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"Among the greatest benefactors of mankind": What the Success of Chalkboards Tells Us About the Future of Computers in the Classroom

Steven D. Krause

Twenty years after Hugh Burns wrote what is generally considered the first dissertation that focused on the use of computers to teach writing, the future of computers and writing as a distinct practice or "sub-discipline" of composition and rhetoric and of English studies is at a crossroads. In the near future, will *all* writing and literature teachers expect the omnipresence of computer technologies in their teaching in the same way they currently expect chalkboards in their traditional classrooms? Will the incorporation of computers into writing continue to the point of "naturalization"? Or will there always be a "cutting edge" where new technologies are adopted and theorized by specialists long before they accepted by other writing teachers?

I'd like to consider these questions by reflecting on the chalkboard to see what its history tells us about the present and the future of computers and writing, something I don't think computer and writing specialists do often enough. Chalkboards and blackboards seem like such primitive tools and a "natural" part of classrooms at all levels that some readers might wonder how they might be considered a "technology" at all. However, even a cursory look at the history of the chalkboard can tell us a great deal about the possibilities (and pitfalls) of computers in the classroom.

Chalkboards as "Natural" Technologies

My historical exploration of the chalkboard as an example of a teaching technology is motivated in part by the sort of comments I hear from colleagues and students who question the presence of computers in writing classes: "All you need to teach English are books, desks, paper, pens, and a chalkboard. You don't need any technology—just use what's there." Of course, all of these items "just there" in elementary, secondary, and higher education classrooms are in fact technologies that have had profound influences on how and what we teach, just as profound as contemporary technologies like the World Wide Web. What then is it about some of my colleagues and students that allows things like the chalkboard to be

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viewed not as "technology" but as natural?

Part of it certainly has to do with the everyday definition of "technology." While critics and theorists delight in thinking of technology in more abstract terms, the common meaning of technology tends to have more to do with new machines and novel mechanisms that are complicated and demand particular user skills: innovative medical devices, scientific equipment, and, of course, computers. However, as Bertram C. Bruce and Maureen P. Hogan suggest in their essay "The Disappearance of Technology: Toward an Ecological Model of Literacy," technologies that have been in our culture for longer and that have more common applications "slip into the background." We "lose site" of the way things like the telephone, modern lighting and plumbing, and writing technologies "give shape to our daily lives" (270). As Bruce and Hogan argue throughout their essay, particularly as it pertains to writing technologies like pen, paper, index cards, word processors, hypertext, and so forth, this is not to say that such "disappeared" or assumed technologies are no longer ideological tools that influence our individual, social, and cultural activities and values. Quite the opposite.

In this sense, I think chalkboards really are more or less "disappeared" or "natural" for most teachers and students. After all, chalkboards have "always" been in classrooms. As Denis Baron puts it in "From Pencils to Pixels: The Stages of Literacy Technologies," an essay that focuses mostly on the pencil, "We have a way of getting so used to writing technologies that we come to think of them as natural rather than technological. We assume that pencils (and I would suggest chalkboards as well) are a natural way to write because they are old..." (32). Chalkboards are simple devices, ones that can even be replicated reasonably successfully in nature with a patch of dirt and a stick, and they certainly have a lot in common with the way that writing has been taught for centuries.

Chalkboards also don't represent a threat to the way that writing is taught, certainly not in the same way that computers do for many English teachers. I will return to this issue again in the last section of my essay, but writing has long been thought of as a field not concerned with technology. Baron points out that writers "use technology, to be sure, but they are not generally seen as pushing the envelope. Most people think of writers as rejecting technological innovations like the computer and the information superhighway, preferring instead to bang away at manual typewriters when they are not busy whittling new points on their no. 2 quill pens" (17). This particular characterization of writers as technological simpletons is one that Baron suggests is thrust upon writers, but, as Baron also goes on to point out, writers and writing teachers themselves have long tried to characterize their work as somehow being separate from technology.

