

## Catalyzing debate about fundamental change in education

Seymour Papert and Carol Strohecker

"Technology and Change in Educational Practice" will close with a discussion led by Seymour Papert and/or Carol Strohecker, revisiting themes addressed last year at a conference held in association with Ireland's hosting of the EU Presidency: "New Futures for Learning in the Digital Age."

The closing session will focus on the themes of *Epistemology* and *Change*, addressing these questions:

*Is knowledge fixed? Does it evolve?*

*What is the source/s of our knowledge?*

*How can we evaluate knowledge?*

*Could knowledge previously associated with higher education become part of curricula for earlier education?*

*Rather than using textbooks, could children rely on primary and secondary source materials, as do historians and others engaged in knowledge production?*

*What barriers do we face in attempting educational change?*

*What factors promote change?*

*Is crisis necessary for change in education?*

*What supports do teachers need in order to experience how technology can be used as an agent of change?*

*What does it mean for the system to learn?*

Renewing this discussion is fitting in the context of the newly formed Knowledge Lab and is particularly salient now, as the UK hosts the EU Presidency and comparable events are encouraging Europe-wide dialogue about these pressing themes.

The site of last year's conference, held by Ireland's Department of Education and Science, was the now defunct Media Lab Europe (MLE), the European Research Partner of the MIT Media Lab. Conference delegates had an opportunity to tour various lab areas, talking with the researchers and seeing the work in progress.

Leading up to the conference, the government organisers' working title had been, "ICT in Education." As the planning proceeded in collaboration with representatives of MLE, we discussed ways in which the rubric revealed assumptions about the nature of new

technologies and ways in which people use them. We decided to hold a symposium in conjunction with the conference, encouraging selected delegates and others involved in educational research and practice to question assumptions as we bring computational technologies into schools.

Thus the title for our follow-on symposium became, "ICT in Education: Incremental Progress or Fundamental Change?" In advance of the event we asked invitees to send statements of position on this driving question. Framing the debate, Seymour Papert urged them to consider the implications of digital technologies for learning: "Some people imagine education undergoing changes as far-reaching as those that have turned medicine or communications into forms that would be unrecognizable to anyone from earlier centuries, while others contend that education may change its superficial form but will always be recognizably what it always was."

Of course we did not presume that the symposium could decide between the alternatives. But we did hope that the event could help in formulating the issues more clearly and that through the symposium we could catalyze widespread discussion of the challenges.

Dr. Papert further set the stage through his address in the preceding conference, saying that he may call the book he is currently writing, "Fiddling While Rome Burns" – which is "exactly what the world's doing about education. We're all meddling with details, tinkering here and there with a system which is about to collapse." Dr. Papert criticised resistance to change and called for curricula focusing on new knowledge, such as ideas in computation and progress in mathematics.

"Wild imagination, passion, being close to nature, and believing in magic – that is what we need. I think these are all elements that we need to bring into the otherwise cold version of use of computers called 'ICT.' I hate that, I really hate that name," he stormed.

He described recent efforts in the United States, particularly in the State of Maine, where the government provides a laptop for every child as an important step in cultivating a culture of learning with digital technologies in the schools. Comparing the effort to projects described by conference delegates from Ireland and Estonia, he said:

"Maybe in small places, less dominated by big bureaucracies, you can make changes happen more easily... Often the smaller place that thinks of itself as a developing country is the one where development can happen. Whereas the countries that think, 'We are developed,' are too arrogant to open the door to real change."

Following the conference, we asked the symposium delegates to address themes of *Epistemology, Learning, School, Society, Technology, and Change*. To close "Technology and Change in Educational Practice" on Thursday, we will focus on *Epistemology* and *Change* – but recaps of last year's discussions suggest ways in which all of these themes interrelate:

### *Epistemology*

Beginning with broad and classic questions (Is knowledge fixed? Does it evolve? What is the source of our knowledge? How do we evaluate knowledge?), participants came to focus on discussion of textbooks. They noted that people often equate curriculum and textbooks, that textbooks are value-laden, and that some uses of "ICT" are simply on-screen versions of existing textbooks. Some questioned how textbooks can be transformed and whether we should abolish them, as they are tied to a specific pedagogy and assessment structure and inhibit the use of other methods.

