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ABSTRACT

A computer-literacy staff training program was designed to provide adult basic education (ABE) instructors and staff with basic computer skills. A curriculum using both Apple IIe computers and IBM personal computers was developed and software obtained. Eight instructors and nine administrative staff members of local literacy programs completed 10 hours or more of computer literacy training during the year-long program. After basic skills instruction, the program continued to assist each instructor in developing the skills necessary to evaluate educational software packages for inclusion in their curriculum. Additionally, the program sought to help instructors and staff use class management and reporting software as well as word processing, spreadsheet, and database software to improve efficiency in completion of administrative tasks involved in reporting on programs. Ongoing evaluation of the program showed that it had accomplished its objectives. (An appendix contains the following: a list of the software and equipment used; curriculum outline; software evaluation form and evaluation checklist; glossary; and illustrated instructions for using disks, the keyboard, and the disk drives.) (KC)

Computer Literacy: Staff Training

Final Report

by

Elizabeth Maher, Instructor

Carol Molek, Project Director
1990-1991

June 30, 1991

TIU Adult Education and Job Training Center
1020 BelleVernon Avenue
Lewistown, PA 17044
(717) 248-4942

99-1003 - $4,600

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Contents

Abstract

Title: Computer Literacy: Staff Training
Director: Carol Molek
Address: TIU Adult Education and Job Training Center
1020 Belle Vernon Avenue
Lewistown, PA 17044 **Phone Number:** (717) 248-4942
Federal Funding: $4,600

Duration of Project: From: 7/1/90 To: 6/30/91
Number of Months: 12

Objectives:

- To develop a computer literacy curriculum for use with local Adult Education staff members reflecting basic skills instruction and the use of technology to improve work efficiency.

- To implement the above curriculum with approximately ten staff members

Description:

The "Computer Literacy: Staff Training" program was designed to provide ABE instructors with basic computer skills. Following basic skills instruction, the program continued to assist each instructor to develop the skills necessary to evaluate educational software packages for inclusion in their curriculum. Additionally the program sought to help instructors and staff utilize class management and reporting software as well as word processing, spreadsheet, and database software to improve efficiency in completion of administrative tasks involved in reporting on programs.

Target Audience:

The group benefitting most from this program were ABE instructors and support staff who now use computer technology to assist in ABE instruction and program management.

Product:

A final report including the success of the program and a fully developed computer literacy course outline detailing m `erials and software has been produced.

Method of Evaluation

A positive evaluation is based on:

- compilation of materials list and procurement of ABE appropriate software
- development of computer literacy curriculum
- training of approximately 10 ABE staff members
- production of a fully developed course outline, materials and software listing, and final report

Computer Literacy: Staff Training

Introduction

"Computer Literacy: Staff Training: program addressed 1991 state priority J.3 - grant to support a Teacher Training Project under Section 353 of the Adult Education Amendments of 1988(P.L. 100-297). The proposal addressed a need to provide local adult education staff members with computer literacy instruction so that staff members could use computer technology in the classroom as an instructional tool and could also improve their own work efficiency in administrative record keeping and reporting tasks.

Our Adult Education and Job Training Center staff has access to a number of computer software packages and various computer equipment which can be used in various ways to instruct, motivate or provide remediation to our ABE students. Though the equipment had been available for approximately a year, it was not in use. Our staff often remarked that they believed the computer could be used as a wonderful motivational and instructional tool for many students, but they had no experience using computers and could not take advantage of the equipment and programs available. Additionally, their lack of experience and skills prevented their

exploration of other ways in which the computer could be used in the educational process. Access to the equipment and interest from the staff led to the development of this project.

Throughout the 1990-91 year, Adult Education and Job Training Center Staff learned to use computers in the educational process. The time frame for project activities follows:

July, August 1990 - Research and development of curriculum. Software procurement. Set up of computer facilities.

September 1990 - small group instruction of staff in basic computer literacy skills.

October, November, December 1990, - Individual staff instruction including the use of specific computer software, software evaluation methods and techniques for implementing computer technology into ABE curriculum.

January thru May 1991 - Specialized instructional computer support for staff as skills in utilizing computer technology were gained.

June 1991 - Evaluation of project. Final report.

The project director was Carol Molek. Ms. Molek coordinates

programs at the TIU Adult Education and Job Training Center. Her seven years experience coordinating adult programs have made her aware of the need to train staff in the use of computer technology and take every advantage possible to improve ABE instruction. Ms. Molek directed the project, supervised the other personnel involved, was responsible for maintaining the planned time frame, participated in the computer training, and reported to and communicated with the Department.

Elizabeth Maher served as the curriculum developer, instructor and technical support person for the project. Ms. Maher has eleven years experience in the use of microcomputers and four years experience training adult users in microcomputer literacy in the workplace. Most recently she had instructed SPOC/ABE student in the Center's Pre-Vocational Clerical Skills course.

Additionally, Ms. Maher relied heavily on the enthusiasm and experience of the Center's staff especially in the areas of integration of computer software into the Center's various ABE curriculum and of program management requirements.

The audience who would benefit most from this program are ABE instructors and program administrative personnel. The program should assist those instructors who wish to make use of available computer

technology in the ABE environment, beginning with the development of their own computer skills and moving into integration of computers into the classroom and into management areas of their programs.

Permanent copies of this report can be obtained from:

Division of Adult Basic and Literacy Education Programs
Pennsylvania Department of Education
333 Market Street
Harrisburg, PA 17126-0333

and

AdvancE
Pennsylvania Department of Education
333 Market Street
Harrisburg, PA 17126-0333

"Computer Literacy: Staff Training" was administered by the Tuscarora Intermediate Unit No. 11. The TIU is a local education agency which provides educational and management services to 11 school districts and two area vocational technical schools in Fulton, Huntingdon, Juniata, and Mifflin Counties.

The Intermediate Unit sponsors or oversees all Adult Center programs at the TIU Adult Education and Job Training Center. Center

programs have included 306/321 ABE and GED programs; ACT 143 Program; the GED Alumni Association; various JTPA Programs; Carl Perkins project for single parents and homemakers and eighteen 310/353 special projects.

"Pre-Vocational Clerical Skills" was based at the TIU Adult Education and Job Training Center at the Juniata-Mifflin Area Vocational Technical School in Lewistown, Mifflin County. The Adult Center is the home of a wide variety of adult educational programs meeting the needs of adults in Juniata and Mifflin counties. February '91 marked the Adult Center's 7th year of successful operation.

Program Design

Problem Statement

"Computer Literacy: Staff Training" program was designed to provide local adult education staff members with specific computer skills necessary to allow them to use computer technology effectively in their work. Our local ABE staff members needed to acquire a familiarity with microcomputers, and understanding of educational software and skills to evaluate educational software for inclusion in their curriculum. In addition, staff members needed to learn how microcomputers could be used to improve their own efficiency in administrative record keeping and reporting tasks.

Our local staff has access to a number of computer software packages, Apple IIe and IBM compatible equipment which can be used to supplement traditional ABE curriculum. The administrative staff acquired three Macintosh computers on which word processing, spreadsheet and database software can be utilized for record keeping for various programs. Computer use was limited before this project. A small number of staff made occasional us of the computer equipment to run an individual

educational package or produce certificates or banners

Goals and Objectives

To meet the need to train our staff to use available computer equipment and software, the following objectives were developed.

-Develop a computer literacy curriculum which will

-provide basic computer literacy

-train instructors to use and evaluate educational software

-train instructors and administrative staff to use word processing, spreadsheet, and database software to improve efficiency in administrative tasks

- Implement the curriculum with approximately ten staff members

Procedures Employed

Phase one of the project involved designing a curriculum which would meet the needs of the staff. Recognizing that each staff member had different needs and uses for the computer, the instruction was divided into two parts.

The first part of the curriculum was designed to instruct all staff members on basic computer literacy skills beginning with small group classes on Apple IIe computers and then on IBM compatible equipment (See

curriculum outline). The classes began by introducing the basic computer equipment components, microcomputer operation, basic keyboarding, computer vocabulary, and general procedure of microcomputer operation including an introduction to the disk operating system. This part of the curriculum also addressed software evaluation. The basic considerations for software evaluation were presented to the instructional staff (see appendix).

The second part of the curriculum was designed to provide instruction individualized for each staff member. Each staff person decided in consultation with the instructor which software and equipment would be most beneficial to her work and arranged for individual hour long tutorial sessions. The program allowed for fifteen hours of individual instruction.

In general, individual instruction for clerical staff members was given on the Macintosh computer on Word processing, spreadsheet, and database use to complete correspondence, maintain attendance records, schedule van transportation, record GED test scores and progress and other similar tasks. Instructional staff members were given instruction on specific software packages for the Apple IIe and IBM compatible

equipment that could be integrated into ADE curriculum, using teacher management systems that are part of the software and additional word processing, spreadsheet and database used to track and record progress throughout a program.

Results

Objective #1

-Develop a computer literacy curriculum which will

-provide basic computer literacy

-train instructors to use and evaluate educational software

-train instructors and administrative staff to use word processing, spreadsheet, and database software to improve efficiency in administrative tasks

This objective was met successfully by August 15, 1990. The appendix includes and outline of the computer literacy curriculum covered during small group instruction.

Research was conducted on available software evaluation instruments and an adaptation of a software evaluation form was used during instruction and distributed to instructional staff.

Additionally, a software listing of educational programs was compiled and produced. The listing includes subject area and grade level and is available to the instructional staff.

See Appendix for copies of above mentioned documents.

Results

Objective #2

-Implement the curriculum with approximately ten staff members

This objective was met with many positive results. Eight instructors and nine administrative staff members completed ten hours of computer literacy training by September 30, 1991. The clerical staff began scheduling individual sessions in October of 1990. Of the nine administrative staff members, five received at least 15 hours of individual instruction, and in some cases considerably more than 15 hours.

The remaining four administrative staff members received less than 15 hours of individual instructions. There were primarily two reasons. First, access to computer equipment was limited for individuals whose job tasks were not specifically suited to computer technology. Second, scheduling time for instruction was a problem for some very busy administrative staff members. Each member of the administrative staff did, however, receive some instructional hours on specific job related tasks.

