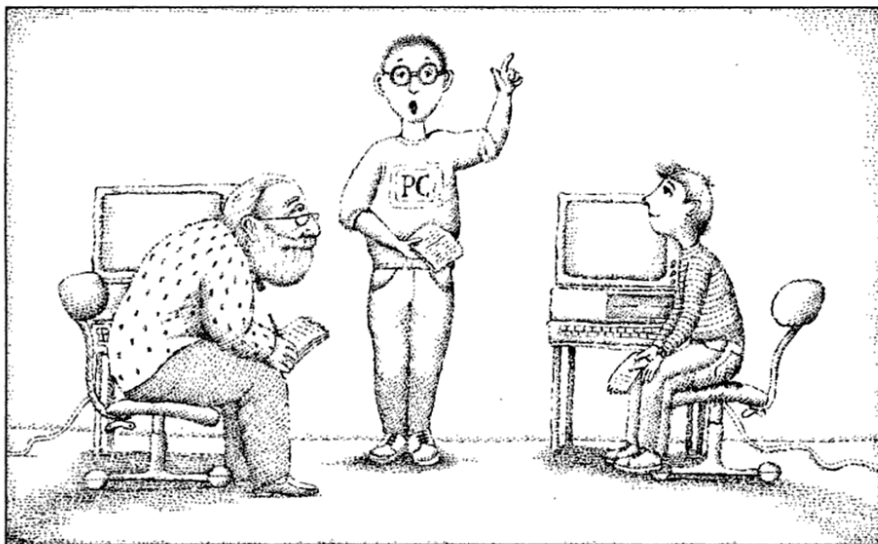


The PC Student As Teacher

In these days of short-staffed schools and ever-increasing numbers of students eager for computer skills, what could be better than having students do the teaching?



Imagine that you've just learned *WordStar* and must now teach someone else to use it. You might be frightened, but you'd reinforce what you'd learned and be forced to fill in any gaps in your knowledge.

Joan Targ and Jeff Levinsky have been pioneers of this "teaching to learn" method for helping everyone from fifth-graders to senior citizens become computer literate. The two San Francisco Bay Area educators cofounded a nonprofit corporation, Interactive Sciences, and codirect both the computer program at Palo Alto's Jordan Middle School and the Institute on Microcomputers in Education at Stanford University.

Peer Tutoring

One variation of teaching to learn that Targ and Levinsky have found particu-

larly effective is "peer tutoring," a method that requires people who have just learned to use computers themselves to teach their peers the same skills. The tutors have the chance to cement their new skills by sharing them, and each new learner has personalized instruction from someone who remembers how it feels to be a beginner.

Targ began experimenting with peer tutoring in the late 1970s when she was director of Jordan Middle School's Independent Study Center for gifted and talented students. A number of the students at the center were eager to learn about computers, but not enough teachers who had the necessary technical background to teach them were available—nor was there enough time or money available to develop and fund a teacher-training program. Also, some of the students who

had computers at home knew more than their teachers.

Targ set up a computer class for interested students, but the results were distressing. The kids who already knew something about computers learned more, but those new to computers were overawed by the more advanced students and unsure of their own ability to learn.

Determined to make the program work, Targ developed a new approach. The more knowledgeable students agreed to become tutors, working one to one with those who didn't know much about computers. This time, the results were encouraging. The beginners learned computer skills, and the tutors clarified their own knowledge and gained confidence.

The outcome of this early work was the Computer Tutor community education project. Begun in 1979 under a Title IVc grant, the project is now supported by the school district, with additional funding from other sources. To date, more than 5,000 elementary and secondary school students have participated in the program, and hundreds of parents, teachers, and community members have been reached through weekend workshops.

How It Works

In a typical peer-tutoring session, Targ and Levinsky will have each tutor teach two beginners at one computer. In some settings, more-experienced users known as "circulators" help the tutors if they come up against a problem they can't solve.

Illustration: Peter Sis

EDUCATION

Learners and tutors are matched by their speed and learning style, and lessons are designed to let students proceed at their own pace. Peer tutoring is beneficial to learners because it permits lots of

hands-on practice and provides lots of help. In addition, using kids as tutors means a potentially limitless supply of new computer instructors.

Finally, Targ and Levinsky like peer

tutoring's flexibility. It can be implemented almost anywhere—in schools, community centers, or offices.

Across the Generations

Interactive Sciences also uses "cross-age tutoring," in which kids teach teachers, parents, business people, and senior citizens—or vice versa.

How do adults react when they discover they're going to be taught by kids? "When you tell experienced teachers that their instructor will be a 12-year-old, you may get some raised eyebrows," says Levitsky. But once they see how well it works, they're sold.

Summer School

For the past four summers, Interactive Sciences has brought the Computer Tutor model to the college campus. Along with the School of Education at Stanford, it cosponsors the Institute on Microcomputers in Education at Stanford University, which offers an intensive 5-week program for educators. The institute brings together educators, researchers, and administrators who want to set up computer programs in their own schools and serve as district resource people.

During its first 3 years, the institute was geared to educators with little or no

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computer experience. They were introduced to the computer by specially selected high-school-age tutors.

In the first year, 1982, the educators followed up their learning session by sharing their new expertise with youngsters attending an Interactive Sciences-affiliated computer camp at Stanford University. In 1983, Levinsky and Targ separated the camp and the institute and

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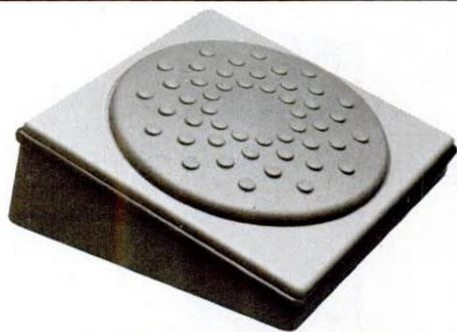
EDUCATION

tried a new approach to teaching at the institute. "We split teachers up into three groups," says Levinsky. "One learned BASIC, one *WordStar*, and one *Multiplan*. Then we formed groups of three,

and each teacher taught the other two." With this new approach, the ratio became 75 percent learning, 25 percent tutoring. "When we were tied in with the camp," he explains, "we had teachers

spending twice as much time tutoring as learning." The program could also now reach five times as many educators.

This past summer, Microcomputers in Education became a follow-up confer-



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Working with counselors and each other at the camp, beginners learn BASIC and word-processing, while more advanced students study graphics, animation, and computer music.

ence for people who had attended during the previous 3 years—"a continuation of the subjects they had studied in the past and an opportunity to talk about the problems they have faced." Next summer, the institute will again be for newcomers.

Computer Camping

Even though the computer camp is no longer connected with the institute, it's alive and well and still uses peer tutoring. Cosponsored by Interactive Sciences and U.S. Sports Development, the camp gives kids who can't be a part of the regular school program an opportunity to participate in the Computer Tutor pyramid. Working with their counselors and each other, beginners learn elementary BASIC and word processing, while more-advanced students study graphics, animation, and computer music.

"We try to tailor the curriculum to what people need," says Levinsky. "We don't think learning about computers must involve covering every last menu option. We teach *WordStar* in about 3 hours."

And the Computer Tutor learning chain doesn't end at the camp. The campers pass their knowledge along to a new set of peers—their parents. ■

Jean Varven is a free-lance writer/editor who often writes about computers in education. She is a former associate editor for Softalk and Softalk for the IBM Personal Computer.