

## Teaching and Technology

It is a basic fact that you cannot look up on Google something that you do not know exists. The *Zeitgeist*, however, gives technology a sort of supernatural power. In some accounts traditional teaching, chalk and talk in particular, is increasingly outdated, as students arrive in classrooms from informal learning environments of television, video games, and the Internet in which the older cognitive skills that conventional teaching utilizes have been largely replaced with new talents such as iconic representation and spatial visualization. Now, to geographers this trend is not necessarily such a bad thing. As formal education adapts to the new cognitive skills, much of what geographers teach is already appropriate to widespread use of the new technologies. The longstanding reliance on maps, pictorial images, and spatial framing has been matched to a profoundly relevant modus operandi. Yet, a real danger, even for geography, is that in adapting wholeheartedly to new media and computer technologies, we will retard development of the higher-order cognitive skills that may still be best delivered by traditional means – the lecture, the reading list, the essay exam, and the discussion group. I have in mind such thinking processes as abstract vocabulary, reflection, inductive problem solving, and critical analysis.

Certainly the charismatic teacher is probably overemphasized as a singular source of learning. Organizations such as the Teaching Company glorify "master teachers." We are all familiar with the powerful but unsatisfying Prussian/German model of the brilliant authoritarian lecturer as the centerpiece upon which university education rests. In counterpoint, the English-style tutorial works best when students can absorb material quickly and are verbally dexterous. The new technologies are potential equalizers for those students who have acquired the visual-spatial skills that have previously tended to receive less appreciation than the textual and verbal ones. Recent systematic research, however, suggests that one can suffer from too much of one thing.

In this context, then, reorienting teaching totally towards the new technologies would

present two major problems. The first is a reinforcement of a message about learning as involving form rather than content. Most of the media in question have been developed to entertain rather than to educate. Thus, the expectation is that learning is always "fun" and does not require memorization or other habits of mental discipline, although the ability to "know" things or hold facts in your head is a requirement for many jobs. Consequently, the new technologies may lend themselves to a fact-free conception of learning. But literacy and numeracy are often best developed with substantive material rather than as subsidiary aspects of computer or watching skills. Reading books, for example, is still the best way to build a vocabulary. The decline of recreational reading over the past half century in the U.S., although apparently things have started to look up more recently, correlates strongly with declines in verbal SATs and other higher order measures of literacy. Time spent with new media, therefore, seems to have major costs as well as benefits. Using them exclusively in the classroom would seem likely to strengthen this negative trend.

The second problem is the mismatch between the cognitive socialization of the students and the mix of skills that an adequate education still requires. Visual literacy such as that developed by video games is undoubtedly a useful skill. Even when most games have violent content, and seem to stimulate aggression, there is still a pay off in terms of capacity for multitasking, although performance of all of the tasks would have been better if each had been the singular focus (P. M. Greenfield, "Technology and informal education: what is taught, what is learned," *Science*, 323, 2, January 2009, 69-71). Educational psychology research suggests, however, that most

other skills are either not developed or are actually retarded by the new media technologies. For example, critical thinking and reflection correlate highly with amount of out-of-class reading rather than with time viewing television; visual technology seems to actively inhibit imaginative response. The beef is that the new technologies are lacking when it comes to a range of skills. This is not to denigrate the new technologies so much as to say that no particular method of learning can do everything. If we abandon requiring reading, for example, then we probably can't expect much new thinking that will challenge existing commonplaces.

Compared to the new technologies, traditional classroom teaching can be dull and boring. The difficulty is to steer rhetorically between the fact-grubbing of a Mr. Gradgrind (in Charles Dickens's *Hard Times*) who had as his gospel "Now, what I want is, Facts. Teach these boys and girls nothing but Facts. Facts alone are wanted in life," and surrender to the siren song of the new media. What is needed is an imaginative incorporation of the new technologies into conventional classrooms without succumbing to their seductive power to overwhelm the other goals of education. As Patricia Greenfield puts it in her important meta-analysis of current knowledge about new technologies and learning:

"Society needs reflection, analysis, critical thinking, mindfulness, and imagination more than ever. The developing human mind still needs a balanced media diet, one that is not only virtual, but also allows ample time for the reading and auditory media experiences that lead to these important qualities of mind."

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