Scheduling individual time for instructional staff proved as nearly

impossible as scheduling time for busy administrative staff. The instructional staff spends most of their tirne in class, in preparation, and in follow-up record keeping. By the end of December, 1990, many of the instructional staff had not yet scheduled an individual session. The Interim Special Demonstration Project Report reflected this problem. Instructors were contacted and a schedule of individual instruction time was proposed. However, even when scheduled, individual sessions were often cancelled due to a lack of time. The program of instruction was adjusted to assist instructors to meet their teaching goals as well as develop computer literacy skills which would allow integration of software in the classroom curriculum.

The program adjustment involved contacting each instructor individually and planning specific lab sessions for the instructor's class. The classroom instructor and the class were given instruction on the use of a pre-selected educational software program. The software was pre-selected by the computer literacy instructor, Elizabeth Maher, after consultation with the classroom instructor. This allowed software to be integrated into the curriculum and helped instructors develop computer skills simultaneously.

This adjustment was successful and resulted in increased computer

lab use, curriculum integration, and computer skills development.

Evaluation

Evaluation of the project was an ongoing process. Measurement of success was based on:

(a.) Procurement and listing of software representing general types used in ABE instruction; and familiarization with tasks for both instruction and program administration which could be accomplished with the aid of computer technology.

Both were accomplished during curriculum development.

(b.) Development of computer literacy curriculum incorporating information gained from familiarization of tasks necessary for both instruction and program administration, information researched on educational software appropriate for ABE instruction, and information researched on software evaluation.

See appendix for curriculum outline.

(c.) Enlisting approximately 10 staff members to participate in computer literacy instruction.

To date, seventeen staff members have completed the initial ten

hours of computer literacy instruction. Ten of these staff members have completed an excess of 15 hours of individual instruction. Computer instruction has been successfully integrated into various ABE programs including GED reading and math, SPOC lifeskills, Single Parent/Homemaker and Job Search Programs, as well as others. Instructional staff members have taken additional initiative to learn to use word processing, spreadsheet and desktop publishing software to complete administrative tasks.

The administrative staff now uses computers almost exclusively for correspondence, attendance, transportation scheduling, timekeeping, mailing lists, to name a few. The staff has been working on developing a client database form which to draw statistical data about the Center's programs.

(d.) A final report stating the plan and implementation of each phase of the program including a fully developed course outline, materials and software listing to be disseminated by TIU, AdvancE and PDE (see Appendix).

By meeting our objectives with such positive results, we feel that this project was very successful.

Dissemination

This project will be available for dissemination through:

Division of Adult Basic & Literacy Education Programs
Pennsylvania Department of Education
333 Market Street
Harrisburg, PA 17126-0333

and

AdvancE
Pennsylvania Department of Education
333 Market Street
Harrisburg, PA 17126-0333

Specific questions should be directed to:

Carol Molek
Adult Education and Job Training Center
1020 BelleVernon Avenue
Lewistown, PA 17044
(717) 248-4942

Conclusions/Recommendations

Our "Computer Literacy: Staff Training" project provided needed training for both instructional and administrative staff. The program of instruction was flexible enough and individualized as much as was necessary to achieve success. It is important to note that while basic skills instruction of a new technique or tool can be approached in a classroom setting, often, the way in which each of us as an individual uses a tool varies greatly. When the final goal of a project such as this is to realize the application of the technique or tool, it becomes necessary to approach instruction on an individual application basis.

In a large part, the continued enthusiasm and support of the staff made this project very successful. We believe we have created an environment in which computer technology is seen as another valuable tool that can help us in our work and one in which each staff member uses technology to complement his or her teaching style.

Recommendations for the future for ourselves and others include continuing to explore new ways to use computer technology in the classroom to assist the learner and effective ways to utilize the computer to assist in administrative tasks. For example, the staff is

currently exploring ways to develop a client database which will provide needed demographic and statistical information. Several instructors are planning to include computer literacy at the beginning of their programs so that the students can use the available software more effectively. Attendance record keeping is now computerized and ways are being explored to report year end statistics from the data now computerized. Production of a Center newsletter is in the planning stages and brochure and program copy is expected to be generated on the computer. The staff continues to use and improve their new computer skills.

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Doll, Carol A., Evaluating Educational Software: American Library Association: 1987

Shelly, Gary B., et al., Learning to Use WORDPERFECT 5.0/5.1, Lotus 1-2-3 and dBASE III Plus, Boyd & Fraser Publishing Company: 1990.

APPENDIX

Materials Used

Software:

Apple Presents the Apple IIe, Apple
Apple Presents the Inside Story, Apple
Appleworks
Microsoft DOS
The Factory, Sunburst
The Oregon Trail, MECC
Careful Math, Calibre Software
Where In the World is Carmen San Diego?, Broderbund
Those Amazing Reading Machines, MECC

Equipment:
Apple IIe
IBM compatible
20 blank 5.25" diskettes

Curriculum Outline

A. INTRODUCTION TO COMPUTERS

1. Define the computer & discuss the 4 basic operations
   Input, processing, output & storage

   a. Computer - a definition
      an electronic device, operating under the control of instructions stored in its own memory unit, that accepts input of data, processes data arithmetically and logically, produces output from the processing and stores the results for future use.

   b. All computers perform basically the same four operations
      Put diagram on board
      1. Input operations - data is entered
      2. Arithmetic operations +, -, *, /
      3. Output operations - make information generated available for use.
      4. Storage Operations - store data for future use

2. Define data and Information
   a. Data is raw facts or numbers and words for processing in a predetermined manner on a computer to produce information.
   b. Information is defined as data that has been processed into a form that has meaning and is useful. Example - telephone book

3. Components of a computer
   a. Input devices
      1. keyboard - have students examine keyboards
         a. alpha keys - like typewriter
         b. numeric keypad or pod
         c. cursor control keys
            1. define cursor
            2. cursor movement
         d. shift, insert, delete, tab, backspace

e. escape key

2. Mouse
3. Laser scanner (grocery store example)
4. light pen

Have students run Apple Presents Apple IIe

b. processor unit contains (open a computer to examine inside)
   1. CPU
      a. ALU
      b. control unit
      c. small amount of short term memory
   2. Main Memory
      a. bits, bytes
      b. ROM RAM
      c. chip, microprocessors

c. output devices
   1. Printers
      a. impact printers - distribute sample output
         1. dot matrix
            a. 50-300 characters/sec
            b. letter quality or NLQ
         2. daisy wheel print/letter quality
      b. non-impact printers
         1. ink jet
            a. sprays drops of ink
            b. 150-270 characters/sec
         2. laser printers - distribute sample output
            a. beam of laser light focused on photoconductor that attracts toner that is then fused onto the paper
            b. can print varying type styles
            c. 6-8 pages of text per minute.
         3. Plotters - draw with pens, graphics

2. Computer Screens
   a. different names
      1. monitor
      2. VDT - video display terminal

3. CRT - cathode ray tube

b. two general types
   1. monochrome, green/amber/white on black
   2. color 256-256000 colors

c. graphics display

3. Other output devices
   a. speakers -sound, music
   b. LCD liquid crystal display - example watches - laptop computers

d. Auxillary Storage - used to store instructions and data when not needed in main memory.
   1. Diskettes or disks - distribute handout
      a. storage capacity depends on
         1. # of sides used ss/ds
         2. # of tracks on the diskette or bpi - single, double, high density depends on the drive
         3. recording density of the bits on a track
            a. formatting, initiated by dos, established by the drive
      b. diskette handling and write protect notch

   2. Hard disk - rigid metal platter coated with metal oxide allowing date to be magnetically recorded
      a. most cannot be removed from the drive
      b. spin at 3600 rpm
      c. storage capacities range from 5 million to over 100 million characters on fixed disks for micro computers

4. computer software - controls the computer's input, processing, output, and storage operations

   a. application software - allows the user to perform a function on the computer like word processing, math review, Pac Man game

   b. system software - programs/ instruction used to start up

the computer, load, execute, store, retrieve files, or perform a series of utility functions, like formatting a diskette

Have students run Apple Presents the Inside Story
Have students run MECC Educational Software

B. INTRODUCTION TO TYPES OF SOFTWARE

Review two types of software

1. system software - Have students boot DOS on IBM compatible and run through Intro to DOS exercises. Review disk formatting. Have students format a blank disk.

2. Applications software

a. For Administrative tasks: have students boot AppleWorks. Run a demonstration on word processing, spreadsheet and database with student interaction. Define terms.

1. Word processing - use a previously saved letter file to demo common WP functions; cursor movement, word wrap around, delete, copy, move, find, replace, spell

2. Spreadsheet - use file to demo common functions; cursor movement, column, row, cell indicator, formulas, functions

3. Database - use file to demo common functions; discuss field record, data types, sorting, record selection, and reporting

b. Educational software exploration

1. Hands on review of types of educational software

a. Drill and Practice - have students boot "Those Amazing Reading Machines"

b. Tutorial - have students boot "Careful Math" - discuss teacher management options, DOS shell

c. Problem solving - have students boot "The Factory" - explain logic skills being developed

d. Games - have students boot "Where in the USA is Carmen San Diego?" - discuss educational value in game.

