The Basics Do Change


Q. How do you respond to people who argue against computers in schools by speaking about the importance of the "basics"?

I begin by agreeing that the basics are really important. Many people agree about what constitutes the basics in education, and a number of the basics can be combined into an overall goal for education such as the following:

All students should gain a working knowledge of speaking and listening, observing (which includes visual literacy), reading and writing, arithmetic, logic, and storing and retrieving information. All students should learn to solve problems, accomplish tasks, and carry out other higher order cognitive activities that make use of these basic skills.

There are three important ideas here. First, the list is often summarized as "the three Rs," even though it contains more than three items. Second, the goal has an emphasis on performance at a level requiring higher order skills. Third, all students should achieve the goal.

Ten thousand years ago, the basics of education were quite different. Reading and writing had not been invented. Information was stored and passed on mainly through a combination of oral tradition and artifacts such as tools. The development of reading and writing clearly brought with it a significant addition to the basics.

Thus, the basics themselves can and do change. However, they do not change very often. The three Rs have been with us for thousands of years. We have no indication that they will suddenly disappear.

The higher order thinking skills associated with the basics have also stood the test of time. When we say "read and write" we mean that there should be intelligent, higher order processing of information through reading and writing. Indeed, we mean that people should be able to meet contemporary standards in the use of these basics. For example, a few thousand years ago nobody was expected to be able to read a bus or train schedule. Now, however, a lack of high performance on such a task is taken as evidence that our schools are failing. The emphasis is on performance—on being able to read and process the information in order to meet contemporary standards.

The idea that all students should master the basics is an important part of our educational goals. If we were to go back just a few hundred years, we would find ourselves in a time when many people received no formal education in reading and writing. Of those who did, the highest proportion received fewer than three years of formal instruction. Contemporary standards were not very high. Standards do change.

Tools and Contemporary Standards

There is another dimension to the basics: the tools we use. The tools and the basics are so intertwined that in many cases we do not attempt to separate them. For example, the abacus has been used for about 5,000 years. Over the past few hundred years, paper-and-pencil arithmetic
replaced the abacus in many educational systems. Both the abacus and the paper and pencil are tools—they are physical artifacts developed by people. Other artifacts that have proven very useful in arithmetic and mathematics include me slide rule, the calculator, and the computer.

Similarly, consider writing. At one time students had to learn how to select an appropriate quill, cut its point properly, and gather and mix the ingredients for ink. These were part of the basics of writing. Later, pencils were developed—and then the typewriter and then the ball point pen. Still more recently, the word processor was developed.

We have nearly universal agreement that arithmetic and writing are basics in education. However, we lack agreement on which tools should be embedded in the basics and how those tools should affect the basics.

Obviously, there is no single right answer. It is both appropriate and desirable that people should argue about which tools to embed into the definitions of the basics. These discussions need to include a focus on contemporary standards of expected performance in using the basics.

To take a simple example, when I was in high school all students taking algebra learned to calculate square roots by using a paper-and-pencil technique that bears some resemblance to long division. This is a rather laborious process, and it is easy to make mistakes. Now, however, this computational technique has largely disappeared from the curriculum. It has been replaced because students now have easy access to handheld calculators. The hand-held calculator can calculate square roots much faster and more accurately than students doing the calculations by hand. Moreover it does not take very long to learn to use a calculator to calculate a square root. The learning time that is saved can be devoted to other tasks.

The point is that the calculator supports an increase in contemporary standards in arithmetic and mathematics. To a large extent, contemporary standards in education are based on levels of performance expected of people working in business and industry. Business and industry are less constrained by the weight of history than are schools, and people working in business and industry select tools that help them solve problems and carry out tasks. Thus, business and industry set contemporary standards based on the use of available, effective tools.

This type of analysis should help us to understand the nature of the basics issue. I strongly support the importance of the basics. But I want students to learn to meet contemporary adult standards of performance, too. Thus, I strongly feel that students need to be educated in the environment of the tools that adults use as they define their own contemporary standards. Computers are now part of the basics!

[Send your questions for this column to Learning and Leading With Technology, International Society for Technology in Education, 1787 Agate Street, Eugene, OR 97403-1923; fax 503/346-5890; e-mail tsfe@oregon.wregon.edu. You can e-mail Dr. Moursund directly at moursund@oregon.uoregon.edu.]