

## Integrating Technology into Teaching

### A New Digital Literacy: A Conversation with Paul Gilster

*Carolyn R. Pool*

**The author of *Digital Literacy* reflects on journeys through cyberspace and asks, "How can we use technology to do something worthwhile for our culture and our society?"**

Paul Gilster, the author of *Digital Literacy* (1997) and *The Web Navigator* (1997), began his career as a scholar and teacher in Medieval English and history, then worked as a commercial aviator, and then became interested in computers when he began writing. He says that his interest in technology began when he bought a computer as a word processor—but this interest grew as he explored and as he wrote books to help others conquer this new medium.

***In Digital Literacy, you relate how you saw a hawk flying in the sky and you immediately went to your computer to find pictures of hawks. In fact, you take us through everything you did that day in your home office—including making a quick check of the stock market. Your purpose was to show how other people can do the same thing—how we can become digitally literate. What does this mean? And how is digital literacy different from the traditional concept of literacy?***

Digital literacy is the ability to understand information and—more important—to evaluate and integrate information in multiple formats that the computer can deliver. Being able to evaluate and interpret information is critical. When I talk to teachers and librarians, I emphasize that you can't *understand* information you find on the Internet without *evaluating* its sources and placing it in context.

Dealing with information on the Internet is different for several reasons. First, it's not all text. Multimedia computers enable students and teachers to download video, audio, and photos.

Second, the way we find this information is different from the way we use a card catalog, check out a book, buy a magazine, or sit down to read on a rainy day. A multimedia computer with an Internet connection enables people to truly *construct* information from around the world. I found information about the hawk in a newsgroup I subscribe to, and I found pictures of many raptors in another newsgroup dedicated to digitized graphic material.

Third, being digitally literate is multidimensional and interactive. If I found a picture I liked, I could not only view it but also save it to a file on my own computer, use it in a hypertext creation of my own (being careful of copyrights, of course), print it out, or send

it to a friend by e-mail. Or I could discuss it on another newsgroup, talk about it on a chat group or online forum, or e-mail the artist or photographer. And all this is almost instantaneous.

***And part of this new literacy has to be knowing how to find those resources.***

Yes, that's a major thing. Unfortunately, searching the Internet on the surface is deceptively simple. Type in a keyword and presto! A software "spider" scurries through thousands of files looking for it. But getting 30,000 hits after a search is not going to help you find important information. Teachers and students need to learn sophisticated search techniques—so they get only 50 hits or fewer per search. I recommend using one Web search engine exclusively at first—such as Alta Vista, Excite, or HotBot—and learning all you can from that tool. Then you can explore other engines and their databases.

***Is this part of virtual instruction? What are the benefits and disadvantages of such instruction?***

Virtual instruction includes a broad range of activities, and it can supplement traditional teaching. I use the word *supplement* deliberately. Computers are never going to replace the teacher in the classroom. Computer-mediated instruction allows us to engage networked resources in ways that are profitable for students.

For example, I recently participated in an online "Australian Adventure" in which I "talked" with Jim Malusa, who was bicycling across the Australian Outback with his laptop computer and digital camera, sending daily reports and photos back to home base by plugging his modem into a pay phone.<sup>1</sup> I could locate the cyclist's position on the clickable map as the days progressed. Some of Jim's reports were serious, some were whimsical—pictures of what he ate for dinner and unusual natural phenomena he saw as he biked. The site also included audio clips and hypertext links constructed by experts on Australian wildlife.

Projects like this have the sense of immediacy that appeals to young people. A 6th grader in a class studying Australia would have found this project very engaging—particularly the opportunity to communicate with experts across the world.

***Virtual instruction also allows for an integration of knowledge in many fields—geography, language arts skills, biology. . . .***

Exactly. Through projects like this, we pull together different disciplines and make them available to students; and we tie everything together through written language. I find it interesting that people worry so much about the survival of text and reading when children spend a lot of time on computers. But skeptics may discover that the Internet is providing us with a way to use language again. I know many people today, students as well as people who are long out of school, who had simply gotten out of the habit of writing and who now find themselves using e-mail all the time.

Of course, not everything on the Internet is necessarily positive for education, but the integration of knowledge and the emphasis on communication are powerful tools. Teachers can use these resources to present new kinds of experiences to their students.

### ***What are some disadvantages of virtual instruction?***

We have to be very clear-headed about computer-mediated instruction. It disturbs me that many people assume that what's wrong with education can be cured by technology; we just need to spend enough on machinery. That's a dangerous assumption. We still need the very best teachers we can find: We still need to teach essential skills in reading, math, listening, and thinking. I see computers as supplements—tools—in education.