2. Review software evaluation form (see outline next page)

PRESENTATION

Microcomputer software programs should be

A. Accurate and error free
B. Up to date or current
C. Unbiased and free of stereotypes
D. Presented on the computer screen in a nonconfusing manner
E. Compatible with texts and other materials

EDUCATIONAL QUALITY

Indications of Educational Quality

A. Production Concerns

1. Authors have background or training in education
2. Program was pretested and revised
3. Possible to identify program goal(s) and objectives
4. Enhances, supports, and supplements school objectives

B. Presentation of Information

1. Material organized in small, well-sequenced units
2. Information or skill presented more than once
3. Builds from the familiar to the new or unknown
4. Required user response matches the program objectives

C. Suitable for intended Audience

1. Program requirements match the developmental and/or intellectual level of target audience
2. Prerequisite skills match both the program and the target audience
3. Reading level of program and program instructions appropriate for the target audience
4. Type of response required consistent with the skills of target audience
5. Computer screen adapted for young users, where appropriate
6. Neither content nor documentation is offensive to students
7. Type and amount of anticipated use is compatible with the program

SUPPORT MATERIALS

A. Printed Documentation

1. Includes clear, complete directions on operation of the program
2. Is presented in logical order
3. Uses good organizational aids
4. Discusses program features, advantages, and limitations
5. Contains instructions on access to and use of protected areas of the software
6. Denies students access to confidential information

B. Documentation in the Program

1. Possible to use the program only by following directions which appear on computer screen
2. Clear, concise, and easy to follow
3. Experienced users can bypass lengthy beginners' instructions

C. Support Materials

1. Educationally sound and truly supplementary, not mere duplication of the program content
2. Follow-up activities are appropriate
3. Program and accompanying materials are self-contained

USER INTERACTION

A Operating Interaction

1. Student controls pace of the program
2. Student can control direction of program, when appropriate
3. Frequent opportunities for student interaction
4. Function assigned to a particular key is consistent throughout program
5. Type of student response matches desired type of learning
6. Students can correct their mistakes

B. Program Response to Correct Answers

1. Acknowledges and/or rewards correct answers
2. Young children need immediate feedback; older ones will work for delayed reward
3. Variety in responses to correct answers is desirable

C. Content Errors
   1. Appropriate responses to mistakes:
      a. Give student second chance to respond
      b. Repeat part of program to reteach information needed by student for correct answer
      c. Compare student's wrong answer to correct one so he or she can identify own error
   2. Poor responses to mistakes:
      a. Identify answer as wrong and continue to next problem or section
      b. Display insulting or derogatory message
      c. Audible response to wrong answers
      d. Flashy, elaborate response to wrong answers

D. Format Errors (e.g., Typing or Spelling Errors)
   1. Should not be handled in same manner as content errors
   2. Some options are available:
      a. Prompt the student if answer does not match one of predetermined selections
      b. Accept minor misspellings if most of the letters match
   3. When incorrect command is used, program should:
      a. Wait for appropriate command
      b. Prompt student by displaying available choices of correct commands

UTILIZATION OF STRENGTHS

Ways to Exploit the Microcomputer's Data Handling Capabilities

A. In the Programming:

1. Uses branching instead of linear programming
2. Is more than just a computerized workbook
3. Gives immediate feedback
4. Problems presented in random order

B. On the Screen

1. Screen not crowded or cluttered
2. Graphics emphasize or highlight key points
3. Color an integral part of instruction
4. Effective shading for use with noncolor monitor

C. Sound Capability

1. Sound is used to
   a. Teach music
   b. Give oral directions
   c. Enhance presentation
   d. Reward correct answers
2. Sound can easily be turned off

INSTRUCTIONAL MANAGEMENT

Instructional Management Section

A. Records Student Scores

1. Saves final scores for a number of students
2. Identifies specific types of problems which give students difficulty
3. Differentiates between correct answers on first tries and correct answers on subsequent tries

B. Other Management Functions

1. Uses student performance to determine portion of program to be presented
2. Gives initial diagnosis of student's ability
3. Capable of printing out its information

C. Must Be Easy to Use

D. Security Procedures Protect Its Information

CHARACTERISTICS OF FORMATS

A. Drill and Practice Programs

1. Content compatible with earlier classroom instruction
2. Repetitious
3. Interactive
4. Exercises presented in random order
5. User controls pace of program
6. Progressive levels of difficulty
7. Use branching techniques of programming
8. Reward correct answers; good technique for handling wrong answers

B. Tutorial Programs

1. Assume some of the task of instruction
2. Information presented in logical sequence
3. Use branching techniques of programming
4. Exercises presented in random order
5. Frequent assessment of student performance
6. Reward correct answers; good technique for handling wrong answers

C. Problem-solving Programs

1. Student uses previously acquired knowledge to "discover" solution
2. Student input influences the presented situation
3. Reaction shown for each user action
4. Promote understanding of algorithmic methods
5. Contain relevant details
6. Respond to wide variety of student responses

D. Games

1. Objectives match instructional objectives
2. Varying levels of difficulty available
3. Results depend on user input, not on chance alone
4. User can stop and resume play later, without penalty
5. Fun to play

CHARACTERISTICS OF FORMATS (CONTINUED)

E. Simulations

1. Objectives match instructional objectives
2. Varying and progressive levels of difficulty available
3. User responses determine results of program
4. User can stop and resume play later, without penalty
5. Programs are interesting
6. Include all essential elements of real situation
7. Interrelationships among elements are accurate
8. Sophistication level of program matches sophistication level of anticipated users

F. Shell Programs
1. Simple, uncomplicated procedure for changing content
2. Accept letters and numbers
3. May require two disk drives
4. Format is appropriate for intended audience

EVALUATION PROCEDURES

A. Identify Needs to Be Met by Software

B. Sources of Titles

1. Professional literature of education, library and information science, and computer science
2. Publishers' catalogs
3. Professional meetings and conventions
4. Professional colleagues

C. Obtaining Material for Preview

1. Request preview copy from dealer or publisher
   a. Use letterhead stationery or approved purchase order
   b. State that school won't approve purchase without preview
   c. Guarantee that no copy will be made
2. Use program at microcomputer software center
3. Use program at exhibit at professional meeting
4. Sales representative can bring copies
5. Users' clubs may have copies

D. Examining Program

1. Run Program first, using only information on the screen
   a. To become familiar with program in general
   b. to identify obvious flaws
2. Experiment with and test the program
   a. Give creative responses
   b. Give slow and/or incorrect answers
   c. Check for branching and random order in presentation of exercises
3. Evaluate instructional management section
4. Evaluate printed documentation and support materials
5. Watch a student use the program

E. Additional Procedures for Multidisk Sets

1. Identify where series begins and ends
2. Determine amount of overlap between disks

F. Use Checklists to Guide and Record Evaluation

BALANCING CONCERNS

A. Reasons for NOT Purchasing/Using

1. Won't be used
2. Won't work with available microcomputer equipment
3. Mistakes in program

B. Problems Which May Be Serious Enough to Refuse Purchase/Use:

1. Denial of backup copy
2. Time needed to run the program
3. How program responds to wrong answers
4. Inability to turn off sound
5. Price and predicted use
6. Vendor support
7. More weaknesses than strengths

C. Final Decision Is a Judgment Call and Should Be Based on Professional Expertise

EVALUATION CHECKLIST

I. When you receive an educational microcomputer software program to evaluate or preview, supply the following information as accurately and completely as possible.

A. Program Title:_____

Series title(if applicable:_____

Local Vendor:_____

_____

Cost:_____ Copyright Date:_____

B. Hardware specifications and compatibility:

Make/model microcomputer:_____

Memory required:_____

Program language:_____

DOS:_____

Required peripherals:

_____ second disk drive

_____ color monitor

_____ graphics capabilities

_____ printer

_____ game paddles

_____ other(specify): _____

Input device:

_____ floppy disk

_____ cassette

_____ cartridge

C. Subject/curriculum area:_____

Age/grade level:_____

II. When considering a piece of instructional microcomputer software for purchase, answer the following questions.

	Yes	No
1. Will this program run on my model of microcomputer?	_____	_____
2. Does my microcomputer have enough memory capacity to run this program?	_____	_____
3. Do I already have all the necessary extras to make this program run (e.g., second disk drive, printer, game paddles, color monitor, input device)?	_____	_____
4. Is a backup copy of this program readily available?	_____	_____
5. Are there mistakes in this program? (This includes spelling, grammatical, content, and/or programming errors.)	_____	_____
6. Will good vendor support be available after the program is purchased?	_____	_____

A negative response to any of the above should cause the reviewer or reviewers to seriously consider NOT purchasing the program.

III. Now run the program on the microcomputer and respond to the following statements. Try to run the program normally, without any deliberate mistakes. Then see how it responds to errors. While working with the program, indicate how much you agree with the following statements. Skip those statements which do not apply to the program being evaluated.

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
A. Presentation of Content				
1. Program content is accurate.	_____	_____	_____	_____
2. Program is unbiased and free of stereotyping	_____	_____	_____	_____
3. Information is presented on computer screen in nonconfusing manner.	_____	_____	_____	_____
4. Program is compatible with texts and other materials.	_____	_____	_____	_____
B. Educational Quality				
1. Possible to identify program goal(s) and objectives	_____	_____	_____	_____
2. Program enhances, supports, and supplements school objectives.	_____	_____	_____	_____
3. Material organized in small, well-sequenced units.	_____	_____	_____	_____
4. Information or skill presented more than once.	_____	_____	_____	_____
5. Builds from familiar to the new or unknown.	_____	_____	_____	_____
6. Required user response matches program objectives and/or desired type of learning.	_____	_____	_____	_____
7. Required response matches skills of target audience.	_____	_____	_____	_____
8. Reading level of program and its instructions match target audience.	_____	_____	_____	_____

B. Educational Quality (continued)

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
9. Prerequisite skills match both program and target audience.	_____	_____	_____	_____
10. Neither content nor documentation is offensive or condescending to users.	_____	_____	_____	_____
11. Program is suitable for type and amount of anticipated use.	_____	_____	_____	_____
12. Intended user can work with program independently.	_____	_____	_____	_____

C. Documentation and Support Materials

1. Manual well constructed and understandable.	_____	_____	_____	_____
2. Manual discusses advantages disadvantages, and unique features of program.	_____	_____	_____	_____
3. Manual gives clear directions on access to and use of instructional management portions of program.	_____	_____	_____	_____
4. Program can be used by following only directions which appear on computer screen.	_____	_____	_____	_____
5. On-screen instructions are clear, concise, and easy to follow.	_____	_____	_____	_____
6. Experienced users can bypass on-screen beginners' instructions.	_____	_____	_____	_____
7. Support materials do more than duplicate program content.	_____	_____	_____	_____
8. Support materials are educationally sound.	_____	_____	_____	_____
9. Program and accompanying materials are self-contained.	_____	_____	_____	_____

