conducted computer seminars for the department and most faculty are now

computer literate. Basic computer literacy skills are covered for students in a senior level course, Investigations into Communication Research.

OBJECTIVES

* Students will know the common vocabulary of computers.
* Students will understand at a non-technical level how computer programs work in directing the machine to perform specified functions.
* Students will comprehend the ethical issues related to computer applications in organizational communication.
* Students will use statistical packages designed for the micro-computer and interpret findings.
* Students will use the statistical programs such as SPSS and SAS designed for the main academic computer while enrolled in the graduate program.
* Students will use departmental micro-computers for computer assisted instruction.

FUTURE PLANS

A micro-computer laboratory for students will be operational on a limited basis beginning Fall, 1985. This laboratory will provide computer assisted instruction for advanced students using programs developed by the faculty. The department would prefer that students acquire computer literacy skills before entering the speech communication program so that departmental faculty could concentrate on fluency topics. Perhaps a service course for this purpose could be provided by the Computer Science department or the College of Business Administration. At the present, however, the faculty feel that essential computer literacy skills must be provided for in the major curriculum.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department has six IBM PC micro-computers available for instructional purposes. Plans provide for the addition of six additional micro-computers next year. The faculty are using the McGraw Authoring System to develop computer assisted instructional programs for students in advanced communication classes.

THE COLLEGE OF EDUCATION

Gene V. Campbell, Dean

Thomas A. Teeter, Associate Dean

The College of Education offers baccalaureate degree programs in the following areas:

Adult Education	Art
Business Education	Elementary Education
English	Foreign Language
Health Education	Physical Education
Recreation	Mathematics
Science	Social Studies
Speech Communication	Special Education

Graduate degree programs are offered in the following areas:

Adapted Physical Education
Elementary Education
Rehabilitation of the Blind
Teaching the Gifted and Talented
Teaching the Severely and Profoundly Handicapped
Teaching the Visually Impaired

CURRICULUM AND INSTRUCTION

Calvin Johnson, Chairman
Anna Heatherly

GOAL STATEMENT

The Department of Curriculum and Instruction requires a one hour micro-computer laboratory of all students concurrent with their taking an educational media course. The goal of this laboratory is to provide an environment where pre-service and in-service professional educators can obtain competencies needed to use, modify, and supervise computer assisted instruction and to use computer systems for the management of instruction. Standards used to

develop computer literacy goals were derived from the competencies for teacher training developed by the Association of Computer Machinery.

OBJECTIVES

* Students will evaluate and select educational programs written by others.
* Students will use commercially available educational software and understand program documentation.
* Students will have an understanding of computer terminology, particularly as it relates to the micro-computer.
* Students will recognize educational and instructional problems that can be solved using the computer and those problems that cannot be solved using the computer.
* Students will locate evaluative information on educational software and equipment.
* Students will identify moral and ethical issues related to the use of computers in educational settings.
* Students will use commercially available sound and graphic software to develop instructional presentations.
* Students will use computer simulations where appropriate (e.g. "The Oregon Trail" in the social studies).
* Students will at the graduate level use the computer terminal to access national data bases such as ERIC.
* Students will use standard business software to develop grade books and student data files.
* Students will at the graduate level use the micro-computer to solve statistical problems.
* Students will use computer data files and other software to manage, record, and track student learning.
* Students will use the micro-computer to develop and administer curricula examinations.
* Students will evaluate educational software and determine its appropriateness for specific educational settings.
* Students will use commercially available word processing programs and evaluate the programs appropriateness for specific educational settings.

FUTURE PLANS

The goals of the department are viewed as transitional. The faculty feels that the generic content of computer literacy should be found within the general education component of all University degree programs. Until that

goal has been attained, however, the College of Education should provide basic computer literacy programs for its graduates.

Staff-development workshops and guided practice sessions are very much desired by the faculty. Applications in the field of education extend beyond the basic uses of the computer for word processing, data files, and spread sheets. Education faculty must also incorporate applications of the micro-computer as an educational tool into appropriate methods courses such as Instructional Design and Evaluation and special methods.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department now has five Apple IIe's and three printers. Students also have access to the College of Education Micro-computer laboratory administered by the Department of Educational Foundations and Technology.

EDUCATIONAL FOUNDATIONS AND TECHNOLOGY

David Spillers, Chairman
John McGuire

GOAL STATEMENT

The Department of Educational Foundations and Technology does not offer degree programs. The department serves a support function, however, in the area of educational technology which includes the study of micro-computers and their applications in school setting. The faculty have defined computer literacy to include for

pre-service teachers the following understandings:

1. The computer as a tool to perform research and publication activities such as word processing, statistical computation, file generation, and graphics.
2. The computer as a tool in computer aided and managed instruction.
3. The computer as a tool of instruction through simulations and games.

Minimal computer literacy also includes the ability to boot-up scftware packages; attach and operate peripherals; manage languages such as Basic, Pascal, and Logo; care for technical aspects such as mechanical connections and maintenance.

OBJECTIVES

- Students will develop simple programming skills using the languages of Basic, Pascal, and Logo.
- Students will demonstrate keyboarding skills necessary to input data through the computer keyboard.
- Students will explain processes of interacting with software such as that of operating from a program menu.
- Students will define specified computer terminology such as CPU, ROM, RAM, and Buffer.
- Students will understand the role of the Micro-computer in instructional systems.
- Students will use computers for instructional aids and for instructional management.
- Students will evaluate commercially available educational software.
- Students will interpret issues related to computer applications such as those of privacy, copyright, and equity of access.
- Students will acquire information relative to the future of computer technology.
- Students will identify the advantages and disadvantages of computer assisted instruction activities.
- Students will integrate computer applications into instructional units.
- Students will demonstrate expertise in instructional support software such as computer-managed instruction, data base management systems, word processing, spread sheets, and utilities.
- Students will use the micro-computer to develop testing and evaluation programs.

FUTURE PLANS

The department is in the process of hiring an

additional faculty member with expertise in computer applications. The faculty hopes that a core course in the educational uses of micro-computers can be developed and incorporated into the curriculum of every teacher education student.

Most of the faculty are now computer literate. Many have attended national or regional work=hops related to computer uses in the classroom.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department now supports a micro-computer laboratory with twenty Apple IIe micro-computers, five printers thirteen Texas Instruments 99 4/A micro-computers, three with disk drives, two Commodore 64 micro-computers, and two PET micro-computers. Communication modems are available for the Apple and TI micro-computers

HEALTH, PHYSICAL EDUCATION, AND RECREATION

James Hall, Acting Chairman
Ethel Trice
Newman McGee
Gwen Twillie
Ronald Croce

GOAL STATEMENT

The Department of Health, Physical Education and Recreation faculty feel that computer literacy is very important for their graduates. Computer skills should be taught and competencies required as a part of the education core curriculum through an instructional technology or

educational media course. The goal of this course should be to provide pre-service teachers with competencies needed to use, modify, and supervise computer assisted instruction and to use computer systems for the management of instruction.

OBJECTIVES

- Students will analyze and evaluate educational programs written by others and select programs for individual purposes.
- Students will understand software program documentation as required to use needed programs.
- Students will have an understanding of computer terminology, particularly as it relates to the micro-computer.
- Students will recognize educational and instructional problems that can be solved using the computer and those problems that cannot be solved using the computer.
- Students will locate software reviews and other evaluative information.
- Students will discuss the historical development of computer technology and its applications to education.
- Students will identify moral and ethical issues related to the use of computers in educational settings.
- Students will use commercially available graphic software to develop instructional presentations and conduct biomechanical analysis of movement and sports skills.
- Students will at the graduate level use the computer terminal to access national data bases such as ERIC.
- Students will use standard software to develop grade books, individualized educational programs, instructional objective data banks and student data files.
- Students will at the graduate level use the micro-computer to solve statistical problems.
- Students will use computer data base management systems and other software to manage, record, and track student learning.
- Students will use the micro-computer to develop and administer curricula examinations such as those required in psychomotor and physical fitness.
- Students will evaluate educational software and determine its appropriateness for specific educational settings.

FUTURE PLANS

The department hopes to incorporate computer fluency skills into upper level courses required in the major.

Among the courses that could be used to integrate computer skills are movement fundamentals, team sports, diagnostic and prescriptive teaching, and methodology.

The faculty feel that it would be helpful to have workshops in basic computer literacy to help them become aware of possible computer applications within the department. While none of the faculty think it will be necessary to become computer experts, there is agreement that basic computer skills are desirable for all faculty.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department has no computing equipment for irstructional purposes at this time.

REHABILITATION AND SPECIAL EDUCATION

Larry Dickerson, Chairman
Dan Head
Suzanne Abraham
Steve Rock

GOAL STATEMENT

The Department of Rehabilitation and Special Education faculty feel that computer literacy is important. Computer competencies should be required in an instructional technology or educational media course. The goal of this course should be to provide students with skills needed to use, modify, and supervise computer assisted instruction and to use computer systems for the management of instruction. In addition, the faculty teaching methods courses should integrate computer skills in the content of those courses to ensure that students use the computer as an instructional tool.

