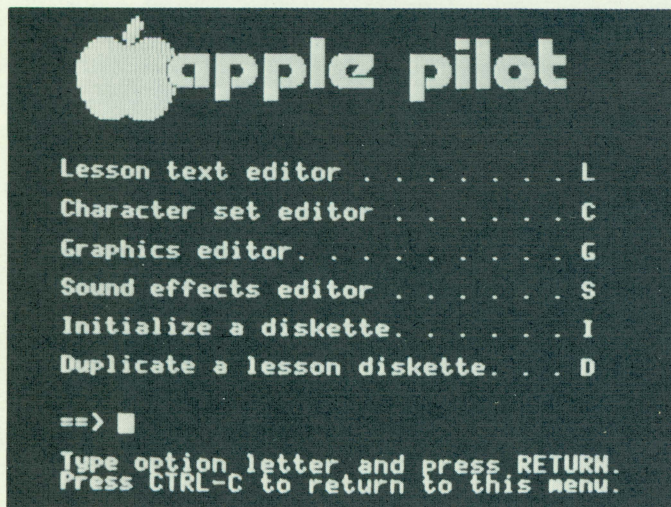


APPLE INTRODUCES PILOT AND FORTRAN AT THE NATIONAL COMPUTER CONFERENCE

Apple once again alters the world of microcomputing with the introduction of two new products: the high level languages PILOT and FORTRAN. The Apple can now speak to engineers, scientists, trainers, and educators—in their own languages. Inexpensively!

PILOT your CAI with Apple



The Apple becomes an even more effective teaching tool with the introduction of Apple PILOT. A high-level, easy-to-use language, PILOT was designed for use by educators, trainers, and courseware developers, and has been in use since 1968 as a language for creating Computer Assisted Instruction (CAI). In fact, PILOT is the most widespread CAI language available today.

Although the PILOT Language does require some training and practice, producing CAI materials with PILOT is a simple task compared to other high-level languages. And even though programming is easy, powerful courseware can be written which fully utilizes the capabilities of the Apple for sound and graphics.

Apple PILOT provides three important extensions to common PILOT, upon which it was based. These exten-

sions allow you to create graphics, music, and special characters without any programming. By using the graphics editor, the user can position points, draw lines and circles, fill in areas, choose colors and see immediate results. The final graphic is then named and referred to by name in the PILOT program.

Sound is another major extension that Apple PILOT offers. Music is composed or transcribed by specifying note selection, order, duration, and special effects; like warbling.

The third major extension, the character set editor, allows the user to draw and save special characters for specific programs. A Greek or Russian alphabet, for example, can be created and used for a language drill and practice. This feature was formerly offered on only the most expensive CAI systems.

Apple PILOT system requirements are an Apple II or II Plus with 48K memory, one disk drive for LESSON MODE or two disk drives for both AUTHOR and LESSON modes, a video monitor or television, and the DOS 3.3 or the Apple Language System.

(continued on page 2)

North Carolina Picks Apple

The State of North Carolina has chosen the Apple II disk-based computer system as the preferred machine for all State agencies, including the entire State educational system. Charles Williams, Director of Management Informations for the State Education Department indicated that Apple was recommended for all of their over 1000 elementary, secondary and vocational schools as well as 86 community colleges. In the education area, the microcomputer effort will be supported through 8 regional education centers located throughout the state.

Gregory Smith, Apple's Director of Education Sales said, "We are extremely gratified that North Carolina has chosen Apple. We are making an extraordinary effort to serve the needs of education and are glad to see major states like North Carolina recognizing our commitment to education."

FORTRAN makes comfortable conversation with engineers

Long the mainstay of the scientific community, the powerful FORTRAN has been the primary teaching language at many colleges and universities. Large libraries, particularly in math and engineering, have been written in FORTRAN. Many of these existing programs can be modified to run on the Apple, saving schools time and money. Thousands of engineers and scientists who presently use large systems for their daily work in FORTRAN can use those same programs on the Apple.

Apple FORTRAN is ANSI Standard Subset FORTRAN 77. This latest computer industry standard provides significant additions to the previous 66 standard (FORTRAN IV). For example, structured programming concepts are added to traditional FORTRAN statements through expanded IF statement constructs.

Because Apple FORTRAN operates in the Apple Pascal Language System, the same comprehensive software development environment provided to Pascal users is also available to FORTRAN programmers. Under the Apple Language system, FORTRAN, Pascal, and assembler routines can be created into a single program. In addition, FORTRAN takes full advantage of Apple's high resolution graphics capabilities, sound, and control paddles, through Turtlegraphics and Apple Stuff units.

Minimum system configuration with FORTRAN requires an Apple II or II Plus with 48K and the Apple Language System. One disk is necessary, but two are recommended in addition to the video monitor or television.

Both FORTRAN and PILOT will be shipping early in the third quarter. Apple now offers the "Big 3" teaching languages: PASCAL, FORTRAN and BASIC, as well as a major CAI language: PILOT. See your dealer about them!!