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
D. User Interaction With Program and Operating Interaction				
1. User controls pace of program and, where appropriate, its direction.	_____	_____	_____	_____
2. Frequent opportunities for user interaction.	_____	_____	_____	_____
3. Function assigned particular key is consistent throughout program.	_____	_____	_____	_____
4. User can correct mistakes while entering information.	_____	_____	_____	_____
RESPONSE TO CORRECT ANSWERS				
5. Program acknowledges and/or rewards correct answers	_____	_____	_____	_____
6. Variety in rewards for correct answers	_____	_____	_____	_____
RESPONSE TO CONTENT ERRORS				
7. Program gives users second chance and/or repeats pertinent part of program.	_____	_____	_____	_____
8. Program does not simply indicate answer is wrong and then continues.	_____	_____	_____	_____
9. Program does not respond to wrong answers with insulting or derogatory messages.	_____	_____	_____	_____
10. Program does not use flashy, elaborate response to wrong answers	_____	_____	_____	_____
11. No audible response to wrong answers	_____	_____	_____	_____
RESPONSE TO FORMAT ERRORS				
12. Program prompts user when incorrect command is given	_____	_____	_____	_____
13. Program prompts user when answer does not match required format or given list	_____	_____	_____	_____
14. Program accepts minor misspellings, where appropriate.	_____	_____	_____	_____

E. Utilization of Microcomputer Strengths	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
1. Program branches; i.e., user response determines subsequent questions or information.	____	____	____	____
2. Program is more than computerized workbook.	____	____	____	____
3. Program gives immediate feedback.	____	____	____	____
4. Problems presented in random order.	____	____	____	____
5. Screen display well designed and uncluttered.	____	____	____	____
6. Graphics are distinct, understandable, and well designed.	____	____	____	____
7. Graphics highlight or emphasize dy points.	____	____	____	____
8. Color or shading is used effectively.	____	____	____	____
9. Sound is used appropriately (e.g., to reward corrert answer, enhance instruction, give directions).	____	____	____	____
10. It is easy to turn off sound.	____	____	____	____

F. Instructional Management

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
1. Program records responses of individual users.	_____	_____	_____	_____
2. Program can store scores of more than one user.	_____	_____	_____	_____
3. Program differentiates between right answers on first, second, third try, ect.	_____	_____	_____	_____
4. Program identifies type(s) of problems that gives a student difficulty.	_____	_____	_____	_____
5. Program gives initial diagnosis of student strengths and weaknesses.	_____	_____	_____	_____
6. Instructional management section is easy to use.	_____	_____	_____	_____
7. Possible for teacher or librarian to tailor program to users.	_____	_____	_____	_____
8. Possible to print out information in instructional management section.	_____	_____	_____	_____
9. Instructional management section has procedures to protect its information.	_____	_____	_____	_____

IV. In addition to the general statements is Section III, there are considerations which pertain to specific format. Respond to statements in the following categories appropriate to the program being evaluated. Skip sections or statements which do not apply.

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
A. Drill and Practice Programs				
1. Program is repetitious.	_____	_____	_____	_____
2. Program has progressive levels of difficulty.	_____	_____	_____	_____
B. Tutorial Programs				
1. Assume some of the task of instruction.	_____	_____	_____	_____
2. Frequently assess user performance.	_____	_____	_____	_____
C. Problem-solving Programs				
1. User input influences situation presented.	_____	_____	_____	_____
2. Program reacts to each user action.	_____	_____	_____	_____
3. Program contains all relevant details.	_____	_____	_____	_____
4. Program responds to wide variety of user actions.	_____	_____	_____	_____
D. Games/Simulations				
1. Program has varying and progressive levels of difficulty.	_____	_____	_____	_____
2. User responses, not chance alone, determine results of program.	_____	_____	_____	_____
3. User can stop and return to program later without penalty.	_____	_____	_____	_____
4. Games are fun to play.	_____	_____	_____	_____
5. Simulations include all essential elements of real situation and interrelationships among these elements are accurate.	_____	_____	_____	_____

IV. (continued)

E. Shell Programs	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
1. Program has simple procedure for changing content.	_____	_____	_____	_____
2. Program accepts both letters and numbers.	_____	_____	_____	_____

V. The next step is to obtain an overall rating for the program being evaluated. To do this, count the total number of statements you **strongly agree** with, the number you **agree** with, the number you **disagree** with, and the number you **strongly disagree** with; and fill in the blanks below.

STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
_____	_____	_____	_____

The sum of the numbers in the first two blanks (**strongly agree** and **agree**) is the total number of criteria on which the program was marked favorably or on which it performed well. The sum of the last two numbers (**disagree** and **strongly disagree**) indicates the total number of evaluative criteria where the program does not perform well. These two figures summarize your reaction to the program and represent the number of its strengths (**strongly agree** and **agree**) and the number of its weaknesses (**disagree** and **strongly disagree**).

The numbers which result fro this method should not be used as absolute guidelines. Instead, they provide a quick summary of your reaction and can help you come to a final decision. It is possible for a useful program to have a few more weaknesses than strengths, and you may wish to use or purchase such a program. It is also possible for a program to have a few more strengths than weaknesses, but the identified weaknesses may be more important than the strengths. In this case, the decision may be not to purchase or use the program.

VI. The last step is to make a final decision. Remember that no program is perfect. Then, based on the information gathered, use your professional judgment to determine whether or not to recommend this program.

