

# Engines of Inquiry

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## **Engines of Inquiry: Teaching, Technology, and Learner-Centered Approaches to Culture and History**

*Randy Bass, Georgetown University*

As Leo Marx pointed out a long time ago, rhetoric of the “technological sublime” is an American tradition, and though it first emerged in response to the inventions of the Industrial Revolution—the steam engine, the telegraph, the railroad—the idea of the technological sublime is still with us in this so-called Information Age. With their emphasis on solutions and efficiency, popular images of information technology have contributed to a misleading mythology—a new rhetoric of the technological sublime—about technology’s impact on culture and especially education. Computers are touted primarily as machines for increasing productivity, speeding up problem-solving, and finding answers. All you need, we are told, is the right set of tools—the latest microprocessor, the newest operating system, the fastest Internet connection—and your satisfaction is guaranteed. Stuart Moulthrop calls this matrix of images and rhetoric the “game of perfect information,” and it skews the conversation about the use of new technologies in education in dangerous ways.

Discussions about educational technology are influenced as much by the rhetoric of the “technological sublime” and language of “perfect information” as by what is actually possible. Furthermore, the discussions have been dominated by policy-makers, corporate PR firms, and administrators with little or no experience using technology in real classrooms with real students. Or, the parameters of the discussion become entangled with debates about educational standards that speak in reductive terms about content and student skills and too seldom without any appreciation for higher-order thinking abilities and real understanding.

What is missing from the discussion about educational technology is a more nuanced and careful approach, a sustained exploration of the kinds of learning that are—and are not—enhanced by digital tools. Moreover, the discussion must extend beyond the “early adopters” of technology and the faculty innovators to include mainstream faculty, all sharing their experiences, perspectives, and needs. And most critically, the discussion must recognize something that educators and scholars often take for granted: teaching and learning is not about perfect information, but often about *imperfect* information.

Indeed, learning is often about indirection, ambiguity, complexity, and multiplicity. What's more, in the fields of culture and history, imperfect information is not necessarily something to be wished away, but is sought after, interpreted, and synthesized. Sometimes knowledge is simply too complex to be perfect.

Refocusing the discussion about teaching with technology into an investigation of effective practice and intellectual inquiry is a daunting challenge. If we want to answer the question, "What is the impact of computers on learning?" then we have to begin with the premise that teaching and learning is a complicated process that builds knowledge over time, and in not always predictable ways. In her book *Rethinking University Teaching: A Framework for the Effective Use of Information Technology*, Diana Laurillard describes one framework for quality teaching as a "conversational framework" that is premised on a "cyclical process." This process, she argues, has to allow "both teacher and student to understand each other's intentions and descriptions of the phenomena at the discursive level, and come to some kind of agreement; then at the interactive level, the students practice their subject, and get feedback on their actions; then they reflect on this experience to integrate it with the theory, and rearticulate what they know at the discursive level." In short, Laurillard posits that good teaching must be discursive, adaptive, interactive, reflective, and most critically, intentional.

### **The Contexts of Good Learning**

All teachers have intentions when they design and teach a course. In many ways those intentions are a kind of hypothesis, as if to say: "If I teach these particular things, in this particular order, in this particular way, then this kind of learning will probably take place." This mostly unarticulated "course design hypothesis" is loaded with complicated questions, and informed by a range of knowledge about one's subject matter, one's students, and the learning process. Yet, faculty almost never have the opportunity to look at those questions slowly. Although many faculty have the inclination to improve and innovate, a rare few have time, training, or institutional incentives to examine their teaching systematically, and consider their intentions in curriculum design for all their assumptions and ramifications. Furthermore, most faculty who teach literature, history, and interdisciplinary culture courses have so internalized this process that they do not recognize it as a hypothesis or design process at all, but mostly as a set of decisions about content, coverage, and materials.

The proliferation of technology in higher education has provided an opening to address our intentions in a fresh way. In fact, new technologies and new learning environments provide an *opportunity* for intentionality. Quite simply, when we ask the question "How do our students learn when we teach with technology?" we are really asking this question: "How do our students learn when we teach?"

So, despite the temptation to focus on technology alone, it is critical to step back and first ask some basic questions about one's own teaching:

What am I doing now that I'd like to do better?

What pedagogical problems would I like to solve?  
What do I wish students did more often or differently?

If there is anything common to the many answers I have heard faculty give to these questions, it is their desire to heighten student engagement. Faculty commonly wish that students would come to class not only having done the reading, but with something to say about it. Faculty wish that more students would talk in class or use class time more productively to dig into material. They wish students would develop their own interrogative stance toward material or look at a document or issue or event critically on their own. And perhaps most commonly, faculty want their students to develop an ability to see and express complexity in the *language* of that discipline in such a way that it is transferable from one problem to the next.

All of these dimensions of engagement address faculty desire for their students to move beyond what John McClymer and Lucia Knoles call “coping mechanisms.” “Coping mechanisms” are the set of “acritical techniques” that students develop over the life of their schooling that they too often are able to use as a substitute for “genuine learning.” Varying from field to field, “coping techniques involve doing exactly the opposite of what you must do in order to learn. A student who wants to cope with a poem must systematically ignore those elements that seem confusing or contradictory, but a student who wants to construct a real interpretation must seek out the most puzzling elements in the work” (42).