OBJECTIVES

* Students will evaluate and select educational computer software.
* Students will use commercially available educational software designed for use in special education classrooms.
* Students will have an understanding of computer terminology, particularly as it relates to the micro-computer.
* Students will recognize instructional problems that can be solved using the computer and those problems that cannot be solved using the computer.
* Students will locate evaluative information on educational software and equipment.
* Students will use commercially available sound and graphic software to develop instructional presentations.
* Students will use computer simulation programs to develop appropriate response patterns in counselor/client interactions.
* Students will use the computer terminal to access national data bases such as ERIC.
* Students will use the micro-computer and the main academic computer to solve statistical problems.
* Students will use computer data base management software to develop Individualized Educational Program (IEP) records and to track student learning.
* Students will use the micro-computer to develop and administer curricula examinations.
* Students will be knowledgeable of computer applications for special populations such as voice synthesized or the Versabraille output word processing programs use by the blind.

FUTURE PLANS

The department faculty hope to incorporate into all degree programs information about computers as instruments of both teaching and learning. One issue to be resolved is that of providing for basic computer literacy at the graduate / in-service levels.

Several faculty expressed interest in UALR becoming a demonstration center for computer applications for the handicapped. Many instruments used by the handicapped now interface with computers to perform tasks more effectively. Yet, there is no readily accessible center for agencies

serving the handicapped or for individuals to learn of new applications.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department has twelve Apple IIe micro-computers networked as a single system and one Epson printer.

THE SCHOOL OF ENGINEERING TECHNOLOGY

Walter Thomas, Dean

Hirak Pantangia

The School of Engineering Technology offers baccalaureate degree programs in the following areas:

Engineering Technology
Eng.Tch: Electronics
Eng.Tch: Manufacturing
Eng.Tch: Mechanical
Eng.Tch: Construction

GOAL STATEMENT

The School of Engineering Technology has determined it is essential that the graduates of the school's programs not only possess the knowledge and ability to use computer systems as an everyday tool to solve engineering technology problems, but also to learn the special purpose industrial applications of the computer. Today computers are used in many engineering technology applications such as sophisticated guidance systems, computer aided design (CAD), computer aided manufacturing (CAM), and computer integrated manufacturing (CIM). Since one of the major applications of the computer traditionally has been in engineering technology problem solving, it is necessary that all engineering technology graduates be fluent in computer applications.

OBJECTIVES

* Students will be knowledgeable of computer vocabulary, algorithms, and programming methods.
* Students will understand both when appropriate and when inappropriate to use computer in engineering technology

applications.

* Students will extrapolate probable directions in the future development of computer technology.

* Students will structure a process for the selection of computing equipment.

* Students will write beginning programs using the Basic or Fortran language.

* Students will use word processing software to write and edit academic reports and term papers.

* Students will use commercially available software to develop engineering technology schedules.

* Students will apply specialized computer aided graphics design software such as MATC CAD while enrolled in the architecture, civil, and construction technology tracks of the program.

* Students will employ modeling and simulating software such as SPICE III to analyze electrical, mechanical and construction structural loads.

* Students will use standard engineering technology statistical packages to determine the probability of specified variables.

* Students will be knowledgeable users of communication software while enrolled in the computer electronics track of the degree program.

FUTURE PLANS

The School of Engineering Technology plans to integrate computer applications into almost every major course in the school. This plan includes the incorporation of computers in experiments conducted in the electronics and robotics laboratory. Computer integration would require that students enter engineering technology programs with a level of computer literacy not presently provided for in the general studies portion to the curriculum. The faculty feel that a three hour computer literacy course should be provided that would allow students hands-on experience with micro-computers.

The School also plans to utilize computer assisted instructional programs for students in basic engineering and technology courses at the freshman and sophomore levels.

INSTRUCTIONAL COMPUTING EQUIPMENT

The School now owns seven Apple IIe micro-computers and has ordered three additional Apples with graphic tablets. In addition, the School owns ten LSI-11 (DEC); four HP-85 computers; one plotter, four printers, and twelve teletype terminals.

THE COLLEGE OF FINE ARTS

Lloyd Benjamin III, Dean

The College of Fine Arts offers baccalaureate degree programs in the following areas:

Art	Music Education
Music Performance	Music Theory
Theater Arts	

A graduate degree program is offered in the area of Art.

ART

Joe Phillips, Acting Chairman
Susan Borne
Eric Mantle

GOAL STATEMENT

The Department of Art has determined that except for graphic design and illustration computer fluency is not a priority. In graphic design computer fluency is a moderate priority. Computer imagery will be used to augment rather than supplant other image producing media.

Yet, because computers continue to become increasingly important in all walks of life, the faculty feel that all students should reach some level of computer literacy in a baccalaureate degree program. . This understanding of computers will allow art students to adapt as technology becomes more important in the visual arts.

OBJECTIVES

- Students will use the computer as a graphic tool for developing visual concepts and graphic design.
- Students will acquire knowledge of trends in computer art.
- Students will apply knowledge of word processing, data files, and spread sheet technology necessary in the operation of art history and museum management.
- Students will understand computer modeling applications in sculpture and ceramics.

FUTURE PLANS

The department is only beginning to consider future plans to reach computer literacy. The faculty in graphic design hopes to receive additional staff-development in the area of computer generated visual concepts.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department has no computing equipment at this time. However, the department plans to purchase an IBM PC and three terminals during the current year.

MUSIC

Richard Sieber, Chairman
Robert Boury

GOAL STATEMENT

The Department of Music has defined computer fluency to be a knowledge of common computer terms and computer principles. This knowledge involves the student's ability to use an electronic keyboard, to respond to a series of pre-programmed interactive instructions, and to work through a variety of computer assisted instruction programs in music.

Many programs for teaching music fundamentals to college students have been developed at the University of Nebraska at Omaha (UNO) where programmers have developed systems for instruction and research. Drill and practice strategies have been developed to teach pitch and interval recognition, melody, chords, harmony, and rhythm. Other programs help students develop deep music reading skills. The department has recently joined the UNO network of institutions using these software applications.

The department hopes to make students computer literate through the use of computer based/assisted/managed instruction and through the incorporation of computer skills in classes such as Jazz, music composition, and music theory.

OBJECTIVES

* Students will understand the ethical and legal implications of computer software use to ensure the creative protection of music programmers.
* Students will have a general working knowledge of micro-computer terminology and operating systems.
* Students will use computer graphic software specifically developed for musical notation.
* Students will use computer modeling and simulations to develop marching band formations when enrolled in the instrumental degree program.
* Students will develop data files as necessary to organize music library materials, maintain an equipment and sheet music inventory, and categorize resources.
* Students will study and report on computer applications described in the Computer Music Journal published by MIT Press.
* Students will use programs and instrumentation developed to generate sound to perform the following activities:
    - Create a specific tone
    - Create a major scale
    - Create notes of different duration and rests
    - Play a simple tune
    - Add harmony to a tune
    - Create a musical composition

* Students use a Yamaha RDX-7 sound synthesizer for composition, play back editing, and stacking sounds (adding harmony to melody).
* Students will complete computer based instructional programs designed to develop ear training for rhythmic patterns, notations, harmony, and melodic patterns.
* Students will use musical envelope construction and shaper software to duplicate and reproduce the sounds of specific instruments.

FUTURE PLANS

The department hopes to purchase a Yamaha RDX-7 sound synthesizer to be housed in the College of Education Micro-computer laboratory and used by Music majors. Plans are also underway to integrate computer applications in all theory courses and in methodology courses for perspective music educators.

The faculty has participated in a selection process to begin a software library of computer applications in the field of music. Initial purchases will include programs for Jazz and musical theory.

INSTRUCTIONAL COMPUTING EQUIPMENT

The Department of Music has no computing equipment available for instructional purposes at this time. The department does own one Apple IIe micro-computer for faculty use. Plans are being made to utilize the College of Education micro-computer laboratory with music majors in accomplishing the objectives stated above.

THEATER ARTS

Seldon Faulkner, Chairman

GOAL STATEMENT

The Department of Theater Arts has defined computer fluency as the ability to use the computer to perform tasks required in the discipline. While the computer uses appropriate to theater arts are quite limited when compared to other disciplines, the department has established a high priority on computer applications for office use, ticket sales, and seat reservations. Students interested in theater arts management would benefit from these applications.

The faculty feel that computer literacy topics should be a part of the general education or pattern components of the curriculum. Students should have the opportunity to test out of the computer literacy requirement if computer skills have been acquired by other methods. Computer fluency topics could be taught both through incorporation of computer applications in major course requirements and through providing non-credit workshops on Micro-computers and the Arts.

OBJECTIVES

- Students will be encouraged to use word processing programs to write and edit reports required in appropriate major courses.
- Students will use specialized graphic software to aid in costume design.
- Students will utilize computer modeling programs to create scene designs.
- Students will apply computer scheduling and switching programs to develop lighting sequences for stage

productions.