_____ 1. I recommend this program for purchase or use.

_____ 2. I recommend this program with reservations or stipulations. (Please Specify.)

_____

_____

_____

_____

_____

_____ 3. I oo not recommend this program for either purchase or use.

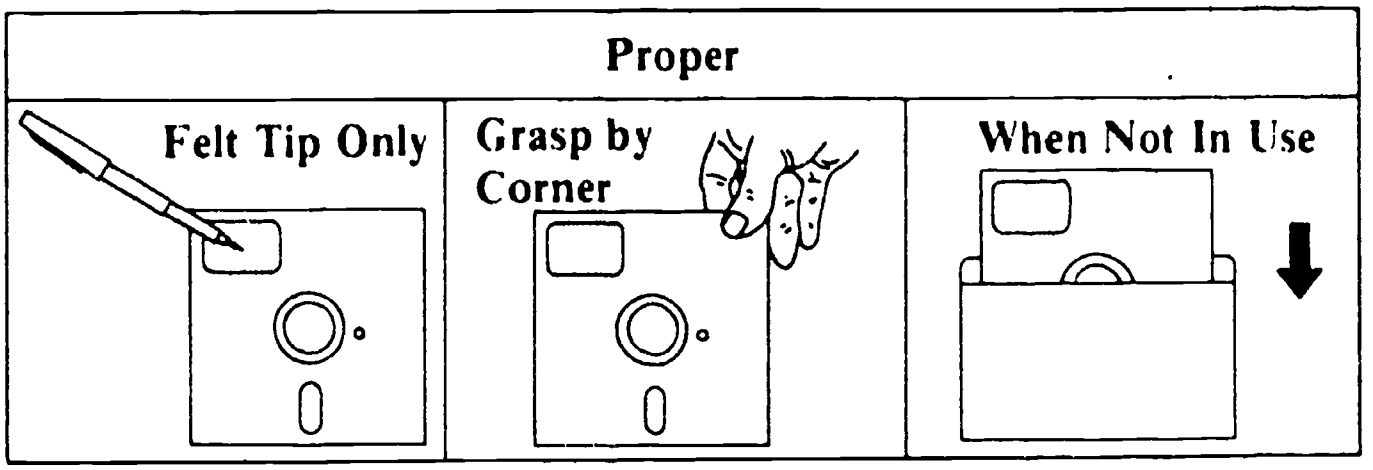
PROGRAM TITLE:_____

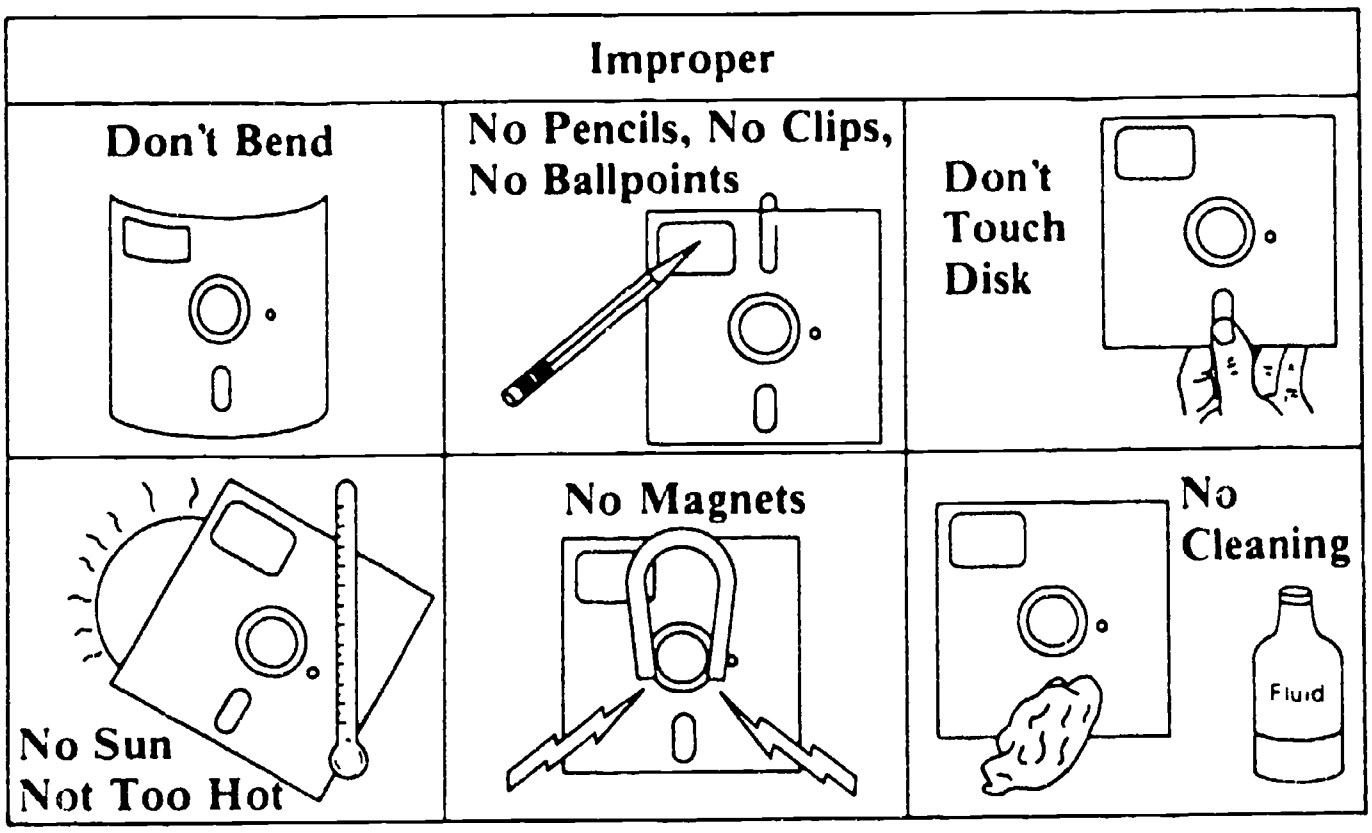
EVALUATOR'S NAME:_____

DATE:_____

Handling Diskettes

The figures below show some proper and improper ways of handling your diskettes. Proper handling greatly reduces the possibility of damage.





KEYWORDS - GLOSSARY

ALT - Specialized key on either side of the space bar that works in combination with other keys to perform special functions.

ASCII - Standard code for representing character as binary numbers. American Standard Code for Information Interchange. Includes printable characters and control characters.

BACKSPACE - Key in the upper top row of the keyboard which deletes one character at a time to the left.

BACKUP COPY - Another copy of the data that can be used if the original copy is lost or damaged. Some programs backup automatically. This is part of good housekeeping.

BOOT - Start up the computer. The term comes from bootstrap with the idea that the computer had to "pull itself up by the bootstraps" by loading a small program into it that enables it to load larger programs.

BYTES - The amount of memory space needed to store one character, which is normally 8 bits.

CAPS LOCK - Key to the left middle of the keyboard which locks on capitals. It will not lock on the characters above the numbers at the top of the keyboard.

CHARACTER - Any symbol that can be stored and processed by a computer. These are letters, numbers and other symbols.

CONTROL - Special key on the lower left and right side of your keyboard which , when pressed with another key, gives that key a new meaning.

COPY - To copy information to a new location, leaving the original information unchanged.

CPU - Central Processing Unit is the part of the computer where arithmetic and logic operations are performed and instructions decoded and processed.

CURSOR - A blinking underline, rectangle or other symbol that marks your place on the screen; it usually marks the place where whatever you type will appear.

DEFAULT - An assumption that the computer(program) makes as its best guess about what you want to do, unless you tell it to do otherwise. (Margins, tabs, page

length, etc. are set at default).

DELETE - A special key on the left of the keyboard which deletes the character on which the cursor is setting.

DIRECTORY - The divisions of the hard disk which the operator sets up to divide the various programs and information into manageable units.

DISK - SEE FLOPPY DISK.

DOS - Disk Operating System. In IBM compatibles this is usually MS-DOS (MicroSoft DOS) or PC-DOS (Personal Computer DOS). This is necessary for the computer to interpret and run programs. Both of these systems are very similar.

DRIVE - Disk drive, a device which enables the computer to read and write data on disks. SEE HARD DRIVE.

ENTER - Sometimes called the return key. Located on the middle right hand side of the keyboard. This is the key to press to tell the computer that you want it to accept what you have typed. In word processing it is not pressed at the end of each line if the paragraph is continuing. Word wrap will wrap the words to the next line automatically.

ESCAPE - Special key on the upper left hand side of the keyboard. Often used to back out of a part of a program, can also be used with other keys to create special functions.

FILE - A collection of information which is stored on the disk in such a way that you can read it or write to it. Each file has a name (limited to eight characters) followed by a 3 letter extension. The file must be retrieved using this filename.

FLOPPY DISK - A flexible plastic disk covered with a magnetic coating on which information is stored by the computer and can be retrieved from it. The common size has been 5 1/4 inches. The disk is covered with a paper cover which is referred to as the jacket. They should be stored in paper envelopes when not in use. They are easily damaged.

FUNCTION KEYS- Programmable function keys which can do specialized functions according to the way they are programed in a particular software program. They range from F1 to F10 or F12. They can be found on the far left of the keyboard or across the top.

HARD COPY - A printout of the output of the computer.

HARD DISK - Large aluminum disks built inside the computer which can hold much larger amounts of information. Can not be removed. They hold from 10 megabytes of data up to 100 M or more.

HARDWARE - All the physical elements of the computer, such as the integrated circuits, wires and terminals.

K(KILOBYTES) - K is the symbol for the unit used to measure the size of the computers memory. It represents 1024 bytes (2^{10}). Computers commonly have memories from 128K to 640K. (This refers to RAM memory only.) Additional memory can now be increased by extended or enhanced memory boards to greatly increase their capabilities.

KEYBOARD - The input device which looks very much like a typewriter keyboard. This is how you will put information into the program (type documents), and respond to questions from the program.

MEG(MEGABYTES)-Stands for 1,048,576 bytes of memory (2^{20}). 1 meg can store approximately 1 million characters.

MENU - List of choices that appears on screen while executing a particular program. Options can be chosen and the program is much more "user friendly" with helpful menus.

MERGE - To put two files together. Frequently this is done when merging an address list with a letter for a mass mailing.

MICRO DISK - Can also be called a microfloppy disk. These are 3 1/2 inch disks encased in a hard plastic shell. Although smaller than the 5 1/4 floppies, they are designed in such a way that they hold twice the amount of information. They are sturdier than the larger floppies because of the hard cover. A special size drive is needed to use them.

MODEM - A device that encodes data for transmission over telephone lines. You must have a modem in order to communicate by phone with another computer.

MONITOR - A device that looks like a TV screen. It simply accepts video signals and displays them. It does no computing.

PASSWORD - A secret word or name that is required to retrieve a file or log on to a computer system. This adds

security to information which is confidential.

PERIPHERAL - Devices (hardware) which are connected to the computer itself. Examples are external drives, modems, printer, mouse.

PORT - The connection between the computer and another device. These can be parallel or serial ports. They are usually called LPT1, COM1, COM2, etc.

POWER SWITCH - The switch which turns the computer on. These are sometimes plugged into a switch device which turns all the devices on at one time.

PROGRAM - A set of instructions for the computer to execute. Word Perfect 5.0 is a word processing program.

PROMPT - A symbol which appears on the computer screen which signals the user that the computer is ready to accept information. This will vary with the drive that you are in. The prompt could be A:\> ; C:\> or D:\> or any other drive that is available on your computer.

RAM - Random Access Memory, memory which is used to store data. The size of the RAM controls the size of the programs you can use. 640K has been the most that DOS will work with, but extended and expanded memory has been added to increase the capabilities of computers. RAM is lost (erased) when the computer is turned off, so that any work must be saved to disk before the computer is turned off.

REBOOT - To turn the computer off and start again. Sometimes this is done as a WARM BOOT by pressing CONTROL-ALT-DELETE at the same time. Everything that is in RAM memory is lost unless it has been saved to disk.

ROM - Read Only Memory. The memory which is permanent, built into the computer. It is read by the machine, but cannot be changed.

SCREEN - The monitor window which is the display area of the computer.

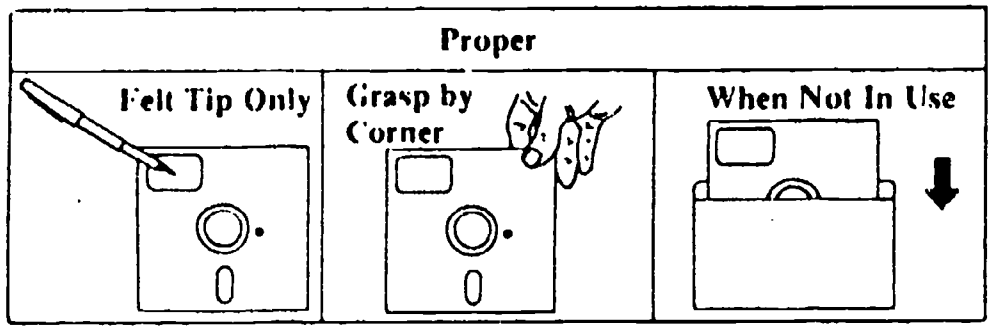
SHIFT - Keys on the lower left and right of the keyboard. This is used to cap characters (as in typing), and used with function keys in Word Perfect will do specialized functions.

SOFTWARE - The programs which are written and sold for the computer which tell the computer what to do. There are all kinds of programs: word processing, data

base, spreadsheet, integrated programs, games, programming language, and many other types of programs. They only run on the type of computer for which they were written.

