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# Computers in the Classroom

by William C. Levin

Whatever your age, at some time during your education a new technology changed the way you were taught and the way you learned. Some of these innovations, like the ball point pen and loose-leaf binder, have only made things slightly more convenient. Others have had much greater impact. The first electric typewriter was built by Thomas Alva Edison in the United States in 1872, and its widespread use became common starting in the 1950s. By the late 1960s, the photocopier was becoming an affordable and efficient replacement for the slow (and messy) mimeograph machine. At least at the college level, photocopying is indispensable to teaching.

More recently, computer technology promises to dwarf all innovations, save the printing press, in its influence on American education. From word processing to data analysis, from e-mail to the publication and retrieval of information on the internet, the potential of computers to revolutionize education is apparent. But what is not at all apparent is how this technology will be integrated into our schools. The history of the adoption of innovation demonstrates that the process is far from predictable. For example, from its beginning in the 1950s, television was predicted to be a revolutionizing force in American education. It certainly revolutionized the way we get news and entertainment, but it has never gained a serious foothold in our schools except as a way of showing films. If computers are to have the impact on education that seems inevitable, educators at all levels of schooling will have to discover the ways in which they can be used.

At Bridgewater State the process of the integration of computers has been under way for many years. In the 1960s, Bridgewater faculty and administrators conducted data analysis and managed information using an IBM 360 that was housed in Boston, connecting to it via remote card readers located on campus. Perhaps there were some visionaries who imagined using computers in teaching at Bridgewater, but at first computers were limited to use for research and administration. It was not until the last decade that computers were brought to the campus in really large numbers. Now there is a computer on the desk of every faculty member, and essentially every classroom has computer capability, either with a permanent installation or a rolling cart

with computer and projection equipment. The entire campus has been equipped for wireless internet connection with very few blank spots in the coverage. The equipment is here in full measure, but what about the use of this technology in our teaching and learning?

In his studies of the ways in which innovations become adopted in societies, Everett M. Rogers recognized that the first to use innovations are their inventors, a very small proportion of the population, which he estimated at 2.5%. These inventors, while often independent and adventurous, typically are not well integrated into the social structures in which their innovations may have wide application. According to Rogers, for innovations to be tested in practical social settings requires the participation of people he called "early adopters." At Bridgewater, one such early adopter of computer technology in the classroom is Dr. Lee Torda of the Department of English.

In the spring of 2001, BSC received a Board of Higher Education grant to wire the campus for computers. One part of the grant called for integration of computers into teaching here, and Bill Davis, head of information technology on the campus, began looking for professors who would be interested in teaching courses using computer technology. Professors Anne Doyle and Garland Kimmer of the English Department were among the first who volunteered; they proposed a pilot project integrating laptop computers into freshman writing classrooms. Shortly thereafter, Professor Lee Torda, Coordinator of the Writing Program at Bridgewater, joined the laptop initiative. Though you might imagine that early adopters would be likely to love new technologies and to have special talent with them, this was not the case with Dr. Torda. A self-professed "non-techy," she had concluded early on that teaching with computers was the inevitable wave of the future, and that she might as well be involved at the beginning. In addition, she felt strongly that our students deserve to have the same technological training and experiences that students at elite colleges and universities would have.

After the first few waves I didn't

need protection anymore. I spent the whole day playing in the water with my sister. When it was time to go, I didn't want to leave. It was so much fun staying in the water. That was a day I'll never forget.

**Comment:** It would be nice to have a few more details of the ocean and playing in the water that day.

As I got older, I began to go there with my friends. We used to cut class and go to the Copacabana beach frequently. It was cool because our whole class went there at the same time.

The fun started at the bus stop, before we got on the bus. We were young and none of us had given a single dollar. It was crazy to just take off without money, but we got there anyways. One of us would stay at the bus stop ~~comms~~ and the rest of us would hide somewhere. He'd sign to the bus saying he wanted it to stop. When the bus stopped and opened the doors we'd all come out and get in there. The drivers knew this trick ~~comms~~ and that's why we had to hide. However,

**Deleted:** at least  
**Deleted:** May sound crazy, huh?  
**Deleted:** Going anywhere  
**Deleted:** And it was

It has now been three years since Dr. Torda began to use computers in her beginning level composition courses. At first students were nervous about this new way of learning. They were often savvy about computer operation for e-mail, internet browsing and entertainment, but they were now being asked to learn how to use software such as sophisticated word processing utilities to submit and work on their writing. As a transitional device, Dr. Torda had students write in class by hand, mainly because they were used to it. But after a few classes they had begun to learn not only how to write on the computers, but how to edit and submit rewritten work. Their typing skills also improved.