Here's one major problem: The Internet provides us something like a library of information online, though I'm hesitant to use the term *library*. A lot of very bad information floats in cyberspace. Anybody can be a publisher—from *The New York Times* to neo-Nazi groups who say the Holocaust didn't happen, to the kid next door with his Web page commenting on yesterday's soccer game. Internet publishing tools are free or very cheap. What do we do with the glut of information that results?

### ***And rumor has it that one-fifth of all Internet traffic is to sexually explicit sites.***

Well, the last number I saw that I trusted was 4 percent. But I won't stand by that number because I don't really know. And nobody really knows how big the Internet is. Even if total traffic to the porno sites is only 4 percent, I'm concerned as a parent. A lot of parents have this legitimate concern.

### ***And this is one of the big objections that people have about allowing students access to the Internet.***

I have a lot of sympathy for that objection. I also find it frustrating to hear a certain knee-jerk reaction in the Internet community that dismisses all these concerns and says "Oh, no, the Internet has to be totally free, leave it alone, all you want is censorship." My answer to that is to think of the children—and more and more children are finding these tools exciting and motivating. Parents come to me and say, "You know, the library now has Internet access. Should the libraries have completely free and open access?" My response to that question is *no*.

For publicly supported institutions like libraries and schools, we need to develop good filtering tools, much better than the ones we have today. Software like NetNanny and Surfer Guard is in its infancy, but companies are fast developing ways to customize filters—so you won't eliminate Shakespeare or studies in genetics, for example. New services will not only eliminate stuff we don't want but will find information we consider valuable and deliver it to us.

Just as important, we need to be teaching students how to use the Web properly and how to be critical. We all need to learn that skill.

### ***What are some tips that might help us all learn to use the Internet wisely?***

The first tip is to check your source. Let's say that a Web page you find has information that you want to use. It sounds right, but you don't know much about the author or the organization behind that page. Enter the name of the organization on a search engine and

see what you find out. Search engines are not just for concepts or keywords. If you find no name or organization, that's a red flag.

We need to use search engines as a sort of Better Business Bureau or a set of personal references for some of these Web pages. When you do one of these searches, you will often see postings on newsgroups that tell you what other people have to say about that organization or that person.

The second tip is to check out the hypertext links on a Web page before you explore them. If all the links point back to internal pages of the site, be aware that you may not have objective information. If the author is really saying something worthwhile—especially if it's controversial—he or she should be willing to show me information to back it up and to listen to alternative viewpoints. If you look at the neo-Nazi or revisionist history sites, you find that they surround themselves with a convincing display of related content until you look closely and realize they don't connect to any viewpoints other than their own.

The third tip is to communicate with the author of the Web site by e-mail. Students should do this sparingly, under the guidance of their teachers; but if you find it difficult to verify a source's information, most reputable authors are happy to answer.

Here's a polite query a student could send: "I'm researching this topic. I'd like to know more about it, and I want to use your material, but I need some information about your background and where I can find further information."

Students who do this often tell me, "You know, lots of times they don't write back." And my answer to that is if they don't respond in some way, do not use the information.

***Do you think teachers should encourage students to e-mail authors and participate actively in newsgroups?***

Yes, with qualifications. The main one is basic Internet etiquette—Netiquette. We should treat e-mail just like any other social situation. You don't necessarily pop up unannounced at somebody's door and expect to get an hour's worth of free material from that person.

Newsgroups, on the other hand, are open to anybody. Students can join them, ask questions, become active participants, leave them, and join others. On a newsgroup, if you are impolite or show that you don't know what you're talking about, other participants will soon let you know—and sometimes none too politely (thus, the infamous *flaming*).

***How does virtual instruction help students and teachers construct knowledge? What is the role of the teacher in what you call "knowledge assembly"?***

You hear a lot of talk today about the teacher becoming a facilitator, as opposed to the old model of the teacher up in front of the class. Now let me say from the outset, I don't go for the *facilitator* definition. I have taught classes where I've had a room full of people with computers; and any teachers who've tried it know . . .

***Nobody listens to you.***

Right. Almost immediately you begin to lose eye contact. And pretty soon you realize they're doing stuff on-screen. Are they doing what they're supposed to be doing? You don't know—unless you want to walk around and find out.