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After all, writers and writing teachers (even in an age of postmodernity) have traditionally been concerned about and continue to primarily be concerned with people, the "human" in "humanism." And technology, especially as it has been defined philosophically and critically, has frequently been perceived as something that gets in the way of that enterprise. Plato raised the same concerns about writing that have been raised countless times in his dialog *Phaderus*, a dialog that is generally regarded as one of Plato's clearest explanations of the role of both rhetoric and writing in the pursuit of philosophic truth. Plato thought rhetoric was trickery and his mouthpiece Socrates did not seem much fonder of the "new technology" of writing. When Phaderus asks Socrates about the nature of writing, Socrates criticizes it as offering "the appearance of wisdom, not true wisdom, for they will read many things without instruction and therefore seem to know many things, when they are for the most part ignorant and hard to get along with, since they are not wise, but only appear wise" (Bizzell and Herzberg, 140). In short, the tension between the technology of writing and the actions of writers and thinkers is longstanding to say the least.

More contemporary critics of technology tend to turn to philosophers like Martin Heidegger and his work in *The Question Concerning Technology*. For example, Cynthia L. Selfe discusses Heidegger and his arguments in her 1999 book *Technology and Literacy in the Twenty-First Century: The Importance of Paying Attention,* a text that examines the inequities fostered by technology in American culture and classrooms and a text that also attempts to raise awareness of the influence of technology on literacy. Selfe suggests that Heidegger "dwells not on technology itself but, rather, on those problems caused by the relationship that humans establish with technology, specifically, the very human habit of understanding the world as a series of problems amenable to technological fixes" (140). In other words, we tend to believe that problems of all sorts can be solved by technology. Heidegger thought this was problematic because it caused us to perceive the world as a series of problems to be fixed, and, according to Selfe," this technological understanding of the world encourages the intellectual habit of perceiving everything around us, including the natural world, as a 'standing reserve' of resources that can be used to create, design, and manufacture technologies" (141).

I think it's important to emphasize that Selfe's reference to Heidegger and her critique of technology as a "fix" for problems with literacy, which she makes throughout *Technology and Literacy in the Twenty-First Century,* is not an argument *against* technology per se, certainly not in the same way that some of my colleagues and students are "against" computers as writing tools. Rather, her book is an attempt to get teachers of English and composition to recognize the ways in which technology is inevitably,

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and, at times, negatively effecting our work in literacy. In that sense, it is an argument I find myself more or less agreeing with.

However, I think Selfe too is making the same reductive assumptions about the "technological" attributes of computers versus the apparently "natural" characteristics of the tools that have "always" been a part of classrooms, things like chalkboards. Such a view is understandable and common, but it simplifies the definition of "natural" to the point that it seemingly includes anything that has been around us for a long time. In other words, despite the fact that chalkboards were considered a technical advance 150-200 years ago, despite their use (as I will discuss in the next section of this essay) as a tool that "fixed" problems afflicting literacy, they are for contemporary critics of technology parts of our everyday teaching environments, "natural," and thus not a threat to the way we understand ourselves as humans or the worlds around us.

Ultimately, I suppose the perception of chalkboards as "natural" as opposed to "technological" is also one based in symbolism as much as anything else. At least it is for me. When I think of the signifer "school," I automatically picture the teacher (usually a smiling young woman) standing in front of, pointing at, or writing on a chalkboard. It is as essential and cliched an image of schooling as apples, rulers, and school bells. In other words, maybe many see chalkboards not as "technology" but as "natural" because to do otherwise would rupture the real and symbolic meanings of "schooling" in a way that would be too disruptive to consider.

A Brief History of Chalkboards

Even those not willing or able to recognize chalkboards as a "technology" have to admit that they were not always "there" in the same way that public schooling in the United States has not always been "there." So, where did the chalkboard come from? While there is no clear "origin tale" in American public schools, the chalkboard seems to be an innovation of the early 19th century. The description of schools and schooling around 1800 by Paul Saettler in his text *The Evolution of American Educational Technology* is indeed grim. Before and around 1800, instruction at the elementary and secondary level was more or less individual study; "Developing understanding through inductive group discussions was unknown" (32). Writing instruction seemed to have more to do with making copies of existing texts and "whittling goose-quill pens" (33) than what we might consider "writing instruction" from even a current-traditionalist paradigm.

