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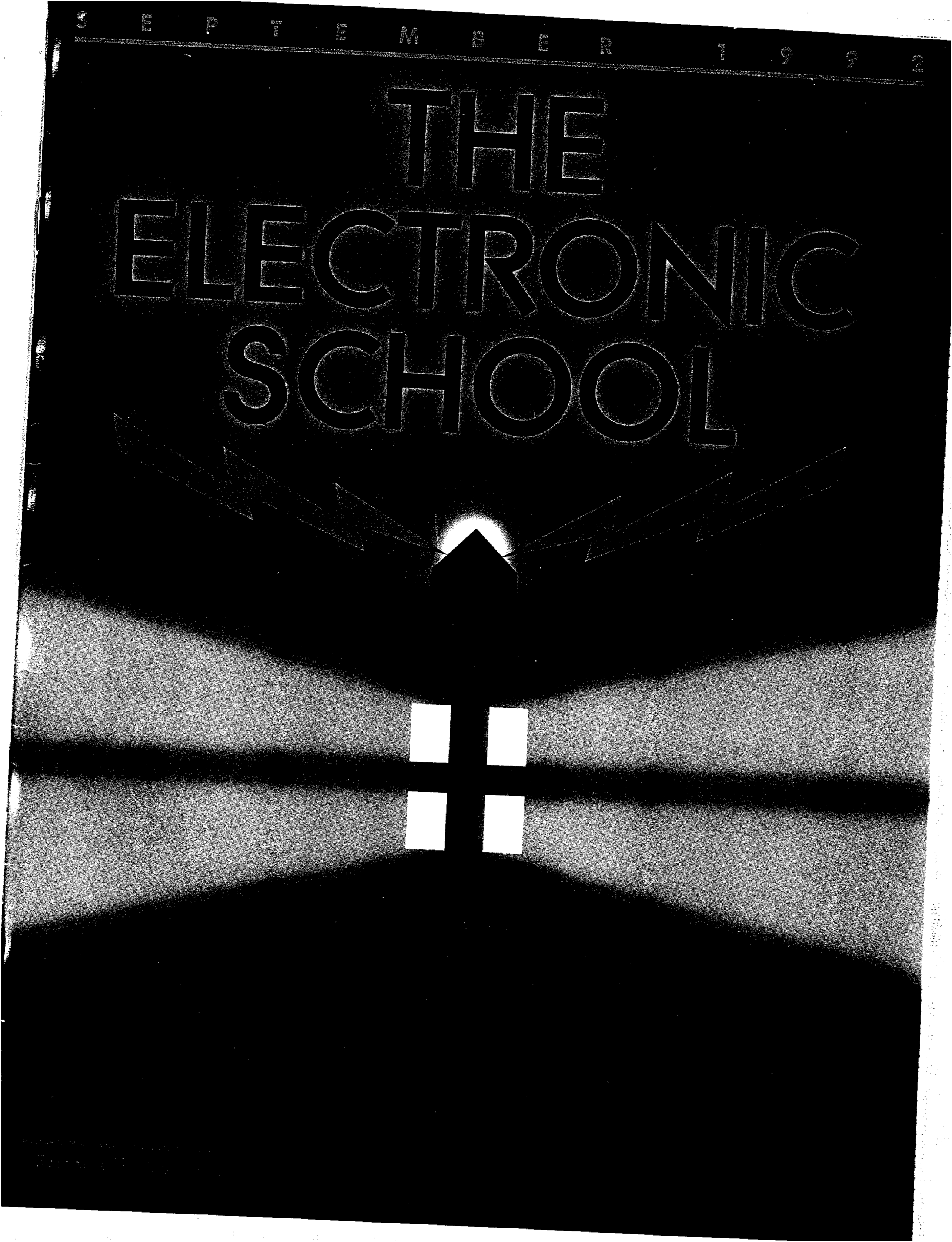
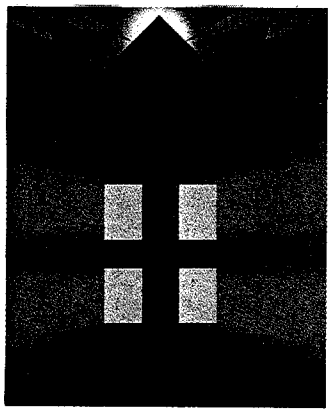
THE ELECTRONIC SCHOOL





THE ELECTRONIC SCHOOL

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TECHNOLOGY AND SCHOOL RESTRUCTURING

BY CHARLES M. REIGELUTH, JANET M. ANNELLI, AND SUSAN L. OTTO

Technology should be viewed as a catalyst for systemic restructuring in every component of a school system. Technology allows the actors in a restructured school—students, administrators, and what we call teacher/guides—to assume new roles by giving them new powers in instructional management, research, communication, and the very act of learning itself.