COMMON PILOT USERS GROUP

The new Apple Pilot is based on an implementation of Pilot that is available on several different types of computers called Common Pilot. The Common Pilot User Group was formed for the following purposes:

1. to let users of Common Pilot know who other users are;
2. to let courseware authors tell the user community what programs they have;
3. to provide a catalog of available courseware to potential users; and
4. to provide a means for the exchange of useful information on Common Pilot in the form of articles and letters.

Membership is currently free. To get a membership form, contact:

Larry Kheriaty
Computer Center
Western Washington University
Bellingham, Washington 98225

Apples Find a New Classroom



Lawrence Hall of Science, University of California/Berkeley, has established a new frontier in education—interactive teaching through exhibits in shopping malls.

Two of the traveling exhibits feature Apple computers. In the "What's in Your Lunch?" exhibit, the Apple analyzes calories, vitamins, nutrients, and fat in the participants' lunches. Shoppers enter their sex and age, and then choose from foods commonly found in fast food restaurants in a mall. The Apple generates bar graphs that show if a food is high, medium, or low value in vitamins, minerals, and fats. Also, the Apple tells the individual what percentage of his daily caloric allotment his lunch represents. The program is designed to take only 30 seconds to one minute. But this booth and others are still popular enough to create lines of eager visitors.

Apples also educate shoppers in energy conservation, testing their knowledge of gasoline use and economy with the "Vegas Econo-Run." Participants receive different sets of circumstances and enough gasoline to reach the goal—Las Vegas. The driving game takes the car from any starting point to Las Vegas, presenting choices such as type of car and driving speed. The Apples' colorful animation shows the car's travels through swampland, desert, and forest. If the "driver" makes the right choices, the Apple then shows the car arriving in Las Vegas with flashing lights and music. But, if the choice is incorrect—out of gas in the desert.

The Hall chose Apples for the displays because their previous experience proved that Apples could be depended upon for vivid color and graphics capabilities as well as an ability to travel well. In addition to the jolts and vibrations of travel, setups and takedowns, the Apples are exposed to changes in humidity and temperature, and to almost constant use by an inexperienced public.

Lawrence Hall of Science developed the mobile science center specifically for malls. Other museums and cultural centers have temporarily placed exhibits in malls, but, "This is the first one that lives an independent life," says Dr. W. M. Laetsch, director of the Lawrence Hall of Science.

(continued on page 9)

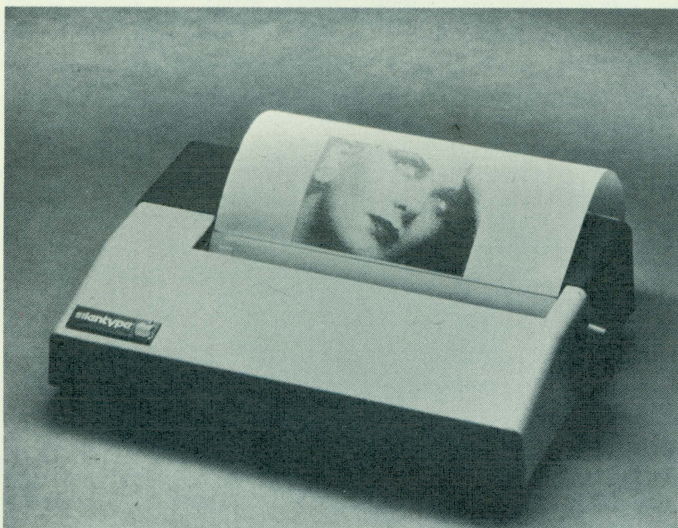
APPLE DOS 3.3 INCREASES DISK SPACE 23%

Apple's new DOS, DOS 3.3, contains two significant improvements for the Apple owner. It creates a compatible environment so that the Apple owner can easily and efficiently use his Applesoft, Integer, and Pascal programs on one set of hardware. The second benefit for the user is that the disk space available is increased 23%. Under the old operating system, approximately 103,000 bytes were available to the user. With the new DOS, 126,976 bytes will be available for user programs.

Included with the new DOS is a utility to convert programs from the old disk format to the DOS 3.3 format, a fast single or double disk drive file copying program, a diskette to allow you to run unconverted software from the old disk format, and a flexible new file utility program. Also included in the package is a new DOS manual, and, of course, the necessary PROMs to change your Apple to the new disk format.

Look for the new DOS beginning in June at your local Apple dealer.

APPLE SILENTYPE — The Personal Printer



Like silent movies sixty years ago, the Apple Silentype thermal printer is creating a big noise! *Unlike* its noisy predecessors, the Silentype has quiet, quick output, a low price tag and a lightweight (6 lbs.) frame for portability.

Available now at your dealer, the Apple Silentype has features formerly found only on much more expensive printers. Ideal for home or office use, the six-pound Silentype features: 1) completely noiseless operation, 2) superior printing flexibility, 3) guaranteed reliability, and 4) maintenance-free upkeep.

The Apple Silentype prints finely drawn lines, graph-

ics, and charts without losing a single detail. Since it receives its power only from the Apple, the Silentype has fewer components and greater reliability than micro-processor printers. The Silentype lets you adjust margins and line spacing, offers a selection of print intensities, and can be easily used from machine language, BASIC, or Apple Pascal.