There are many reasons why students develop coping mechanisms; many have to do with the nature of schools, and some have to do with the expectations of teachers. McClymer and Knoles argue that students are often encouraged simply to cope because the kinds of tests, assignments, and activities we give allow them to do so. “If one of the hallmarks of a serious [historical or literary] interpretation is a willingness to confront complexity, it behooves us to practice what we preach” (42).

In light of this, I think that it is worth asking ourselves, before considering the revision of our pedagogy, “In what contexts, and by what means, do students tend to engage in learning rather than coping?” Following that question, then, I think we can reframe the discussion about technology’s impact on teaching and learning around something like this question: “What aspects of good teaching, and contexts of good learning (rather than adequate coping), do particular technologies serve well?”

Perhaps it is also appropriate to ask what it is that drives learning for teachers and scholars. I argue that there are three factors that drive the learning of experts: the *questions* that we want to ask, the cultural record and *materials* that we have to work with, and the *methods* and theories that govern our practice. First and foremost, compelling questions motivate expert learning; similarly it is in those moments when students are driven by questions that are compelling (or interesting) to them that they learn best. And, ultimately, it becomes its own “cyclical process”: it is inquiry itself that drives learning—and resources, materials, and methods that drive inquiry. The question confronting us as teachers, and the question that governs this volume, then, is how can

information technologies play a role in the *engines of inquiry* that drive learning?

For the balance of this essay, I will look at the study of American culture and history and the ways that faculty have been applying different technologies in different contexts. To do this, I have drawn on two different kinds of sources. On the one hand I owe part of this framework to the thinking not only of Diana Laurillard, but also to the fundamental and well-known “Seven Principles of Good Undergraduate Practice” (Chickering and Gamson) and its later reconsideration in light of information technologies (Chickering and Ehrmann). On the other hand, the framework that I offer below is a synthesis of practical findings that come from faculty who teach culture and history with new technologies. I have worked within the tenets of what we might call “new media pedagogy” to reflect on the reported experience of faculty working to discover meaningful ways to use information technologies in teaching interdisciplinary approaches to culture and history.

The ongoing work of faculty innovators (much of which is documented in the *Works and Days* volume that came out of the Crossroads Research Project) indicate that information technologies offer a range of opportunities for meaningful learning for students in history and culture classes in secondary and post-secondary settings. In our experience, most educational uses of digital technology fall into three broad categories:

**Inquiry-based learning** utilizing primary sources available on CD-ROMs and the World Wide Web, and including the exploration of multimedia environments with potentially fluid combinations of text, image, sound, and moving images in presentational and inquiry activities, involving different senses and forms of expression and addressing different learning styles;

**Bridging reading and writing through online interaction**, extending the time and space for dialogic and distributive learning, and joining literacy with disciplinary and interdisciplinary inquiry;

**Making student work public in new media formats**, encouraging constructivist pedagogies through the creation and exchange of knowledge-representations, and creating opportunities for review by broader professional and public audiences.

Each type of activity takes advantage of particular qualities of the new media itself. And each type of activity is also linked to particular pedagogical strategies and goals. Most if not all of the essays in this volume fall into one or more of these categories. So, let me explore each of these areas more extensively and, in particular, highlight the connections that innovative teachers are making among technologies, pedagogies, and the study of culture and history.

# Engines of Inquiry

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## **Inquiry-Based Learning: The Novice in the Archive**

The first important area for the use of electronic tools and resources in history and culture courses emerges from the proliferation of digital archives of primary documents. Faculty nationwide, at both the secondary and post-secondary levels, have begun exploring ways to build inquiry activities that take advantage of the resources available on the web and to a lesser extent, CD ROM.

Probably the most outstanding single site for primary documents in American history and culture is the American Memory Collection, created and maintained by the Library of Congress. As of this writing, American Memory provides online access to more than 100 tremendously diverse collections and a total of over 7 million different primary documents. Across the country and around the world, universities, libraries, art museums and individual researchers are likewise digitizing their archives—the letters, diaries, period newspapers, court records, photographs, military records, oral history interviews, and so on that are vital to the study of history and culture. For example, the [\*Valley of the Shadow\*](#) website, created by Ed Ayers and what is now called the Virginia Center for Digital History at the University of Virginia, offers thousands of documents tracing the history of two counties in the Shenandoah Valley (Staunton, Virginia and Augusta, Pennsylvania) in the three pivotal decades surrounding the Civil War. Likewise, the African Studies Center of the University of California, Los Angeles, has mounted online the entire collection of the Marcus Garvey Papers, including newspaper articles, correspondence, photographs and audio recordings of several of Garvey's speeches. The list could go on and on—there are hundreds of such digital archives related to American history and culture, including many on CD-ROM, such as the American Social History Project's 1994 disc, *Who Built America?*

The abundant digital archives available through the web and on CD-ROM offer exciting educational opportunities for the study of history and culture. The examination of primary sources, and the structured inquiry learning process that is often used in such examinations, are widely recognized as essential steps in building student interest in history and culture and helping them understand the ways that scholars engage in research, study, and interpretation. Primary documents help give students a sense of the reality and the complexity of the past; they represent an opportunity to go beyond the predigested, seamless quality of most textbooks to engage with real people and real problems. The fragmentary and contradictory nature of primary sources can be challenging and frustrating, but also intriguing and ultimately rewarding, helping students understand the problematic nature of evidence and the constructed quality of historical and social interpretations. Framed by thoughtful questions and contextual

information, the inquiry process asks students to take on a particularly active role in exploring texts, generating hypotheses and conclusions, and enriching their knowledge and understanding. Inquiry methods are challenging for faculty as well as students, demanding substantial time in research and planning as well as classroom implementation. But the benefits of motivation, skill-building, and in-depth understanding are widely recognized.