We have an ancient and well-established model of learning that has worked since the beginnings of civilizations. This is an *apprentice model*, where people who need to learn go to people who know more than they do. Those people then lecture, teach, demonstrate, and help apprentices learn more. I think that model is healthy. What's wrong with education has nothing to do with that model. What we need to do is figure out how to integrate the interactive, Internet-based approach into that model. We need to teach students about knowledge assembly.

***What are the basics—and cautions—of knowledge assembly?***

Knowledge assembly is an activist way of gathering and evaluating materials, integrating network material with traditional materials, and then creating a finished project. It's like a term paper except it might well have multimedia aspects to it, and it incorporates many different sources of information.

One source is a personalized news service that delivers the information you want automatically. Other sources include chat rooms, newsgroups, mailing lists, the World Wide Web, and e-mail. Then there are graphic and radio archives. Finally, we must not neglect traditional sources of information—books, newspapers, journals, even television and movies. Integrating them with Internet materials is really the key.

The Internet gives us the ability to focus tightly; but we must also maintain a sense of context. For instance, information we find in a chat room is usually not as reliable as that found on a Web page sponsored by an authoritative source. Critical thinking skills are extremely important in evaluating what you find.

Other cautions are like those I give to students writing any term papers: Using Internet sources, particularly, it's very easy to simply find lots of discrete items of information and cut and paste, producing a cobbled-together collection of quotes or multimedia items. Students need to learn how to assimilate the information, evaluate it, and then reintegrate it.

***Now for the tough question: What of equity issues? Many schools in high-poverty areas don't have the bright, high-tech environment of some wealthy suburban areas.***

It's a worrisome issue. A school just opened in Raleigh to great press fanfare about the computers on every classroom desk. And across town are plenty of schools with very few computers. I think the answer to that issue is a reevaluation of our national policy toward technology in the schools. We don't need a top-down decision to put a computer on every student's desk. We need a computer on every *teacher's* desk. We need to encourage teachers to become digitally literate—to evaluate content they find on the Internet.

Of course, we should expose students to computers. Schools should have computer labs and as many other computers as possible. But we can't create equity by putting a computer in front of every student, nor can we afford to do this. Much of the equipment will become obsolete within a few years, anyway. And we still need to fund traditional school needs: library books, teacher salaries, staff development, and so forth.

***Equity within the United States is one problem; how about global equity issues?***

It gets even worse if you start looking in other parts of the world. The distribution of computers in Africa and Latin America, for example, is minuscule. But some people are coming up with creative solutions.

In one project, 5,000 educators and volunteers are fanning out in Central and South America to instruct local farmers in computer skills and in finding ways to finance their own computers for both businesses and schools. Now there is an intelligent use of money and technology. This project is sponsored by the International Fund for Agricultural Development, a United Nations project based in Rome. The idea is to electronically link 500,000 poor households in 3,600 different Latin American communities, to set up sales channels for farmers with excess crops. The fund doesn't buy computers; it pays teachers to empower the local people in ways to improve their lives. Projects like this have great potential to benefit local communities.

***What do you see in the future for technology in schools?***

In the near term—the next five years—I see a bit of a backlash against technology. A lot of people are upset about the state our schools are in. They say, "You know, we've spent X many millions on computers. Where are the results?" It's dismaying to find that so many of the positive studies tend to come from technology companies and people who have a vested interest in technology. It's very hard to come up with the really impartial studies that show a huge increase in student learning. Even Steve Jobs of Apple said computers are great in education—as long as you remember that they alone won't solve the problem. A backlash might be productive because it will make us reexamine how we use technology in the classroom.

Ideally, technology sets up wonderful possibilities for multimedia projects. The beauty of new technology, within 10 years, is that we're going to have very broad bandwidths and thus much faster connections. A school's best teachers can become available to anybody on the Net. In Internet-based instruction, you can attend class at 3 a.m. if you want to—whether it's a high school or a college class. You can communicate with class members and the teacher through e-mail, chat lines, and electronic forums. Video conferencing will enhance the "live" aspects of virtual instruction.

What the Net's going to give us is the ability to turn our educational facilities loose—to distribute education. That's provocative because it points to lifelong learning. Now that doesn't mean we'll do away with classrooms—or teachers. But it does mean reenfranchising a whole class of people in the work force who would like to learn more—get a high school diploma or a college degree. That's very exciting.

## Endnote

<sup>1</sup>Jim Malusa's adventures were hosted by Discovery Channel Online (<http://www.discovery.com/area/travel/travel.html>), which currently sponsors several other adventures.

## References

Gilster, P. (1997). *Digital Literacy*. New York: Wiley.

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