The buildings and equipment in early American schools were just as crude. Saettler describes the typical one-room school house of around 1800 as "... [A] log building, with one end usually occupied by a fireplace

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and the room's only window at the opposite end. Sticks were inserted between the logs that formed the walls and used to hold boards that served as desks. Backless benches made of split logs ran the entire length of the board desks" (33). In their book *Tinkering Toward Utopia,* David Tyack and Larry Cuban also suggest that the concerns of educators 150-200 years ago in this country were significantly different than they are today. "Complaints about outdoor privies once peppered the reports of state superintendents; they ranked separate outhouses for boys and girls high on their agenda for reform. In their diaries, teachers lamented green firewood and inefficient fireplaces and longed for decent stoves" (54-55). Further, and perhaps this goes without saying, the students who were unfortunate enough to find themselves in these circumstances were the lucky ones since access to public schooling was not remotely universal.

In this context, it is perhaps easier to understand the "revolutionary" nature and technological sophistication of the chalkboard. Tyack and Cuban do not explore the origins of the chalkboard, but Saettler ties the introduction of the new technology to the Lancasterian method of monitorial instruction. In brief, the Lancasterian method was one of the first "systematic" approaches to education introduced in the United States and was the brainchild of Joseph Lancaster of England. Lancaster wrote detailed education manuals that provided specific methods of classroom organization, approaches for grouping subject matters in certain ways, methods for providing instruction to large groups, and so forth. Lancaster also studied and wrote about the construction of specific school buildings and classrooms designed to foster motivation and a more efficient method of instruction.

"Efficient" to Lancaster and his followers seemed to be schools and teacher/student ratios that strike us today as ludicrous. According to Saettler, there were 10 public Lancasterians schools in Philadelphia in 1819, each with ten teachers and about 2,845 pupils—a 1 to 284 ratio. This was not overcrowding; this was the plan Lancaster and his followers had in mind. Lancasterian schools were "constructed to accommodate hundreds of children in a series of large, undivided rooms, with careful attention paid to lighting, ventilation, seating, and acoustics. One 50 by 100 foot room could accommodate as many as 500 pupils, with a space of 10 square feet allotted for each" (33). Saettler writes that chalkboards, slates, sand tables, and wall charts were an essential part of the Lancasterian method because it kept costs low by minimizing the use of paper, ink, pens, and books, and because it facilitated group instruction by monitors and teachers.

Nowadays, if we had elementary and secondary school settings where there was one teacher for a class of 200 or so, there would be public outrage. But as Saettler points out, the Lancasterian method of instruction

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was incredibly successful relative to the incompetence of village schoolmasters and the absence of any previous "systematic" approach to learning, and clearly Lancaster's approach of using the day's most sophisticated teaching technologies extended the opportunity of public education to hundreds of students who would have had no other access to schooling. Further, many of the innovations of this method—including the chalkboard, of course—have had tremendous influence on education at all levels to this day. Indeed, it is perhaps arguable that as American universities and colleges grew in leaps and bounds, they have more or less copied the Lancasterian method of instruction for many lower level classes. All of us are familiar with the lecture hall classes on our campuses, and except for auditorium-styled seating, the look of those learning environments is similar to the Lancasterian school of early 19th century America. Except the teacher-student ratio is often more like 1 to 500, and there are often a series of chalkboards (or, the chalkboard's 20th century cousin, the overhead) at the front of the room.

There were of course other competing methods of instruction in early American schools, and the Lancasterian method appears to have been a relatively short-lived approach. But regardless of how it was introduced, once the chalkboard was here it was here to stay, and it seems to have been an innovation that became synonymous with "schooling." Even the small schools in rural and westward lands such as Indiana, Illinois, and Iowa had to have a blackboard. In her book *Women Teachers on the Frontier*, Polly Welts Kaufman documents the early experiences of western teachers prior to about 1850. Even in those remote schools, a blackboard was one of the first pieces of teaching technology made available to the new teacher. For example, Kaufman writes that when Aurilla Cross came to White River Township, Indiana, "The community was so glad to have a teacher that they made new seats and desks and even a blackboard, although she had to paint it" (29). Martha Boynton arrived in her community school in Wisconsin to face a group of 33 students, aged four to 20, in a frame school house furnished with a blackboard and a globe (29).