* Students will be knowledgeable of data base management software if interested in arts management.

* Students will use BOCS, a box office accounting system that runs on the VAX.

FUTURE PLANS

The department plans to incorporate computer applications into appropriate upper level courses such as Directing I. While direct applications in the theater arts are not as common as in other disciplines, the faculty feel that computer literacy is important and should be a part of the curriculum of every well educated person.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department has no computing equipment for instructional purposes at this time.

GRADUATE SCHOOL

Recognizing the rapidly growing importance of the computer in contemporary life, the UALR Graduate Council has strongly encouraged each graduate program to include computer-related elements throughout its curriculum. In a policy statement developed and approved during the 1982-83 academic year, the Council agreed to conduct a regular five-year review of each graduate program that would give particular attention to computer-related elements of the curriculum.

The Graduate Council further stipulated that future policy consideration would be directed at the adoption of a uniform, minimum level of computer fluency for all entering University of Arkansas at Little Rock graduate students, effective fall, 1987. Alternatively, a uniform minimum level of computer fluency could be adopted as an exit requirement, effective on an appropriate date. The Council encouraged individual program faculties to establish rigorous computer fluency requirements which could be made effective on an earlier date.

HEALTH SERVICES ADMINISTRATION

John A. Baker, Director

The Graduate School offers a program of study leading to the Master of Health Services Administration degree.

GOAL STATEMENT

The explosion in micro-computer technology has created a major educational gap in the graduate program for health services administration. Future administrators of health institutions will be operating in environments that will demand computer literacy and competence in the use of decision making data systems. In general, the goal of the graduate program is to incorporate computer applications into as many curriculum offerings as appropriate. Eight major courses within the curriculum provide an opportunity to use microcomputer applications in the decision making process. Upon completion of the graduate program, students should be computer literate and fluent in the skills required of health institutions administration.

OBJECTIVES

- Students will use statistical analysis software as required in graduate program research and course work.
- Students will operate and utilize spread sheet software for such administrative functions as budget control and forecasting.
- Students will apply commercially available graphic software to depict such data as admitting statistics, dietetics, and facilities management records.
- Students will use the micro-computer for data base management to establish such files as found in medical records applications.
- Students will utilize the word processing functions

of the computer to development documents such as medical records, policy manuals, and management reports.

* Students will use the micro-computer as a terminal to access statistical packages available on the academic computer such as SPSS or SAS.

* Students will write and modify computer programs utilizing a common language such as Basic or Cobol.

* Students will use health services software such as the DRG Grouper for networked hospital simulations.

* Students will utilize the micro-computer to access national data bases such as the American Hospital Association's Data System for legislative updates and health statistics.

FUTURE PLANS

The Graduate Program in Health Services Administration is currently recruiting a new faculty member with expertise in management information systems for health institutions. This faculty member will coordinate all efforts to improve the computer literacy of graduates.

The program is in the process of purchasing equipment needed to establish a micro-computer laboratory that will be dedicated to health administration data bases and applications. The laboratory will be used for both graduate students and for continuing education for practicing health administrators. Equipment to be housed in the laboratory includes five Rainbow 100-B microcomputers, one modem for communication with the main academic computer, one letter quality printer, one graphics printer/plotter, and one video terminal.

INSTRUCTIONAL COMPUTING EQUIPMENT

Computing equipment maintained by the graduate program at this time is not exclusively for instructional purposes. A laboratory is being developed for this purpose.

LIBRARY AND INFORMATION SCIENCE

Donald D. Foos, Director

The Graduate School offers a program of study leading to the Master of Library and Information Science degree.

GOAL STATEMENT

The Library and Information Science graduate program shares with the computer science department a need for graduates to acquire computer fluency skills well beyond those of the average college graduate. Computer literacy has been defined as the acquired knowledge and ability to use computing systems and related software packages as tools for the handling and marketing of information products. This definition suggests that the graduates of this program would be able to manipulate and access existing computerized databases such as BRS, Dialog, and IRS for the retrieval of information that patrons would use. Library and information science practitioners must work with computers daily in performing the functions of the discipline. Library and information science education at this university is directed at applications of advanced technology micro-computers, bibliographic networks, and information retrieval systems.

OBJECTIVES

* Students will use the micro-computer as a tool in information systems analysis and administration.
* Students will know the technical theories and structures that make micro-computers work.
* Students will analyze informational needs or problems to determine appropriate computer hardware and software requirements.
* Students will gain an in-depth knowledge of Basic programming language. This knowledge will include the following content:
  - language terminology

-conventions
-trends, sequences, methodology
-write simple programs in the language
-analysis of established programs
-write new programs to meet a specific need
-evaluation of computing context, inputs, processes, and products.

* Students will analyze the relationship between various computer applications and ethical considerations such as the application of copyright protection.

* Students will use programs that generate graphics required in specific applications.

* Students will use and evaluate software for word processing and for establishing data bases, data files, and reports.

* Students will use and evaluate software to perform statistical problems.

* Students will use and evaluate new software for generic spread-sheets applicable in a variety of applications.

* Students will be proficient users of national information utilities such as BRS and LEXIS.

* Students will employ the micro-computer in accessing major bibliographic data control systems such as the Data Research Association (DRA).

* Students will acquire knowledge of computer applications in specialized fields as required of special librarians.

FUTURE PLANS

The Library and Information Science program hopes to establish a micro-computer laboratory for students to become fluent in the use of computers as a professional tool. Computer applications should be integrated into the content of most graduate level library and information science courses. Presently, two courses, LIBS 7314 Advanced Reference and Information Resources and LIBS 7340 Library Information Systems are formally offered in the MLIS and require computer literacy skills.

INSTRUCTIONAL COMPUTING EQUIPMENT

The program now has two Kaypro II micro-computers. An IBM XT has been available to the program in the past but is no longer available for instructional purposes.

THE SCHOOL OF LAW

Lawrence H. Averill, Dean

James Spears

The UALR School of Law grants the juris doctor degree. A student may also pursue the J.D. and the master of business administration concurrently.

GOAL STATEMENT

Law School education is quickly moving into the computer age. The UALR law library currently subscribes to two computer data retrieval systems, Westlaw and LEXIS. These information utilities enable students and faculty to rapidly access essential data relevant to the practice of law.

Legal education has not stopped at data retrieval in the computer age, however. A consortium of law schools, the Center for Computer-Assisted Legal Instruction, has been formed to produce and lease software that is directly related to law school courses. Most software developed by the consortium is appropriate not only for law students but also for attorneys enrolled in the Arkansas Institute of Continuing Legal Education.

The Law School has as a computer literacy goal that every graduate be knowledgeable of computer applications commonly available to practicing attorneys. These applications include standard business uses of the computer such as word processing, spread sheet, and data base management programs and specialized uses such as

telecommunications with legal data bases.

OBJECTIVES

* Students will understand standard computer vocabulary and terminology.
* Students will know the advantages and limitations of commercially available software such as word processing, data base management and spread sheet programs.
* Students will determine a process for the selection and evaluation of computer software and hardware needed for specific legal applications.
* Students will use available word processing software to develop and edit documents while enrolled in the Legal Clinic.
* Students will use graphic programs and instruments to develop charts when enrolled in the Trial Advocacy course.
* Students will employ simulation programs for the recreation of courtroom situations to determine the probable consequences of specific actions.
* Students will access major legal data bases such as Westlaw and LEXIS and conduct data searches.
* Students will understand the legal applications of spread sheet software in areas such as corporate taxation.

FUTURE PLANS

The School of Law hopes to incorporate computer applications in many of the courses required for the juris doctorate and in those courses offered in the Arkansas Institute of Continuing Legal Education. These courses could include Research, Writing and Advocacy; Estate Planning; Trial Advocacy; and Federal Income Taxation. In addition, the School plans to develop a new course entitled "Computer and the Law" to make students aware of computer applications for legal purposes.

"There is a recognized need for faculty development in the use of computers. This need ranges from the most basic information on computer capabilities to the specialized applications useful to attorneys. Most faculty wish to learn the use of word processing software in the preparation

of legal drafts.

When funds are available, the Law School plans to join the Center for Computer-Assisted Legal Instruction, a national consortium of law schools that produces computer aided legal instruction software. The Center has developed model and simulation programs that facilitate the legal education process.

INSTRUCTIONAL COMPUTING EQUIPMENT

The School of Law currently has three IBM display writers, one IBM-AT with hard disk storage, and one video-disk recorder to interface with a micro-computer. The School plans to purchase one additional IBM-AT this year and to begin to network existing equipment. Consideration is being given the possibility of discontinuing the lease arrangement for the three display writers and using the funds for the acquisition of additional micro-computers.