The Silentype produces clear copy on white paper with 80 characters per line in upper and lower case. High resolution graphics print at 60 dots per inch. The Silentype can be used for teaching word processing, graphic design, business and composition writing, journalism, manuscript critique, editing and drafting.

Cost is \$595 and includes the Silentype thermal printer, interface card, connecting cable from the card to the printer, a roll of installed paper, and a 50-page User's Manual. Apple's standard warranty covers the printer.

Apple Writer Simplifies Text Editing

"Just a few minor corrections."

Every writer, whether educational, business or professional, sighs at these words. However, with the new Apple Writer, a few minor—or many major—changes are complete within minutes. Retyping a page, like writing with a quill pen, is a labor of the past.

Available at your dealer, the Apple Writer is a text editor that can write, revise, and print letters, memos, and other documents on the Apple. According to Jim Hoyt, assistant project manager on the text editor, "The Apple Writer is an incredible timesaver. It moves paragraphs, inserts and deletes words, and corrects mistakes in a moment." The Apple Writer comes with a clearly written manual and a handy tear out sheet that lists print and editing commands. Place this on your Apple for quick reference and you're ready to use the Apple Writer.

Costing \$75, the Apple Writer comes with two diskettes and the user's manual. Ask to see Apple Writer at your dealer and make your first draft final copy.

British Columbia Chooses Apple

British Columbia, Canada's third largest province, has announced plans to place over 100 Apple Computer systems throughout their Educational system.

The announcement was made by Dr. Walter G. Hardwick, Deputy Minister of Education and Dr. Karl Deneluk, Superintendent of Public Instruction. The Apples will be utilized in a wide variety of educational applications and will be distributed throughout the entire Province. Dr. Hardwick, commenting on their reasons for choosing Apple, indicated that one in particular was the successful experience with Apple of the Minnesota Educational system. The Minnesota Educational Computing Consortium (MECC) has used Apple as their exclusive microcomputer since 1978.

PASCAL II: An Application at University of California, San Diego



Dr. Kenneth Bowles of University of California, San Diego, believes the only suitable language for long, complex programs is Pascal. And he's proving it, with UCSD PASCAL™ and a lab full of Apples.

Both the Introduction to Computer Science course and a more advanced course on non-numerical applications are taught in Pascal. The complex programs for each, involving quizzes, grading, drill and practice, and record-keeping are run in Pascal. Within the framework of the overall UCSD PASCAL™ software system, UCSD also developed a library of utility programs to simplify the task of writing automated quizzes and other Computer Assisted Instruction (CAI) materials. The UCSD program is a prime example of a computer science program almost entirely based on the Pascal programming language.

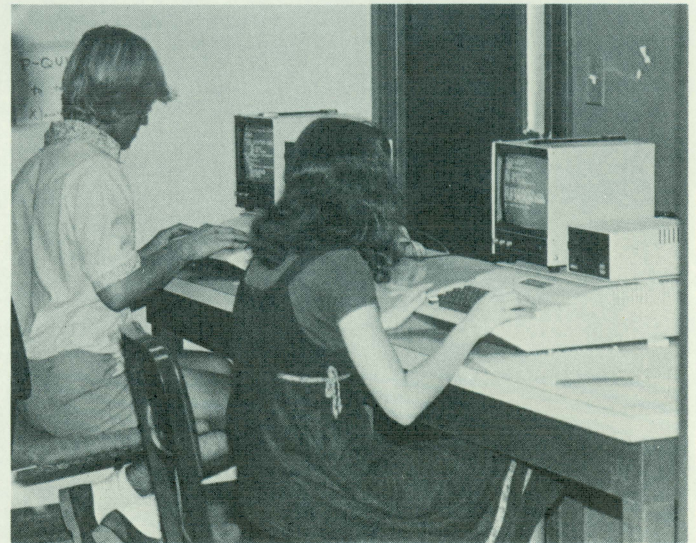
"Programming in a higher level language to efficiently prepare computer-based instruction materials was once prohibitively expensive. Since higher level languages were unavailable for the less expensive microcomputers, the small machines weren't seriously considered for CAI technique," says Dr. Bowles. UCSD and Apples have changed all that. Operating at the vanguard of an unprecedented wave of popularity for the powerful Pascal language, UCSD implemented a full-scale version of Pascal for the microcomputer. Dr. Bowles' Introductory Computer Science Course, which uses 40 Apples as its sole computer source, offers high quality, low cost education to approximately 500 students per quarter.

In operation for about six years, the course originally ran with Terak Computers, but the switch to Apples made twice as many machines accessible to the students, while still using Pascal and graphic capabilities at a considerably reduced cost.

Dr. Bowles' program excites student and instructor as well. Because the program does not require a math

background, English literature students as well as engineering students can be exposed to the kind of logic used by computers. And while the Apples handle routine matters like record-keeping, scoring quizzes, and checking homework, teachers can concentrate on more creative and individualized tasks, such as development of teaching materials, research, and helping individual students.

Dr. Bowles' course centered around extensive use of Apples and automated quizzes is an example of self-paced individualized instruction. After students receive a brief introduction to the class organization and hands-on use of the Apples, they proceed individually through course work in the supplementary text, perform homework tasks on the Apples, and take tests, graded go or no-go, for each chapter. Students must pass both homework and quiz for the unit before moving on and can work in the lab from 9 a.m. to 11 p.m. daily.