So from almost the beginning, the chalkboard seems to have been a technology that was universally accepted, immediately adopted, and widely praised. As quoted in Tyack and Cuban's book, Josiah F. Bumstead wrote of blackboards in his 1841 book *The Blackboard in the Primary Schools* that "the inventor or introducer of the system deserves to be ranked among the best contributors to learning and science, if not among the greatest benefactors of mankind" (121). Tyack and Cuban also quote another writer of the time as calling the blackboard as "the MIRROR reflecting the workings, character and quality of the individual mind" (121).

It's difficult for us to nowadays imagine such praise for *any* technical

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innovation in the classroom (except for maybe computers), and I think it is more difficult for us to imagine such praise for the lowly chalkboard. Granted, a handy tool, but "among the greatest benefactors of mankind?" that "reflects the workings of the mind?" Quite a stretch. Nonetheless, the chalkboard has survived these early hyperbolic claims that always accommodate new technologies and has even managed to live up to a few of them. In short, it was and remains an ingenious teaching tool and a significant contribution to the "technology" of the classroom.

The Success of Chalkboards versus the Future of Computers

There are some fairly obvious reasons why chalkboards continue to "work" pretty much the same way they did just short of 200 years ago. They are easy to operate devices that are cheap, low-maintenance, and long-lasting. They are simple to use, flexible in application, and extremely reliable to the extent that there is chalk available, which, in the classrooms where I teach, is often an issue. These advantages on the whole are clearly one of the reasons why it is difficult for us to imagine a classroom without the "natural" presence of a chalkboard. And to me, these advantages say a lot as to why computers are not as of yet a "natural" feature of classrooms. In terms of costs, maintenance, reliability, durability, and ease of use, computers are essentially the opposite of chalkboards.

Chalkboards also have the obvious advantage of having been around for a long time. We are past the point in the chalkboard's history where it is necessary to defend the reasons for using them. The same cannot be said of computers. As Denis Baron puts it, "After more than a decade of study, we still know relatively little about how people are using computers to read and write, and the number of people online, when viewed in the perspective of the total population of the United States, or of the world... is still quite small" (32). So in a sense, thinking about the potential future of computers based on the success of the chalkboard is problematic at best since the chalkboard has a 150 year or so head start.

But a slightly less obvious (at least to me) reason for the success of chalkboards as argued by Tyack and Cuban has to do with what chalkboards *don't* do. "[R]eliable improvements like the chalkboard ... enhanced what teachers were already doing. Teachers have regularly used technologies to enhance their regular instruction but rarely to transform their teaching" (122). In other words, technology has historically been incorporated into teaching only as a means of enhancing accepted pedagogical approaches, not as a means of transforming pedagogy.

There are good reasons for this, as Cuban discusses in his book *Teachers and Machines.* Cuban argues that teachers, especially at the secondary and elementary level, have traditionally had to cope with a variety of conflicting goals within their classrooms—encouraging students to social-

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ize while nourishing individuality; demanding that students follow the rules, while encouraging students to think for themselves; and so forth. "Coping with these conflicting messages within the hierarchical structures in which teachers must work drives them to construct a practical pedagogy, permitting them to complete a hectic five-hour instructional day" (2). Cuban argues this is not "merely a knee-jerk, unthinking reaction" (65), but rather a survival skill classroom teachers must master to succeed. Cuban sums up how the use of technology has figured into the day-to-day work of K-12 teachers: "Thus, the simplicity, versatility, and efficiency of those aids such as the textbook and chalkboard in coping with problems arising from the complicated realities of classroom instruction far exceed the limited benefits extracted from using machines" (59).

Cuban is speaking here about the "machinery" of film projectors and the like, and he and Tyack both acknowledge that computers have a lot of potential in the classroom. At the same time, Cuban and Tyack also suggest that "the jury is out on how soon and how extensively the computer will be incorporated in everyday instruction" (126). The potential benefits of computers in the classroom are readily apparent to Cuban and Tyack, but they also argue that the "various uses of the computer, valuable in themselves, will still require the integration and sense-making that a good teacher can provide" (126).

I find these to be important observations about the success of chalkboards as I think about the future of computers and writing in English departments for at least two different reasons. First, it seems to me that this idea that technology is used to enhance accepted practices—teaching and otherwise—is the relationship most of my colleagues have with computers: while most aren't willing to change what they're doing to use computers, they are willing to use computers to make the things they've already been doing easier. Just about everybody seems comfortable with word processing software, I think largely because most see it as a technology that doesn't really *change* the way they write; it merely enhances it. (I would argue that word processing does actually change the way we write, but that's a different discussion for a different time).

