

classes, prompted a small group of teachers and administrators in High Point, North Carolina, to seek answers. After working with demonstration classes for four years, the teachers still have many questions, but increasing numbers of teacher volunteers in the program and a persuasive body of data strongly support what is going on. Here is a glimpse of what happens in these High Point classrooms where all children learn to read and write.

Many children come to kindergarten lacking the language concepts essential to learning to read. Children in the demonstration classes learn these concepts as many other children have learned them at home. The children are exposed daily to real experiences from which concepts are built: new people, animals, and unfamiliar things. In and of themselves, however, these experiences do not prepare children for literacy. Language must accompany these experiences, and this language must be oral and written; that is, the children must talk with one another and with the teacher about what they have experienced. They can then record their ideas in the language of their experience, supplementing what they have learned firsthand with easy-to-read books, encyclopedias, and other references on the topics.

In addition to learning about their world, the children learn about themselves and each other. Teachers keep experience charts for each child, recording what the child likes to eat and to play. For their part, children create word banks, beginning with the names of classmates that they have learned to chant, read, and write. They add other words from the language experience charts as they learn them. Some children read a great deal and have 100 or more words in their banks, whereas

other children only gradually develop reading and writing readiness skills. Every child, however, leaves kindergarten with some charts, books, and words he or she can read. No formal reading groups are taught, but everyone learns to read.

The 1st grade begins in much the same way as kindergarten ended. There is a lot going on: oral and written language in the form of charts, books, and references is a major part of every day's work. Gradually, children learn to write their own stories and reports, getting help from the ever-growing word wall, which displays the words they need most frequently. Even after the children begin reading groups and instruction from basal readers, the language experience, writing, and research continue, such that children devote three days each week to basal instruction and two days to "integrated days."

On integrated days, children read, write, and do math related to science or social studies topics. Teachers also relate art, music, and sometimes physical education to each unit. At the end of the 1st grade, each child can read the stories and reports that she or he has written. Although some may read above grade level and others below, all children are reading and writing.

In the 2nd, 3rd, and 4th grades, children continue the pattern of three days of basal instruction and two days of integrated unit instruction. Teachers emphasize research, writing, and reporting, both in the whole class and in small groups. Little by little, students learn to research and write on their own, taking pride in learning new concepts and in being able to talk, read, and write about them.

High Point demonstration classrooms are busy places where teachers

and children work hard. They also learn to work and study independently and to take responsibility for their learning. The classrooms have the same number of children per teacher and work under the same budgetary constraints as other classrooms. Yet even children whose older brothers and sisters have not learned to read and write well learn here.

What makes High Point teachers successful? The simple answer is that they put into practice many truths we all know. We know that no one method will teach all children; thus, the teachers use basal instruction and writing and lots of independent-level reading. We know that reading comprehension develops on a foundation of language comprehension and knowledge; thus, classrooms must be places where children learn concepts and the language to talk, read, and write about them. We know that children will be motivated to become literate when they read and write about what is important to them. And we know that parents will help when they see that their help makes a difference to their children. Thus at High Point, parent volunteers come in often, and because they are needed, they keep coming back.

Teaching all children to read and write is simple to describe but not easy to do. Teachers *can* do it, however, and children *will learn*.

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Mathematics

STEPHEN S. WILLOUGHBY

Can Computers Save Education?

Shortly after the advent of talking mo-

tion pictures, some educators discovered that students learned more from a movie than from a class taught by

their teacher. The natural inference was that a teacher could be replaced by a 16-mm sound projector and 180

films. Today, such a notion would be seen as extremely naive. The novelty of movies in classrooms has worn off. The need for human interaction in the classroom has been reconfirmed. So movies and other audiovisual aids are seen as useful tools for specific educational purposes, but not as panaceas.

Both technologies have had significant effects on the world in general, but the effects of computers have been even greater and more precipitous than those of movies. Therefore, a realistic education today should prepare tomorrow's adults to function well in an age of computers, just as past education should have prepared today's adults to live in a world of multimedia messages. In both cases technology should affect the *goals* of education because technology is changing the world. Specific technology should be used to achieve those goals only if it is more effective than other means.

Because the effects of computers on society are great, because their technology is changing so rapidly, because computers are expensive, and because so much mysticism surrounds them in the minds of most people, both the opportunities and dangers of computers in education are greater than for previous technological innovations. What can we do to take advantage of the opportunities and avoid the dangers?

Perhaps the most important single thing for decision makers to keep in mind is that the existence of computers changes the goals of education.

Since computers can do much of the pedestrian, unimaginative work, some skills may be less important to people in the future. On the other hand, since computers can calculate with great speed, we will need people with the imagination and judgment to decide what computations should be made and to interpret those computations after they are made. Thus, education today must emphasize problem solving and thinking even more than it has in the past.

Are computers particularly well suited to teaching problem solving and thinking? In the long run, computers will not educate or motivate the average student any more than movie projectors do. The programs run on the machines will determine their effects. Experts estimate that over 90 percent of the instructional computer programs presently available are designed to teach lower-level skills (computation, symbol manipulation, spelling, etc.) rather than the higher-order skills needed in today's world. Machines by themselves will not improve education, but the ways in which they are used may help us do a better job.

To set up programs that will educate today's children, we must first agree on some goals. Problem solving and thinking must be foremost among those goals. Then, we should examine various educational materials (textbooks, computer programs, films, etc.) to see if they help achieve the desired goals. If we need hardware (a specific computer, a projector, a piece of chalk, etc.) to help deliver the educa-

tion, we should buy it if it seems more likely to help achieve the desired goals than equally expensive alternatives. We should not buy a piece of hardware simply because it's the "in" thing to do this year, nor should we buy software designed to train children to do what a \$5 calculator or a \$300 computer can do better. We should evaluate computer software as carefully as we do textbooks (and we should evaluate textbooks much more carefully than we have generally done in the past).

The all-too-common practice of using computers as teaching machines is likely to produce children who consider computers to be the ultimate authorities. Computers used as teaching machines may produce people who can perform some low-level skills efficiently, but they will do little to improve higher-order skills unless programs are carefully developed and intelligently chosen by schools. And the use of computers as teaching machines is almost certain to produce students who don't like computers and don't understand their place in the world. The crucial thing for educators to remember is that the numbers and kinds of computers in children's hands are far less important than the quality of the ideas in their minds. □

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Textbook Selection

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What "Training" Should Be Provided?

Two national conferences on the textbook¹ recommended that anyone who evaluates textbooks should have "training." What they did not identify is what this training should include. The following is a composite of recommendations from individuals² who

have special expertise in textbook selection. I asked each expert to identify the three most essential topics or critical areas of training that districts should provide. Although few could confine themselves to three items (nor could I), this list seems to offer the

"basics" for anyone involved in the selection of textbooks at the local level.

1. *Provide a plan for adoption.* Anyone involved with selection of new instructional materials should be provided with (or should help determine)

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