A proctor grades homework in an interview which allows the student to ask questions and the proctor to urge further applications of course information and check on thorough understanding of the problem-solving. Because Apples and proctors work together to furnish the student with fast feedback and grading, the student receives immediate reinforcement and direction. "This feedback is generally credited for superior performance of students using a self-paced program," says Dr. Bowles.

Additionally, the program's Apples are connected into a network and share information on a Corvus hard disk.

Dr. Bowles says, "We transmit at close to 30,000 bytes per second between machines, which is about four times the average speed than the floppy disk transmits information to or from the computer. The hard disk also accesses the information roughly a hundred times as fast."

UCSD Pascal is a trademark of the regents of the University of California.

(continued on page 9)

1000th APPLE II Ordered on MECC Statewide Contract

The Minnesota Educational Computing Consortium (MECC), the public organization which provides statewide coordination of educational computing, recently announced that the 1000th Apple II has been ordered on Minnesota's statewide contract. Receiving the 1000th unit was the Montevideo, Minnesota public school district.

Located about 120 miles west of Minneapolis in western Minnesota's farming country, the Montevideo district serves 1800 students kindergarten through 12th grade. Montevideo is one of over 300 Minnesota school districts currently participating in instructional computing through the use of the MECC Statewide Timeshare System and the Apple II microcomputer. The district currently uses one Apple for senior high school computer science classes and another at the middle school for general instruction in several subject areas. Apple number 1000 on the MECC contract is one of three currently on order by Montevideo for use in the district's elementary schools.

Montevideo Superintendent Ralph Norland and Computing Coordinator Ken Zastrow are both highly enthusiastic about the use of the Apple in their schools. Mr. Zastrow commented, "After seeing the success with our first two Apples, it became obvious that we should place additional ones in our elementary schools. It is our hope to promote computer awareness throughout all levels of our curriculum."

MECC User Services staff member John Arneson has assisted the district in organizing its program and in establishing an introductory course in the use of the Apple for 45 Montevideo teachers at nearby Southwest State University.

MECC initiated a statewide contract for purchase of the Apple II in October, 1978 and has established the reputation as a leader in integrating computing into school programs and development of instructional software. It is anticipated that during this summer several hundred more Apples will be ordered by schools through the MECC contract.

Share Your Apple-Cations

We're interested in your projects using Apple computers for the *Apple Education News*. Send a letter explaining your application and results. We regret that unpublished entries cannot be returned or acknowledged.

Thank you for your interest. Send ideas to:

Editor
Apple Education News
P.O. Box 20485
San Jose, CA 95160

SECOND APPLE EDUCATION GRANTS ANNOUNCEMENTS

From 125 applications, the Apple Education Foundation recently awarded 21 grants worth almost \$130,000. To date, the Foundation has awarded 37 grants to individuals and institutions to develop new methods of learning through the use of low-cost technology. The recipients and their affiliations are:

Computer-Assisted Instruction in Ear Training

North Texas State Univ. School of Music,
Denton, Texas

Dr. Rosemary Killam, R. L. Hamilton

Hand-Eye Coordination Skills Acquisition System

Educational Services Management Corp.
Research Triangle Park, North Carolina

Dr. Jerry Ward

Computer-Based Exercises in Fractions and Decimals

Iowa State University, Ames, Iowa 50011

Dr. Rex Thomas

Microcomputer Programs to Teach Diabetic Care Skills

Grand Valley State Colleges, Allendale, Michigan
Dean Charles Sorensen

Computer-Assisted Instruction in Reading Skills

Oregon School District, Oregon, Wisconsin
Roland J. Cross

Microcomputer Programs for Economics and Business

Knox College, Galesburg, Illinois

Dr. William F. Pillsbury

CAI with Graphics for Chemistry

The University of Northern Colorado,
Greeley, Colorado

Dr. M. Lynn James

A Bi-Lingual Learning with CAI

Stanford Avenue Schools, Los Angeles Unified School
District

Southgate, California

Kenneth Miller, Thomas Sullivan

Planning Nutritious Meals

Iowa State University, Ames, Iowa

Dr. Cheryl Hausafus

Software for Jr. H.S. Administration

Marshalltown Community Schools,
Marshalltown, Iowa

Dr. Wm. H. Robinson

Interactive Graphics for Computer Literacy

University of Notre Dame, Notre Dame, Indiana
James W. Garson

CAI in Cash Management

Iowa State University, Ames, Iowa

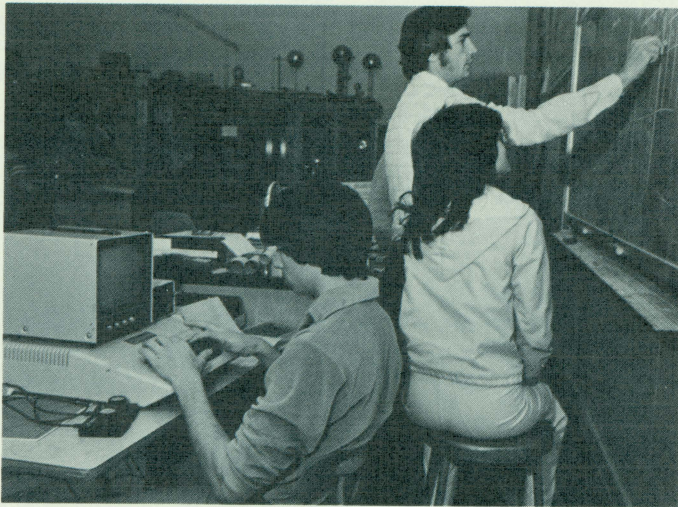
Dr. John M. Whitmer

Computer-Based Instruction Modules in Chemistry

The Milne Press, Carmel Valley, California

Dr. Gordon M. Barrow

(continued on page 7)