Handling Diskettes

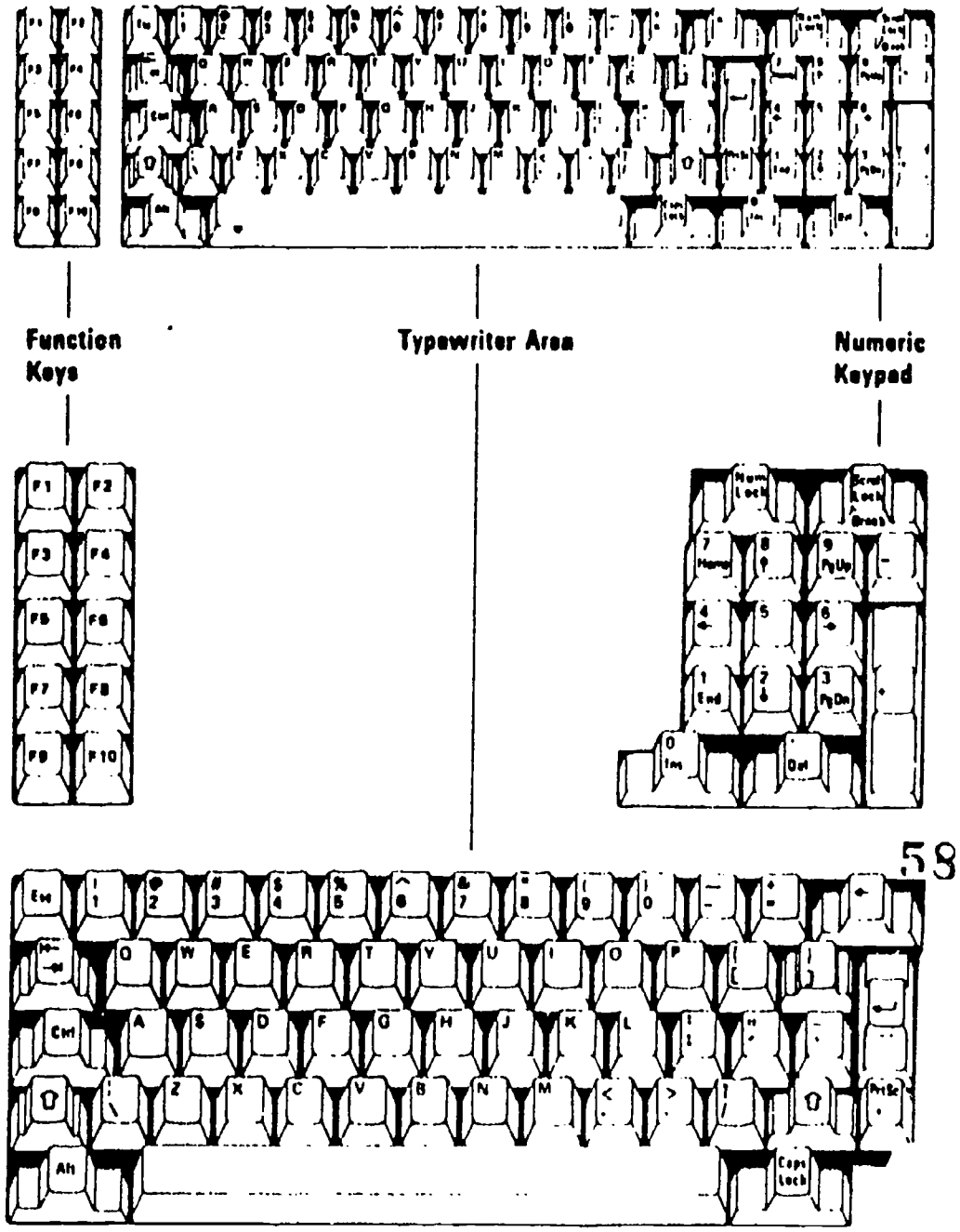
The figures below show some proper and improper ways of handling your diskettes. Proper handling greatly reduces the possibility of damage.



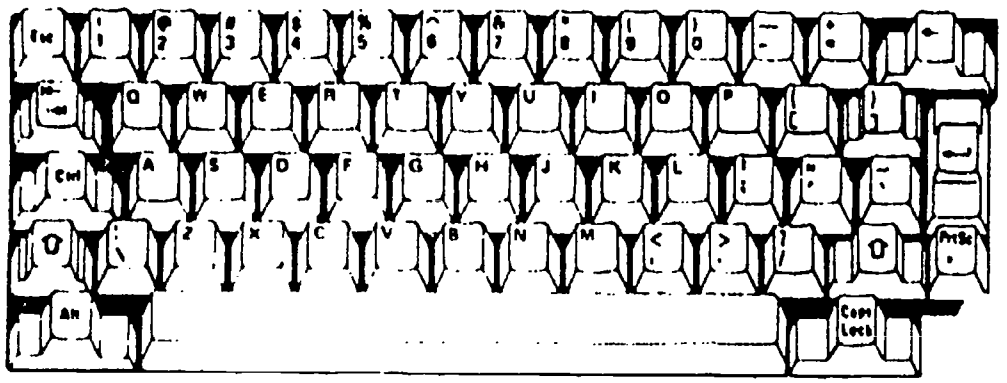
Keyboard

The keyboard consists of three sections: the typewriter area, the function keys, and the numeric keypad.

All keys are typematic; that is, they repeat as long as you hold them down.

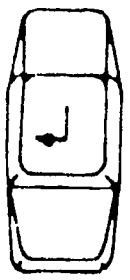


The Typewriter Area



Key positions in the typewriter area are much like those of a standard typewriter. Some additional keys, however, perform control functions.

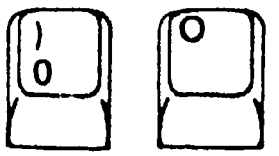
The Caps Lock key, when pressed once, locks the characters A through Z in the uppercase position. To shift to lowercase characters while Cap Lock is on, press the Shift key. Press the Caps Lock key again to release the uppercase mode for characters A through Z.



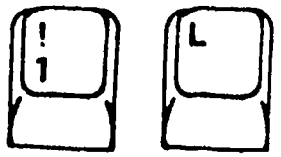
This is the Enter key. Its purpose is defined by the programming language or application you are using. Refer to the appropriate manual for its specific function.

When the Print Screen key is pressed along with the Shift key, a copy of the screen presentation is printed. If the information on the screen is alpha/numeric characters, as in a program listing, a duplicate of the information is printed. If the information is a graphic representation, it can be reproduced only on a printer that supports graphic printing, such as the IBM Graphics Printer.

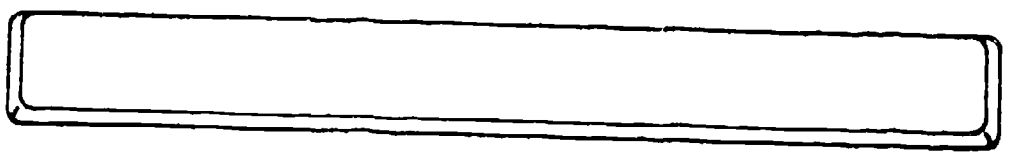
The Backspace key moves the cursor one position to the left. The character to the left of the cursor is erased.



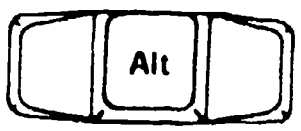
When entering data into your computer, be aware that the number zero (Ø) and the letter O are not interchangeable.



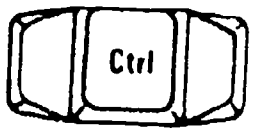
As with the zero and O, the number 1 and the lowercase letter L are not interchangeable.



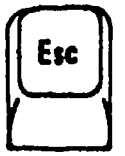
When pressed, the spacebar moves the cursor to the right. Any character the cursor moves over is replaced with a blank.



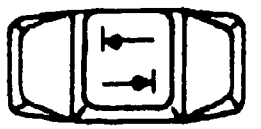
The Alternate key helps you with easy entry of BASIC statement keywords. When you press the Alt key and any alphabetic key A through Z, one of the BASIC keywords is entered. ASCII codes can also be entered by using the Alt key and the numeric keypad. For more information about the Alt key, see the *BASIC* reference manual.



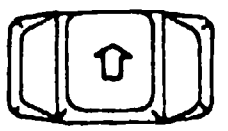
The Control key will perform a variety of functions. These are described in your operating system manual or application program manual.



The functions of the Escape key, also are described in your operating system or application program manual.

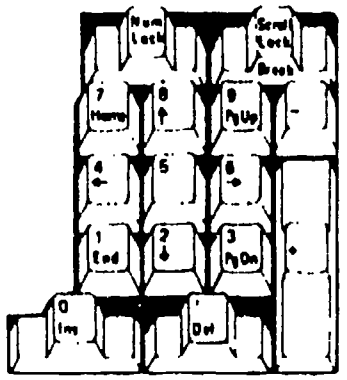


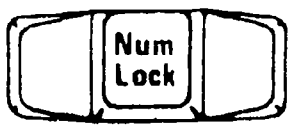
The Tab key moves the cursor to the next tab stop. Tab stops are defined in your operating system or application program manual.



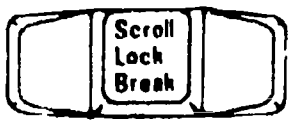
The keyboard has two shift keys, which are in the typewriter area. Pressing either of these changes the keys in the typewriter area to the uppercase mode. When alphabetic keys are pressed, the characters appear as capital letters. When other keys in the typewriter area are pressed, the characters shown on the upper portion of the keys appear.

The Numeric Keypad

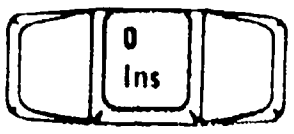




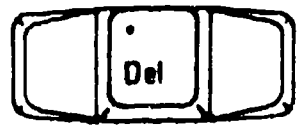
Pressing the Numeric Lock key once places keysØ through 9 of the numeric keypad in the numeric state. Then when keys Ø through 9 are pressed, numbers appear on the screen. Pressing NumLock again returns keys Ø through 9 to cursor-control keys.



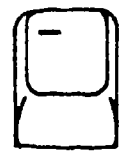
The purpose of the Scroll Lock key is defined in your operating system manual or application program manual.

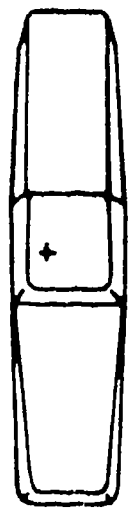


Pressing the Insert key enables you to add characters in the middle of a line. Press it again and you're back to normal operation.



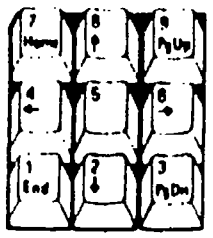
When you press the Delete key, the character at the current cursor position is erased and all characters to the right of the erased character move one position to the left.