The digitization of documents allows students to examine them with supple electronic tools, conducting searches that facilitate and transform the inquiry process. For example, the American Memory Collection provides search engines that operate within and across collections; if one is researching sharecropping in the thousands of interview transcripts held in the Federal Writers' Project archive, a search can quickly find (and take you to) every mention of sharecropping in every transcript. Other search processes cut across collections, allowing for connection and comparison. Searches on less massive and complicated sites also offer interesting possibilities. For example, a site created by David Phillips and Thomas Thurston on [How The Other Half Lives](#) provides the entire text and all the photos from Jacob Riis' classic combination of muckraking journalism and social documentary photography. Searches for key words such as "race" or "disease" or "dangerous" turn up interesting patterns and unexpected insights into the language and assumptions of the narrative and its author. In other words, the search engines can not only help students to find what they are looking for; it also allows them to examine patterns of word usage and language formation within and across documents. Enabling students to more easily consider who uses certain words and in what situations and in what ways, the search tools provided by digital technology can clarify the extent to which primary documents are not merely data (or evidence) but also databases.

These kinds of activities—searching, examining patterns, discovering connections among artifacts—are all germane to the *authentic thinking processes* of historians and scholars of culture. In other words, digital archives allow novice learners to move closer to seeing key texts as ideas situated in a complexity and to use those tools as prosthetics for searching and sorting through possibilities and contingencies, all *en route* to performing authentic analysis and synthesis. This is the phenomenon that I call the "novice in the archive." There are two important points to bear in mind: first, new technologies make it possible for novice learners to engage in the kinds of archival activities that only expert learners used to be able to do; second, the nature of their encounter with primary materials and primary processes is still as novice learners. The unique opportunity with electronic, simulated archives is to create open but guided experiences for students that would be difficult or impractical to replicate in most library environments.

I am not suggesting that electronic libraries and search tools provide a neat, information "solution" to the problem of giving students authentic tasks and teaching them complex thinking. Although powerful tools, they are not serving in these instances as "engines" of productivity leading students to answers, but as engines of *inquiry*, contributing to a context that might lead students to ask better, more subtle, more complex, questions

about the cultural materials before them.

The task of creating “open but guided experiences” is a demanding one, and it helps to turn to the work of educational researchers and cognitive psychologists to understand better how people learn. Samuel Wineburg, in one of his many valuable studies on thinking and learning about history, explains, “The end products of historical cognition are available for examination by studying the expansive monographic literature in history. But what about the intermediate processes of historical cognition? How is it that historians come to know what they know? What cognitive processes do they use to piece together the past when the documents they review are fragmented and inconsistent? What rules of thumb do they use to resolve textual contradictions and how do they get from sketchy document to comprehensive narrative?” (85). In other words, a crucial move in shifting our focus from teaching to learning is a shift in our attention from the “end products” of expert cognition to the “intermediate processes”—those necessary but invisible steps towards comprehension.

The question, then, is how to teach these intermediate processes to students. One powerful model for structuring the transfer of intermediate processes is what Allan Collins, John Seely Brown and Ann Holum call “Cognitive Apprenticeship.” “In apprenticeship,” they explain, “learners can see the processes of work.” Traditionally, apprenticeship applies to physical, tangible activity, but not to schooling. “In apprenticeship, the processes of the activity are visible. In schooling, the processes of thinking are often invisible to both the students and the teacher. Cognitive apprenticeship is a model of instruction that works to make thinking visible” (6). Collins, Brown, and Holum argue that the apprenticeship model is characterized by four important aspects: *modeling* (the expert shows the apprentice how to do a task), *scaffolding* (the supports provided by the expert to help apprentices carry out the task), *fading* (the process by which the expert pulls away slowly in order to let the apprentice accomplish it her or himself), and *coaching* (the thread running through the entire apprenticeship) (8). Key to applying this model for learning—and especially important here in considering the goal of teaching for student understanding in culture and history—is transferring to students these intermediate cognitive processes, what Collins, Brown, and Holum call “strategic knowledge.” Different from important “domain knowledge” (concepts, facts, and procedures), “strategic knowledge” refers to

the usually tacit knowledge that underlies an expert’s ability to make use of concepts, facts, and procedures as necessary to solve problems and accomplish tasks. This sort of expert problem-solving knowledge involves problem-solving heuristics (or ‘rules of thumb’) and the strategies that control the problem-solving process. Another type of strategic knowledge, often overlooked, includes the learning strategies that experts use to acquire new concepts. (42)

Cognitive apprenticeship is one model for teaching students the strategic knowledge and methods of expert learners, through any version of a process that begins with modeling, and moves through a scaffolded and sequenced process of student rehearsal and reflection, leading to the point where the learner takes on more and more of the expert

tasks.

Several years ago when I was a facilitator for a “writing across the curriculum” symposium on my own campus, I asked a group of faculty to talk about their frustrations with student writing. One history professor said, without a hint of cynicism or condescension, “I don’t understand why their midterms are so badly written, when all of this material was covered in lecture.” In short, this professor was making the earnest mistake of thinking that modeling historical thinking himself (and his students’ passive spectating of it) would be adequate preparation for their performing historical thinking on the exam. What was missing from this class was an opportunity for students to engage, either sporadically or routinely, in a practice they were expected to perform on their own—in other words, what was missing was a chance to build strategic knowledge through a cognitive apprenticeship.