I think the same arguments can be made about Internet technologies as well. A recent UCLA study widely reported by the Associated Press noted that two-thirds of college professors across the disciplines expressed fear about computer technologies including the Internet and about as many college faculty said they don't use computer technologies in their teaching. However, the same study notes that 87 percent of college faculty are comfortable using email, again a technology that most see not as transformative but as an enhancement of the practice of letter writing (McQueen, Detroit News Web Site).

Second, if Tyack's and Cuban's argument is true, that technology has

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been employed by teachers to enhance existing technology but not to (generally speaking) transform it, then much of the work we do in computers and writing strikes me as backwards. Too often, I think those of us in computers and writing too easily assume that if we give teachers ample access to computers and technical support, they will be willing to change the way they teach in order to use them. As I think this version of the history of the chalkboard in American schools suggests, it is pedagogy that motivates the use of improved technologies, not the technologies that motivates improvements in pedagogy. Chalkboards were an instant success because they enhanced the new Lancasterian and other approaches to teaching that assumed larger groups of students and more collaborative activity. Computers are not as of yet as universal for a lot of reasons that have to do with access, things like cost, ease of use, etc.; but they are also not universal (yet) because many teachers don't see how computers enhance pedagogy.

Furthermore, all teaching technologies can be misused in a way that defeats their powers. Even the chalkboard: as Bart Simpson demonstrates in the opening credits of *The Simpsons,* the chalkboard can be used as a tool of tediously repetitive punishment just as easily as it can be used as a tool for innovative and effective teaching. Less humorously, the same things happens with computers in the classroom of a teacher not trained or interested in computer-based writing pedagogy. In other words, encouraging, compelling, or forcing teachers to use computers in the teaching of writing will do little good without changing the way writing is taught.

I'd like to close my essay by returning to the questions I asked at its beginning: will *all* writing and literature teachers eventually expect computers in their classrooms in the same way they expect chalkboards? Will computers and writing ever seem "natural"? Will there always be a "cutting edge" in the use of technology and teaching? In some sense, the answer to all of these questions is clearly yes. In the long term, it seems inevitable that computers will take on a more "natural" place in classrooms and our assumptions in teaching. We have a ways to go before they are as cheap, reliable, and easy to operate as the seemingly "natural" classroom technologies like books, pens, pencils and chalkboards, but I believe it will and in fact *is* happening. I have been teaching at the college-level for eleven years now, and I remember that in the first freshman composition class I taught, I had to encourage and require students to use a word processing software to type at least one of their papers. I don't believe I have read a paper that was *not* typed up with a program like Microsoft Word in two or three years.

And of course, the definition of "computer" has changed dramatically and quickly, and it will certainly continue to change. The most modern

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personal computers of the early 80s are unbelievably crude by today's standards, and the G3 laptop computer that I used to type this essay (a computer imaginable only as science fiction 25 years ago) is already out of date and will undoubtedly be considered crude and useless in just a few years. So I think we will always have a "cutting edge" in that we will always be facing innovations with computer hardware and software, not to mention the inventions that have yet to be imagined, the technologies of the future that will certainly be called among the greatest benefactors of mankind.

But I think the future of *how* and to what extent computers will enhance writing pedagogy is still unclear. Just as we've seen with radio, film, and television, just because a communication technology becomes popular and important in American culture in general doesn't mean it will be as important in education, particularly the teaching of writing. However, as Tyack and Cuban point out, the computer is unique in the history of educational technology in terms of both its potential benefits and problems, and they suggest that the extent to which teachers will ultimately embrace the technology "depends in good part on the ability of technologically minded reformers to understand the realities of the classroom and to enlist teachers as collaborators rather than regarding them as obstacles to progress" (126). So it seems to me that a large part of the work we have to do with technology in writing classes has less to do with giving teachers computers and more with facing and changing the "realities of the classroom." If computers are to become as "natural" as chalkboards in the writing classrooms, then I think we need to work harder in emphasizing change in our pedagogical approaches so that computers are seen as essential and as natural in the classroom as chalkboards.

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