Technology and the Culture of Teaching and Learning

Sean Courtney

University of Nebraska-Lincoln

Faculty development professionals in postsecondary institutions face many challenges helping faculty adapt to the new forms of information technology. Chief among them is understanding how technology is forcing us to rethink current classroom practices. To aid this effort, this essay identifies and analyzes six key dimensions of traditional cultures of teaching and learning and attempts to show how technology, particularly computer-mediated forms, is transforming their meaning and potential impact.

"[The] professor . . . sits alone in his office, concentrating as he hunches over the computer. He is busy teaching."

Lincoln Journal Star, June 8, 1997

INTRODUCTION

Against a varied background of social forces (such as the revolution in microchip technology, institutional trends, diminishing budgets, increasing numbers of nontraditional students) there is almost no university or college in the US today that is not grappling with the question of technology and its role in augmenting or even transforming traditional, classroom-based teaching practices.¹ Even as presidents and CEOs of postsecondary institutions establish technology roundtables and faculty groups consider what stance is most appropriate (University of Illinois, 1999), individual instructors find themselves caught in a difficult quandary: How does one respond to the new winds of change blowing across their profession? Various reactions are produced, as depicted in Figure 14.1.

FIGURE 14.1
Faculty Response to Technology

Initially, faculty may be tempted to take current curricula and transfer them directly to the web with little effort to modify them.² The straight arrow between A and B in Figure 14.1 represents this set of actions. For example, if we mainly see teaching as transmission of information and view the preferred method of transmission as the lecture, then we may see computers primarily as tools to aid the task of broadcasting our message (Fox, 1983). Indeed, there is a strong feeling in the academy, shared by many faculty members, that all computers, even when they are the main modality of teaching, are really no more than tools. The view being argued here, however, is that new forms of information technology, principally the computer, are more than tools: Used to their full capacity they are capable of transforming pedagogical practices. The arrow curving back from B to A represents the idea that once one teaches online, he or she may come to realize that old ways of doing things no longer seem to work, if they ever really did. Thus, teachers who value transmission may find that their notes can easily be posted in a virtual library, leaving them wondering what else is involved in teaching their subject. This kind of experience may lead some faculty to question what about their teaching is critical to the success of learning and what was simply conventional and convenient in the traditional face-to-face format. They may begin to isolate the different parts of the integrated whole, to segment the apparently seamless fabric of the current culture. Now, armed with insights, they begin afresh (depicted in Figure 14.1 as the curve from A back to B), prepared to discard that which no longer serves a purpose in the new milieu. But, in doing so, they are in the exhilarating stages of creating a new culture of teaching and learning. (Other faculty may, of course, conclude that these bells and whistles are

not why they got into teaching in the first place. The curved line renders their consequent dismissal of the new technology from B to C.)

The purpose of this essay is to explore what happens to our teaching as we embrace new forms of information technology. Is technology, as some have claimed, merely a tool that will reproduce bad teaching as well as good? Or is it something more dynamic and fundamental, compelling us to rethink the manner of our pedagogy in exciting new ways?

TEACHING AND LEARNING AS CULTURAL SYSTEMS

Classroom-based teaching and learning, for all its warts, is an integrated system. The actions of teachers and the corresponding reactions of their students are symbiotically interconnected. They occur within a context that gives them meaning. In this culture of pedagogy, the teacher engages in certain kinds of actions; e.g. lecturing, which the teacher believes are designed to facilitate learning of a subject matter and which, crucially, students recognize as being teaching. Likewise, for their part, teachers expect students to perform certain actions which traditionally they, the teachers, recognize as learning; e.g., taking notes and writing term papers. Any departures from these solidified—even atrophied—norms are likely to evoke protest, and clearly the move online represents a departure of potentially major proportions.

What defines this culture of pedagogy? And how might it change under the impact of the new technologies? Images can provide clues as to where we should look for answers. First is a typical bare-bones classroom housing tables and chairs in a rough rectangle. Around the rectangle sit the students and the teacher. The period together will be spent mainly in discussion, with the teacher posing questions and, in so doing, facilitating a process of engagement with the text. This picture represents the traditional culture of pedagogy. Now imagine a second image involving “between ten and 20 students [ranging] from mature adults to primary school children [are] seated in a circle in a way that when the students all turn outwards with their backs towards one another, they face a computer. For about 45 minutes they . . . work with the computer in a computer-assisted instruction mode. At the end of that time, they . . . [turn to face each other and over the same period of time are] involved, with the teacher, in a discussion of the subject they had studied with the computer” (Tiffin & Rajasingham, 1995, p. 5).