This idea of strategic knowledge and the cognitive apprenticeship model are useful ways to begin refining the idea of authentic activities, and the possible roles that new media technologies might play in reshaping teaching and learning. In activities in this volume like John McClymer’s “Women’s Rights and ‘Soul Murder’” exercise and Alice Carter’s “Valley of the Shadow” assignment new media technologies help to make these processes visible and accessible to learners, in part by helping students approach problem-solving and knowledge-making as open, revisable processes, and in part by providing tools—and simulated archival environments—that enable teachers—as expert learners—a bridge to student thinking processes.

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## **Bridging Reading and Writing through Online Interaction**

One very significant dimension of “making thinking visible” is the bridging of reading and writing through online writing, electronic dialogue, and communication tools deployed across the curriculum. The use of such tools brings more than just the opportunity for interaction among students with the flexibility of time and place (although this is valuable); communication technologies also bring new contexts and spaces for reshaping the processes of reading and writing, and ultimately, critical thinking.

Over the last several decades, educators in many disciplines and at every level of education have come to believe that meaningful education involves students not merely as passive recipients of knowledge dispensed by the instructor, but as active contributors to the learning process. This approach, which goes back at least to John Dewey and his colleagues at the beginning of the early twentieth century, has been bolstered in recent years by renewed theoretical elaboration and the generation of significant research data on learning and teaching. One of the key elements in this pedagogy is the importance of student discussion and interaction with the instructor and with each other, which provides opportunities for students to articulate, exchange, and deepen their learning. Recall Diana Laurillard’s “conversational framework,” in which an exchange of ideas and discourse of understanding about the importance and scope of the course’s materials is critical to the “cyclical process” at the heart of learning. Similarly, education theorists, such as Arthur Chickering and Alexander Astin have pointed out how critical student-to-student (peer-to-peer) conversation is in the learning process.

Electronic mail, electronic discussion lists, and web bulletin boards can support and enhance such pedagogies by creating new spaces for group conversations. In some settings, the electronic interaction complements the learning that takes place inside the classroom; in a more purely “distance learning” approach, the electronic forum becomes the primary setting for student-to-student (as well as student-to-teacher) interaction. For teachers and courses that fall into the first category, one potential advantage to using electronic interaction is simply that it increases the amount of time that students are focused on and interacting with the subject. Another advantage is the opportunity for “asynchronous” discussion: students can engage in the conversation on their own schedule, rather than only at the time when the instructor and other students are available. A third advantage is the fact that electronic interaction involves the writing process, which can facilitate complex thinking and learning as well as building related skills. Another clear advantage of online dialogue is the “leveling” effect that often

occurs among the students, making participation less threatening and more democratic, drawing out even those learners who remain silent in face-to-face discussion.

At the same time that the culture and history fields have undergone a shift in epistemology, wherein where we look for cultural knowledge is more widely distributed than ever before across fields, texts, objects, and populations, there has been (at least in the United States) a concomitant shift in pedagogical practice that might be called distributed learning. With roots in a variety of student-centered pedagogies, and in particular, feminist pedagogy, radical teaching, multicultural education, rhetoric and composition, and a whole range of collaborative, cooperative, and problem-based learning methods, this shift from a one-to-many to a many-to-many model of communication is one of the most important features of the new media, and provides the fundamental groundwork for a great many changes in social structure and subject formation. The implications are also profound for knowledge-making practices of academic disciplines. In contrast to the McLuhan-esque model of broadcast communications—where telemedia shrinks the space between points of reception—interactive media expands the space in which communication can take place, thereby creating more opportunities for scholars and students to conduct their intellectual work. The expanded space of interactive media enables the visualization and manipulation of objects, as well as the capacity to experiment with textual arrangements, organization, and argument. What is potentially “distributed” in interactive media is not just the ability to “talk back” but the ability to produce and reproduce knowledge.

As an example of distributed learning, consider a lesson in this volume built around a “guided” inquiry assignment using an electronic primary source archive, the American Memory’s Detroit Publishing Company Photograph Collection of American Life (*Engines* 157). Students are asked to choose an aspect of urbanization—industrial work, immigrant life, leisure time, and so on—and in pairs they search the archive for six or so photographs that portray a range of experiences or perspectives about this aspect of city life. Students and their partners are then asked to talk through a series of steps to process what they have found on “urbanization,” which includes observations about what they see, speculations about what they know and how they would interpret what they see, and finally, questions about the content and meaning of the photographs. How would such an activity be a positive difference over other classroom formats? What is to be gained from having students work in pairs with an electronic archive, to discuss and debate among themselves what they have found and then to have to articulate those findings, even in the form of questions, to the rest of the class? How would this scenario be different from the teacher bringing in a series of slides and projecting them, or bringing in photocopies of one or two images and handing them out? If this kind of “search and inquiry” activity were routine in a course, how might it alter the nature of student engagement with knowledge?