Apple Teaches PETS in Marysville

Sometimes David Buchla wondered if it all would pull together. First, he dubbed his Apple project PETS. Then a student bounced three of his Apples on the sidewalk. Finally, a mix-up in the testing led to statistical confusion for evaluating the initial results of his program. Buchla says, "We all survived. The Apples emerged unscratched from their slamming, later data definitely shows the use of Apples improved math scores," and the program is jammed with students anxious to 'get on the computers.'

PETS—Program Effectiveness Through Science—is a two-pronged computer science project at Marysville High School in Marysville, California. It's designed to entice 8th graders and to educate 9th graders about microcomputer capabilities.

Buchla says, "The 8th grade project is presented to the three district intermediate schools. It lasts only two weeks and is primarily motivational. The 9th grade program leads the students from a general computer introduction to actually programming the Apple."

Teaching high school sciences and data processing as well as college electronics, Buchla oversaw the writing of the programs for the 8th graders and wrote several of the 9th grade packages. "My primary purpose in designing the project was to bridge the isolated positions of math and science. Too often we divide the two studies when, in fact, they are natural partners, particularly in the physical sciences."

"My other aims were: 1) to improve student math scores on the California Test of Basic Skills; 2) to teach the students to view the computer as a problem-solving tool, rather than a passive instructional aid; and 3) to expose the student to computer-related career opportunities."

Funded by ESEA Title IV-C, Buchla spent nine months developing materials. With the assistance of science instructor Marlon Miller, Buchla created a clever, concise 9th grade computer science course that integrates math, science, and computers. He calls his loose-bound curriculum guides, Learning Activity Packages (LAP). Each

LAP contains an overview, objectives, schedule of learning activities, study guides, and extra credit assignments. The two Marysville educators supplemented the original LAPs with two application packages: *High Resolution Graphics* and *Map Scale and Computers*.

Miller also designed a separate teacher's manual that provides lesson plans, teaching strategies, grading techniques, tests and enrichment ideas.

For the 8th grade curriculum, Buchla relied on the programming talents of four of his Data Processing students. The formula worked. Ninety-eight percent of the 8th grade students responded favorably to the program.

Teachers received extensive help before and during the implementation of the program. First, the 8th and 9th grade science teachers attended a three-day workshop given by Miller that included instruction of operating the Apple, introduction to BASIC programming, and working through each of the LAPs. Miller also team teaches with the instructors during each 9-week presentation.

Support from teachers, parents, and students stays high. One school's absentee rate dropped 50% during the two weeks Apple visited. Eager students are routinely swept out of the computer lab by the high school's janitorial staff.

Currently, Buchla has 15 Apples. He strongly considered a less expensive microcomputer; however, he's convinced that Apple was the best choice. "The company," says Buchla, "is exceptionally supportive. The machine withstands beatings (and droppings). It's a good product."

Miller adds that the Apple's color graphics, sound capabilities, and separate video monitor add to its attractiveness.

But more important than attractive features was meeting the goal of the program: to improve student math scores. And the Apple succeeded. Using the California Test of Basic Skills, Buchla determined, "every single group that's been on the Apple has scored better in math skills than comparable groups not on the micro." Buchla adds, "Eighty-six percent of the participating students preferred the computer science course to their regular science courses."

The next major step in the two-year-old program is to have the teachers to present the class solo. Therefore, in the 1980-81 school year, plans are for adjoining Wheatland High School to teach PETS using the inservice workshop and teacher's manual as their main instructional guides. No more team teaching, says Miller. Both Buchla and Miller are confident the program will stand on its own.

Currently, 1000 students are involved with PETS. Besides expanding the program to Wheatland, future plans include using three or four student aides in the classroom, grouping the students according to ability, and "to continue as we are and to improve as necessary," says Buchla. Buchla also foresees publishing the LAPs material after it is authorized by Title IV-C.

If you'd like more information about the 8th and 9th grade computer science program, contact:

David Buchla
Marysville High School
Marysville, CA 95901

GRAPHICS TABLET ALLOWS YOU TO CREATE, CHANGE, AND SAVE DESIGNS

Turn your Apple computer into an artist's canvas via the newly developed Apple Graphics Tablet. The 11-inch-square tablet handles block diagrams, architectural renderings, logic diagrams, schematics, mechanical shapes and fine art. The Graphics Tablet and its specially designed stylus operates like a sophisticated magic slate but with important improvements: it draws in color, and allows images to be easily modified and saved for future use.