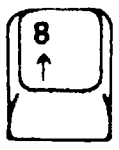




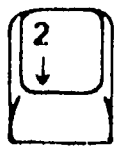
When the Plus and Minus keys are pressed, a plus or minus sign appears on the screen.

Cursor Controls

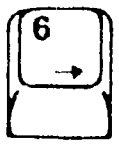




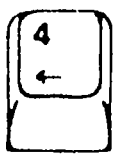
Cursor Up moves the cursor one line up.



Cursor Down moves the cursor one line down.

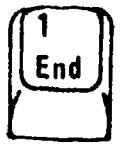


Cursor Right moves the cursor one character position to the right.

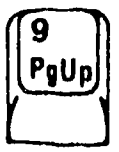


Cursor Left moves the cursor one character position to the left.

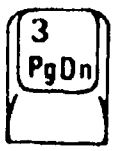
The function of the Home key is defined by your operating system or application program. See the appropriate manual for a description.



End moves the cursor one position to the right of the last character on the line.



Page Up is defined by your operating system or application program. See the appropriate manual for a description.



Page Down also is defined by your operating system or application program manual. See the appropriate manual for a description.

Function Keys

Function keys F1 through F10 are always under program control. See your operating system manual or application program manual.

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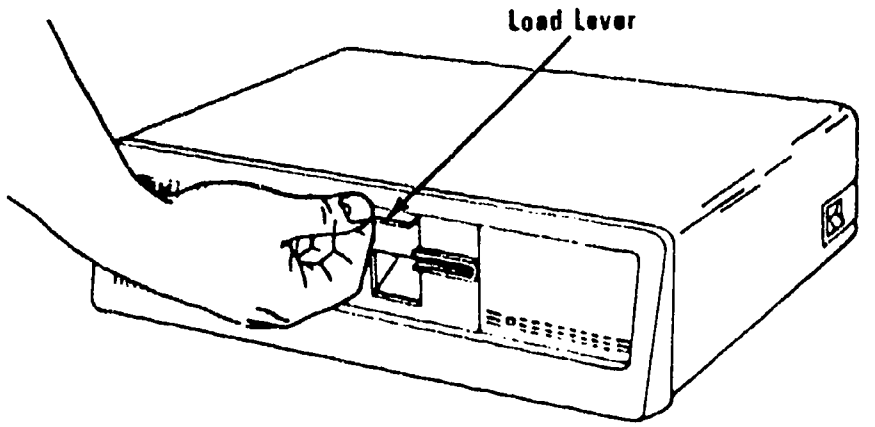
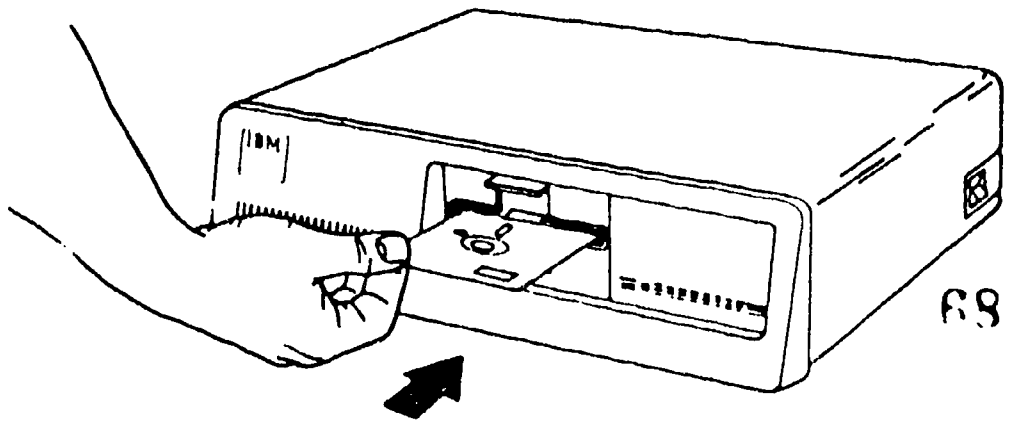
Diskette Drive

The diskette drive is probably the most often used device in your system, besides the keyboard. It is used to load and store programs and data. For proper operation, follow the procedure below:

1 Raise the load lever.



2 Insert the diskette into the drive.



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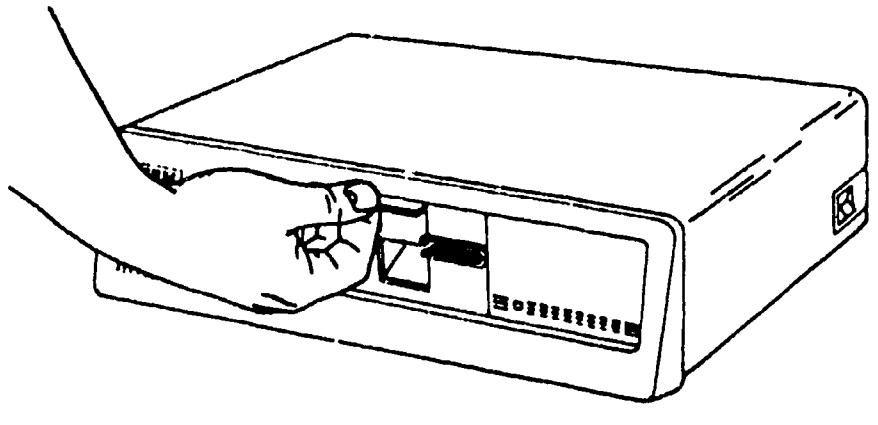
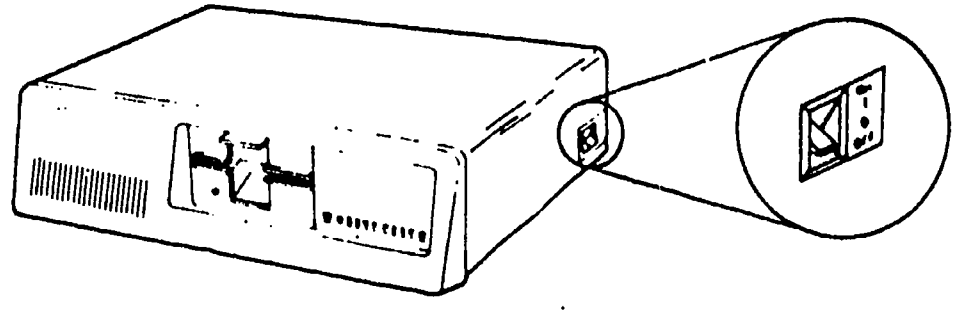
3 Lower the load lever.



When the diskette drive is being used by the system, the In-Use light on the front of the drive will be on.

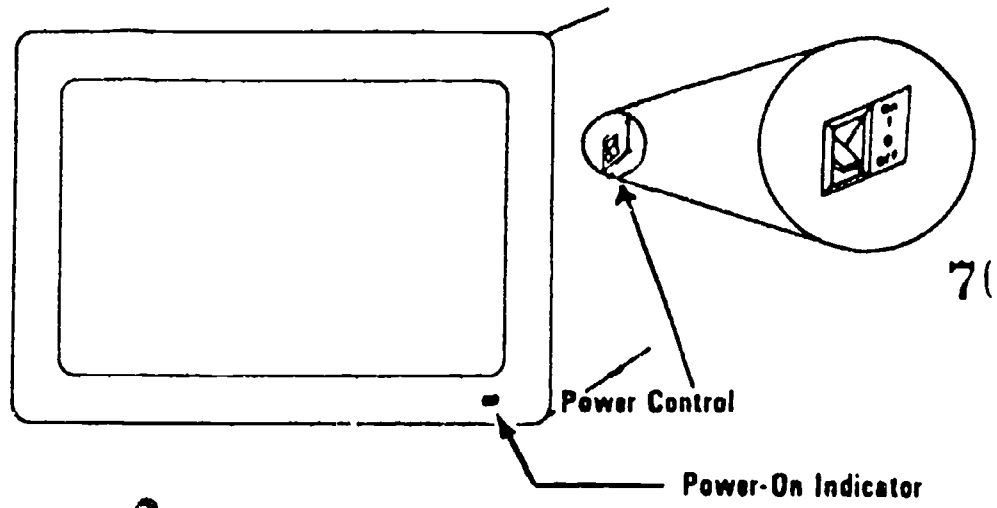
To remove a diskette from the drive, raise the load lever, pull out the diskette, then lower the load lever.



To operate the system unit, just set the Power switch to On. You can then send commands to the system through the keyboard; responses from the system will be displayed. If you have a printer attached to your system unit, you may also request a printed copy of almost any data in the system.