THE COLLEGE OF LIBERAL ARTS

Cal Ledbetter, Dean

John S. Miller, Associate Dean

The College of Liberal Arts offers baccalaureate degree programs in the following areas:

Criminal Justice	English
French	Gerontology
History	Humanities
Liberal Arts	Philosophy
Psychology	Political Science
Sociology/Anthropology	Spanish

Graduate degree programs are offered in the following areas:

Applied Psychology	Criminal Justice
Gerontology	Public Administration
Public History	

ENGLISH

John Schell, Chairman

GOAL STATEMENT

The Department of English views computer literacy as an important component in the schooling of every well educated person. Yet, the incorporation of computers into the English curriculum has been very limited both by a lack of equipment and availability of computer software.

The computer is regarded as a tool for learning and an aid to writers when used in word processing. In general the department desires that all BA - English majors become computer literate either through course work required in the general education curriculum, non-credit workshops and short

courses, or work experience that can be validated by examination.

OBJECTIVES

* Students will use word processing programs to generate, edit, revise, update, and format text while enrolled in appropriate writing courses.
* Students majoring in Professional and Technical Writing, a joint program shared with the Department of Journalism, will become proficient users not only of word processing software but also ancillary programs such as spellers, dictionaries, and structured format helpers.

FUTURE PLANS

The Department of English plans to have a micro-computer writing laboratory operational by August, 1985. This laboratory will contain fifteen Apple IIe micro-computers. The computers will help remedial students develop writing skills using, among others, the HOMER structured writing software. In addition, the laboratory will serve students in all upper level writing courses. Graduate students in the proposed Master of Arts in Professional and Technical Writing will use the laboratory extensively. Computer literacy should be an entrance requirement for that degree program.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department has no computing equipment at this time. As mentioned above, plans are underway to open a micro-computer laboratory next school year.

FOREIGN LANGUAGE

Gregory Armstrong, Acting Chairman
Cameron Jones
Rosalie Cheatham
Barbara Bowlus

GOAL STATEMENT

The Department of Foreign Languages prepares students for graduate programs in foreign languages and assists majors in other disciplines to use a foreign languages as an ancillary tool in performing the functions of the major discipline. The department also cooperates with the Department of Curriculum and Instruction in the preparation of secondary school foreign language teachers. Computer literacy is viewed, therefore, not only from the need perspective of foreign language majors but also from the perspective of the graduate student, the classroom teacher and the professional person applying foreign language skills in the work place.

In general, the faculty feel that computer literacy should be a part of the general education component of the curriculum. All BA - Foreign Language graduates should be able to use the computer as a tool of learning. These students should be able to use word processing programs, data files, and spread sheets as other tools available to the well educated person.

OBJECTIVES

* Students will understand the concepts of programing necessary to customize foreign language programs.
* Students will be proficient users of interactive

language laboratories such as the Tanberg Integrated Language Laboratory for computer aided and managed instruction.

* Students will use commercially available graphic and animation software to demonstrate language meanings.

* Students will use computer foreign language dictionaries and other electronic reference tools to interpret written materials.

FUTURE PLANS

The department hopes that computer literacy will be incorporated in the general education component of their degree program. There are no plans, however, to integrate computer literacy skills into the foreign language curriculum other than those necessary for computer assisted and managed instruction.

Faculty have expressed interest in staff-development activities designed tc teach the skills for using word processing, spread sheet, and data files software.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department does not have computing equipment for instructional purposes.

HISTORY

Lester Bilsky, Chairman
Charles Bolton
Deborah Baldwin

GOAL STATEMENT

The Department of History defines computer literacy to involve two rather separate levels of activities. The first of these has to do with the undergraduate student's ability to use a micro-computer for word processing, data base

management, and graphics development. The second type of computer literacy would apply to graduate students and would build upon basic literacy to include the use of statistical packages such as SPSS and SAS on the institutional academic computer.

These computer skills are being integrated into upper level courses and in the graduate program. Yet, the faculty feel that primary responsibility for teaching computer literacy resides outside the Department of History. Options for helping history majors reach computer literacy could include providing for non-credit workshops, seminars, and user groups.

OBJECTIVES

* Students will use commercially available word processing software to develop history reports and term papers.
* Students will know how to utilize graphic programs as required in the integration of simple charts and graphs in reports and term papers.
* Students will generate data files and reports using data base management software commercially available.
* Students will employ a computer terminal to access national data bases for such information as historical records, current census data, and statistical summaries.
* Students will use a computer terminal to utilize statistical programs such as SPSS and SAS on the institutional academic computer while enrolled in the graduate Public History degree program.
* Students will search electronic library book catalogs and generate bibliographies.
* Students will apply computer modeling techniques to analyze historic and economic events while enrolled in the graduate Public History degree program.
* Students will structure computer simulations of historic events to reconstruct and evaluate outcomes.
* Students will use micro-computer statistical packages while enrolled in the graduate course in quantitative methods.

FUTURE PLANS

The department plans to incorporate further computer applications into upper level courses in the major and the graduate program in Public History. Students enrolling in these courses who do not possess the prerequisite computer skills required will be directed to appropriate support groups for remedial work.

Both faculty and graduate students desire additional preparation in the use of word processing programs and in quantitative research methods using the micro-computer and the institutional academic computer. This would allow the increasingly large volume of research output and other written material to be processed in the most efficient manner.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department has no computing equipment available for instructional purposes at this time.

PHILOSOPHY AND RELIGIOUS STUDIES

Brent Knutson, Chairman

GOAL STATEMENT

The Department of Philosophy and Religious Studies has determined that computer literacy skills are useful, albeit nonessential for graduates of their degree program. The computer used for word processing is a valuable tool for all professions which require writing. Yet most computer applications will be of little use to philosophy and

eligion majors unless they enter other programs of research in which the computer is a useful tool.

The department can implement student awareness of the significance of computers in several categories:

A. Manipulation of Data. Computers are useful in the preparation of bibliographies, indexes, concordances; in statistical research; and logic exercises.

B. Analysis of Texts. Lexical studies can benefit from having a given body of texts on the computer.

C. The Role of the Programmer. Students should understand that the sensitivity of the machine to a text is limited by the sensitivity of the programmer.

D. The Assumptions of Computer Use. Philosophy has to do with effective thinking, which includes seeking to understand the presuppositions of the application of computer use, the methodology by which it is employed, and the implications thereof. This means, first of all, questioning the current mystique which surrounds the machine.

OBJECTIVES

* Students will be encouraged to acquire the computer skills necessary in word processing.
* Students will analyze the presuppositions of the application of the computer and the methodology by which it is employed while enrolled in the Philosophy of Science course.

FUTURE PLANS

The Department of Philosophy has no plans to utilize computers in the curriculum at this time. Most of the fruitful applications of the computer require an

understanding of the discipline normally found in graduate students.

The faculty feel that issues related to computer applications can be integrated into several courses such as Philosophy of Science, Introduction to Philosophy, Introduction to Religious Studies, and ethics courses. An examination of these issues would benefit not only students in the major but also graduates of other degree programs.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department does not have any computing equipment for instructional purposes at this time.

POLITICAL SCIENCE

Neil Snortland, Chairman
Roby Robertson
James Larson
Margaret Scranton
Lance Brouthers

GOAL STATEMENT

The Department of Political Science views computer literacy as a requirement for all well educated people. The faculty feel, however, that computer skills should be acquired in the process of matriculation rather than through direct instruction. Non-credit workshops should be provided for students who do not possess the computer skills required in major field courses and in the graduate program in public administration.

OBJECTIVES

* Students will use word processing software to generate reports and term papers while enrolled in the methods sequence of the MPA degree.
* Students will use commercially available graphic software to develop visual data presentations such as line, bar, and pie graphs.
* Students will be able to evaluate available software to determine its applicability in specific situations.
* Students will apply computer models to predict the effects of potential policy changes in political, socio-economic, and demographic research.
* Students will employ global economic simulations such as the WORLIC or Mesarobic programs in economic policy analysis and synthesis.
* Students will use simulated models such as the SET-UPS packages to manipulate socio-economic variables and determine potential effects of certain policy changes.
* Students will access national data bases such as the ICPSR (Inter-university Consortium for Political and Social Research) using a computer terminal.
* Students will understand the ethical issues related to computer access to confidential research information.
* Students will run statistical packages necessary in the analysis of socio-economic, political, and demographic data.
* Students will utilize the academic computer for such statistical programs as SAS and SPSS.

FUTURE PLANS

The department hopes to integrate computer applications in several courses required in the undergraduate major and the MPA degree such as Political Analysis, Introduction to Political Science, Public Policy Analysis, and Methods in Public Administration. Computer literacy skills have been integrated into the Political Science curriculum at other universities. Lack of adequate facilities at UALR has resulted in Political Science lagging behind national norms. The UALR department hopes to acquire SET-UPS which is a comprehensive software package designed to simulate functions required of political science professionals.

All faculty consider themselves to be computer literate and have used computers extensively at other institutions. The faculty has expressed interest in workshops on SPSS and SAS as well as other software designed for the micro-computer.

INSTRUCTIONAL COMPUTING EQUIPMENT

The faculty feel frustration at not having the computing facilities needed to utilize software applications that have been developed and utilized by political scientists at other institutions. The department has no computing equipment available for instructional purposes at this time.