According to Bryan Ehlers, project manager of graphic tablet applications at Apple, "The Graphics Tablet allows you to create an image, to see it displayed on the computer screen, and to save, change, or create another variation of the image." Easily operated by anyone from small child to professional artist, the Graphics Tablet does not require any prior knowledge of computer operations. "In fact," says Ehlers, "even a non-computer user could take the Graphics Tablet out of the box, plug the interface card in the Apple, put in a disk, and the system will activate the Graphics Tablet automatically."

Compact and lightweight, the Graphics Tablet offers 22 separate functions making it possible for you to switch

modes simply by pressing the Tablet's pen in the desired command box. Additionally, the Graphics Tablet can process up to 100 points per second, allowing the user to draw as fast as he desires.

The Graphics Tablet documentation includes a source listing of all codes and examples of modifications which allows you to easily modify the code to suit your own needs.

Outstanding for education, art, advertising, architectural, and engineering applications, the Graphics Tablet retails for \$795. Included in the price are: the 11 x 11" Graphics Tablet with cable, Graphics Tablet pen with connector cable, two Graphics Tablet software diskettes, the interface card, Mylar overlay and instruction manual. Apple Inc.'s standard warranty covers the Graphics Tablet. For additional information see your local dealer.

Future newsletters will examine uses of the Graphics Tablet. Readers are invited to write APPLE EDUCATION NEWS about their applications. Contact:

Editor, Apple Education News
P.O. Box 20485
San Jose, CA 95160

QUEST Program Developed for Apple

John B. Cook of Area Education Agency Six (AEA-6), Marshalltown, Iowa, has developed an Apple version of QUEST, a twenty-one item career guidance questionnaire. Used primarily in high schools and devised by the University of Oregon, QUEST evaluates the student's attitudes and abilities, directing the user to a specific career.

Prior to using the Apple version of QUEST, AEA-6 career counselors employed a timesharing system that resulted in expensive phone bills and frequent down time. "We also used teletype machines," says Cook. "It's tough hauling a teletype to the third floor."

A lone Apple has circulated among twenty-two school districts the past two years. It has survived pounding in car trunks as well as punishment by several thousand students. According to Cook, the Apple outperforms its predecessors. "Response time is faster; the results are on the screen immediately. You don't have to wait for a printout. The Apple is much quieter—and lighter—than the teletype. "The students definitely prefer the Apple," says Cook.

For information on the Apple version of QUEST, contact:

John B. Cook
CAI Consultant
Area Education Agency Six
9 Westwood Drive
Marshalltown, Iowa 50158

Education Foundation (continued)

CAI for "Life-Skills" Curriculum

Bowditch Middle School, Foster City, California
Margaret Cole

Word Processing Learning

LeRoy Finkel, Menlo Park

Microcomputer Application in Art Education

University of Oregon, Eugene, Oregon
Dr. Beverly J. Jones

Interactive Lessons in Introductory Statistics

California State University at Chico,
Chico, California
Dr. Tom Vayda

Computer Speech for Cerebral Palsy Children

University of Missouri at Kansas City,
Kansas City, Missouri
Dr. Jay Hewitt

Library-Reference Materials

Utah State University, Logan, Utah
Dr. Brenda Branyan

Microcomputer System for Medical Problem-Solving

Children's Hospital of Philadelphia, Philadelphia,
Pennsylvania
Dr. Wm. Schwartz

Computer Skills for Grades 4 to 6

Willis Ann Corcoran, Omaha, Nebraska

For more information, contact: The Apple Education Foundation, 20605 Lazaneo Drive, Cupertino, CA 95014.

APPLE RESOURCE CENTER

SOFTWARE

Science Research Associates, Inc. (SRA), has recently announced a new series of educational courseware for the Apple II computer to be available in the fall of 1980.

Description	Price
Classroom Management System: Mathematics (grades 4-8)	\$595.00
Mathematics Fact Track	\$75.00
Automated Instruction, Drill, and Evaluation (Aide)	
— Managed Version—Level A (grades 1-2)	\$325.00
—Level B (grades 3-4)	\$425.00
—Level C (grades 5-6)	\$475.00
— Unmanaged Version—Level A (grades 1-2)	\$250.00
—Level B (grades 3-4)	\$350.00
—Level C (grades 5-6)	\$400.00
Arithmetic Games	
— Set 1 (2 games)	\$50.00
— Set 2 (2 games)	\$50.00
— Set 3 (2 games)	\$50.00
— Games Package Price (Set 1, 2, 3, — All 6 games)	\$120.00

For additional information, contact:
Science Research Associates, Inc.
155 North Wacker Drive
Chicago, IL 60606
(800) 621-0664

Dr. James Poirot and Donald Retzlaff of North Texas State University have designed a course, with cassettes or diskettes, which uses the Apple to teach about the computer. The tutorials and workbook enable the student to learn how to program and solve his own problems, to pass the initial excitement of game playing and go on to practical use. These programs assume no knowledge of the computer or of programming skills and are suitable for individual or classroom instruction.

Microcomputer Workbook, Apple II Edition \$ 3.95
Cassettes or Diskettes (set of 4) \$40.00

When ordering, specify "Apple II."

