ATARI IN THE CLASSROOM

Academic applications

SISTER SCHOOLS

A fourth grader in Iowa types a question into the computer. His eyes widen as he reads the reply — "NO I'VE NEVER SEEN A LOBSTER. BUT THERE ARE LOTS OF SHARKS!"

The Iowan is getting a firsthand account of the Pacific Ocean from a sixth grader in California. In the meantime, one of his classmates is receiving programming tips from a student in Massachusetts.

Another student is engrossed in a bilingual game of *States and Capitals*. She's playing in English and her partner in California is answering the questions in Spanish.

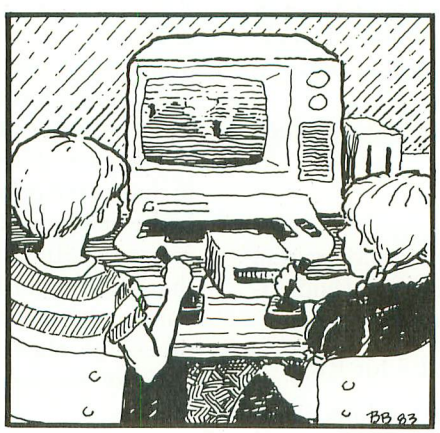
These students are in classrooms linked together by Atari Sister School Network, a telecommunications networking project founded by the Atari Institute for Educational Action Research.

Now in its second year, the Sister School Network consists of 10 elementary schools scattered across the United States. The mix includes Montessori, parochial, alternative and public schools. The Atari Institute selects the schools and equips each with two ATARI 800 systems and the necessary peripherals and software. Atari also pays for the long distance phone charges between schools.

"The first year was a learning experience for us," explained Sandra Williams, manager of program development at the Atari Institute. "We started on a small scale, matching up schools by designating them 'Big Sister' or 'Little Sister' based on the technological expertise of the classroom instructor. With the Big Sister the primary resource for the Little Sister, we set up a buddy system that makes the learning process much easier for first-time computer users and gives students a chance to see teachers in the learning mode."

The network uses BASIC, PILOT and LOGO programs. Students usually work two on a computer as there is no computer-assisted instruction (the Big Sister school is the resource when questions arise). Individual programs include Factory by Sunburst, Master Type by Lightning, Story Machine by Spinnaker and Teasers by Tobbs by APX.

The actual networking software used by the project was designed by George Amy, a teacher at Our Lady of the Rosary School in Union City, California. Amy wanted his students to see each other's input and output on screen at the same time. He took an existing program from the public domain, added a data file and adapted it for use in his classroom.



The network was using Amy's software when Atari learned of a new telecommunications capability under development at Picodyne Corporation in nearby Portola Valley.

A combination of hardware and software, the Picodyne Switch is based on a large microcomputer and allows for simultaneous use of five communication channels. Picodyne offered a prototype of the new product to Atari Institute.

"It was a wonderful opportunity for us," said Williams. "The switch really expanded our capabilities."

The Picodyne Switch features cross execution where two or more users can cooperatively execute the same program; one-to-one, real time for private conversations; conference real time; and bulletin board and mailbox options so users can leave messages for each other.

Making "electronic pen pals" is one way students use the networking system, according to Sara Armstrong, director of the Terra Nuova Montessori School in Hayward, California.

"We write the first chapter in my classroom," she explained. "And then students at the sister school add a chapter and send it to the next school, and so on.

"We communicated like this for several months and then at Christmas we visited a sister school and actually met the friends we'd made on the computer.

"It was really something," continued Armstrong. "Networking took away the isolated and impersonal machine aspect of the computer and made learning fun."

—Lee Miller

ONE ON ONE

When most people think about computers in education, they picture a third-grader learning multiplication tables or playing word games on the school microcomputer. Elementary and secondary schools across the country are exposing students to all aspects of computer use to prepare the children for the future. But who is training the older student — today's adult — who must use a database or word processing program in his everyday, workaday world right now?