In this assignment, each student (or pair of students) brings to class a different piece of cultural authority to share. In a room that has a computer and projector, students would be able to bring those images up on the screen and “read” them for their peers. Rather than passively hearing the characteristics of urbanization in the 1890’s, or simply

reconstructing them from the common reading material, students in this class would *actively and collectively* construct a sense of urban life; the responsibility for building knowledge on that day would be distributed. They would not, from this assignment, have all the facts or much detailed knowledge about the topic, but they would have the tools, resources, and basis for beginning to construct that knowledge. Even more straightforward use of online discussion tools and listservs can simultaneously distribute the responsibility for learning and bridge the gap between reading and writing. “The most basic applications of the Internet involve writing,” point out Donna Reiss, Dickie Self, and Art Young in *Electronic Communication Across the Curriculum*, “and every student who uses these tools is participating in an activity that might be characterized as communication in or across the curriculum” (xviii). In *Works and Days* Tracy Weis claims that

mail exchange encouraged some students to “rehearse” their interpretations of the readings in the relative intimacy of a small group. By focusing on a particular reading and by responding to a specific question, students established individual points of entry for the subsequent in-class discussions. Some use the listserv to express confusion or lack of understanding, while others employed the electronic discussion space to ask questions and to advance analyses. (257)

This idea that students are able to “rehearse” their ideas in draft is significantly related to authentic learning. That is, it helps teach the idea (again at the center of current approaches to writing instruction) that the process of expressing one’s ideas is fundamentally social, not only in the desirability of having an audience to help form and practice ideas, but in the idea that the discourse into which one enters is fundamentally formative of the expression itself. Weis also found that online writing spaces lent themselves to “making thinking visible”—that is, revealing those intermediary cognitive processes identified by Wineburg. As Weis puts it,

Generally, teachers and other students have limited access to other student-readers’ encounters with texts. Since readers read texts in relative privacy, these encounters, whether intimate and profound, or impersonal and superficial, remain largely hidden.... Inviting students to share, via class listserv, their individual reactions (questions, doubts, observations, conclusions) to texts transforms what had previously been essentially a private matter into a public act. (255)

Other teachers have found success using tools like Blackboard or listservs to provide conversational spaces “smaller” than the class itself. Faculty who teach larger classes have found it effective to divide the class into smaller conversational groups (10-15 students each), or even smaller peer writing groups, where each week different questions are addressed or group research projects are undertaken. As with all kinds of class participation, it is to be expected that some groups will work better than others, some thriving, some muddling along, some silent or stagnant. Nonetheless, teachers who utilize email and electronic discussion tools generally find them to be a positive influence for engaging students in a number of ways.

In addition to contributing to a distributive, dialogic environment, these pedagogies and the interactive nature of the technology address specific issues in the teaching of culture and history. Distributive learning responds to issues of identity, subjectivity, and community that characterize newer and expansive approaches to literary, cultural, and historical studies. Similarly, distributive learning approaches are also responses to anxieties about “coverage” in which the exploration of alternative texts, perspectives and methodologies are an increasingly integral component for courses that less and less can presume to be “covering” a particular topic.

The shift from a coverage model to a model based primarily on student understanding and performance necessarily has to focus thoughtfully on *processes* of cognition and knowledge-making, as both an individual and social act; and it is around the complexities of teaching and learning expert processes that we can also move toward increased integration of reading and writing. Not only can dialogic technologies help link the process of writing to activities of inquiry—and availing those processes for exchange—but they also offer environments for nuancing the act of *reading* as a process. This is one of the ways that can help put an end to what Peter Elbow calls the “war between reading and writing” that currently privileges reading over writing in the academy. Speaking about the teaching of literature (although his point applies perfectly well for all culture and history fields), Elbow argues:

students could come to see reading as a “process” of cognitive social construction if only there were a tradition in literature, as there is in writing, of teachers and researchers sharing what we might call ‘rough drafts of reading’: showing or talking about their actual reading process from the beginning—for example, by working with colleagues or students on texts they have not seen before; giving an honest protocol or an accurate account of the mental events that go on in one’s mind while engaged in creating meaning from a text. (281)

Applying Elbow’s point to new media, we believe it is most productive to think of online *writing* technologies also as online *reading* technologies, and to continue developing the integral role of writing and dialogue in archival and inquiry activities, and vice versa.

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## Designing Constructive Public Spaces for Learning

Nowhere else but in school will students ever produce work for no audience. If we are to take seriously the ideas of authentic tasks, complex inquiry, and dialogic learning, then surely we must begin to incorporate a public dimension into students' work as integral to pedagogy. Thus, closely connected to both online writing and inquiry activities is the third dimension of the framework: the use of constructive virtual spaces as environments for students to synthesize their reading and writing through public products. The third dimension of the framework—in some ways the synthesis of the first two areas—entails the use of new media technologies as virtual spaces where students publicly perform their knowledge through constructed projects. As we have already seen, virtual environments offer many layers of public space that help “make thinking visible” and lead students to develop a stronger sense of public accountability for their ideas. The creation of public, constructed products is another manifestation of these public pedagogies, one that engages students significantly in the *design* of knowledge.

Building on the work of David Perkins, Jonassen, Myers, and McKillop argue that “knowledge acquisition is a process of design, that it is facilitated when learners are actively engaged in designing knowledge rather than interpreting and encoding it. Learners become designers when they focus on the purpose for acquiring information, its underlying structure, generating model cases, and using the arguments entailed by the subject matter to justify the design. The people who learn the most from instructional materials are the designers” (94).