What exactly is systemic school restructuring? The structure of a school refers to its basic organization and functioning. Traditional schools are based on groups, not individuals; they feature teacher-led activities and lockstep advancement through grade levels and are oriented according to time. Restructured schools differ in those and other fundamental respects.

Systemic school restructuring is a phased process that involves the following activities:

- Developing a comprehensive design with involvement from administrators, teachers, parents, students, and education analysts.
- Securing funding from public and private sources.
- Selecting and developing instructional resources, providing staff development, and preparing facilities.
- Monitoring and revising aspects of the system for effective operation.
- Publicizing results so other schools within and beyond the school district can adopt the school's new structure.

No single best model of a systemically restructured school exists. Each community needs to transform its schools according to its own circumstances and goals. Yet some common approaches related to the roles of teachers, students, and parents appear in the minds of visionaries and in the growing number of restructured schools. Technology is helping all of those players fulfill their evolving roles.

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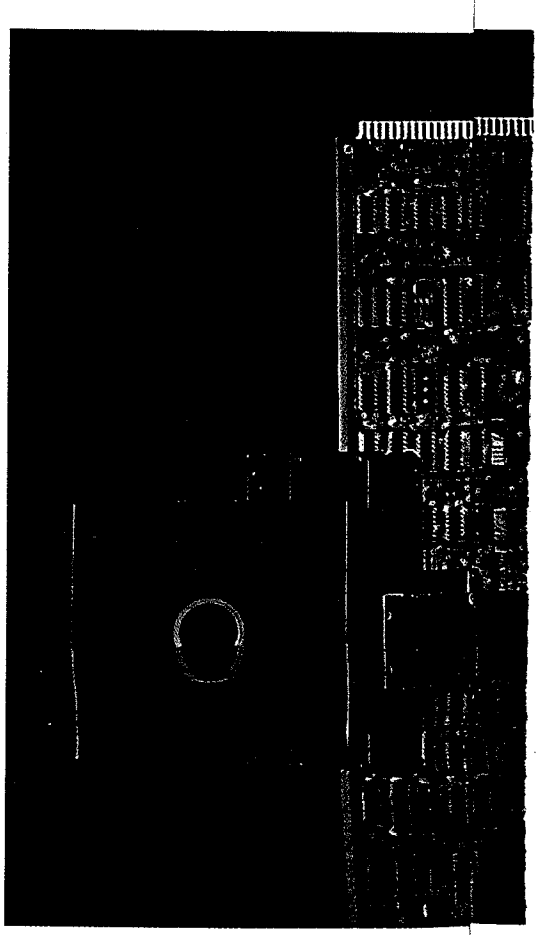
TEACHERS AS GUIDES

Modification of the teacher's role is the most important change in restructured schools. Instead of performing as presenters of information, teachers in restructured institutions function as guides who expedite, manage, and motivate student learning, much as a teacher in a Montessori school does. Besides advising and assisting students, guides plan and develop learning materials. Teachers need specialized training to assume this new role.

In several visions of restructured schools, such as some elementary schools in the Jefferson County Public School District in Louisville, Ky., teacher/guides are responsible for groups of students of varying ability levels for between three and five years. In the Saturn School in St. Paul, Minn., students previously sepa-



rated into grades four, five, and six are now grouped together in an ungraded structure—despite their range in ability level from grade one through grade 12. Because guides work with students for several years and recognize their individual age and ability levels, it no longer makes sense to continue the tradition of student grade levels.

In many restructured schools, guides use computers to manage a curriculum tailored to the needs of each student. Guides select well-designed instructional resources for students from such data bases as *Only the Best* (from the Education News Service in Carmichael, Calif.) for computer and multimedia software or the on-line KIDSNET (based in Washington, D.C.) for television resources, giving students freedom to pursue individual interests while giving themselves more time for planning, selecting resources, and working one-on-one or with small groups of students. Guides add supplementary information to the computer-aided instruction when they deem it appropriate.