John F. Kennedy University in Orinda, California is one school that is committed to teaching "computer literacy" to its students and staff. JFK offers mostly evening and weekend courses for adults who must work during the week but want to further their education.

Last September the Graduate School of Management received a grant of two ATARI 800's for the purpose of teaching computing to the non-traditional user.

"Most of our students never had any exposure to computers when they were growing up," said Shirley Daniels, instructor in the School of Management, "and certainly none of our faculty did."

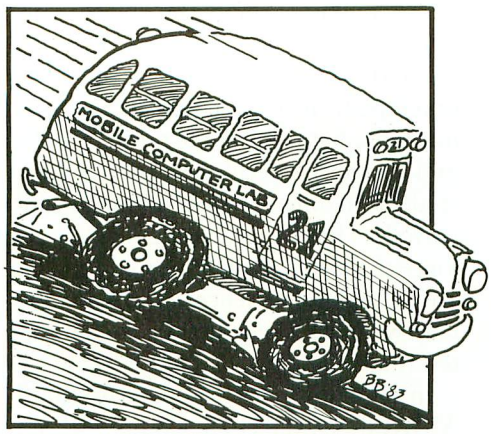
In her business course this past spring, Daniels required her students to write their term reports (feasibility studies) on the ATARI using the Atari Word Processor.

Weekend workshops, open to the public, on the basics of computing had a large response. Business students involved in finance and accounting were also interested in learning programming on the ATARIs after class.

But the School's primary aim was to get the non-traditional user interested in computing. Late this spring Mike Apostolakakis, a graduate student in management with a strong programming background, began tutoring faculty and staff on the ATARI.

Mike spent four hours each with about 25 individual members of the faculty and administration all of whom had been reluctant to become involved with the group instruction. The first two hours were devoted to teaching the fundamentals of machine operation in the context of word processing. The second two hours were spent to exposing them to VisiCalc.

"Everybody liked this approach," said



Mike. "Most people felt very good about it . . . in fact, they were very eager."

According to John Stanford, dean of the School of Management, JFK was "a good testing ground for the older student population." He believes that one-on-one instruction is the most effective way for anyone to learn computing, especially the busy adult.

—Deborah Burns

COMPUTER BUS

Last spring semester more than 3,000 school children throughout California's Napa Valley were treated to hands-on experience with ATARI computers. A refurbished school bus with 17 ATARIs on board circulated among the 21 public schools in the district, giving each fourth-, fifth- and sixth-grader several opportunities to work with Atari's PILOT language.

"This was one of the most successful projects I have seen in this district," said James Gibbany, administrator of curriculum services development in the Napa District. "It had a large impact on the community and the schools. The kids couldn't wait for the bus to come and they were highly motivated to learn."

Three introductory lessons were taught. In the first two lessons, students learned how to manipulate the keyboard and joystick by using a program that generated geometric shapes and various size letters. They also learned some rudiments of PILOT. At the third session, scheduled about two weeks after the first two lessons, each child typed in his or her own program. The program was also printed out on the one available printer.

The bus was furnished with 16 ATARI 400's and one ATARI 800 (for the instructor) by Far West Laboratories, an educational research institute in San Francisco that is keeping data on the project. An old school bus (circa 1953), provided by the district, was painted red, white and blue and named the Napa Valley Unified School District Computer Lab.

The lab accomodated 32 students at a time with each child sharing a 400. Each learning station also included an 11-inch Quasar television for video display and a cassette recorder for storage. The instructor's station (the 800) was equipped with a disk drive and dot-matrix printer as well as a TV and tape recorder.

The students' TV screens could be switched to display the instructor's "host" computer program for instruction and demonstration. Students could also reproduce the assigned lesson on their 400s and respond to the teacher's instructions.

To prepare the students for the introduction to PILOT, teachers in each of the schools provided classroom exercises without the use of the computer. The preview lesson consisted of learning about how the keyboard operates and a few programming terms. The lab sessions were 45-minutes each and occurred three times within two weeks.