CRIMINAL JUSTICE

Charles Chastain, Chairman
Robert Berry
Robert Pursley
Mary Parker

GOAL STATEMENT

The Department of Criminal Justice has not developed a specific definition of computer literacy. Yet, the faculty agree that criminal justice majors have a need to be computer literate just as do graduates of other programs. Literacy is viewed by the department as a function of the general education component of all baccalaureate degree programs. Students entering criminal justice programs should have the skills necessary to use the computer as a tool for learning.

Computer fluency can be achieved through the

integration of computer applications in such undergraduate courses as Research in Criminal Justice, Police Administration and Management, and Judicial System and Process. Graduate courses in Criminal Justice such as Correctional Administration and Technical Research and Report Writing could also incorporate computer fluency skills.

OBJECTIVES

* Students will know the methods and techniques of simple programming in the Basic language.
* Students will at the graduate level use statistical programs such as SPSS and SAS which are designed for the mainframe computer.
* Students will use commercially available graphic software to prepare data presentations and interpretations.
* Students will analyze various situational incidents using computer simulations such as the Justice System Interactive Model (JUSSIM) developed at Carnegie-Mellon University.
* Students will at the graduate level use national legal data bases such as Westlaw and LEXIS for individual and faculty/student collaborative research purposes.
* Students will use commercially available software for developing data files.
* Students will use spread sheets in the development of management decision making techniques.
* Students will have knowledge of statistical methods using a micro-computer that are adequate to analyze criminal justice data reports.

FUTURE PLANS

The department hopes to interact with other state agencies in the criminal justice system so that students can learn first hand those computer applications being employed in the field. Further activities leading to computer fluency of student can be incorporated into upper level course work whenever appropriate.

The department needs access to state-of-the-art software such as JUSSIM to assist student in using the

computer as a decision making tool. There is a great need for free staff-development support that would help faculty learn to use this and other forms of available software in the field of criminal justice. The goals of staff-development would include: a.) an increase in faculty research, b.) an increase in interaction with criminal justice agencies, and c.) an improved utilization of available information in the planning process.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department does not have any instructional computing equipment at this time. Students have limited access to campus facilities tied in to the academic computer. The faculty agree that little more can be accomplished until students have easy access to micro-computers and to the academic computer.

PSYCHOLOGY

Robert Ochsman, Chairman
Roger Webb

GOAL STATEMENT

The Department of Psychology offers a bachelor's degree with two basic tracks -- one a regular liberal arts program and the other a pre-professional program leading to advanced study in psychology. A Master of Applied Psychology is also offered. Therefore, the department requires three different levels of computer literacy. The primary computer literacy goal for all programs is to prepare students for jobs and graduate study in which computing skills are both valuable

and desirable.

In general, the department faculty feel that computer literacy problems are transitional. In the near future students will be computer literate when they come to the University. Until that time, however, the university needs to provide opportunities for students to become familiar with the fundamentals of computer applications. Students should be encouraged to view the computer as a tool that could facilitate research and scientific methods.

OBJECTIVES

* Students will use data base management software to establish, manipulate, and report information collected through data gathering operations while enrolled in the graduate program.
* Students will us statistical programs for the academic computer such as SPSS and SAS as well as statistical packages designed for the micro-computer to analyze data.
* Students will use commercially available software to perform statistical tests and procedures required as a part of the undergraduate and graduate statistics requirement.
* Students will compose and edit manuscripts, term papers, and class reports using a word processing program.
* Students will have an understanding of the potential applications of computer technology and know where to seek help for specific projects.
* Students will use existing software to develop graphic data presentations in such courses as experimental psychology.
* Students will utilize computer simulation programs to present performance using various controls and displays such as those in an atomic power plant simulation.
* Students will access national data base utilities for information such as census data and labor force statistics.
* Students will use micro-computers both as stand-alone computing stations and as terminals to the institutional academic computer.

FUTURE PLANS

The department hopes to integrate computer applications into several psychology courses required in the major.

These courses include those in testing, methods, applied psychology, personnel psychology, and human factors. The faculty hope that students not having the computer skills required will be provided opportunities to participate in non-credit workshops sponsored by vendors and by the University.

There is both need and interest for faculty and staff-development workshops on the programs available on the new academic computer. This is especially needed for the new text editor, SPSSx and SAS.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department now has six TRS-80 micro-computers that serve as stand-alone units and as terminals to the academic computer and five DEC VT-100 terminals. These machines will serve as the core of a micro-computer laboratory to be developed and managed by the department. In addition, the department owns eight TRS-80 micro-computers, two Apples, and one IBM PC micro-computer for faculty and staff use.

SOCIOLOGY, ANTHROPOLOGY, AND GERONTOLOGY

J.D. Robson, Acting Chairman
John Lennon
Perry Thompson
Alan Marks
Hans Baer
Cheryl Puskarich
Agaton Pal
Mark Krain
Dudley Beard
Terry Trevino-Richard

GOAL STATEMENT

The Department of Sociology, Anthropology and Gerontology has defined Computer literacy as the knowledge

and ability necessary to allow students to use computing systems as tools for the enrichment of their personal and professional lives. Computer literacy could involve a knowledge of computer terminology, advantages and disadvantages of computer applications, ethical issues related to computer use, and a process for selecting computing equipment. These skills could be acquired through sociology, anthropology, and gerontology students completing a non-credit, university sponsored workshop on the common applications of the micro-computer.

OBJECTIVES

- ¥ Students will have an understanding of a computer programming language as necessary to demystify computer technology.
- ¥ Students will use word processing software to develop and edit term papers and reports.
- ¥ Students will employ commercially available graphic software to develop charts and graphs used in statistical data presentations.
- ¥ Students will apply computer model and simulation programs such as Micro-dynamics and SIMSOC to analyze individual assumptions and variable manipulations in specific situations.
- ¥ Students will be knowledgeable users of national information data base utilities such as ICPSR and the Human Relations Area Files.
- ¥ Students will develop and utilize data files and records basic to applications in the social sciences using commercially available data base management software.
- ¥ Students will solve statistical problems using statistical packages designed for the micro-computer and using SPSS and SAS on the main academic computer.
- ¥ Students will have an understanding of communications software necessary to access bibliographic and informational resources such as the ITT data base.

FUTURE PLANS

The department would like to work with other departments in the social sciences to develop a special course on computer applications. Such an inter-disciplinary

course would allow for flexible use of faculty talent and would provide for common interest and needs of students. In addition, the department wishes to join with other departments to more effectively develop computer facilities and systems. Small equipment and maintenance budgets make it impossible for most departments to acquire computing facilities needed by students. Together, departments could develop and share common computing laboratories.

The faculty plan to integrate computer applications into the content of courses now required of major students. These include courses in SPSS, population analysis, applied sociology, criminology, statistics, and research methods. Computer integration will require, however, extensive staff-development for the faculty. Most faculty in the department are not trained in the uses of computers. Some faculty have had limited exposure to computer applications but would benefit from both basic and specialty workshops on the use of hardware and software.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department now owns six TRS-80, Model III, micro-computers; six Epson printers; two ADM terminals to the academic computer; two IBM PC micro-computers; and one Apple IIe micro-computer.

THE COLLEGE OF SCIENCES

Robert G. Franke, Dean

J.W. Wiggins, Associate Dean

The College of Science offers baccalaureate degree programs in the following areas:

Biology
Computer Science
Environmental Health
Mathematics
Applied Physics
Chemistry
Engineering Physics
Health Professions
Physics

Graduate degree programs are offered in the following areas:

Applied Mathematics
Chemistry

BIOLOGY

Robert L. Watson, Chairman
Joe Whitesell
Alvin Karlin
Charles Preston

GOAL STATEMENT

The Department to Biology is just beginning to address computer literacy and fluency in its degree programs. Recently, several courses in the department have incorporated the use of computers. The department faculty feel that ideally students should be computer literate before entering biology degree programs. This general computer literacy should include an understanding of the terminology and conventions of computer and should enable the student to use word processing programs. The faculty could then devote efforts toward helping students reach computer fluency.

The department offers three concentrations in the bachelor of science biology major -- ecology/wildlife management, cytotechnology, and general biology. These concentrations require that students be computer literate.

OBJECTIVES

* Students will acquire knowledge of methodology and principles of BASIC or FORTRAN programming as appropriate to their emphasis.
* Students will become familiar with the structures of program flowcharting as a general problem solving tool.
* Students will use commercially available graphic software for the analysis and illustration of biological data.
* Some students will develop and/or computer models to project biological phenomena such as population fluctuations and nutrient flow through the environment.
* Some students will develop data bases to record, monitor, and analyze biological populations.
* Some students will employ the computer and statistical packages such SAS to analyze information in large data files.
* Some students will use available software such as BIOSYS in the study of genetics.

FUTURE PLANS

The department hopes to incorporate computer fluency applications in several courses such as genetics, ecology, and wildlife management techniques. Commercially available software such as BIOSYS and NTSYS commonly used by biologist in the field should be accessible for instructional use.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department now has five DEC terminals that will be hard wired to the academic computer. Two Apple IIe's and two printers are also available for student use.