Contact: Sterling Swift Publishing Company
P.O. Box 188
Manchaca, TX 78652
(512) 444-7570

HARDWARE

Interactive Structures, Inc., announces the AI-02, an analog input system for Apple II. A single card system which allows Apple II to look at analog, or non-digitized information, the AI-02 lets the computer sample temperature, measure light level, listen to sound, and use the result as input to a program. \$260.00.

Contact: Interactive Structures, Inc.
Box 404
Bala Cynwyd, PA 19004

New curriculum materials for Apple are available from CONDUIT, a National Science Foundation funded organization that reviews, tests, and distributes computer-based instructional materials. These versions utilize special features of the Apple II, such as graphical output and program response to a single key stroke (with no RETURN required). Required configuration for the Apple: Apple II, APPLESOFT, 48K. Available only on diskette.

Coexist: A population dynamics program suggested for General Biology, the unit simulates two biological situations. \$30.00.

Complete: A plant competition topic suggested for General Biology, the software simulates interactions between flowering plants, allowing an investigation without the long delay of growth experiments. The unit includes investigations with both real and simulated plants, and other relevant data in graphs, tables, and descriptions. \$30.00.

Ecological modeling: An ecology, ecosystem, and population growth program suggested for Introductory Ecology or General Biology, this unit introduces students to techniques for modeling ecological systems and processes on the computer. \$54.00.

Enzkin: An enzyme kinetics topic recommended for Biochemistry, the experimental research requires planning of experiments, performance of the experiments, and interpretation of the results. \$30.00.

Linkover: With a study in genetic mapping suitable for General Biology or Genetics courses, this unit provides students with an opportunity to plan and execute genetic mapping experiments in order to reinforce learning of the concepts of linkage and crossing over. \$30.00.

Haber: For the Introductory Chemistry course, the topics of ammonia systems and Haber process are included in the simulation. The student can study the process, how conditions influence it, the reactions and properties of a system at equilibrium, and principles of the Haber process. \$30.00.

Rkinet: Suggested for General Chemistry, the topics of chemical reaction kinetics, first and second order reactions, rate constants, and concentrations extend the student's laboratory experience and understanding of reaction kinetics by allowing for a wider range of investigations. \$30.00.

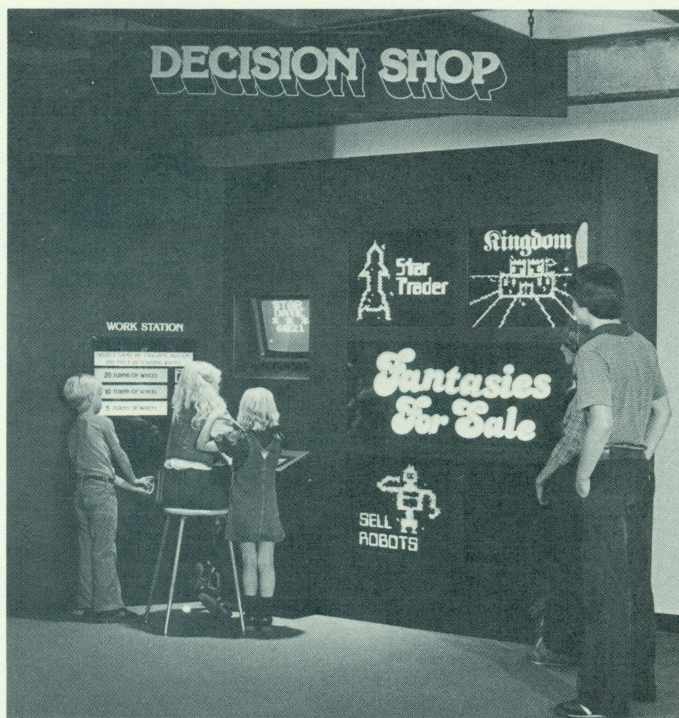
Interp: By studying wave superposition and diffraction patterns for Introductory Physics, students improve in understanding of the use of models in physics, especially the wave theory of light in the explanation of observed phenomena. \$30.00.

Newton: The student of Introductory Physics studies Newton's Laws, gravitation and velocity with a unit designed to increase appreciation of Newton's Second Law and Law of Gravitation, leading to the prediction of satellite orbits. \$30.00.

Scatter: Nuclear scattering, a topic for Introductory Physics, is studied in three models simulating experiments for student investigation of particle scattering. \$30.00.

Contact:
CONDUIT
P.O. Box 388
Iowa City, IA 52244
(319) 353-5789

or read complete descriptions and ordering information in *Pipeline*, Volume 5, No. 1, Spring, 1980. Order from above address.



The Decision Shop: Teaching Economics Through Fantasy

The Decision Shop: Fantasies for sale. This exhibit at The Children's Museum in Indianapolis, Indiana, might not sound educational, but teaches a subject that local businessmen felt was being neglected—economics.

The Children's Museum, with eight major galleries of exhibits, is the largest children's museum in the world, the third oldest, and one of the first museums to attempt teaching economic concepts.

Using an Apple II as the heart of the exhibit, the Decision Shop has proved an overwhelming success during the past year. Visitors, ranging in age from one to eighty, barter goods with other planets, own a robot store, or run a carnival. All games encourage visitors to think "economically." Michael P. O'Lear, curator of the exhibit says, "We're not trying to teach specific words, like 'inflation,' but we want them to think in terms of economics.