There is a final image, that of a class of students who never meet except online, via the computer and a modem, because all are scattered in

time and space. For this group, the class meeting consists of messages that they post to a server, a machine that brings them together in no particular time or space, but nevertheless in mediated conversation. They discuss of the text, as does the group that meets face-to-face. All three images are examples of a culture of pedagogy, capable of explication, analysis, and critique. That culture can be described in terms of the following fundamental categories:

- Space and time
- Embodiment and identity
- Power and control
- Knowledge and text
- Work and interaction
- Tools and technology

In sum, teaching is an orchestration of goal-directed activities located in a particular space and time. Occupying those coordinates are actors who have identities and express themselves in various roles. The purpose of the activities centers on a text which represents desired knowledge. The teacher manages the activities, thereby exercising power and control. The activities constitute the work of the group and may call for various interactions among the actors involved. Finally, the work of the group is advanced by means of various tools and technologies. This defines the culture of pedagogy in the abstract. How does this culture appear in reality and how does it change under the impact of technology?

SPACE AND TIME

Learning is organized in time and space. Classrooms and the class period are living embodiments of that organization, without which learning would appear to be impossible. As a student in one of my classes noted, "I actually thought that to earn a degree, you must be present in a classroom."³ Historically, classrooms have been synonymous with learning. "The idea of people gathering together in some special site for learning goes back well before the industrial revolution, and the classroom by itself has proved a remarkably resilient and endurable place for learning" (Tiffin & Rajasingham, 1995, p. 3). Clearly, many professors find it hard to imagine a class without four walls and a set time for meeting. These

dimensions more than any other probably accounts for the status of the classroom as a “pedagogical isomorphism,” according to Jaffee (1998), meaning a form of practice that continues to exist long after it may have outlived its usefulness.

In the traditional classroom, represented by the first image described above, place and time, space and duration invoke rituals of participation. Though often unexplored as pedagogic points of interest, classes have significant time dimensions: beginnings, middles, and ends. There is an entering of the classroom and a leave-taking (Courtney, Jha, & Babchuk, 1995). On entering the class, the student sizes up her fellow students: What are they like? Will I like them? Will they like me? Leaving the class evokes its own ritual of departure. Will this particular group of peers ever meet this way again? And in between, there are the rhythms of the semester (Duffy & Jones, 1995), those peculiar ebbs and flows, when the urge to learn wars with the urge to relax and take it easy.

What happens to time and place when we teach online? How much are beginnings, endings, and meetings between teacher and student so ingrained in our psyche and how much do we depend on them to give us a sense of the class, to be part of the defining structure of the class, that if they appear absent we find it hard to function? What happens when there is no formal identified beginning or ending? What happens when we do not meet face-to-face with our students? A few years back, I taught my first distance learning course (with Lotus Notes as the web management system). As the planning team met to discuss course design options, it soon became clear that the faculty, myself included, were uncomfortable with never seeing their students. How could they interact and ultimately evaluate learners if they never saw them? To alleviate our discomfort, we arranged for a meeting of the students and faculty in the early part of the semester. When we met for a one-day get-acquainted workshop, I experienced a culture shock, a curious sense of disorientation. I thought “These men and women sitting scattered around the technology lab were not my students; they belong (sic) to all of the faculty present.” Nor did the feeling of not belonging dissipate over the semester. While from time to time I attempted to converse with students in the designated “chat room,” with few exceptions, there was none of the usual interaction associated with a face-to-face encounter. And the contrast was made all the more stark by the fact that I also happened to be teaching a small-group seminar during the same semester, where sitting around a square of tables, talking and joking about the subject had become the relaxed norm.

Clearly, once the classroom moves online there are no four walls common to all the participants. Instead, students have their own four walls, which happen to be wherever they decide is convenient for study: home, office, study, hotel room. Timewise, a class can be as short as five minutes or as long as two hours, just the length of time it takes to download and read the postings of your class companions and to respond if you want. What does that do to your sense of the class and the discipline it takes to learn and be a student? This is not just about the physical dimensions of a learning environment. There is a psychological dimension of even greater significance. For if you have to drive out into the night to get to class, that calls forth its own routine and planning effort, even if the inconvenience is palpable. But when the classroom moves into your home office, and all it takes is a hand motion to enter and be in class, what then of discipline and commitment to learning? Does the breaking down of boundaries serve as a distraction from the difficult task of learning? Do you learn just as well, sitting in your study in your pajamas, noshing on a bagel, as you appraise the images and symbols on the glowing screen in front of you?