CHEMISTRY

Fred H. Watson, Chairman
Robert Steinmeier
Ali Shaikh
Ralph J. Wolf

GOAL STATEMENT

The Department of Chemistry has determined that it is necessary for all upper level chemistry students to achieve computer fluency. In general, the faculty believe that computer literacy topics should be covered in the general education component of the undergraduate curriculum rather than as a part of the major field. A detailed listing of the goals thought to be important by the department was given by James Poirot in Computers and Education (1980, Sterling Swift Publishing Co., pp. 22-23).

Based on the assumption that students will achieve computer literacy through general education courses, the department has developed the following objectives related to computer fluency for students in chemistry degree programs.

OBJECTIVES

* Students will use computer-aided instruction as a supplement to course lectures.
* Students will use the computer as a general tool for word processing, statistical analysis and graphic design.
* Students will use the computer to access large chemical data bases such as Chemical Abstracts.
* Students will use BASIC or FORTRAN to develop programs that solve specific chemical problems.
* Students will use chemical instrumentation that interfaces with a computer. (Modern chemical instruments have connections which allow the computer to control instrument operations, store data, and communicate with other computers.)
* Students will use commercially available software (or self-developed programs) to plot curve and develop other

technical graphics.

* Students will use computer models to analyze mechanisms for chemical reactions, kinetics, and molecular theory.
* Students will know how to develop data files.
* Students will use computer technology and programming to become proficient problem solvers.
* Students will employ the computer to analyze statistical problems including numerical integration, linear regression and univariant analysis.

FUTURE PLANS

The Chemistry faculty hopes to integrate computer applications into more upper level courses. Quantitative Analysis, Physical Chemistry, and Instrumental Analysis are courses where direct applications could be made readily.

Most faculty members are computer literate. There is a need, however, for some assistance in appropriate applications using the university academic computer. This is especially needed in the area of high quality graphic capability needed to illustrate chemical problems.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department has established a small micro-computer laboratory for student use which contains six Apple II+'s. The department also has a DEC PDP 11/34 mini-computer for research purposes which is available to students. An infrared spectrophotometer that is controlled by a computer is used by the faculty. All future chemical instruments purchased by the department are planned to be interfaced with a computer.

COMPUTER SCIENCE

Margaret P. Mize, Coordinator

GOAL STATEMENT

The Department of Computer Science has defined computer literacy as the attainment of knowledge and skills necessary to routinely and naturally use a computer as a problem solving tool.

OBJECTIVES

* Students will know the technical theories and structures that make computers work.
* Students will analyze specific computer needs or problems to determine appropriate hardware requirements.
* Students will gain an in-depth knowledge of one programming language. This knowledge will include the following content:
  - -language terminology
  - -conventions
  - -trends, sequences, methodology
  - -write simple programs in the language
  - -analysis of established programs
  - -write new programs to meet a specific need
  - -evaluation of computing context, inputs, processes, and products.
* Students will transfer knowledge of one programming language to learn other appropriate languages.
* Students will analyze the relationship between various computer applications and ethical considerations.
* Students will develop algorithms to solve specific computing problems.
* Students will develop programs that generate graphics required in specific applications.
* Students will write and evaluate new software to set up data bases, data files, and reports.
* Students will write and evaluate new software to perform statistical problems.
* Students will write and evaluate new software for generic spread sheets applicable in a variety of applications.

FUTURE PLANS

The Department of Computer Science hopes to utilize fully the new resources of the academic computer.

Appropriate compilers and assemblers must be available for computer science students to design, develop and evaluate computer programs.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department has eleven terminals to access the main academic computer as well as the general computing facilities available for all students. Yet, the department feels that there is a need for dedicated computing equipment that would allow students to experiment without jeopardizing the needs of other academic units.

EARTH SCIENCE

Philip Kehler, Chairman
John Thurmond
Brenna Lorenz

GOAL STATEMENT

The Department of Earth Science offers no degree programs. A minor in geology and a cooperative program in geophysics with the Department of Physics and Astronomy are currently offered. Plans are under way to begin a minor in geochemistry.

The department is attempting to introduce computer applications in the earth sciences in various course requirements. Geology and geophysics are fields that have utilized computers for many years. Specific applications include the use of computers for mapping, modelling, and statistical analysis.

OBJECTIVES

* Students will write simple computer programs using either the BASIC or FORTRAN languages.
* Students will apply the principles of algorithms, flowcharting, and structured programming as basic geophysical problem solving tools.
* Students will construct geological models to generate such phenomena as fossil communities.
* Students will develop simulations to determine or predict such geologic occurrences as stratigraphic sequences.
* Students will use public domain or commercially available software to develop maps showing the distribution of minerals.
* Students will use the computer to make geologic cross-section diagrams.
* Students will calculate resource reserves using appropriate computer programs.
* Students will use data base and spread sheet software to develop paleontology collection management techniques.

FUTURE PLANS

The department hopes to purchase computer programs for the earth sciences that have been reviewed and found to be appropriate by the Journal of Geological Education. Another sources of available software for the earth sciences is the publication Computers in Geoscience. This software can be incorporated into such courses as Geomorphology, Sedimentology, Structural Geology, Petrology, and Stratigraphy.

Most of the faculty feel that staff-development workshops on computer fluency skills would be very helpful.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department has recently purchased a KayPro micro-computer which can serve as a stand alone work station and can be adapted as a terminal to the academic computer.

MATHEMATICS AND STATISTICS

Alan M. Johnson, Chairman

GOAL STATEMENT

The Department of Mathematics has defined computer fluency to involve knowledge of a scientific programming language such as FORTRAN or PL/1. Computer fluency also requires that mathematics majors be able to use statistical packages designed for the mainframe computer as well as micro-computer statistical packages.

Graduate students are required to have knowledge of a scientific programming language for admission to the graduate program. Computer applications are required in many graduate mathematics and statistics courses. In addition, graduate students must complete a research project that requires extensive use of the computer.

OBJECTIVES

* Students will gain an in-depth knowledge of one scientific programming language such as FORTRAN or PL/1.
* Students will develop algorithms and flowcharts to solve specific mathematical or statistical problems.
* Students will use graphic programs that generate charts to display mathematical data.
* Students will write and evaluate new software to perform statistical problems.
* Students will use the computer to develop statistical models and probability simulations.
* Students will understand data base management systems as necessary to work with mathematical data sets in business and industry.
* Students will access the academic computer to utilize statistical packages such as SPSS and SAS.
* Students will use statistical packages such as Trajectories that have been designed for the micro-computer.

FUTURE PLANS

The department hopes to integrate computer applications

into courses required in the major such as Discrete Mathematics, Applied Statistics, Numerical Analysis, Advanced Matrix Algebra, and Advanced Differential Equations. The incorporation of computers into the curriculum, however, will require that faculty have development workshops on such programs as SPSSx and SAS. Some faculty have expressed interest in workshops on word processing skills.

The department faculty feel that attention should be given to including a credit course on computer literacy topics in the general studies component of the curriculum. Such a course could be required of all graduates or be specified in the pattern requirements of various degree programs.

INSTRUCTIONAL COMPUTING EQUIPMENT

The department now provides for instructional purposes one KayPro IV micro-computer which is used also as a terminal, two terminals (one DEC and one ADM-21), one DEC printer, and one Epson printer.

PHYSICS AND ASTRONOMY

Donald Wold, Chairman
Steve Crawshaw
Paul Engle
Al Grauer
Richard Prior
Larry Coleman
Steve Davis
Ed Gran
Keith Johnson
Andre Rollefson

GOAL STATEMENT

The Department of Physics and Astronomy has approached the implementation of computer literacy from two perspectives. First, the department feels an obligation to help majors in other disciplines appreciate the role of computers in science. Second, the department wishes to

ensure that all physics majors become fluent in the use of computers as a tool of the discipline. That is, majors should be comfortable in the use of computers and readily use computer technology to solve physics problems.

The faculty feel that the best method to accomplish computer literacy for both majors and non-majors is to incorporate computer applications as a process step in acquiring the content of most courses offered in the department. This process could include the use of computers in classroom demonstrations, computer assisted instruction, and laboratory experiments.

One factor impacting use of computers in physics and astronomy that differs from other areas of study is the lack of commercially available software appropriate for instruction and experimentation. Faculty seem to feel that both students and faculty must be able to develop specialized software as necessary to solve problems in the disciplines.

OBJECTIVES

* Students will demonstrate proficiency in a computer language (preferably BASIC) through satisfactory completion of a programming course, self-study project, or departmental examination.
* Students will be encouraged to use word processing software in the development of written presentations.
* Students will use simulation programs to experiment with projectile motion, orbiting earth satellites, and straight-line motion.
* Students will apply models of the universe to study such topics as Kepler's laws which describe the revolutions of planets around the sun.
* Students will construct experimental computer models and use the models to compare theory with observed data.
* Students will employ specialized graphics software like the Plot-10 package to plot occurrences such as the path of projectiles in space.