Building knowledge-based objects is a powerful dimension of constructivist pedagogies, sometimes also called constructionism. “Constructionism,” as defined by Yasmin Kafai and Mitchel Resnick, “suggests that learners are particularly likely to make new ideas when they are actively engaged in making some type of external artifact... which they can reflect upon and share with others” (1). It is worthwhile to highlight a few outstanding projects created by students which exemplify the dynamic Kafai and Resnick identify.

The [Jesuit Plantation Project at Georgetown University](#) is one such constructionist project, where each successive “generation” of sophomores in the American Civilization core sequence participates in the digital conversion of the Maryland Province Archive, containing 200 years of documents related to the six Jesuit owned plantations in Maryland. Each year, a different slice of the archive is converted into electronic form and mounted on the World Wide Web; only so much of the archive that each class of

students can transcribe, markup, and mount is added to the online collection at once.

In this project, students learn several things, but most importantly they get a taste of the gritty detailed work of doing cultural history: reading artifactual materials, figuring out how to transcribe manuscripts, deciding if a crossout is original, or if the slave named “Cornelius” over here is the same as the “Cornelius” in a different document. Students learn to put the documents into the collection themselves and then to contextualize them, thereby modeling the movement from micro to macro, local to broad knowledge that is at the heart of cultural and historical inquiry. This project engages students in authentic historical work.

What does technology have to do with it? Not a lot, except for the crucial dimension of the World Wide Web, which provides a tangible and immediate forum for the public availability of the work the students are producing. Far from a minor aspect of this project, as an educational tool, the public nature of the electronic environment is the pivotal aspect of the project. Students know that they are leaving a permanent legacy to the project; they get a feel for what it means to engage in inquiry that does not evaporate once the final exam is over. In this course, we are not trying to turn students into historians, but we are trying to give them a feel for what authentic work in cultural history might mean.

A similar project, but one that is oriented less around an archive and more on a usable resource, is the Chronology of the 1890’s project at Bowling Green State University. In this project, each successive generation of graduate students in the Introductory Methods Seminar contributes to an increasingly deep, annotated chronology of life at the end of the 19th century. As Bill Grant describes it,

At the end of the term, their contributions to the Chronology were left in cyberspace after the seminar was completed. In order to continue the experiment, my current seminar on Computing for American Culture Studies used the same site to build on the work done by the previous seminar in the 1890s. In addition to the opportunity to link to each other’s work, they can also make links to the work done by their predecessors. As other seminars in the 1890s are offered, the process can continue, each new generation of students inheriting from and building on work from the past. As students move on to worlds outside their current graduate program, they have a link back to the work they have left behind, and an ongoing connection with students who have followed them. The potential limits of such a database are only those of available server space. (Crossroads Research Project Archives)

Publicly accessible and accountable projects add to the authenticity of the learning experience by helping to teach students that knowledge making is neither a solitary nor an isolated and episodic experience; instead, it is the product of public dialogue, within the protocols of disciplinary discourse, in an ongoing and recursive conversation. Electronic projects can help engage students in that conversation in a way that asks them to be publicly accountable for their contributions. As Alan Howard puts it in his essay in this volume, such projects turn students from “consumers to producers”—producers

with a responsibility. With the “Virtual Pavilions” created by John Dorst’s introductory American Studies classes at the University of Wyoming, students realize that the design of any exhibit—even a digital one—raises questions about choice, selection, arrangement, and narrative interpretation (see *Engines* 98). David Silver, remarking on constructive hypertexts projects created by students at the University of Maryland, sees the process as both dynamic and collaborative:

This dynamic interaction—between students and instructors, students and students, and the class as a whole—fostered a collaborative learning environment which is reflected in the students’ projects....Another result of the project was multivocality. Students became aware that no single artifact perfectly encapsulates American life. Similarly, no single interpretation perfectly explains an artifact and its meaning within American society. In this manner, diversity—both with respect to culture and opinions—was not to be avoided, but rather engaged. (*Engines* 124-5)

Obviously, then, the best features of what I called “distributed learning” can be enhanced through collaborative and constructivist approaches to learning, where knowledge “is built by the learner, rather than supplied by the teacher” (Wilson 93). There are numerous manifestations of distributed and constructivist learning: variations of *problem-based learning* (which I also call *inquiry learning*); varieties of collaborative learning, ranging from team projects to peer critique to broad contexts for fostering dialogue and distributed knowledge; and multicultural pedagogies that emphasize the recognition and critique of “situated” knowledge and the relationship between perspectivism and universalism. Taken together these distributed approaches all offer productive symmetries between constructivism as a pedagogical philosophy and a belief in the socially constructed nature of knowledge. The two can converge through the design and use of new media environments. For example, Pete Honebein, an instructional designer, suggests that “designers of constructivist learning environments live by seven pedagogical goals”:

1. Provide experience with the knowledge-construction process.
2. Provide experience in and appreciation for multiple perspectives.
3. Embed learning in realistic and relevant contexts.
4. Encourage ownership and voice in the learning process.
5. Embed learning in social experience.
6. Encourage the use of multiple modes of representation.
7. Encourage self-awareness of the knowledge-construction process. (11-12)

Clearly, these goals for the design and use of digital learning environments could apply to any learning context dedicated to student-centered, constructivist goals. It is easy to imagine how, in the right pedagogical context, the developmental processes associated with constructivist approaches could also include focusing on the theoretical, even political, dimensions of the production of knowledge. Simply stated, constructivist-based pedagogies, combined with inquiry-based learning and dialogic learning, can foster critical thinking in our students.

