

Scardamalia, M. (1999). Moving Ideas to the Center. In L. Harasim (Ed.), *Wisdom & Wizardry: Celebrating the Pioneers of Online Education* (pp. 14-15). Vancouver, BC: Telelearning, Inc.

## **Moving Ideas to the Center**

I have never thought of online education as being my 'field.' I got into software design because computers looked like a way to implement some educational ideas that had arisen from research that Carl Bereiter and I conducted on the writing process, intentional learning, and expertise. Expert writers and expert learners, we had found, deal rather directly with their knowledge. Inexpert writers and learners instead focus on the immediate task--producing the essay, doing the assigned exercises, or whatever. When we looked at classrooms we saw everything focused on tasks and activities. It was as if schools were designed to produce nonexperts. How could we bring knowledge into the center of students' (and teachers') attention? That became the challenge to which it seemed technology might be a necessary part of the answer.

For the classroom to shift from a focus on tasks and activities to a focus on knowledge is a radical shift, as all who attempt it discover. I have come to liken it to a Copernican Revolution, for it is much like moving the sun from the periphery to the center. The focus on tasks and activities is not simply a matter of tradition. On one hand, it is an adaptation to the management situation faced by a teacher who must keep thirty or so students productively occupied throughout the school day. For the Copernican Revolution to take hold, that management situation has to be altered--and since very little can be done about the many-to-one ratio, this means somehow radically altering the activity structure. But the focus on tasks and activities also seems to derive from a low opinion of students' intellectual capabilities. Focusing on knowledge--on the creation, examination, and improvement of ideas--may be fine for the graduate seminar, but it will not work with less mature students. Or so the conventional wisdom holds. Changing that wisdom would require demonstrations that young students are capable of genuine engagement with ideas.

So, the design challenges were (1) how to engage students in dealing directly with problems of knowledge, (2) how to alter classroom structures so as to make this engagement possible, and (3) how to support knowledge processes in immature students so as to ensure that they would be productive. Our previous research had yielded strategies for meeting the third challenge--methods of what we called "procedural facilitation." To meet all three design challenges on a large scale we needed systems through which students could support one another in the advanced socio-cognitive processes that lead to continual improvement of ideas. We tackled that problem by building supports for these processes into local- and wide-area networked technology.

In 1983, with help from computer science colleagues, I had implemented a patchwork system in a 300-student psychology course that I taught at York University. A key design challenge was that of working around then-dominant conferencing systems that result in a

string of messages rather than what we came to call knowledge building discourse. Another challenge was engagement with ideas focused on shared goals for knowledge advancement rather than focus on prepared texts. Even in crude first approximations to a knowledge building technology, students began responding to each others' work instead of having everything funnel through me. We all experienced the excitement.

I moved to OSIE in 1985, where Carl was already, and assumed the role of head of the Center for Applied Cognitive Science. The goal was to join the disciplines represented by the Cognitive and Computer Sciences, and more particularly to initiate work in the field of computer supported intentional learning environments. We went with our ideas to Doug Penny at the Ontario Ministry of Education, who saw the potential for implementing these ideas with the Icon--Ontario's ahead-of-its-time networked computer for schools. With a grant from the Ministry we began a 15-year program of research. Our first act was to visit our OISE colleague Bob McLean, who immediately saw that what these ideas called for was not an improved kind of conferencing system but rather a special kind of network database that had the capabilities of a conferencing system (it would allow comments on other people's entries, for instance, and display the identities of contributors) but that had the cumulative and searchable properties of a database. Within two weeks he had a simple prototype running. We recruited a staff of talented young programmers and struck a partnership with two teachers at the Huron Street Public School in Toronto, who had been brave and valuable participants in our earlier research -- Jim Webb and Chuck Laver. By the next fall we had the first version of CSILE (Computer Supported Intentional Learning Environments) running on a local-area network in their classrooms.

The power of students collaborating in the construction of public knowledge astonished us all. We had embarked on the CSILE experiment with high expectations, but none of our previous research had prepared us for the level of intellectual productivity that the Huron Street students were exhibiting. One 'learning organizations' champion claimed that he saw his first real learning organization with his visit to Huron. Videotapes and conference reports of what the students and teachers were accomplishing drew visitors from around the world and brought in research grants from IBM, Apple Computer, and the James D. McDonnell Foundation. A number of doctoral theses were done, using data from the CSILE databases. A partnership for design and marketing was formed with Learning in Motion in California. We used the results of a decade of research to produce a dramatically enhanced version of the software, now known as Knowledge Forum®. However, it has not been just the software that has advanced. The "technology of use," as we call it, has also advanced in ways that longitudinal research has clearly documented.

An upbeat ending to this story would tell of the growing number of sites around the world where the "Copernican Revolution" is taking place, not only in schools but also in higher education and workplace and cultural settings. There is, however, a downbeat ending as well, and it has to do with the overall state of educational technology in the schools. With very few exceptions, all the software used in schools continues the traditional focus on tasks and activities. Impressed by students' wonderful multimedia productions, educators fail to recognize the generations-old school "project" in its new finery. Excited by

intercontinental email exchanges and cross-school projects and games, they overlook the often banal and unprofitable content. And then there is all the drill-and-practice software, which seldom offers more than a motivational advantage over the traditional workbook. The Knowledge Age has not yet come to the schools. The Multimedia Age has arrived in its stead.

Not that we have anything against multimedia. Graphics were an outstanding feature of CSILE from the beginning and multimedia are incorporated into Knowledge Forum in ways that directly serve knowledge-building purposes. It is all the matter of what is central. When document production is central, knowledge building is in trouble, regardless of whether the medium is text or something more contemporary.

Two historical factors seem to have blocked the emergence of knowledge-centered online education in the schools. One is that (perhaps out of necessity) school systems put technology under the control of teckies, many of whom lacked educational sense or vision. The school systems where we have made significant headway are all exceptions to this rule. Elsewhere, we have suffered at the hands of technology specialists like the one who reported back to his board that CSILE was "just a database."

The other factor is that the first exposure most educators have had to computer networks has been in a wide-area context of email, computer conferences, or Web site visits. Accordingly, the potential of local-community networks is unknown to them. Many we have talked to have trouble seeing any point to a network for students who can easily address each other face to face. Our own experience, of course, was the reverse. We started with local-area networks and discovered the enormous potential they have for transforming the intellectual life of the classroom. Once you have vigorous knowledge-building communities in different schools, there is much to be gained by broadening the community so that they interact, and then bringing in other communities, such as those of museums, businesses, and civic organizations-plus the parents. Our current work on what is called the Knowledge Society Network is aimed at this more inclusive kind of knowledge building. But the nurturing of a knowledge-building culture within the local community is still a vital and challenging part of the effort, and if it is omitted the prospects for building such a culture over the Internet are doubtful.

If online education is a 'field', we trust that this is a temporary expedient, the need for which will disappear as the various digital technologies become just a normal part of the resources for educational design and for the solution of educational problems. In a history-making presidential address to the American Psychological Association, George A. Miller proposed that the profession should try to "give psychology away"--to disseminate psychological expertise and embed it in the normal workings of society rather than hoarding it as a specialty. Our fond hope is that the Telelearning•NCE may do the same for online education.