* Students will be knowledgeable of data base management programs and apply the technology in data acquisition, storage, and analysis.
* Students will use micro-computers interfaced with light and sound data gathering instrumentation.
* Students will understand the concepts of analog-to-digital and digital-to-analog conversions as used in the computer acquisition and analysis of physical data.
* Students will be aware of computer uses in image and picture processing.
* Students will be knowledgeable of computer networking and multi-user operating systems such as UNIX.

FUTURE PLANS

The department hopes to integrate computer applications into the content of upper level courses such as electromagnetism, mechanics, advanced laboratory, modern physics, and general physics. In addition, the department has considered a new course on computer methods in physics. This course would be similar to the existing Math Methods of Physics.

The faculty feel that time must be provided to develop software appropriate for applications in the upper level courses. Software development becomes especially complicated and time consuming when computer applications must be interfaced with other instrumentation. Little programming is available commercially that meets the specialized needs of students majoring in physics.

INSTRUCTIONAL COMPUTING EQUIPMENT

The Department of Physics and Astronomy has five App' IIe and II+ micro-computers, three Epson printers, one H Laser Jet printer, five DEC GIGI terminals all available for instructional purposes, and one Dual System computer (used for research).

THE GRADUATE SCHOOL OF SOCIAL WORK

Gisela Spieker, Dean

Jerry Flanzer
Lou Santa Cruz
Patricia Bauknight

The Graduate School of Social Work offers a program of study leading to the Master of Social Work degree.

GOAL STATEMENT

The Graduate School of Social Work faculty feel that computer literacy skills are essential to all well educated persons. Therefore, the graduate curriculum should provide treatment of computer topics and systematically determine that students acquire the computer competencies required of Social Workers today.

The Master of Social Work degree program offers two tracks - Social Program Administration and Clinical Treatment. Students in both programs will become computer literate by way of inclusion into the Research Methods class. Computer fluency, however requires different skills in each of the areas. The focus of the administration program will be on business computer applications necessary in managerial and personnel positions. Clinical Treatment will focus on computer applications designed to aid in assessment and diagnosis of client problems.

OBJECTIVES

* Students will be knowledgeable of the ethical issues related to computer access to client records.

* Students will understand computer terminology necessary to operate a micro-computer.
* Students might use modeling and simulation software to explore the effects of various client decision alternatives when enrolled in the Clinical Treatment track of the program.
* Students might explore business applications of the micro-computer such as data base management when enrolled in the Social Program Administration track of the program.
* When faculty is available, students might access the main academic computer to use statistical programs such as SPSS.
* When sufficient equipment is available, students might use micro-computer statistical software.
* Students might use the micro-computer to access national data bases for the social sciences such as ICCS.
* Students might administer computer versions of the MMPI and the Hudson scales diagnostic software while enrolled in the Clinical Treatment track of the program.

FUTURE PLANS

The faculty hopes to integrate the understanding of computer applications into the curriculum through such courses as research, statistics, and thesis. Some attention will be directed at the creation of an elective course designed to help social workers become computer fluent.

INSTRUCTIONAL COMPUTING EQUIPMENT

The Graduate School of Social Work has no computing equipment available for instructional purposes at this time.

RESULTS AND CONCLUSIONS

Robert Gillespie, Vice-Provost for Computing at the University of Washington, observed that the diffusion of tools follows a regular sequence. Gillespie hypothesized that the diffusion of computers will follow the same sequence. First, computers will be used as replacements for functions performed manually. Then, Gillespie predicted, as new capabilities are found computers will be used for new kinds of tasks. Finally, computers will become structurally integrated into the system, forcing re-analysis of goals and overall structure.

Most UALR faculty and administrators presently view the diffusion of computers as a stage one activity in Gillespie's sequence. That is, they think of the computer (more specifically the micro-computer) as a more efficient and effective tool for performing routine functions. Graduates, however, are entering job markets where the computer has become structurally integrated into the system and structure of their profession. These students need to be prepared adequately in computer applications that have become essential in the work place.

The primary purpose of this study was to aid departments in the development of computer literacy goals and objectives for each degree program. A secondary purpose of the project was to determine short-range departmental computer needs and plans for hardware and software acquisitions, staff-development, or related activities designed to help students achieve computer literacy. For

several departments the project provided an opportunity to build upon extensive groundwork that had been in progress for several years. For other departments the project was a fresh look at computer literacy which focused on student outcomes and curricular goals.

As a working definition computer literacy was defined as student's comprehension of those things that every well educated person should know about computers. Computer fluency was defined as the student's application of computers in the performance of functions required in the discipline or profession.

A structured interview was conducted with the chairman and in most instances with representative faculty from each department at UALR. Goals and objectives were developed using information provided during the interview process. These goal statements were submitted to the departments for revision and approval before inclusion in this report.

FINDINGS

Little uniformity exists in the stages of computer literacy development among departments at UALR. Several departments and colleges have refined course-specific computer literacy objectives while other departments have scarcely considered the need for graduates to be computer literate. For example, the College of Business Administration has a faculty committee that differentiated five levels of computer fluency for the college. Each degree program was reviewed to determine appropriate levels of computer fluency for the specific area of study. At the

other end of the development continuum, the Department of Art has just begun to consider the appropriateness of computer skills within their degree programs.

Departments also differ on how computer literacy for all graduates best can be accomplished. Some colleges and departments take the position that computer literacy is very important and that each academic unit should be responsible for teaching majors everything they need to know about computers. Other departments agree that computer literacy skills are necessary for graduates but feel that those skills should be acquired in other areas of the curriculum.

Most faculty at UALR would define computer literacy to involve, among other topics, an understanding of computer vocabulary, operating systems, advantages and disadvantages of computer applications, ethical issues, and future technological developments plus the ability to use the micro-computer for word processing, data base management, and spread sheet software. Computer fluency builds upon computer literacy skills and involves the student's ability to use computers in carrying out the functions of the discipline. In most instances computer fluency would include the ability to use word processing, data base management, and spread sheet software for discipline specific applications, but would also include the use of specialized programs and instrumentation such as those required in journalism, communicative disorders, education, chemistry, and business.

APPROACHES TO COMPUTER LITERACY

Several approaches for the University to help students acquire computer literacy were suggested in the course of this project. The following approaches may be appropriate at UALR.

* A Facilities approach - Some faculty felt that if computing equipment were more accessible through either general purpose, multi-user computer laboratory networks or through college managed micro-computer laboratories, students and faculty would be more likely to become computer literate. Those supporting this approach often expressed the need for faculty to provide assistance while students learn to use computers as a tool of the discipline. This group tended to favor a decentralized, college managed laboratory arrangement. In brief, those advocating an improved computing context at the university felt that with an appropriate computing environment, students would become computer literate.

* A Curriculum approach - Faculty suggesting a curriculum approach to computer literacy tended to recommend one of two different paths. First, many faculty seemed to support the development of a general studies credit requirement for all students. This course, most felt, should include but not be limited to instruction in computer terminology, advantages of computer applications, ethical issues related to computer use, and should provide experience in the use of word processing, data base management, and spread sheet software.

The second path involved most of the same content concepts found in the credit approach. Yet, this group felt that the content should neither be required nor offered for college credit. These faculty suggested making the content of computer literacy available to students through non-credit workshops, seminars, and short courses designed to help students deficient in computer literacy skills.

* An Indirect approach - Faculty favoring the indirect process approach believed that computer literacy should not be taught directly. Rather computer skills should be integrated where appropriate as a process for acquiring and applying the content of required general education and major field courses. In the process of

English composition, for example, students would use word processing. In the process of completing a mathematics course students would use the applications of calculating spread sheets.

* A Proficiency approach - These faculty viewed computer literacy or rather the lack of computer literacy as a temporary problem that did not merit a curriculum change. At some point, either as a entrance requirement to specific programs or as a graduation requirement, students should be required to demonstrate computer competence.

ISSUES AND RECOMMENDATIONS

In the preceding sections this study has attempted to describe how academic departments help students achieve computer literacy and computer fluency. Issues identified in the process of this project must be addressed as the University continues its quest for complete student computer literacy. These issues are summarized in the following comments and recommendations are proposed.

INTEGRATION OF COMPUTERS IN EXISTING CURRICULA

The following recommendations address the problems of integrating computer literacy skills into the curriculum.

RECOMMENDATION 1 - Develop a credit course (or several courses) with a title such as Introduction to Computer Applications. This course should be designed for non-computer science majors. The course content could include but not be limited to instruction in computer terminology, advantages of computer applications, and ethical issues related to computer use. The primary focus of the course, however, should be on providing experience in the use of word processing, data base management, and spread sheet software. The course should be available to students in all degree programs where a minimal level of computer literacy is deemed important.

RECOMMENDATION 2 - Provide non-credit, short-term, tuition free or inexpensive workshops for faculty, staff, and students. These workshops should be designed to help participants learn to use specific software packages for the academic computer such as SAS or SPSSx and standard programs for the micro-computer.