# Engines of Inquiry

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## **Critical Thinking and the Scholarship of Teaching**

It hardly needs stating that no single technology can teach critical thinking; it is also doubtful whether any single teacher or any single course can. Habits of mind, contexts for performance, an environment that encourages and enables the reflective construction of knowledge, these are all necessary for critical thinking. And, as I argued earlier, also necessary is a shift in the responsibility for producing knowledge in a classroom from teacher to student. Everywhere I give workshops, faculty complain that their students cannot think critically or reflectively, yet, when looking at technology-enhanced, student-centered approaches, these same educators are reluctant to “give something up”—whether that something is authority, time, coverage, or control. If we want students to learn better or differently, then we have to teach differently, and that may require reconstruction of many structures and habits. I think this is especially true of teaching the elusive objective of critical and reflective thinking.

The relationship between technologies and critical thinking has to be characterized as “yes, but...” *Yes*, there are many features of technology-enhanced environments that can facilitate critical thinking:

- the ability to create rich environments of information that students can move through at their own pace;
- the ability to put tools in students’ hands that allow them to manipulate primary materials in light of methodological activities;
- the opportunities for faculty and students to read and write in electronic environments in which the emphasis is on making strategic choices in (re)constructing cultural and historical knowledge;
- the ability to read and write in nonlinear environments that can dramatize and make vivid multivocality and multiperspectivism;
- and finally, the opportunity for students to engage in the public conversation of ideas, either as speakers, listeners, or writers.

*But*, whether these capabilities lead to better learning (let alone critical thinking) depends on how they are deployed, and the ways that teachers construct a context for students to engage with both technologies and materials. Although there is great potential for learning when teaching with technology, there are many obstacles and no inevitabilities. The potential benefits of technologies laid out in this essay require the

right institutional and professional contexts for full realization. These contexts must respect the intricacies of synthesizing new technologies with the complexities of learning in the culture and history fields. To uncover these intricacies, and build a knowledge base of excellent practice, we need to situate the framework in a dynamic conversation that treats teaching and learning as matters of scholarly inquiry. That is, we must return to the notion of *intentionality* in our teaching.

Diana Laurillard, speaking of the need for more informed and reflective teaching practices in higher education, argues: “Teachers need to know more than just their subject. They need to know the ways it can come to be understood, the ways it can be misunderstood, what counts as understanding: they need to know how individuals experience the subject. But they are neither required nor enabled to know these things” (4). I agree with Laurillard, and I believe in the vital importance of faculty examining and collectively discussing their classroom practice and its impact on student understanding. I believe that this approach—which I’ll call here the “scholarship of teaching and learning”—will be essential in deepening our collective professional insight into the capabilities of new educational media laid out in the framework above—and into broader questions about how students learn.

The scholarship of teaching and learning can be thought of as an antidote to the rhetoric of perfect information that imbues the language of technology in the marketplace, the language that says innovation is about individual adoption and the imposition or infusion of optimal programs onto empty spaces. At both practical and theoretical levels, a scholarship of teaching and learning brings to the foreground the intellectual, analytic, experimental, and developmental dimensions of educational reform.

Originally coined in *Scholarship Reconsidered*, a 1990 report from the Carnegie Foundation for the Advancement of Teaching, “the scholarship of teaching and learning” does not have a clear and simple definition, and its meaning is still very much evolving. Put most simply, the scholarship of teaching and learning may be defined as a *range of activities* engaged by faculty to observe and analyze their own teaching, for the purpose of improving their teaching and sharing their findings with others for the improvement of teaching in their disciplines, on their campuses, and in their professional contexts. Although we tend to think of traditional scholarship in terms of publishable products, we want to stress the “range of activities” as the critical part of this definition.

Just as with more traditional kinds of scholarly, critical, and theoretical discourse, every professional scholar and teacher need not always engage in the same kind of inquiry or discourse in order to make use of or contribute to that discourse. If the goal is to foster an academic culture where all teachers are trained and able to engage in systematic investigations and intellectual inquiry on teaching as part of the fabric of their professional lives (even if they do not always do so), then the scholarship of teaching and learning cannot be seen as an activity merely engaged in by a few people who “do” that kind of research, or an activity only engaged in by research faculty with an interest in teaching, at the kind of institutions that afford them the luxury and incentives to do so

in an extensive way.

Although the scholarship of teaching should have the qualities of scholarly products it is more important that its range of activities be part of *an institutional vision* for providing an intellectual context in which faculty engage the professional practice of teaching. Russell Edgerton, as president of the American Association for Higher Education, argued for many years in behalf of “making teaching community property.” As Edgerton puts it,

If we could introduce faculty to a conception of teaching that honored faculty’s intuitive appreciation for the subtle processes of “knowledge transformation” entailed in quality teaching, then perhaps teaching *could* become a subject of ongoing professional, collegial discourse. A culture of interest in teaching could develop that would contain its own dynamic for continual improvement. (vi)

But how do we create that institutional vision? How do we foster that “culture of interest” so that the scholarship of teaching and learning is practiced by faculty who are talking to other faculty practicing the same? How do we remind ourselves that when we teach we have intentions, whether we articulate them or not, intentions that we often take for granted? How do we keep in the forefront that teaching with technology is not about technology, but about teaching, and teaching, in turn, is about learning? These are the kinds of questions hinted at in the Crossroads Conversations excerpted in this volume, and they are the kinds of questions that drive the Visible Knowledge Project, a five-year collaborative project spearheaded by the Center for New Designs in Learning and Scholarship (CNDLS) at Georgetown University. Growing directly out of our relationship with faculty represented in this volume, as well as participants in the Crossroads Research and Study Project, the Visible Knowledge Project is asking rigorous questions about the impact of certain technologies and pedagogies on both student learning and faculty professional practice. Extensive and intensive efforts like the [Visible Knowledge Project](#) are essential, we believe, for creating those insitutional visions about the power of discovering more about one’s own teaching.