At the same time, the computer-as-educator also makes previously intractable issues now much more salient. Just-in-time learning now seems very doable. New potential pockets of learners emerge, including those who previously considered further study inaccessible. Students take courses based on their needs relative to their proximity to the campus and on constantly changing schedules. The primary benefit is that more adults are going back to school or considering the option of extending their education. There is now even the possibility for an amazing individualization of learning with the potential invention of the PAD or personal access device (Downes, 1998). With new opportunities come new challenges. Separated asynchronously in cyberspace, how do learners interact? How are faculty to recreate a sense of community among learners who may not even share domicile in the same hemisphere (Palooff & Pratt, 1999)?

EMBODIMENT AND IDENTITY

Increasingly, the educational literature has begun to take seriously what has fast become a major topic of interest among sociologists, anthropologists, and feminist scholars (Weiss & Haber, 1999). This is the notion that the teachers embody as well as model what they are teaching; that they are an embodiment, a physical "code," who carry certain messages

to their students, messages that go beyond what is to constitute knowledge, learning, and successful performance, extending even to what it is appropriate to say or do within the confines of a norm-dominated environment like the classroom (Chapman, 1998). As learners, we are similarly embodiments of multiple roles and identities (as mothers, fathers, sons, daughters, employees, etc.), which transcend the classroom.

By way of illustration, in a study of adult basic education classrooms (Courtney et al., 1995), we asked students to give us their impressions of fellow class members. In one notable case, one student admitted his shock and considerable discomfort at discovering that most of the people he was sharing a class with were prisoners from the local correctional facility. Even though, for the most part, the students pursuing basic literacy skills or the GED in this study, were young men and women from backgrounds not unlike those of the local prison population, their expectations were very different. It appears, though research is needed to support a stronger conclusion, that students expect other students to be like them in significant ways, both in terms of intelligence and ability, if not in terms of looks, income, or other factors of cultural value.

Though ostensibly in class to learn or to teach, teachers and students alike are more than mere ciphers or cognitive roles. They are persons who occupy bodies, about which it is easy to form judgments, often mistaken, based solely upon impressions. The teacher appears first and foremost as a living person, a body, with all of the qualities that go with that entity: clothes, appearance, mannerisms, and so forth. All of these weave into the culture of learning. Teachers, like learners, are members of social, economic, and cultural groups. They can be expected to react to the people in front of them. You might say, by way of example, that teaching accountancy is the same regardless of the identities of your students. But is this the case? As teachers, don't we have certain expectations about what our students will look like, and if those expectations are not met, won't we react accordingly?

Now, if you move all of this visible body stuff to the web, what happens? If the class could be anywhere in the world, and students could be from anywhere in the world, if you might never see them, won't you react differently than if they were all sitting there in front of you? Some might say that anonymity might cut down on possible discrimination based on perceptions. But invisibility is a double-edged sword. If the teacher cannot experience the multiple embodiments of his or her learners, is the commitment to helping them learn lessened? These are dimensions of the culture of learning that we have only begun to explore.

Another way to address this is through the concept of identity, captured in the various roles we take on as teachers and learners. The teacher, who enjoys the role of stand-up dispenser of wisdom before a large audience that gives him energy, may drift in cyberspace, unable to find a psychological anchor to tether him. Correspondingly, the learner who is accustomed to a certain battle for attention in that same traditional academic environment, and thrives on the cut-and-thrust of classroom discussion, may feel curiously unmotivated in the ethereal world of cyberspace. Research is beginning to uncover the role of the computer in shaping the social interactions and community building of the online classroom (Palloff & Pratt, 1999). Some learners it causes to come out of their self-imposed isolation and to shine on the web. Others it alienates, even frightens. In this respect, as with all of the other cultural dimensions being discussed here, it is no exaggeration to say that technology is more than a mere tool of convenience. Its power to transform human interactions, as well as to critically mold the teaching and learning exchange cannot be underestimated.

Knowledge and Text

In the traditional classroom, the teacher-as-expert distributes her knowledge to the student body by way of the text, which includes syllabus, notes, and various handouts, along with the actual textbook. They in turn recognize the teacher as expert or the holder of the knowledge which they seek. While the text is separate from the teacher in the traditional paradigm, nevertheless the teacher embodies the text and becomes the mouthpiece through which its difficulties are mediated. In such an environment, it is not hard to see how the teacher remains at the center of all pedagogic activity—figuratively if not literally—and how student activity in the pursuit of learning must always refer back to the teacher's actions. Correspondingly, all would-be interactions between teacher and student or among students themselves will be limited to what is task-related, tasks that have to do with understanding and internalizing "descriptions of the world" (Laurillard, 1993), the official subject of the course.

