

LETTERS

Internet as Teacher: Is it a Virtual Improvement?

The ever-growing labyrinth known as the Internet is being touted by many quarters. Politicians and educators alike claim the necessity of universal Internet access and warn of the problem that too many are denied access. Grade-school children are taught how to surf the Web while university professors draw students into the Internet like politicians gather votes, making grand promises and assurances of better education. Virtual classrooms and even virtual universities are proliferating. Yet a significant number of people are denied access, due to financial limitations or simply to being in the “wrong” school district. To underscore that the problem is real, it has been given a name: “Digital Divide.”

New funding initiatives appear continually for “technology in the classroom.” However, these initiatives make little or no mention of research, improved teaching, or better learning. Technology should enhance teaching, not obscure learning. But with many students held in the glare of the monitor like moths in the porch light, comparisons are now being made between drug addiction and Web addiction.

Consider the university that extols the virtues of the exciting new shopping mall, and even forces students to go there by placing its bookstore inside. The university then boasts publicly that every graduate visits the mall. I hope this university exists only in my imagination, but the proliferation of Internet vendors puts the brick and mortar in this parable.

Should a class studying low pressure and vacuum be sent to the local

Hoover vacuum supplier? Should a lecture on gas mileage and economy be accompanied by a visit to the used car dealership? With vendors buzzing across Web pages like mosquitoes on a summer night, this exact scenario is played out daily in the classroom.

Virtually anything can—and does—appear on the Internet. Creation of a Web page, with links to any other page, requires only a computer with a modem, a phone line, and an Internet service subscription, which can cost less than twenty dollars per month, or is even “free” if one is willing to endure the increased advertising. Beyond a hypothetical disapprobation from the Internet provider, content is not censored or controlled in any way. Compare this to a textbook sold by a major publisher. The authors are chosen with care, and must be authorities; the book undergoes expert review; and additional revisions are often made in subsequent editions.

Although there is no denying the usefulness, even the necessity, of the Los Alamos National Laboratory’s e-print server (<http://xxx.lanl.gov>) and similar scientific servers, these are the exceptions, not the norm.

With legislation looming to force more and more people onto the Internet, the question is, Is the Web a valuable source of knowledge or a glitzy new form of yellow pages? My daughter recently asked me about europium. Knowing almost nothing about it, I went to a search engine and typed in the word, found five vendors that sell it, but retrieved little other information. I reported to my daughter that it costs about \$100 per ounce. She was not impressed, and the next day asked me again what physicists do.

Huge sums of federal and state dollars are being spent to incorporate Web use in the classroom. I suggest putting these funds toward creating more teaching positions, buying laboratory or demonstration equipment, modernizing classrooms, or subsidizing tuition; or for scholarships, book allowances, or even new blackboards.

As professor and department chair I am forced to provide, by action or

inaction, guidance in Web-based education to students. Due to the rapid commercialization of the Internet, its value to education is being compromised. I hope we can channel our finances and our creative energy toward a real improvement in education, and not a virtual one.

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Causal Discussion of Superluminal Pulses

Recent observations of “superluminal” light pulses were widely reported in the news media. Some reports noted that the observations do not contradict Einstein causality, but others were misleading. For example, one began by announcing that “scientists have apparently broken the universe’s speed limit.” Another unfortunate circumstance has been a cavalier derision of the work by other physicists.

In his “What’s New” column on the American Physical Society’s Web site, Robert Park¹ asked, “Whoa, is this the old phase-velocity stuff that has confused generations of physics students?” No, it is not. It is the group velocity that is found to be greater than c (the speed of light in a vacuum). A month and a half later, Park said,¹ “Charles Bennett at IBM Watson points out that this is little more than a confused rehash of an old story, where the peak of the wavepacket leaving the ‘superluminal’ medium is causally related to just the leading edge of the wave packet entering the medium.” I would like to offer a different perspective.

Generations of physics students have been assured that, when the group velocity is either greater than c or negative, a pulse will be so distorted that group velocity is no longer a meaningful concept. (The implication that there would otherwise be a conflict with special relativity is incorrect, because the group velocity is not a signal velocity.) But

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