

Bring in the Geeks

Letting the digerati onto campus to work with faculty and students will help the university become relevant

By **Peter Schilling**

It may not come as a surprise to learn that some students attend college to gain status rather than to learn. That they have done so since the sixteenth century and for the same reason should give us pause, however. Students focus on status rather than gaining the knowledge and ability to learn intended by a university education in part because a divide separates new information technologies from higher education. If we bridge this gap, we can help make education relevant for students.

Emerging information technologies have historically existed outside the status-conferring realm of higher education. Today, our academic institutions neither train nor confer status to the digerati. The twentieth-century poster children of the information-age elite, Bill Gates and Steve Jobs, did not bother to earn college degrees. The student founders of Yahoo, Google, and Netscape all dropped out of their degree programs. Few IT positions listed on monster.com require a university degree. Linus Torvald was still an undergraduate when he released the first version of Linux, as was Shawn Fanning when he released Napster. These individuals, as well as the dropout founders and CEOs of IT companies such as Oracle and Dell, further demonstrate the IT exception in the school-for-status valuation.

The sixteenth and seventeenth centuries, known today as the "Scientific Revolution," reveal evidence of a remarkably similar phenomenon. This was the time of Newton and Galileo, when major new information technologies were developed. The telescope, for instance, had an enormous impact on the infor-

mation available and how it was collected in the seventeenth century. It also changed the information hierarchy of the day and the roles that different organizations played. (The Catholic Church has never recovered.) In the context of today's information revolution, we should recall that then, as now, university scholars developed few of the new tools of the Scientific Revolution. Academics also did not use or understand the importance of some of these tools, such as the microscope, for generations. This is not to say, though, that all of these inventors lacked formal education.

Two very separate education tracks existed before and during the Scientific Revolution. On the one hand were the more theoretical and status-conscious universities, where many students enrolled because they offered the fastest and least expensive way to become a gentleman—and were a lot less dangerous than the army. On the other hand were the craft guilds, which had a strong commercial orientation. The guilds developed and passed on much of the empirical learning of the day. It was also guild craftsmen who made the first telescopes and microscopes in the 1600s. One could argue, in fact, that we still know Galileo's and Newton's names today because of this separation between universities and guilds. Although both men belonged to the university track, they were exceptional in their mastery of the craft of lens grinding and could make improvements on the telescopes of the time. Newton went so far as to make his own tools to grind the glass.

The history of the microscope contrasts with that of the telescope. It also

provides a sobering lesson for what could happen if we do not bridge our own craft-university divide. Antonie van Leeuwenhoek of Holland invented the microscope probably sometime in the latter half of the 1600s. Although he did not have the academic's orientation to reveal his construction methods, he sent reports of what he saw to the Royal Society of England. Still, neither his tools nor his discoveries had an impact on academic research for years.

The important issue here has little to do with Newton, Galileo, or Leeuwenhoek. It has to do with how we regard them, and why. All three men had the remarkable ability to bring together what at the time were distinct skills, while the institutions with which they were affiliated could not. We remember individuals of this era as exceptional because they overcame this profound failure of the educational institutions. We may wonder how much sooner others could have made their discoveries if the craft-university separation had not delayed them. Newton and Galileo both left the universities, Galileo a year after making his first telescope.

Today, more than one hundred years after Marconi spoke into the ether, our information cognoscenti, like him, still learn outside the universities. This time, the guild is online at Slashdot and the learning, just-in-time. Knowledge is digital and, at its best, its source is open for all to test and alter. Students and some faculty split their time between, on the one hand, massive multiuser online role-playing games, Kazaa file sharing, and ICQ, and, on the other, classrooms, essays, and exams. The two parts never meet.

We have rendered teaching and learning abstract, theoretical, and often irrelevant. When students know how to create and share knowledge with the world at large, they generally have taught themselves or learned from their peers. Simply put, we do not teach students to use the tools they will need to function after graduation. Just as significant, we do not teach them how to think in the ways that the tools make possible. Of course, there are exceptions. Some students go on to graduate school.

Our junior faculty's grandparents came of age with radio, their parents with TV, and they themselves witnessed the birth of networks of digital information. Nevertheless, they do as they must and lecture to rooms full of students and earn job security by writing for a linear medium. If they do try to use new technologies in their teaching, many faculty resort to those tools that help them to teach in old ways, such as PowerPoint and Blackboard. Although decades of research on learning show how and why this does not work for all students, university teaching practices generally do not incorporate the world of information all around them.

Most colleges and universities construct curriculums based on the faculty in residence at a particular campus during a particular period of time. A century after the introduction of radio, it is difficult to consider this, well, current. Outside the university, we share and create information through digital networks. Inside, students sit in classrooms, write papers, and take exams that only professors or graduate assistants will ever read. Synchronous, linear, and print-based activities should occupy a portion of our pedagogical strategies analogous to the role they play in our world.

Instead of making progress, we seem on the verge of regressing to a model of education similar to that of medical training in sixteenth-century Britain. Then, the state required physicians to hold a degree from either Cambridge or Oxford. As both universities approached medicine from a very theoretical perspective, most students sought their education abroad and paid a fee to the British institutions for their

degree. More important, apothecaries and surgeons provided the public with actual medical treatment. They received their training by apprenticeship.

To integrate our educational strategies with our information and communication strategies, we need to align today's IT guilds and universities more closely. We should not wait for the extraordinary academics, or the extraordinary geeks, who will master and think creatively about all tools and disciplines. Although many colleges have made training programs available for faculty, we will achieve only very limited success following this route. For instance, will the exceptional biologists teaching genetics become exceptional database programmers as well? Should faculty teaching second languages, history, and economics learn to develop computer-game-like virtual reality environments for their students? Do faculty in English departments need to master nonlinear video editing and geographic information systems to help their students converse in a world in which these types of applications have changed the form and content of narratives as well as cultural analysis?

We must bring the database programmers, graphic artists, and game

developers—in short, the geeks—to the students and faculty. When we do this, we will see a momentous change in higher education. To consider what this might mean, we could look at the most dynamic area of knowledge production of our time. Open-source programs and programming demonstrate a new way of developing and using knowledge. They also fall outside our traditions of knowledge production, intellectual property, and learning. Still, if participants write good, stable code that helps a community perform a task, the results contribute to the body of knowledge. All work is original and shared, which gives it meaning and relevance. Education in this model would completely reconceive such things as classes, teachers, students, school years, learning, and assessment.

Bring the geeks into education. Understand the range of their abilities. Let them work with you to help make the production and use of knowledge relevant in the lives of students. Don't leave them in the previous generation's MIS department. *C*

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