Dr. Papert pointed out that historians don't rely on textbooks but use primary and secondary sources to research a topic. Noting that textbooks create prefabricated chunks of knowledge that no one in the real world would use, he questioned why we can't let our children act more like historians and others engaged in knowledge production.

### *Learning*

Among the diverse group of participants, problems with terminology became particularly apparent as discussants struggled to define "the way people learn." One approach considered how we learn from experience, from books, from computers, and so on, enabling the view that technology has provided new ways to learn. Another approach considered inner processes as could be described in terms of neurology or cognitive science. From this perspective some people thought that learning has not changed in 5000 years, from the days of Plato and Socrates. But other people thought that technology does allow us to think about things in various ways, abstract or concrete, which were not possible before, as we off-load to computers processes such as remembering phone numbers and calculating sums.

Discussants generally agreed on some core tenets: motivation and a sense of ownership are critical in learning, one size does not fit all, it's important to engage children in real projects, and learners need a lot of time to meaningfully engage an idea. Discussants defined literacy as being an author as well as a reader, and addressed the related problem that if everyone becomes a producer, we need ways to be effectively discerning in deciding what to read and watch. Discussants noted that life-long learning and cross-generational learning are becoming more and more important. They characterized skills for the knowledge society with three "x's"; EXplore, EXpress, and EXchange.

### *School*

The crisis is here. Schools are failing more people than they are serving well. More and more children report that they do not find school relevant, perhaps because there is a divergence between how people do things in school and how they do them in the real world. Kids' disaffection with school leads to all kinds of emergent problems: declining attendance, poor grades, learning disabilities, even violence.

As we consider solutions, we have to reconsider the very purpose of education and the schools' responsibility for shaping society. Beyond becoming a worker in the economy, students need to become full members of society and engage in learning to learn. We continue to struggle with how to fund new initiatives and how to scale solutions they develop. We need to acknowledge that "ICT" skills are not another subject to tack onto the curriculum and that there is not just one way to play with technology or to introduce "ICT" to the classroom. We also need to address the change in parents' and teachers' abilities to control knowledge and information that children can access.

### *Society*

Who decides the objectives of education? Who decides what is worth learning? Instead of imposing answers from outside the realm of education, can they be constructed from the inside – and if so, how? Many discussants felt that Hollywood, large corporations, and governments control too much of the communication space and inevitably represent values in their own interests. Familiar practices are facing fundamental changes: for example, if a 14-year-old can develop a sophisticated programming language, how do we need to shift our assumptions about who is the learner, who is the teacher, and the importance of age in establishing this relationship?

### *Technology*

Fundamental change involves the purpose, goals, and methods of learning – but referring to technology as part of the argument sometimes clouds the issues. We need to distinguish basic skills from higher-order thinking and decide whether we consider the purpose of education as nurturing and caring or as systematic instruction. We need to address why schools are laggard in embracing technology for learning: though we have seen huge changes in our world, in our schools it has been a matter of putting 21<sup>st</sup>-century tools into a 19<sup>th</sup>-century system.

Technology is affecting the traditional roles of both parents and teachers. Educational software is finding its way into the home; meanwhile well-used technology in the classroom leads to teachers encouraging and guiding students more than instructing – but such blurring of lines is not often seen as a role of technology. One-to-one computers enable a familiarity and sense of ownership not possible with periodic, led computer sessions. Apple, Windows, or PDA should not be the only choices for

computers: Papert suggested that we should insist on a computer designed for learning. Computers should be cheaper; we don't need the top of the line.

### *Change*

Discussants debated whether crisis is necessary for change in education, considered powers that would act against change, and advocated fostering links from schools to outside agents of change. Many felt that if we wait for consensus in promoting societal change, we will continue to lag behind.

Some addressed "levers of change in education" such as curriculum, content, assessment, and teachers, while others felt that only a holistic approach could work. One practicing teacher observed that what goes on in the classroom is fundamentally different now than it was 20 years ago, but the differences have grown through a series of continuous small changes. And though teachers have adapted or try to adapt, the structure of school has not adapted. Supporting teachers to experience how technology can be used is key to change.

Dr. Papert asserted that it is not expensive to give every child a computer, and we should shame people out of using that argument. Delegates resolved to collect numbers and figures about costs of computers and current expenditures in schools, and to make this information available via a web site. This site is evolving at:

<http://fundamentalchange.carolstrohecker.info/>

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