Movies like "Ferris Bueller's Day Off," "Dead Poets' Society," and "Stand and Deliver," even given their very different sympathies, all convey the timeless impression of the teacher at the center of all that matters. In the typical university classroom, the teacher is at the heart of the classroom's geography. While occasionally she steps to the side, this is mostly the exception that proves the rule. She dominates the discourse. Occasionally, students resist this domination and talk to each other in sidebar

conversations. But the teacher finds this mostly distracting and will discourage it.

Teaching online, however, does something funny to the text and to the teacher's role in the creation of knowledge. Again, let me illustrate. In my own teaching online, I have noticed an interesting thing happen as we begin to discuss the text (Courtney, 1997). In one case, when students had responded to the main questions, once they had finished the work I had set before them, they turned naturally, or so it appeared to me, to discussions of how the theory applied to their own practice. From there it was a simple transition to where the focus became their expertise and interests. As the focus changed so did the discourse; from the artificial talking about that characterizes most academic discourse—that which describes a world theorized by others—the asynchronous dialogue became a talking within (Lave & Wenger, 1991), that which characterizes the discourse of people working on a joint task and attempting to help each other in the process. In the process, what I had to say became less relevant, mainly because I was not a K-12 teacher like them. They could learn from me, benefit from my expertise, and respect my command of the theory. But when it came to the everyday dimensions of their work worlds and the putting into practice of what I had taught them, they needed each other more than they needed me.

My point here is that this is also true of the traditional classroom: Students need each other and can benefit from each other's experiences as they tackle common problems of the profession. However, in the typical classroom, the likelihood of this happening is seriously diminished mainly because the teacher's—rather than the learner's—curriculum dominates the pedagogic discourse. It is the problems of the text—the teacher's problems—which get worked on rather than the learner's. This experience captures for me the essence of the argument that moving teaching online means more than using a computer as a tool. Working in an asynchronous environment that carries expectations of students constantly interacting and reflecting, it seems natural for the teaching—the direct instruction part—to become decentered, for the students to join the inner circle of learning so that, at some moments, there appears to be no distinction between the teacher and the taught, the teaching and the learning.

Finally, knowledge must be current, so the text must be new. In the past such newness was guaranteed by bringing out new editions of the text. Today, particularly with the existence of the web, currency may be more associated with finding the most up-to-date information on the In-

ternet. Likewise, with the extension of the classroom beyond the traditional four walls—with its literal movement diffused in cyberspace—expertise and currency should be sought where it exists: at other sites and among those who are in the midst of new knowledge-generation.

Power and Leadership

Issues of power, control, authority, and leadership are often hard to detect, even in the traditional classroom setting and may be the deepest aspects of the culture of teaching and learning. Who has the power in the classroom? Ostensibly and mainly it belongs to the teacher, who acquires it through the institution for which he or she works. How is it used? Presumably, it is used fairly. Many syllabi now carry what might be termed a pedagogical disclaimer, a clause that says that all students will be treated equitably and reasonably regardless of various biological and social attributes; e.g., religion, gender, and sexual orientation. Some aspects of power seem obvious, even if many of the actors involved would disclaim any such quality. Feminist scholars like Tisdell (1993) and others have written about the interlocking systems of privilege both students as well as teachers can draw on in order to make their point, argue their case, or otherwise win position within the rigors of the modern graduate classroom. As has been pointed out, teaching is a rhetorical enterprise (Laurillard, 1993), and learners often exhibit resistance to the text. Mechanisms and attributes of the teacher as the embodiment of more than knowledge; e.g., that he is a white upper-middle-class male, are all brought to bear in an effort to convince the student that he or she is the expert and that the knowledge being dispensed is worth having.

Nonetheless, power rarely appears as such, and how we find evidence of it in the classroom is a tricky business, complicated by the reality that teachers as a group exhibit different fundamental approaches to the teaching act and therefore embrace issues of power and privilege in different ways. For the transmission style of teaching, for example, power is never on the table, according to Pratt (1998). Rather, there are clear lines drawn between teacher and student, and the roles and functions of each within the class setting. The syllabus and its language, even the bearing of this category of teacher, make it clear who has the power. Little is negotiated.

