Robert Logan's The Fifth Language


Robert K. Logan's recent book, *The Fifth Language: Learning a Living in the Computer Age*, brings an interesting new perspective to computers in education. Logan (1995) argues that computers (along with other related information technologies) constitute a language. He sees this language as the fifth in a series of languages that have developed over time. These languages include speech, writing, mathematics, science, and now, computers. Logan argues that our educational system needs to be substantially modified to reflect the capabilities of computers as an aid to communication and human thinking.

**What Is a Language?**

People define the term language in many different ways. However, a generally accepted definition is that given by Vygotsky (1962), who described language as a vehicle for communication and thought.

Speech (natural language) is a powerful aid to communication and thought. Logan presents a carefully reasoned chain of arguments that the four other languages-writing, math, science, and computers-each satisfy the generally accepted definitions of language.

**A Brief History of Languages**

Logan's book also provides an informative summary of the history of the non speech languages. He notes that evidence of memory aids far precedes our earliest records of writing. For example, drawings and paintings on cave walls have been dated from more than 30,000 years ago. Tallies (for example, notches on animal horns) were in use more than 15,000 years ago.

Soon after the agricultural age began about 10,000 years ago in Sumer, a country located in the Middle East, agricultural societies began developing individual, uniquely shaped tokens that represented various agricultural products—a jar of oil, a measure of wheat, or a goat. At first, the number of tokens was small—perhaps 24 or so—but as agriculture grew more complex and cities began to develop, the number of tokens grew to as many as 190.

After about 5,000 years, the increasing size of cities and the complexity of agricultural activities made the use of tokens in the information-processing system impractical. Within the next 250 years, writing and mathematics were developed. These were powerful aids to the representation, processing, and communication of information. Because it takes considerable formal instruction and practice to learn writing and mathematics, schools were developed to teach what we now call "the three R's" to government and business clerks. (It is interesting to note that these schools used classrooms and had class sizes much like those in today's secondary schools.)

It took another 2,500 years before the methodologies for collecting, storing, processing, and communicating information overwhelmed the capabilities of the languages of speech, writing,
and mathematics. This led to the development of science as an organized discipline—and as a language.

Writing, math, and formal science were tools used by a very limited number of people until technologies for the mass production of paper and books were developed by Gutenberg and others in the mid-15th century. These technological developments made it possible for a significant percentage of the population to gain the knowledge, skills, and power of writing, mathematics, and science.

Finally, it took until the 1930s (about 2,500 years after the development of science as a formal discipline) for the information explosion to overwhelm the languages of speech, writing, mathematics, and science. This information explosion led to the development of computers—the fifth language.

Computers as a Language

Logan bases much of his analysis on the work of Marshall McLuhan, a worldwide leader and visionary in communications. McLuhan coined the term "global village" and the phrase "the medium is the message." McLuhan and others have noted that new languages include their predecessors; they add new powers but lack some of their predecessors' powers. Thus, writing and mathematics did not replace speech, but they certainly empowered their users in ways far beyond the ways speech could.

Similarly, science, including its attendant features—the scientific method; the orderly collection, classification, and analysis of data; and model building—builds on and uses the languages of speech, writing, and mathematics. However, it provides its users with tools and power far beyond what is provided by these other three languages.

Computers as a fifth language builds upon the power inherent in the four preceding languages. Computers do not obviate the need for speech, writing, mathematics, and science. However, computers have engendered new tools for the acquisition, storage, processing, and communication of information. Interactive hypermedia and the World Wide Web are two obvious examples. Other examples include tools for composing and/or editing sound and video, software for graphic artists, systems for manipulating mathematical symbols, simulations in the sciences and social sciences, and medical imaging systems.

Educational Implications

It takes a lot of learning time and effort to develop a reasonable level of knowledge and skill in a language. For example, the acquisition of speech begins in very early childhood, and formal instruction in speech (rhetoric) often continues far into a person's educational life. Writing, mathematics, and science are part of the required curriculum in K-12 education and on into college.

Eventually it will become clear that learning computers as a language requires a similar amount of study and practice. In the near future, informal instruction in computers as a language will begin before students start school. Formal instruction will be built into the curriculum at every grade level and continue as part of a college education. All teachers will need to work with their students in the use of this new language.

Educators have a long way to go! Fortunately, many teachers now are comfortable enough in using computers that they can learn alongside their students as they implement new ideas in the
classroom. To aid in this effort, ISTE-developed and NCATE-approved standards are in place for teacher education, both for classroom teachers and technology specialists. There is now and will continue to be a steadily rising tide of teachers who have knowledge and skills in the use of computers in education.

**References**