# Engines of Inquiry

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## Getting the Thing of Value Out the Door

The growth of technology in education has been nothing short of phenomenal. Rapid advances in digital information processing show no sign of slowing. And though patterns of significant inequality persist, access to educational technology is rapidly spreading, affecting a wide range of educational settings, changing as it were the ecology of higher education. But figuring out the proper uses of educational technology inevitably takes time: time to learn about hardware and software; time to examine and assess available learning resources in one's discipline; and time to develop and refine effective strategies for media-based activities, units, and courses. Unfortunately, administrators have been all too reluctant to provide faculty with the time and the support they need to make these changes—especially staff development support and released-time from teaching responsibilities. An overwhelmed and beleaguered faculty, feeling exploited and unsupported, may well become exhausted, cynical, or openly resistant to the use of new media. Part of the source of this trouble may be that faculty and administrators are often not speaking of the same phenomenon when speaking about technology.

Just as these technological changes help faculty and students transcend the isolated nature of class periods or individual assignments, they also raise the possibility of thinking beyond the courses themselves to thinking in terms of clusters of courses, or "courses of study." Can the same changes that occur in the classroom occur across departments, or across entire universities? Just as the incorporation of new technologies leads us to consider the value of collaboration, revision, and dynamic interaction in our classes, new technologies should also lead us to think about these same changes and how they might extend beyond "the course" to a wider context. As Steve Ehrmann puts it in an essay in the previous edition of this volume, "Education can affect the lives of its graduates when they have mastered large, coherent bodies of knowledge, skills, and wisdom. Such coherent patterns of learning usually must accumulate over a series of courses and extracurricular experience. Thus, to make visible improvements in learning outcomes using technology, use that technology to enable large-scale changes in the methods and resources of learning" (66).

Here then is an implicit challenge to programs and departments to think about the intersection of technologies and pedagogies, in the context of activities students might engage in across several courses in a single institution. How might a program construct an electronic space or architecture that serves a program (as in the case of AS@UVA) and not just a single course? How might certain habits of mind, or routines of authentic

performance, be repeated across several courses so as to contribute to the coherent experience of a course of study? How might students work with constructive projects of their own theme, yet contribute to some larger collaborative project, helping to bring a sense of coherence and continuity across individual courses within a program?

Finally, the use of distributed learning and Web-mounted materials also begs a larger question about thinking “beyond courses” and the increasingly arbitrary boundaries of institutions themselves. Clearly, the field of American Studies and cultural history is too big for all but the largest institutions to even come close to coverage. As certain shifts take place, and more courses are entirely or partially online, why would it be necessary to maintain the fiction that every program in American Studies, or Literature, or History, is complete (or complete enough) in and of itself? Why couldn’t online course materials serve courses at more than one institution? Or, why couldn’t institutions, by close agreement, consider that their curriculum together forms a larger and more complete “course of study” than either curriculum alone? What used to seem like inevitabilities gives way to possibilities, and that will have the effect of driving us back to “first questions” regarding what really matters in terms of teaching and learning.

And that possibility reminds me of an old joke that I heard from my father: A man who works in a factory leaves there every evening with a wheelbarrow full of straw. Every night as he exits the factory and passes through the gate, the guard looks through the straw, certain that the man is stealing something. At the end of twenty years employment, the man is departing, as always with his wheelbarrow full of straw. The guard turns to the man and says:

“For twenty years you have been leaving every night with a wheelbarrow full of straw. For twenty years, every night, I look through the straw and find nothing. I know you have been stealing something. This is your last night. For my own curiosity, you have to tell me: what have you been stealing all these years?”

The man replied, “Wheelbarrows.”

If that joke were taken as an analogy, then *technology* is the straw. It is merely the prop by which we are getting something more valuable (the wheelbarrow) out the door. And what is that more valuable thing we’re trying to get out the door? I argue that in the field of American Culture Studies, it is ultimately four things:

- the enhancement of learning through interaction and dialogue;
- an increasingly expansive, inclusive, and socially conscientious approach to the study of culture;
- the elevation of our standards for what passes as student learning; and
- an opportunity for teachers to engage in a critical inquiry of their own teaching.

If these values are to be pursued and preserved in light of the onslaught of information technologies, then faculty themselves will have to take the lead in resisting the “perfect

information” game.

Throughout the pages of this guide you will see the work of creative, innovative, and generally tireless teachers, who have been experimenting with the use of new technologies to serve all four of these goals. What is here are not solutions, easy answers, recipes, or secrets, but hypotheses about intentions and stories about consequences. It is the most we can expect so early in the “imperfect information game”—but it should be a useful start.

## Notes

- 1) This is a work in progress. Please email comments or criticism to Randy Bass, Georgetown University: [bassr@georgetown.edu](mailto:bassr@georgetown.edu).
- 2) Many thanks to Mark Sample, Eric Hofmann, and Steve Ehrmann for their advice and assistance in revising this essay.

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