The Changing Classroom: Challenges for Teachers

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Since the emergence of the Internet and dramatic expansion of personal computers in education, business and everyday life, there have been fierce debates over whether and how to employ computers in K-12 education. At first, there was a generational divide with younger teachers and some students putting computers to use in the classroom and discovering along the way how information technology could contribute to learning. For many educators comfortably conditioned by traditional teaching methods, however, the advent of technology was not a welcomed change. Yet with the enthusiastic embrace of the "information superhighway" by the Clinton administration and explosive development of the Internet in the 1990s, many educators eventually came to see that computers could play a critically important role in teaching. As the classroom itself began to change with the integration of technology, the role of the teacher has inevitably changed, as well. With technology delivering an ever-accelerating learning curve that everyone must keep up with, teachers have begun to see that they must learn to work differently with their students in order for education to remain relevant and effective.

In the late 1990s, many in education, government, and among the media and public recognized a "digital divide" in which some school districts and classrooms were "wired" and had up-to-date computer technology, while others did not. Accordingly, there were efforts undertaken by government, business, and educators to wire classrooms and make computer technology available to ever-greater numbers.

Yet while many teachers and students are engaging in innovative forms of research and novel projects, there are still many traditional teachers who resist learning new computer skills and do not want to bring computer-based technologies into their classrooms. Yet these technologies carry a transformative power, and many schools, recognizing this, are now requiring that teachers make use of computer-mediated instruction. Students today are exposed to a barrage of new technologies outside of the classroom, including home computers, email, and text messaging, and many possess greater technological skill than their teachers. This has shifted a dynamic between teachers and their students, forcing teachers to engage in a learning process themselves.

Teachers have to develop the ability to demonstrate to their students how these technologies can be used for academic purposes, and convey to their students the educational advantages of computers and the Internet. This means acquiring and teaching

new literacies, involving teachers and students in innovative types of research projects, and interacting in novel ways as everyone learns to use new technology and media.

Indeed, to meet the challenges of an always-evolving high-tech society, teachers today need to develop multiple forms of computer and information literacy in order to help improve education. This means using technology in the classroom to illustrate lesson topics; teaching students how to use the Internet and information technology to research topics; and using technology to enhance education outside the classroom, ideally in ways that involve students in the learning process.

While computer literacy is usually interpreted in narrow, technical terms, concerning how to use different computer programs, a broader conception would involve learning how to access and evaluate information, using the technology for research and discussion of issues, and even producing Web Sites, blogs, or other forms of Internet culture. To achieve these goals, teachers need to involve students in hands-on projects that make them active participants in the learning process, rather than passive receptacles of information. Group projects can also spark curiosity, and make the learning experience fun.

Merely putting computers in a lab or classroom will not necessarily have beneficial effects; there are important preconditions that must be met before technology can enhance learning. At the most basic, many schools lack adequate technical support and the expertise that will enable teachers to make effective use of information technology. Some teachers simply do not have a clear idea of how they can actually use information technology to better teach their subject matter, and their students.

Yet many teachers are developing highly promising projects that make productive use of information technology, and in some cases students themselves are taking the lead and helping produce instructive educational material. Indeed, some students may be more advanced in their use of computers than their teachers and are often willing and able to share their skills with their teachers and classmates. The result is a changing classroom and learning environment that promises to re-involve students in the learning process while cultivating multiple literacies that will be of use in further education, future job endeavors and everyday life.

To begin, it is useful for teachers to start with assignments that do not require specialized computer knowledge and skills. Teachers can take a topic from current events or an issue from an existing course, and assign students to use a search engine such as www.google.com to search for three or four items on a specific topic. They can then ask their students, how useful was the material for clarifying the topic or issue at hand? A further exercise might explore what limitations students encountered while using Internet materials, as opposed to books from the library or textbook materials.

Through this process, teachers must advance their own "information literacy" skills and learn to discern the quality of material their students are accessing. Teachers, along with students, will quickly learn that some Internet sites may contain misinformation and be

highly biased, while others will be educational and instructive. Just as students need to learn how to use the library to access the most relevant and sound print material, both teachers and students must also become Internet-literate and learn to critically evaluate the online information they access.

With technology in the classroom, teachers must become open-minded themselves, and recognize that learning new processes and skills is an ongoing necessity. Although this involves added work, there are many imaginative ways of using technology to engage students in the learning process.

High school students, for example, can learn a more advanced use of information technology that would include developing a course Web Site. Here students could put in hyperlinks to relevant course material from reputable Internet sources on the topic one is teaching. Obviously, developing a Web Site involves some technical skill, although there is often someone in the school computer lab who is able to undertake the project and in some cases students themselves might be able to develop the Web Site. The teacher can then have students do research to add to the site, which is an ideal way for everyone, teachers included, to develop website construction skills, and learn to publish online. An additional plus this exercise provides is that classes can expand upon the site from year to year, to provide important teaching resources that can make material available to an Internet-wide audience around the globe.

Another shift for teachers comes with adopting a more flexible mindset about how the lesson plan should flow; teachers need to get comfortable with the idea of not teaching all their students the same information at the same time. Since most classrooms do not have enough computers to enable all students to use them simultaneously, teachers can rotate students to different projects, so that while some work on computers, others will utilize textbooks or other materials.

Next, if there is access to computer labs and technical support, teachers can also set up a class bulletin board or discussion forum on a Web Site and have students log-in to discuss a certain topic. Students can be assigned to make comments on topics studied in the classroom, share information or ideas, and comment on other students' postings. Students could also be assigned to search for and post Internet addresses (i.e. urls) of interesting sites on the topic discussed and to comment on what they learned from the site and why they think it is reliable and educationally useful.

A more advanced use of the Internet for high school students, discussed in a recent issue T.H.E. Journal (Ferdig and Trammell 2004), would be to have students develop Weblogs, or blogs, that consist of student postings on specific topics. Blogs can range from personal diaries discussing what students are reading, learning, and doing in relation to the course to posting hyperlinks to useful Internet sites to debate over issues being discussed in class or of current topical interests. There are several Weblog sites, like www.schoolblogs.com or www.blogger.com) that provide free Weblog technology and there have been recent articles on how students are taking to blogging and making it a highly involving and interesting cultural forum (Nussbaum 2004).

Such participatory learning projects thus not only provide real life experience of Internet research, production, or discussion, but help prepare students for later life activities, ranging from preparation for jobs of various kinds to giving them the social and communicative skills necessary to be a good citizen and active in politics and social life. As we evolve into the future, Internet and other multimedia technologies will even be more pervasive, thus preparing students to become active subjects and participants in computer culture. Teachers face the challenge of transforming their classroom to make learning more relevant for the contemporary era and preparing students to actively engage and participate in the learning process and the society of tomorrow.

References

Ferdig, R. and Trammell, K. 2004. "Content Delivery in the 'Blogsphere.'" T.H.E. Journal, February: 12-20.

Nussbaum, E. "My So-Called Blog." New York Times, January 11, 2004: D1.

Author's note: illustrative material could include pictures of Web sites, bulletin boards, and Weblogs.