—Deborah Burns

SOFTWARE START

Computers and kids seem to go together as naturally as peanut butter and jelly! Kids are enthusiastic about computers and all the games they can play on them. Learning is no longer a chore when they get to work on a computer.

In 1973 some foresighted administrators in Minnesota formed the Minnesota Educational Computing Consortium (MECC). The computers used then were large time-sharing systems, but nonetheless, over 400 school systems were using computers. Five years later MECC began producing microcomputing courseware for the Apple, which helped Apple gain popularity in school systems throughout the country.

Today the consortium developing quality educational software for the ATARI computers. In the current catalog, it has about 25-30 courseware packages available for the ATARI. These packages are usually multi-program packages that include several related pro-

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grams and a support manual. For example, one of the popular packages, Expeditions, contains three simulations that are ideal for history or social studies.

The Elementary Biology package (reviewed in our Products Reviews department) contains Circulation, Odell Lake and Odell Woods. Here children discover the relationships in a food chain by role-playing.

Other packages available from MECC cover several subject areas including language arts, math, music, sicence, and social studies. There are a variety of programs available for children from preschool through grade 12.

Although some of the programs available for the ATARI were originally written for the APPLE computer, MECC would rather develop original programs for the ATARI computer. The majority of the programs are teachers written. MECC also sponsors contests during the year for new and original programs.

The MECC catalog with complete courseware description and price list is published twice a year. To obtain your catalog, call MECC at (612) 638-0627 or write: MECC, 2520 Broadway, St. Paul MN 55113.

—Linda Schreiber

MIAMI DOES IT

Over the last two years, students and teachers in Miami (Dade County), Florida and the county school board have made a real committment to computer education.

Computers, mostly ATARIs, can be found in all the elementary, junior high, and high schools. Computer literacy is stressed in every grade. In the elementary schools, students spend more time on drill and practice, while in the high schools, programming is the primary focus.

The Dade County School Board has purchased nearly 1,000 ATARI 800's. Individual schools have also obtained various computers on their own, bringing the total to about 1,300. These computers are spread throughout a county with an enrollment of over 256,000 students.

The Dade County School Board's involvement with computers has been a three-stage process. In 1981, a plan was developed for choosing a brand of computer and integrating it into the public schools. Based on price and performance, ATARI was the brand chosen.

Next, a curriculum guide was developed. It is not specific to any machine, but sets out the types of skills and learning activities with which students in different grades should be involved. The curriculum guide covers kindergarten through adult education. Based on the experiences gained over the last two years, the guide is being rewritten this summer.

In order to purchase nearly 1,000 ATARI 800s, the Dade County School Board applied for federal funds to supplement state funding. Under the federal grant, they were able to hire an education specialist who also serves as a librarian and programmer. That person runs a central lab where software can be collected and evaluated.

Educators who are interested in Dade County's computer education program can get more information by contacting Mrs. Marilyn Neff, Instructional Computing Coordinator, 1410 NE 2nd Avenue, Miami, Florida 33132.

—Richard Herring

COMPUTER MUSEUM

ATARI computers practically run the whole show at the Capital Children's Museum in Washington, D.C.! Many of the exhibits at the museum are controlled by either an ATARI 400 or 800. The computer displays are just a part of the large Communication Hall containing a working radio and television studio, a telephone network, and a real satellite. The past as well as the future are represented, from the most primitive of technologies to the most advanced. Children are encouraged to learn by touching and playing with everything they see.

A visitor's first introduction to the capabilities of the ATARI is through the Ice Age Cave. A sound and light show operated by an ATARI 400 demonstrates how our ancestors communicated back in the Ice Age by means of cave paintings, storytelling, and ancient rituals.

Another exhibit gives children the opportunity to watch an ATARI 400 outperform the room-sized 1950's Whirlwind computer. A videotape starring Edward R. Murrow and the Whirlwind is contrasted with a demonstration on the ATARI 400: the little ATARI runs exactly the same programs as the huge Whirlwind, but with greatly improved speed, sound, and graphics.

