
This is the third "Editor's Message" that I have written about Logo. It is motivated by three relatively recent Logo-related events that have affected me.

First, this past summer ICCE acquired the *Logo Exchange* and installed it as the publication of SIGLogo. This represents a serious financial commitment on ICCE's part. It is a major extension of ICCE's previous Logo-related activity of publishing Logo books and carrying a Logo column in *The Computing Teacher*.

Second, my recently increased interest in problem solving has extended in the Logo direction. Sharon Burrowes Yoder (editor of the *Logo Exchange*) and I are currently writing a series of articles on Logo and problem solving that will appear in the *Logo Exchange*. We focus on using Logo as a vehicle to help students learn general ideas about problem solving, and on helping students transfer this knowledge to domains outside of the Logo environment.

Third, I recently had the opportunity to spend quite a bit of time talking with Seymour Papert and to attend several of his presentations at a conference in Calgary, Alberta, Canada. This was a most enjoyable and rewarding experience.

Initial work on Logo began about 20 years ago. This was several years before Art Luehrmann coined the phrase computer literacy and educators began to talk about helping all students become computer literate. The basic ideas underlying Logo, both 20 years ago and now, have little to do with computer literacy. The focus is not on the computer. Rather, the goal is to help create a rich, exploratory learning environment that empowers the learner. Twenty years ago Seymour Papert had a vision that computers would eventually prove very powerful and cost effective in helping to create such environments.

But a lot has happened in the computer field during the past 20 years. For example, microcomputers with graphics and sound have become available. Applications software, such as word processors and spreadsheets, has come into general use. Many millions of people now have computers in their homes, and perhaps a quarter of the adult workforce in the United States regularly uses computers. It is reasonable to ask whether such changes have obviated the need for or the value of Logo.

In responding to such questions, it is important to be aware that Logo is a living, growing, ever changing language and an aid to creating good learning environments. Original Logo versions lacked Turtle graphics and ran in timeshared environments on mainframe computer...
systems with output to relatively slow printers. Logo with graphics, sound, and color are all more modern developments. Still more modern are LogoWriter and LEGO TC logo. In the future we may well see Logo versions that include built-in database and telecommunications capabilities.

The trend is clear. The Logo goal is to make use of computer technology to help create learning environments that engage the minds of children in rich, exploratory, open-ended enquiries. Progress in understanding how to accomplish these tasks depends on field-based research, and such research has continued throughout the history of Logo. Progress in hardware capability and in software methodology has supported the development of new and better versions of Logo. The decreasing cost of hardware, the increasing availability of teacher and student support materials, and the growing understanding of staff development and how to support teachers using Logo with their students have all contributed to the potential of Logo.

It is easy to understand why Logo has so many dedicated supporters and will continue to thrive. All educators want to help children learn and develop their potentials. All educators recognize the value of having rich learning environments consisting of varied combinations of teachers, books, audiovisual materials, hands-on materials such as math manipulatives and artist supplies, and so forth. Computers can help create rich learning environments, and Logo represents one major approach to doing this.

The Logo dream is still alive, and in a few places the dream is slowly becoming a reality. Seymour Papert suggests that significant effects become clearly visible when students have easy access to a Logo environment for an hour a day. Research by Papert and others at the Hennigan School in Boston supports this position. Significant changes are noted in many children who have that daily hour of computer access for Logo-related activities.

One standard question is whether time taken away from the conventional curriculum will lead to decreased test scores. Researchers at the Hennigan School feared that this might happen, but it didn't. This suggests that an hour a day can be taken from the regular elementary school schedule with no ill effects on conventional school goals. The net effect of the conventional curriculum plus the Logo intervention is proving quite positive at the Hennigan School.

I feel that the work of Papert and others in the Logo field should be an inspiration to all of us. Computers are not a quick fix for what ails our educational system. But we are making continued and cumulative progress in the use of computers in education. Eventually computers will contribute substantially to some of the major changes needed in our educational system.