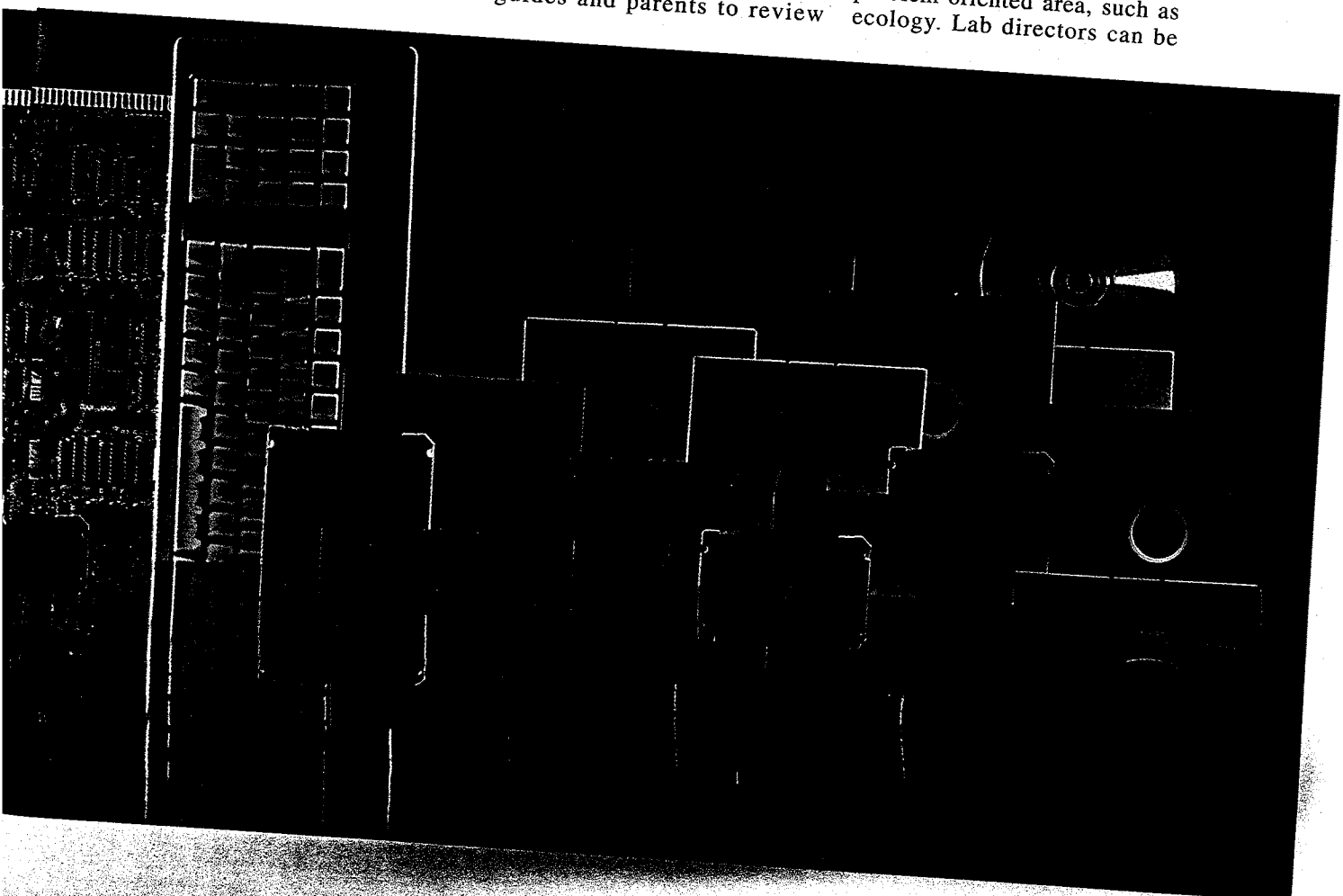
SELF-DIRECTED LEARNERS

By encouraging personalized and self-directed learning, restructured schools give students opportunities to work at their own pace. Students who master skills can move on quickly to other work, while those who need more time to achieve their objectives get the time to do so.