Five ATARI 800's at the Future Center are set up to display the voice, music, color, graphics, memory, and number-crunching power of the microcomputer. Games and programs illustrate the different ways microcomputers are used in communication: through simulation of an actual event, for example, or as a database, storing numerous items of information.

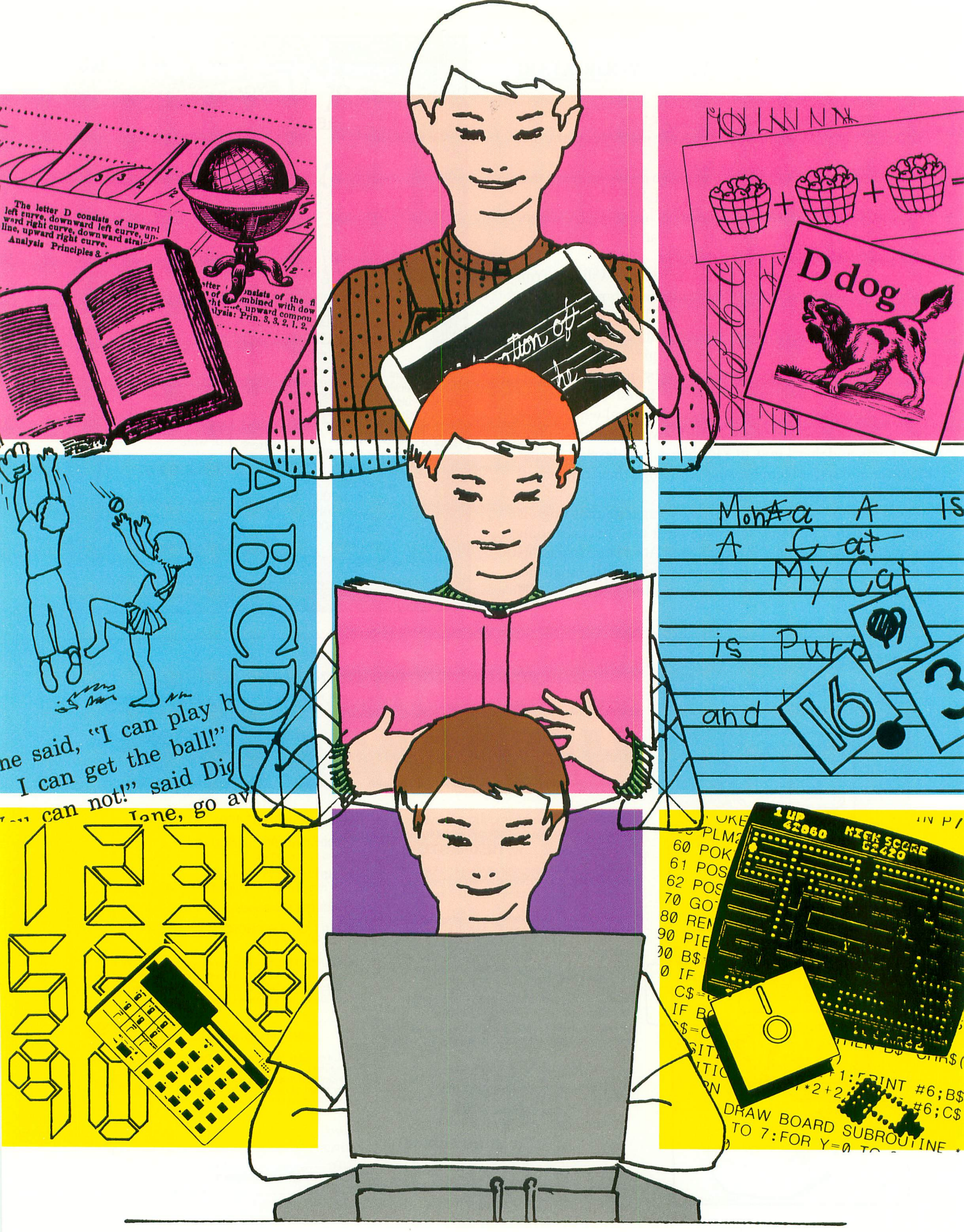
These displays give children a chance to really get to know an 800. When it's not reserved for classes and groups, visitors can use the 30 microcomputers in the Center to play games or write programs. Classes are offered for several different age groups: CompuTots, for ages three to seven, allows young children to learn about computers by playing educational games. CompuPlay provides an hour of directed exploration, while CompuBASIC teaches kids to write their own BASIC programs. CompuLab is for older children who have had a fair amount of experience and are interested in experimenting on their own.

