
Knowledge vs. Creativity: A False Dichotomy

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Abstract

- “Knowledge Society” or “Creative Society”—which society are we preparing our children for?
- Are computers used at school as expressive tools for knowledge construction?
- How do we enhance learning to design, invent, and express oneself creatively by means of ICT?
- What is the wrong way to use computers to teach kids?
- When and how should we introduce young children to programming?

The panel presenters will try to find answers to these questions together with the audience based on their personal experience. As an excellent appetizer and challenge we present here short notes of **Paul Goldenberg** to the questions listed above:

- For any society, rural or urban, rich or poor, success depends on both knowledge and creativity. Some knowledge is “just” broadening: No matter what one’s circumstances, if one knows only about those circumstances (the practical knowledge for living in that way at that time), one’s mind is limited. I don’t “use” knowledge of Beethoven, but it makes my limited world richer. But even *within* my limited world, extending knowledge beyond what my parents had gives me choices to improve that world. The enormous change that Fábio Rosa wrought through rural electrification in Brazil – helping rice farmers *remain* rice farmers but also survive – depended on more than knowledge, of course. He could not have succeeded without extreme determination, creative problem-solving, a willingness to challenge, and so

on. But neither could he have succeeded without knowledge. Knowledge without creativity is too static; no change can be expected. Creativity without knowledge is too weak; no effect can be expected.

- Some people argue that there's so much knowledge to be had that the most important thing is to "learn how to learn" and all the details can then just be looked up when one needs them. I don't believe that. So much discovery (medical discovery is a prime example) depends on serendipity – I'm studying the effects of various drugs on one disease process and notice that one of them reduces some particular protein level associated with a completely different disease.... We encounter so much data, so many things we could take note of, that we routinely (and necessarily) dismiss things that seem irrelevant. It takes knowledge *in one's head* to detect what is and isn't "relevant."
- We (at least some of us) used to think that computers in schools could help to change schools toward a realization that knowledge is constructed. We wound up (probably not because of computers) with a bifurcation: knowledge is handed down (the old idea); knowledge is "invented" (a perversion, or at least a misunderstanding, of "constructed") by children. The latter seemed to suggest that nothing need be passed from generation to generation; whatever ideas the child invented were good enough. Both are anti-intellectual. The first expects the child to do no thinking and just absorb; the second requires no grounding in the reality of a growing body of culture and knowledge. Before computers can be used as expressive tools for knowledge construction, we have to get past this one-or-the-other split – either "knowledge" or "construction." Historians do literally (re)construct history, but not oblivious to the data they get. Even as children, we can do some of the creative inventing of theories about what might actually have happened, but we need, as the professional historians need, lots of data to work from. We can't simply make it up. Personal knowledge is constructed (that is, I can't put my ideas in your head; only you have access to your head); but not just made up (or all our realities would bear no relation to each other).
- Alas, one thing that's wrong with the way computers are used to teach kids is that they – like books, manipulative materials, science experiments, and teachers – can only be used the way we already conceive of teaching, and the most widespread views of teaching/learning are stuck on that binary split of knowledge and creativity. The U.S. has "solved" the problem by terrifying teachers/schools into focusing back on a list of the 40,000 things to know. Computers are used extensively (almost, though not quite, exclusively) for some version of test-prep. This is far from the Logo dream we had.
- When we should introduce young children to programming presupposes that we ever will! In the U.S., we don't do it at all any more. My 1999 EuroLogo (Bulgaria) paper on the dwindling of formal language – the remarkable coincidence of the reduced interest in programming (no longer a battle about whether Logo or BASIC or Pascal was best for "thinking," but a complete loss of interest in programming except as a job skill) with reduced emphasis on algebra and grammatical analysis and phonics – presented my take on the reasons for this: again profound anti-intellectualism.

Unless we can address the anti-intellectualism – an issue in society *outside* the schools – interventions within the schools (technological or otherwise) are unlikely to take root.