Personalized education plans document the goals of each student, not just students in gifted or special education programs. At the Saturn School, the term is "Personal Growth Plan." Students meet individually with their teacher/guides and parents to determine goals and objectives. These plans represent a balance between the individual student's interests and the district's and state's requirements. Throughout the year, students meet with their guides and parents to review progress, plan future goals and activities, and identify additional topics to incorporate into the plans.

To meet objectives, students—with their guides' help—select activities and projects involving a widening array of personalized learning resources, many of them computer-based and designed to match students' diverse learning styles. But learning is not accomplished in isolation. Students are encouraged to help each other in a cooperative environment and to work on projects in groups. At Saturn, for example, the goal of a group assignment to design a desktop publishing project is to promote cooperation skills.

In such schools, instructional resources are grouped in learning centers, with "experts" or lab directors assigned to each center to manage the resources and assist students with activities. A learning center can provide instruction in specific subject areas, such as biology, or in a cross-disciplinary, problem-oriented area, such as ecology. Lab directors can be



teacher/guides, parents, other community members, or even students. Some learning centers might be permanent—such as a biology lab that needs specific equipment and facilities—and others might function for a limited time.

Pursuing their own interests at their own pace using vast resources, including those made available by technology—computer software, video, data bases, and interactive on-line telecommunications—students tend to show an extra burst of enthusiasm for learning. Results are sometimes striking. In Florida's Escambia School District, for example, the dropout rate fell from 40 percent to 3.7 percent after the district established a comprehensive restructuring plan that includes Computer Curriculum Corp.'s integrated learning system—a personalized interactive technology program.

Education is the only business where the consumer does the work

Schedules in restructured schools balance individual and group needs. Instead of switching teachers or subjects every 40 or 50 minutes, students work for longer periods on a given project or activity. Areas of study and projects often extend beyond school terms and years.

PARENTS AS RESOURCES

The definition of education expands when we think of restructured schools. Restructured education demands cooperation not only from students but also from their parents and members of the community. Parents need to understand the changes in school structure and the school's goals and objectives so children will get consistent messages at school and at home.

In restructured schools, parents work with children and their teacher/guides to develop achievement profiles. At Saturn School, parents also participate in school budgeting, governance, and staff selection.

Parents and community members also become educational resources to students in restructured education. Through presentations and discussions at home and at school, and by providing access to community resources such as the city library, science and art museums, and local theaters, they widen students' experience of the world of work and study.

In restructured schools that support lifelong learning, parents and community members also have a role as learners. School "customers" outside the traditional age range—whether they are preschool youngsters, employees of companies that seek training assistance from schools, or individuals trying to learn new skills—can also benefit from the learning technologies in place at the local school.

CHANGING SCHOOLS

Like any change, introducing technology to a school system requires a great deal of organization and research. The process involves three stages:

The first stage, planning, starts with gathering political, financial, and emotional support and opening lines of communication. Educators and community members who fund the school budget must understand the link between restructuring and technology: that technology is both a catalyst that propels change and a tool that makes change possible. Also in the planning stage, school leaders must identify problems in the current system, define what changes are necessary, and determine how they want technology to help them make those changes.

In stage two, equipment is installed and teacher/guides are trained in the skills they need to use technology to its fullest potential. This staff development component is perhaps the most important part of the change process. Without people who are skilled at applying technology, hardware and software are useless. Besides formal training sessions, guides need technical support on an on-call basis—not just as technology is introduced, but also as the guides' use of technology grows in sophistication and as new technological developments are integrated into the school plan.

The third stage is institutionalization, in which change is confirmed through feedback from the people who use the technology. Careful monitoring at this point indicates whether selected technologies and their applications are effective and what modifications are necessary.

Why should school restructuring succeed this time when previous reform attempts have failed? The difference—according to Al Shanker, president of the American Federation of Teachers—is electronic technology. Over the past few decades, new technologies such as computerized forms and fax machines have transformed business worldwide. Businesses have taken advantage of technology not only because they can afford it but also because they recognize they cannot afford to postpone change. Neither can our schools afford to postpone using technology and benefiting from the changes in school structuring that it enables.

In *Technology and Transformation of Schools*, published by the National School Boards Association in 1987, author Lewis Perelman observes that "education is the only business where the consumer does most of the work." In restructured schools that promote lifelong learning, the students who are doing "most of the work" may be youngsters or adults. They, their guides, their parents, and their neighbors all have important roles to play in bringing technology into schools and making schools more effective places of learning. ◆