Special events for groups can also be arranged: CompuGame turns the Future Center into a game arcade, and CompuParty lets children celebrate a birthday or special occasion. A visit to the Future Center is a favorite field trip for many classes from nearby schools, too.

Additional exhibits in the museum use ATARIs to demonstrate various educational concepts. Computers in the Think Metric Room teach children about measurement by enabling them to play Centimeter Eater. Players have to guess the metric length of a line before it is eaten by the Centimer Eater inch-worm. Children and adults alike enjoy creating bright, colorful pictures with Paint, a game that lets you select different shades from "paint cans," and then use a joystick to draw on the screen.

Other computers at the Capital Children's Museum include Wisecracker, a talking computer, the Kid-Net network of timesharing terminals. Children can send messages to different exhibits, or add their own name to a database of information about previous visitors to the museum.

—Julie Sickert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Computers in Education

Benefit or bombshell?

by JOHN and MARY HARRISON

"Our nation is at risk. The educational foundations of our society are being eroded by a rising tide of mediocrity. If an enemy power had attemped to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war. We have, in effect, been committing an act of unthinking unilateral educational disarmament. History is not kind to idlers."

This assessment by the National Commission on Excellence in Education has received widespread press coverage. We repeat it here to emphasize present educational problems and the need to explore alternatives and improvements in the way a child is educated. This is especially pertinent since one of the commission's recommendations is for all students to have a half-year computer science course.

No one can deny the explosion of the microcomputer industry over the past ten years. TIME magazine named the computer its "man of the year". Computers influence the games we play to the movies we watch. This potential just waits to be tapped to improve the quality of education. As parents, educators and ATARI users, we intend to explore the role of the computer in the revitalization of the education process.

John and Mary Harrison are parents, teachers and ATARI hobbyists. Mary teaches math and computer science at the high school level. John holds an M.S. in computer science and develops educational software. They will be coordinating the Education Department for ANTIC.

HISTORY

Ever since the development of ENIAC by the University of Pennsylvania in 1946, the role of the computer has expanded to encompass tedious or dangerous tasks. Originally designed as an electronic calculator to solve complex mathematical formulas, today the computer can be found performing numerical computations, inventory control, point of sale transactions, manufacturing operations, word processing, and a variety of chores in the home. Of all the uses for computers, their role in education has generated the most controversy.

One of the first educational applications was designed by Patrick Suppes in the mid 1960s. A series of programs to drill arithmetic facts for elementary school children was developed and tested. This modest beginning touched off the debate that continues today about the proper role of the computer in the classroom. Regardless of the answer, it is certain that the microcomputer will be a permanent fixture in the classroom of tomorrow.

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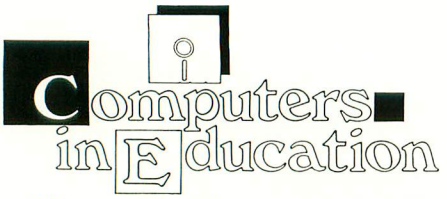

The spread of the computer's influence on society is due largely to the major advances in electronics technology. The first electronic digital computer, ENIAC, covered 1500 square feet, stood nine feet high, weighed 30 tons, contained over 18000 vacuum tubes and was able to perform 350 multiplications per second. Today's ATARI 800 microcomputer covers about one square foot, stands 4.5 inches high, weighs ten pounds, contains no vacuum tubes, and can perform about 300,000 additions per second. Meanwhile, as computing power increased, prices decreased. The ATARI 400 that sold for $630 three years ago is now available for under $100.