One of the unique qualities of the exhibit is that no game requires a right or wrong answer in any simulation. Players learn the consequences of their decisions, however; if they're selling robots for less money than it costs to produce them, the Apple tells them they're losing money on every robot they sell.

O'Lear says he chose Apple because of its graphics and sound capabilities. "These things were important to us because The Children's Museum has many competing exhibits.

The Apple II is used not only for graphics and input but also to control all the hardware in the exhibit. The computer turns on lights, reads numbers, and records turns of a wheel.

"We're really happy with the program," says O'Lear. "At ten o'clock every morning, there are children outside lined up to play the games. There's never a time when the computer is not being used. Exhibits usually keep a child's attention for 30-40 seconds . . . we have the child's attention for 20-30 minutes, which gives us a lot more time for education." At midsummer, 1200 people had used the computer since the exhibit opened April 17, 1979, and a second identical exhibit with its own Apple II will reach the museum floor early next year.

For further information contact:

Michael P. O'Lear
The Children's Museum
30th and Meridian
Indianapolis, IN 46208
(317) 924-5431

Apples find new classroom (continued . . .)

The modular displays travel by truck, accompanied by two permanent employees who handle maintenance and local promotion. The quarter of a million dollar set of exhibits sets up in about two hours, offering mall visitors interesting opportunities for interaction with science and technology.

Dr. Laetsch feels that enclosed shopping centers offer a unique learning climate. "For a long time, we've been wanting to reach a large cross section of people, approaching them about subjects related to science and technology while they were going about their daily business."

Shopping centers reach huge numbers of people for education on these themes. Approximately 12 million people per year pass through just one large mall. As a comparison, Disney World gets 9 million visitors a year, and the largest single museum attendance is ten million annually, at the Aerospace Museum in Washington, D.C.

Lawrence Hall of Science also wants to stimulate the use of malls as places where other educational groups can meet their publics. "We've gone out to science centers, museums, local health organizations and community groups, inviting them to exhibit in a participatory way. We can be a catalyst for their interacting with their public," says Dr. Laetsch. The traveling exhibit is also a catalyst for educational institutions within each geographical area, in particular, providing an opportunity for introducing microcomputers to students through the exhibits which use Apples. "One of our interests is using micros in education, and the resulting impact they'll have on schools," says George P. Moynihan, assistant director of Lawrence Hall of Science. "We're trying to expose children to the technology."

"To date," states Dr. Laetsch, "we estimate that the exhibits have actually been used by half a million people. They have been viewed by several million."

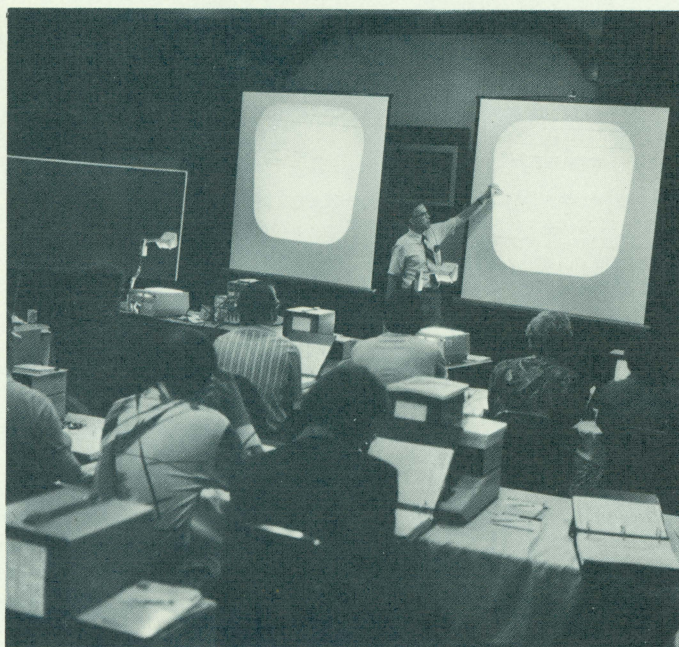
Beginning in May of this year, another Lawrence Hall of Science traveling exhibit, using Apple computers will educate the public in cancer detection, prevention, and treatment.



10260 Bandley Drive
Cupertino, CA 95014

BULK RATE
U.S. Postage
PAID
Permit No. 3440
San Jose, CA

PASCAL II: (continued)



The network does far more than share software, however. Each student no longer must purchase the two floppy disks, and the number of disk drives is drastically reduced along with their maintenance and repair.

The network allows requests to the printer to queue up and be filled, with the students remaining at their stations. The proctor can be summoned through the Apple from any station, and can send messages to any or all stations. Programmed notes like "It's time to prepare to leave class" can be transmitted through the network, and Dr. Bowles can be consulted in his office without proctor or student leaving his individual Apple.

UCSD has shown what can be done with Apples and UCSD PASCAL™. A student there will only ask once, "Pascal . . . who's he?"

Contact:

Dr. Kenneth L. Bowles
Institute for Information Systems
Mail Code C-021
University of California, San Diego
La Jolla, CA 92093