RECOMMENDATION 3 - Review at the departmental level computer fluency goals and objectives to determine appropriate methods for incorporating discipline specific uses of computer.

RECOMMENDATION 4 - Establish a faculty task force to advise the University Assembly on appropriate measures to incorporate computer literacy skills in the general education or pattern components of the curriculum. In addition, the task force could study issues such as appropriate means of incorporating computer literacy skills in established graduate programs or the utilization of computer assisted instructional programs.

HARDWARE NEEDS

An analysis of computer hardware needs at this institution requires attention to both the emotional overtones that accompany any discussion of this topic and to the evolving perspective of computing adequacy brought on by rapidly changing technology. Many faculty and departmental chairpersons have experienced great frustration in the most modest attempts at procuring computing equipment. While the roots of this frustration are not clear, most interviewed seemed to expect more support than the institution is providing in the acquisition of data processing equipment.

Computer capability at UALR today is greater that ever before in the history of the institution. Four Digital Equipment Company VAX 11/780 computers, twelve RA81 disk drivers each with 456 mega bytes of storage capacity, three TU78 tape drivers and one 600 lines per minute printer are operational for academic purposes. Some individual faculty members have immediate access to micro-computers and mini-computers that exceed the computing power of the largest corporations just ten years ago. Yet, most faculty and administrators interviewed seemed to feel that institutional computing facilities are inadequate.

The perception of data processing inadequacy is both real and imagined. While enormous academic computing capability exists at the institution, data processing equipment and software are not easily and readily available to computer users. Virtually without exception those

interviewed indicated a need for stand alone micro-computing capability within the department or college with direct access to the institutional academic computer. These individuals stated that micro-computer centers or multi-user networks could support most professional and instructional needs of the faculty and staff. Access to the main academic computer would meet research needs of the faculty and specific applications in such disciplines as business, and computer science.

Two trends in the acquisition of academic computing hardware seem inevitable at UALR. First, a shift must occur that moves computing access from the sterile, glass-enclosed computer centers and places equipment in locations readily available to end users -- faculty, staff, and students. The micro-computer or computer terminal must join the coffee pot, ash tray, and typewriter as standard paraphernalia of the work and study station.

Second, the emphasis on the acquisition of individual computer work stations must be refocused on the development of local area networks that join the large academic computer system with individual micro-computers and individual units with one another. While the computing capacity of UALR today far exceeds that of previous years, the institution's total data processing potential would increase manifold if equipment could be linked together to function as a system.

RECOMMENDATION 5 - Develop an institutional annual data processing equipment procurement plan for review and approval by the Arkansas Department of Higher Education. This plan would exempt from ADHE review data processing acquisitions with

purchase price values of between $2,500 and $20,000 and would therefore expedite the purchase process.

RECOMMENDATION 6 - Establish academic computer/ micro-computer local area networks for sharing files, printers, plotters, hard disks and other applications. Carnegie-Mellon University has developed such a synergetic network of IBM micro-computers that provides computing access for all students, faculty, and staff.

RECOMMENDATION 7 - Appoint a support group of knowledgeable faculty to help departments and colleges determine hardware most appropriate for specific applications. This group should advise on both the technical aspects of computer applications and the procedural aspects of data processing equipment acquisitions.

RECOMMENDATION 8 - Develop or arrange for incentive programs to encourage faculty, staff, and students to acquire personal computing equipment. Incentives could take the form of low interest loans, reduced price agreements with manufacturers, or time-payments through an institutional vendor such as the bookstore or central supply center.

RECOMMENDATION 9 - Establish new budgeting strategies for data processing equipment that allow small academic units to collectively acquire computers and software. An institutional budget for end user data processing equipment should be considered.

RECOMMENDATION 10 - Provide at an institutional level for mairtenance of instructional computing equipment and for technical advice and support necessary to interface computers with other instrumentation.

SOFTWARE NEEDS

Data processing equipment vendors often promote their micro-computers by emphasizing the quantity of software that will run on their products. Indeed, some departments indicated that their choice in micro-computers was based on the number of programs available commercially. While the

quantity of available software is important to faculty, a more vital criterion for selecting a computer is the availability of quality software. UALR must insist that funds are expended for qualitative academic computing software.

RECOMMENDATION 11 - Appoint an advisory group of faculty to help departments, colleges, and Computer Services determine software most appropriate for specific academic applications. Ethical and legal issues related to software use and dissemination should also be considered.

RECOMMENDATION 12 - Develop a UALR Computer Software Demonstration and Evaluation Center to assist the institution, community, and state in the selection of computer programs.

COMPUTER LITERACY FOR FACULTY

The need for faculty to be computer literate is critical to the success of the institutional goal that all students be computer literate upon graduation. In general, computer literacy for college faculty includes knowledge of one or more of the following topics:

1. Word processing;
2. Data-based management systems;
3. Spread sheet applications such as VisiCalc;
4. Statistical packages such as SPSSx, LISREL, and SAS;
5. Graphic software developed for both the micro-computer and the academic computer;
6. Educational uses of computers;
7. Hardware and software evaluation;

8. Programming skills; and

9. Knowledge of multi-user operating systems.

RECOMMENDATION 13 - Design and implement longitudinal staff-development program plans for faculty on the nine topics specified above.

RECOMMENDATION 14 - Organize academic computing user groups to provide support for faculty and staff on the use of specific hardware and software.

RECOMMENDATION 15 - Increase both the number of technical support personnel and the level of activities provided presently relative to computer hardware and software. These personnel should plan and present faculty development endeavors and provide support to computer users through diagnostic problem solving.

DEPARTMENTAL INDEX

APPENDIX A

COLLEGE/DEPARTMENT INVENTORY OF INSTRUCTIONAL COMPUTING EQUIPMENT +

ACADEMIC UNIT	BRAND COMPUTER	NO.	TERMINALS	NO.
BUSINESS ADMIN.	TRS-80/III	25		
Accounting				
Economics / Fin.				
Management				
Marketing / Adv.				
COMMUNICATION				
Comm.Disorders				
Journalism				
Radio,TV, Film	DEC/RAINBOW	1		
Speech Comm.	IBM/PC	6		
EDUCATION				
Curriculum / Inst.	APPLE/IIe	5		
Educ. Foundations	APPLE/IIe	20		
	TI/99 4A	13		
	COMMODORE/64	2		
	/PET	2		
Health,PE, Rec.				
Rehab. Spec. Ed.	APPLE/IIe	12		
ENGINEERING TECH.	APPLE/IIe	7	TELETYPE	12
	DEC/LSI-11	10		
	HP-85	4		
FINE ARTS				
Art				
Music				
Theater Arts				
LAW	IBM/AT	1		
LIBERAL ARTS				
Criminal Justice				
English				
Foreign Lang.				
History				
Philosophy / Rel.				
Political Science				
Psychology	TRS-80	6	DEC/VT-100	5
Soc.Anthro.Geron.	TRS-80/III	6	ADM	2
	IBM/PC	2		
	APPLE/IIe	1		

APPENDIX A, CONTINUED

INVENTORY OF INSTRUCTIONAL COMPUTING EQUIPMENT

ACADEMIC UNIT	BRAND COMPUTER	NO.	TERMINALS	NO.
SCIENCES				
Biology	APPLE/IIe	2	DEC	5
Chemistry	APPLE/II+	6		
	DEC/PDP11/34	1		
Computer Science			ADM	6
			DEC/VT-100	5
Earth Science	KAYPRO	1		
Mathematics	KAYPRO/IV	1	DEC/VT-100	1
			ADM/21	1
Physics and Astron.	APPLE/IIe	5	DEC/GIGI	5
	DUAL SYSTEM	1		
GRADUATE SCHOOL				
Social Work				
Health Services Ad.				
Library,Info. Sci.	KAYPRO/II	2		
TOTAL		142		42

+ This inventory does NOT include data processing equipment used for purposes other than instruction.

SELECTED BIBLIOGRAPHY

Brown, Peggy (Editor). Computer Literacy...Would Plato Understand? Forum for Liberal Education, v5,n6, May/June, 1983.

Hopping, Lorraine. "Tennessee - A Four-Point Computer Literacy Requirement Plan." Electronic Learning, 42-44, April, 1984.

Jenkins, Tracie M., and Dankert, Elizabeth J. "Results of a Three-Month PLATO Trial in Terms of Utilization and Student Attitudes." Educational Technology, 44-47, March, 1981.

Lloyd, Jo. Computer Literacy. Part I -- A Manager's Guide. Further Education Unit, London (England), ISBN-0-946469-80-6, November, 1983.

Masat, Francis E. Computer Literacy in Higher Education. American Association for Higher Education-ERIC Report No. 6, 1981.

Tannenbaum, Robert S., and Rahn, B.J. "Teaching Computer Literacy to Humanities and Social Science Students." ACADEME, 19-23, September/October, 1984.

Tolman, Marvin N., and Allred, Ruel A. The Computer and Education. Washington: National Education Association, 1984.