Not only are microcomputers inexpensive, they are more reliable than their larger and more expensive ancestors. Schools are taking advantage of this trend, buying computer equipment in ever larger quantities. Families, too, are buying computers, providing their children with an introduction to computers even before the schools. The rush to computing has almost obscured the important question: How are computers to be used in education?

TWO VIEWPOINTS OF COMPUTERS IN EDUCATION

There are two generally accepted applications for the computer in education: as a dispenser of education and as a tool. To date, the emphasis has been upon the student as a recipient of information from the computer. This application (also known as Computer-Aided Instruction — CAI) can be seen in the original work by Suppes as well as most of the educational programs on the market today. Although the packaging of today's programs may be more sophisticated, the basic tenet remains the same — the computer presents the problem, the child responds, the computer evaluates the response and the process repeats.

This is the basis for drill and practice programs. These programs allow a slow student to repeat an exercise without embarrassment or ridicule. Other students can practice new concepts to reinforce instruction already received. Since the computer, as well as the student, immediately recognizes a correct response, the program can adjust the difficulty level of successive problems.

The logical extension of drill and practice programs is the tutorial. Here, the student is introduced to new information in a series of lessons. Following each lesson, drill and practice routines are used to reinforce the material. The advantage of this method is that it allows the student to progress at his or her own rate. Lessons can be repeated to gain mastery of the topic. Well-designed tutorials include both a pretest and a post test. The pretest determines whether the student has the prerequisite skills, or sufficient knowledge to bypass that lesson. The post test is used to determine the retention of the material.

A third type of CAI is gaining popularity — the simulation. The computer mimics a real world situation and poses options to the student. The computer evaluates each decision and determines its effect. The program may then prompt the user with another question. The student must develop logical reasoning to successfully pilot the simulation. The major advantage of simulations is that they allow the student to repeat the process and vary responses in an attempt to determine the correct combination of choices to reach the desired goal.

Considerable research has determined that these methods do affect a student's real understanding of the concepts presented. However, to regard the computer only as an electronic workbook or sophisticated teaching machine does not begin to tap its potential. No one knows the uses to which the computer may eventually be put, but new applications are emerging regularly.

The computer can be manipulated by the student to explore ideas and draw conclusions. In this way, the student becomes an actual participant in the learning process rather than passively receiving knowledge from the computer.

The idea of active student participation was explored by the University of Pittsburgh starting in 1969. Supported by the National Science Foundation, Project SOLD was organized into five laboratories — computer, synthesis, dynamics, logical design, and modeling/simulation. Here a student could combine his knowledge of computer science and mathematics to test an experiment of his own design. The student, rather than the computer, set the pace and made the decisions. This concept is gaining popularity as more computers proliferate in the nation's classrooms. Students use the computer to perform tedious or repetitive calculations in mathematics and laboratory science courses, leaving more time to explore the topic being taught.

The idea of student control at a more elementary level has been the subject of research by Seymour Papert. Using turtle graphics and a programming language called Logo, Papert's group at MIT has been working with children ranging from preschool through college age for over twelve years. The purpose of this research has been to create an environment for exploring computers. Logo was designed as an interactive language to minimize the impact of continually defining and modifying procedures that would be present in a compiled language. An excellent summary of the work done by the Logo Group and some exciting ideas for new directions in education can be found in Papert's book *Mindstorms: Children, Computers, and Powerful Ideas* (New York: Basic Books, 1980).

THE ATARI COMPUTERS

The family of ATARI computers fits into this spectrum of educational uses however the user desires. The excellent sound and graphics capabilities can liven up drill and practice, tutorials, and simulations. The use of color and sound help maintain the student's interest and relieve the boredom of staring at a screen of text.