Monochrome Display

1 Set the Power control to On.



2 Is the Power-On indicator lit?

Subject	Level	Title	Mgt?	Publisher	MType
	*	Apple II IIgs		Apple	A
	*	Apple Igs System Disk 3.1		Apple	A
	*	Apple IIgs System Tools		Apple	A
	*	Apple Works Start Up & Program Samp		Apple	A
	*	Apple Works WP 1 Program Disk			A
	*	As Easy as [illegible]			I
	*	[illegible]			A
	*	Bmis Math Skills Disk 3 Records		Cambridge	A
	*	Perfect Forms			I
	*	Prints			A
	*	Word Perfect 4.1			I
Chemistry	8**	Periodic Table		MECC	A
ED Game	5+	Carmen Sandiego Time		Broderbund	A
ED Game	5+	Carmen Sandiego USA		Broderbund	A
ED Game	5+	Carmen Sandiego World		Broderbund	A
ED Game	5	Mind Puzzles		MECC	A
ED Game	5	Odell Lake	Y	MECC	A
ED Game	5	Oregon Trail	Y	MECC	A
ED Game	5+	SimCity		Broderbund	A
ED Game	8+	The Factory		Sunburst	A
ED Game	5	Wood Car Rally		MECC	A
ED Game	5	Zoyon Patrol		MECC	A
ED Game	5	Super Factor,		Sunburst	A
Educational	*	Letter Writer For Job Seekers		Wintergreen Software	A
Geography	5	Fifty States		MECC	A
Graphic Arts	3**	EZ LOGO Revised	Y	MECC	A
Graphic Arts	5+	PrintShop		Broderbund	A
Graphic Arts	*	Print Shop Companion/ Regular		Broder Brund Software	A
Graphic Arts	*	Print Shop Graphics Library Disk 2		Broder Brund Software	A
Graphic Arts	*	Print Shop Holiday Edition		Broder Brund Software	A
Graphic Arts	*	Print Shop Special Edition/Regular		Broder Brund Software	A
Graphic Arts	*	Printshop Graphics Library Disk 3		Broder Brund Software	A
Instructional	*	Apple presents size A/ Inside stor/			A
Instructional	*	Managing Life Styles Survival Math		Sunburst Communication	A
Instructional	*	Speed Reader II		Davidson	A
Instructional	*	The Perfect Resume Computer Kit		Permax Systems	A
Instructional	*	The School CD.		Career Development Software	A
Keyboarding	4*	Keyboarding Primer	Y	MECC	A
Keyboarding	6+*	Type Right	Y	Barron Enterprises	A
Keyboarding	T*	Keyboard Master Games & Drills	Y	MECC	A
Keyboarding	T*	Keyboard Master Paragraphs	Y	MECC	A
Keyboarding	T*	Keyboarding Primer (Teacher)	Y	MECC	A
Language	7*	Sentences	Y	Micro Power & Light	A
Language	7*	Using Commas		QUEU	A
Language	4-12*	Word Attack Plus	Y	Davidson	I
Language	Mil	Spelling Elevator	Y	MECC	A
Language	K*	Right of Way		MECC	A
Language Arts	1*	Word Munchers	Y	MECC	A
Language Arts	3*	Contractions Action	Y	MECC	A
Language Arts	4*	Compound It	Y	MECC	A
Language Arts	7*	Grammar Examiner	Y	Davidson	I
Language Arts	7*	Grammar Gremlins	Y	Davidson	I
Language Arts	7*	Prepositions		QUE.	A
Language Arts	7*	Pronouns		QUE.	A
Language Arts	7*	Punctuation Revie.		Que.	A
Language Arts	7*	Word Quest	Y	Davidson	I

Subject	Level	Title	Mgt?	Publisher	MType
Language Arts	ALL	Master Spell	Y	MECC	A
Language Arts	ALL	Word Wizards	Y	MECC	A
Language Arts	T	Word Wizards Data		MECC	A
Management	*	Certificate Maker	YES	Springboard	A
Management	*	Print Shop Graphic Expander	YES	Springboard	A
Management	T*	Grade Manager		MECC	A
Management	T*	Labels, Letters and Lists		MECC	A
Management	T*	Presto		HFLI	A
Management	T*	Puzzles & Posters		MECC	A
Math	1	Block Works	Y	MECC	A
Math	1	Early Addition	Y	MECC	A
Math	2	Circus Math	Y	MECC	A
Math	2	Money Works	Y	MECC	A
Math	2	Space Subtraction	Y	MECC	A
Math	3	Addition Logician	Y	MECC	A
Math	3*	Addition Logician		MECC	A
Math	3	Market Place	Y	MECC	A
Math	3	Multiplication Puzzles	Y	MECC	A
Math	3	Number Munchers	Y	MECC	A
Math	3*	Subtraction Puzzles	Y	MECC	A
Math	4	Conquering Whole Numbers	Y	MECC	A
Math	4*	King's Rule		Edge for Learning	A
Math	4	Quotient Quest	Y	MECC	A
Math	5	Adventures with Fractions	Y	MECC	A
Math	5	Fraction Munchers	Y	MECC	A
Math	5	Fraction Practice Unlimited		MECC	A
Math	5	Growing Fractions	Y	MECC	A
Math	5	Math Blaster Mystery	Y	Davidson	A
Math	5*	Math Shop	Y	Scholastic	A /3.
Math	6	Conquering %	Y	MECC	A
Math	6	Conquering Decimals *,\	Y	MECC	A
Math	6	Conquering Decimals *,-	Y	MECC	A
Math	6	Conquering Fractions *,/	Y	MECC	A
Math	6	Conquering Fractions *,-	Y	MECC	A
Math	6	Conquering Ratio & Proportion	Y	MECC	A
Math	6	Decimal Concepts	Y	MECC	A
Math	6	Equation Math	Y	MECC	A
Math	6*	Mathematics Today: Pattern Puzzle		Harcourt Brace Jovanovich	A
Math	6*	Mathematics Today: Problem Solving		Harcourt Brace Jovanovich	A
Math	6*	Mathematics Today: Spotlight on Gra		Harcourt Brace Jovanovich	A
Math	6*	Money Manager	Y	Computer Age Education	A
Math	6	Problem Solving Strategies	Y	MECC	A
Math	7*	Algeblaster	Y	Davidson	A
Math	7	Coordinate Math	Y	MECC	A
Math	7*	Mathematics Today: Pattern Puzzle		Harcourt Brace Jovanovich	A
Math	7*	Mathematics Today: Problem Solving		Harcourt Brace Jovanovich	A
Math	7*	Mathematics Today: Spotlight on Gra		Harcourt Brace Jovanovich	A
Math	8*	Geometric PreSupposer	Y	Sunburst	A
Math	8*	Geometry Concepts	Y	Venture Educational Systems	A
Math	8*	Mathematics Today: Pattern Puzzle		Harcourt Brace Jovanovich	A
Math	8*	Mathematics Today: Problem Solving		Harcourt Brace Jovanovich	A
Math	8*	Mathematics Today: Spotlight on Gra		Harcourt Brace Jovanovich	A
Math	1-6*	Math Blaster Plus		Davidson	A
Math	K	Arithmetic Critters	Y	MECC	A
Math	K	Counting Critters	Y	MECC	A
Math	K-12	Careful Math	Y	Calibre, Inc.	A

Subject	Level	Title	Mgt?	Publisher	MType
Math	K-6*	Word Math	Y	Milliken	A
Math	T	Mastering Math Worksheet Generator	Y	MECC	A
Personal Skills	6*	Speed Reading IV Tutor		Kyria Systems/Simon Shuster	A
Personal Skills	6*	Study Skills	Y	Educational Media Corp.	A
Personal Skills	6*	Test Taking Made Easy		Microcomputer Education	A
Personal Skills	6*	Typing Tutor III			I
Personal Skills	6*	Typing Tutor III		Kriya Systems Simon/Shuste	A
Personal Skills	6*	Typing Tutor III		Kriya Systems Simon & Schus	A
Personal Skills	6*	Typing Tutor III		Kriya Systems/Simon & Schus	I
Personal Skills	6**	Typing Tutor III	Y	Simon & Schuster	A
Personal Skills	6*	Typing Tutor IV		Kriya Systems/Simon & Schus	A
Problem Solving	4*	Rocky's Boots		Educational Home Software	I
Problem Solving	6+	Mind Castle I		Microcomputer Educational F	A
Problem Solving	6+	Mind Castle II		Microcomputer Educational F	A
Problem Solving	6	Miner's Cave		MECC	A
Problem Solving	6	Mystery Matter	Y	MECC	A
Professional	T*	Module Skills Data			A
Professional	T*	Quick Flash			A
Professional	T*	Student Stories	Y	MECC	A
Professional	T*	Study Guide			A
Reading	1	Phonics Prime Time: Vowels I	Y	MECC	A
Reading	2	Phonics Prime Time: Vowels II	Y	MECC	A
Reading	3	Phonics Prime Time: Blends and Dig	Y	MECC	A
Reading	3	Those Amazing Reading Machines I	Y	MECC	A
Reading	4*	Words to Read for Everyday Living	Y	Educational Activities, Inc	A
Reading	4	Suffix Sense	Y	MECC	A
Reading	4	Those Amazing Reading Machines II	Y	MECC	A
Reading	5	Prefix Power	Y	MECC	A
Reading	5	Those Amazing Reading Machines III	Y	MECC	A
Reading	6	Those Amazing Reading Machines IV	Y	MECC	A
Reading	2-5*	Dilemma	Y	Educational Activities	A
Reading	5-8	Watership Down	Y	Sunburst	A
Reading	8-12	Reading Realities: Jury Series	Y	Teacher Support Software	A
Reading	K*	First Letter Fun	Y	MECC	A
Reading	K*	Fun From A to Z	Y	MECC	A
Reading	K*	Paint With Words	Y	MECC	A
Reading/Writing	4+	Magic Slate II 80 Col.		Sunburst	A
Science	6	Simple Machines	Y	Educational Home Software	A
Social Studies	5+	Immigrant	Y	Sunburst	A
Training	*	Apple Works Trainng Disk		Apple	A
Training	*	Legal Secretary An Office Job Simul		Fernandez Payne Webster/ So	I
Training	*	Legal Secretary An Office Job Simul		Fernandez Payne Webster/ So	A
Training	*	Resume Writing		Career Development Software	A
Training	*	Your Tour Of Apple IIGS		Apple	A
Tutor	*	Lotus			I
Various	1*	Basic Skills 1		Public Domain Library	A
Various	2*	Basic Skills 2		Public Domain Library	A
Various	3*	Basic Skills 3		Public Domain Library	A
Various	4*	Basic Skills 4		Public Domain Library	A
Various	5+	Basic Skills 5		Public Domain Library	A
Various	6*	Basic Skills 6		Public Domain Library	A
Various	7*	Basic Skills 7		Public Domain Library	A
Various	8*	Basic Skills 8		Public Domain Library	A
Various	9*	Basic Skills 9		Public Domain Library	A
Writing	4**	MECC Writer		MECC	A
Writing	7+	Appleworks Data Disks		MECC	A

Subject	Level	Title	Mgt?	Publisher	MType
Writing	T	Appleworks StartUp & Program Disk		Broderbund	H
Writing Analysi	T*	Ghost Writer	Y	MECC	A