Effective Practices (Part 2): Productivity Tools


Q. I am planning to make a presentation to our school board. Are there some really good arguments that computers make a difference in education?

We grow up surrounded by human produced artifacts— aids to the mind and aids to the body. Reading, writing, and arithmetic are examples of human produced aids to the mind; binoculars, bicycles, and telephones are examples of aids to the body.

All of these human produced artifacts (let's agree to call them tools) extend the capabilities of individuals and groups of people. Those who have learned to use these tools effectively have increased their ability to solve problems, accomplish tasks, and learn about the world.

On a historical time scale measured in hundreds of thousands of years, the development of society-changing tools has proceeded at a moderate pace. Thus, historically, most people have faced very few of these technological changes during their lifetime.

However, the pace of change has quickened over the past few hundred years, and it continues to quicken. Now we have new tools being piled on new tools in a never-ending onslaught. Each year we see a number of new, potentially society-changing tools.

Many of the new tools make use of computer technology. Thus, our educational system is faced by the challenge of how to deal with computers as tools.

Generic Computer Tools

Many people simply "throw up their hands" at the pace of change of computer technology. They suggest that the rate of change is so great that there is no sense in helping students learn about the technologies in school. They argue that "it all will have changed in six months."

However, many new technologies are well worth learning. For example, the microcomputer with a word processor began to be readily available more than 15 years ago. The difference between writing by hand and writing in a word processing environment is considerable, and is probably larger than the difference between writing with a word processor developed in 1980 and writing with a present day word processor.

The point is, we have a new tool for writing. It is not particularly easy to learn to use this writing tool, but once one learns to use it effectively, it is relatively easy to adapt to the changes this tool continually undergoes.

A word processor is a generic tool. It has general use across many different disciplines and can be used to accomplish many different writing tasks. It is not a tool that will disappear one year or five years from now. We can integrate the use of word processors into our K-12 educational system with confidence that students just now entering kindergarten that the word processor will be a useful and routinely used tool in their adult lives.
There are many such generic tools. Following is a list of some of these tools, each of which has the characteristics of widespread applicability and a long life expectancy. Of course, each tool will change significantly over time, growing ever more powerful and versatile. However, each has the characteristic that once a person masters it as a basic tool, it will not be overly difficult to adapt to the changes the tool undergoes.

Computer assisted design (CAD). CAD software is used to produce architectural and engineering drawings. It has replaced the ruler, compasses, protractors, and other tools the draftsperson formerly used.

Database. A database is an organized collection of information, such as a telephone book or encyclopedia. A computerized database is much easier to edit (add entries, make corrections, delete entries) and use than a printed database.

Desktop presentation (to accompany oral presentations). The overhead projector, filmstrip projector, movie projector, tape recorder, and video projector have gradually merged into a computer-based presentation system.

Hypermedia. A hypermedia document, which contains text, sound, graphics, and video, is designed to be used interactively. Hypermedia is a new form of communication.

Spreadsheet. An electronic spreadsheet, which allows users to manipulate and make computations using numbers and formulas, is a standard tool in modern business and industry.

Telecommunications. This covers a variety of software used to link people and computers across distances.

Word processor. Electronic text editors have become the norm for all professional writing because of the power they offer for formatting and changing documents.

Each of these generic tools can be integrated into the K-12 curriculum in a manner that will significantly help students as they move into the adult world.

[Send your questions/or this column to Learning and Leading With Technology, International Society for Technology in Education, 1787 Agate Street, Eugene, OR 97403-1923; fax 541/346-5890; iste@oregon.uoregon.edu. You can e-mail Dr. Moursund directly at moursund@oregon.uoregon.edu.]

Note: The National Foundation for the Improvement of Education (NFIE) has received funding from Microsoft founder and CEO William Gates III to carry out a project titled “The Road Ahead.” NFIE is a non-profit educational foundation created by the National Educational Association in 1969. NFIE has subcontracted with the International Society for Technology in Education (ISTE) to do research and evaluation on this project. Some of the ideas in this series of columns on computers and effective practices are based on this research.