One of the clearest examples of the advantage of computers in teaching writing is how they help students and teachers edit class writing assignments. It quickly became apparent in Dr. Torda's class that an electronic draft of a writing assignment could be rewritten with much less effort than with a paper copy. Just copy the file to be worked on with a new name, make your changes and resubmit. There is no need to rewrite or retype the parts of the original that were fine, and the original version is still available for comparison with the new essay. In fact, over a series of drafts, the evolution of an essay can be traced. Any decent word processor has as one of its utilities the ability to compare drafts and highlight the differences between them.

From Dr. Torda's point of view, correcting writing on computer was, after some practice, also much easier. Using an editing routine contained within the word

processing software (in this case, Microsoft Word) she found that she could make her corrections and suggestions to student essays faster and more clearly than she had been able to do by hand. Printed with this article is a sample of the way Dr. Torda has used this program in one of her composition classes. The sample reproduces part of an essay submitted by one of her students that has been edited by Dr. Torda. Notice that the editing and accompanying comments are much easier to follow than is usually the case when teachers have to find space between lines or in the margins of paper to fit their editing work.

Of course, this is just one of the many uses for computers in teaching writing that Dr. Torda has employed. She has encouraged her students to use the computer as a tool to improve as readers. For example, students have experimented with the analysis of "fan fiction" like that posted by fans of J. K. Rowling's novels on Harry Potter web sites. The boundary between author and reader appears to be changing. In addition, access to information that can be used in one's writing has been revolutionized by the internet.

As of the academic year 2004/5, all first year students are required to have laptop computers. They are configured to have access to the internet by wireless connection all across campus. It is now possible for Dr. Torda to have students writing in class and, while in the middle of an essay, interrupt the writing to look for a specif-

*The following is a sample of "fan writing" taken from a Harry Potter web site on the internet. The site is called MuggleNet. This sample was written by a fan whose pen name is Goddess, and begins chapter one of eighteen chapters. As of late November, 2004, the site posted the work of over 1,000 fan authors, and had already published a conventional (non-electronic) book of selected fan writing entitled The Plot Thickens: Harry Potter Investigated by Fans for Fans. It is available for purchase on Amazon.com among other places. So much for the line between author and reader.*

Harry Potter and the Vision of Light, By Goddess

*Chapter One—The Unexpected Visitors*

*Evening had begun to fall on Privet Drive when large raindrops began dropping from the sky to signify the first rainfall in weeks. The trees seemed to sigh in relief and the thick smell of wet ground rose into the air. A teenage boy sat quietly in a tree that overlooked the neighbourhood of Privet Drive. He brushed his dark, untameable hair out of his green eyes and smiled, for he knew that the rain would anger his least favourite people in the world—the Dursleys. Just as he thought this, he swore he could hear a roar of anger coming from the window below him. Harry Potter was far from being like any normal boy his age. For one thing, he had been home for summer holidays for only two short weeks, and already he was wishing he were back at school. This was because he lived with the Dursleys of number four Privet Drive—his Aunt Petunia and Uncle Vernon and their son Dudley. Whenever they looked at him, they would utter sounds of disgust under their breath and pretend as though he was not there. This was because Harry was something that they could not stand in the least bit—a wizard.*

ic bit of information on the internet. That information, with proper attribution, can then be incorporated into the essay either in the form of a direct quotation or the student's paraphrase. Of course, part of the teaching here involves the ability to evaluate the authority of the internet source. Dr. Torda has spent a good deal of time distinguishing for students between internet sites that are worth using and those that are not, just as traditionally published (paper) sources need to be evaluated.

As readers of the *Review* have already discovered, computers are being used in teaching across the campus. Chemistry displays complex molecules in three dimensional form. Earth Science maps population densities, traffic flow and land uses for regional cities and communities. Biology tracks the health of river and marsh sys-

tems in Southeastern Massachusetts. Sociology and Criminal Justice conduct statistical analysis of national surveys and of crime data obtained from university and government sources online. Art students create electronic "canvasses" impossible to produce with traditional materials. There seems to be no limit to the potential for the use of computers in the classroom, and the learning of writing is just one fundamental area of education that is certain to benefit.

—William C. Levin is Professor of Sociology and Associate Editor of the *Bridgewater Review*