The ATARI computers are also well suited to the role as a tool. To encourage the beginning programmer, color and sound are easily accessible from ATARI BASIC. Character graphics are available from the keyboard. A wide variety of resolution modes encourage experimentation with line drawings. Hence the student programmer can utilize the graphics and sound capabilities of the machine to design his experi-

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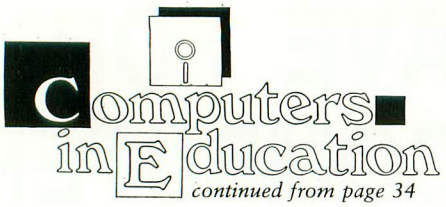

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ment more realistically or display the results more vividly. The ATARI also has the processing power to perform the tedious calculations often found in mathematics and science courses.

To bring the excitement of programming to a wider audience, ATARI PILOT and ATARI Logo are available. Both languages support turtle graphics and encourage structured program development. Since a sophisticated mathematics background is not required, young children and adults are able to quickly grasp programming concepts. Thus the ATARI can provide the environment for exploration similar to that developed by the Logo Group at MIT.

An additional use for the ATARI machines is in word processing. Errors and changes in text, once the bane of all writers, are easily handled with a word processor, and there are several good programs for the ATARI. This removes at least some portion of the dread of preparing reports because the writer knows that each page will only need to be typed once.

The independent software houses have finally recognized the potential of the ATARI computers. There has been a software explosion to accompany the hardware boom. Everyone from major publishing houses to occasional users are producing educational software. But children and beginners are not the only beneficiaries. There are many programming languages available for the ATARI owner besides BASIC, PILOT, and Logo. These include Pascal, LISP, Forth, C, and machine language assembler/editors. Combined with the huge selection of books and manuals covering every facet of the machine, the ATARI becomes one of the most versatile microcomputers on the market.

PARENTS AND TEACHERS

If the commissions's recommendation for community involvement is to be taken seriously, what are the implications for parents and teachers?

Parents are a child's first teachers. In some respects they will know their child better than anyone else ever can. The examples parents provide, the priorities they set, and their attitudes towards school deeply influence their child's academic and social behavior.

There are several stages in a child's development, many before age six. Several child psychologists have theorized that an enriched early childhood may foster readiness for school. This is the motivation behind "Sesame Street", Head Start, Montessori and other preschools. Certainly an early exposure to computers through friendly educational games should be a rewarding experience.

Parental involvement with a child's education must not stop with the first grade. The computer explosion has caught teachers by surprise almost as much as it has parents. Some educators fear computers, and for various reasons. Some doubt their own ability to learn computing. Some feel that computers may reduce the need for teachers, or diminish the teaching role. Certainly some of the effects of the computer in education will be difficult for the traditional teacher. Still, nothing can replace human kindness and the real concern of a teacher for students. The computer will assume the clerical tasks associated with attendance, day-to-day record keeping, grade calculations, and if cleverly programmed, may seem to relate personally to students. With the support of the computer, the teacher will be better able to guide each student's progress. The weak student need not automatically fail. The gifted need not be bored. All students should benefit from the greater variety of materials to which the teacher has access.

ANTIC'S RESPONSE

Recognizing the influence of computers on education in the home as well as in the schools, ANTIC has renewed its commitment to education. Over the next few months you will notice changes in the amount and content of education-oriented articles and programs that appear. As a result of this reorganization, we intend to pursue the following areas:

1. Articles discussing how to write or evaluate educational software.
2. Reviews of educational software on the market, pointing out the strengths and weaknesses of each product.
3. Reintroduction of the kid's page. Though still by and for children, we envision this as a place for the parent and child to discuss and submit questions, answers, and programs.
4. Educational software by ANTIC readers for other readers.
5. Other articles that reflect the educational uses of computers.

In order for this effort to succeed, we need your support. We hope to establish a dialogue between us so that our articles are timely and relevant. Please tell us what you want to see in an education department. We will make every effort to address the desires of the widest possible audience while providing a service to all age groups. Please, take the time to get involved and help us make ANTIC your computer magazine.