With the nurturing instructor, on the other hand, issues of power may at least be on the table. This type of instructor wants to know his or her students, will want to elicit and discuss their academic goals and personal interests, with a view to incorporating them into the weekly workings out of the syllabus. Here, students are given some say in the

proceedings, with resultant feelings of power. Of course, in keeping with the subtlety of the subject, this granting of power may be more apparent than real. Teachers may cede control over various aspects of the curriculum without ceding the power (Herron, 1996). For example, in insisting that the class negotiate with the teacher about such things as assignments and their evaluation, the teacher may be sending a message that students are not free not to negotiate the curriculum or to decide that they would prefer a top-down approach of teaching style rather than the more informal, discussion-oriented approach.

What happens to power and control in cyberspace? Anecdotal evidence from a variety of sources (Snyder, 1995) suggest that faculty experience a more democratizing effect as they begin to teach online. They start seeing students willing to take greater responsibility for their own learning. And they start to realize that the success of the course ultimately depends on the students' willingness and ability to initiate and maintain a community of common interest in within the broad confines of the virtual classroom (Palloff & Pratt, 1999). Similarly, with greater use of collaborative models of instruction (Koshman, 1996), when a group is given a range of tasks pursuant to the goals of the course, it is natural that they begin to assume greater control over the proceedings. As one of my students noted: "Power . . . is controlled at various levels: The instructor has the power to create the course and its interactions; the student has the power to interact and learn at his or her own pace. As larger models of education are devised (i.e., open universities, etc.) and traditional models disappear or are modified away this will be a greater issue" (personal communication, December, 1999).

Power also comes from the fact that the move to the web essentially introduces all players into a world of dynamic information over which they have little say or control. The teacher who controls the text is also sending a message about what is permissible as knowledge and discourse within the four walls of his or her class. A class in cyberspace has no walls and no such artificial constraints. The teacher may begin the virtual library, for example, filling it with the support material that he or she deems fit. But such sites have permeable walls. And, in theory, students could fill them with whatever they think relevant to their goals and the aims of the course. From here it is but a short walk to recasting the purpose of the classroom as knowledge building (Scardamalia & Bereiter, 1996), rather than knowledge dissemination as has traditionally been the case. In such a world, the guest presenter may no longer be the person that the teacher thinks may fit the bill, but whomever the students can

link up with and draw into the class through the new and open spaces of the virtual classroom.

Work and Interaction

The classroom is a pedagogical system framed within permeable, manipulable dimensions of space and time. It contains actors embodying various roles and identities, goals and ambitions. Ostensibly, it is about the dissemination and construction of knowledge, activities accomplished within norms and constraints that are slowly and inevitably changing. In the traditional classroom, the main work performed is that of the professor. Students work too: taking notes, occasionally asking questions, but this work is really marginal to the main work, that of the professor expressing his knowledge of the subject. Students' main work belongs elsewhere; that is why they study at home or write research papers in their dorms. Classrooms are centers where the expertise of the teacher is on display; students listen in on the performance, mainly as spectators. A session I once attended at a Lilly Conference on college teaching makes this point about the pedagogic division of labor beautifully. The paper was titled, "Solving homework in class and receiving lectures at home: Reversing the situation." The presenter was making the point that if students were having a lot of difficulty solving the problems that he had set in the classroom, did it not make more sense to use classroom time to work on these problems (in a sense the work of the classroom became the students' home work) and to do the presentation somewhere else; that somewhere else being the web, where the professor subsequently began to post his lectures.

That this particular engineering professor was making use of the computer to help reconfigure the work of his classroom is no coincidence. His reversal of the situation—his redesign of the curriculum so that the work of his students became the work of the classroom—captures dramatically what is at issue as our teaching moves online and technology continues to impact what we consider to be patterns of work and interaction that are acceptable as teaching and learning. If more and more the computer can be used to do things such as post our lecture notes, create and grade tests, and do a host of management-oriented activities once considered essential aspects of classroom life, then more and more time is freed up for something else. What is that something else? Could it be the opportunity, at last, to truly facilitate student learning, to do the hard work of getting students to think, and to focus on motivational factors such as the creation of community among learners individually isolated by the

traditional norms of the classroom? That clearly is the hope of those who are championing the revolution in information technology.

As the work of classroom is increasingly distributed among the various actors involved, it is natural to start seeing collaboration as a preferred mode of interaction among learners. For this reason, more than any other, educators and researchers have become interested in computer-mediated forms of learning and in ways in which learners can be brought together to accomplish complex tasks, what has come to be termed computer-supported collaborative learning (CSCL) (Koshman, 1996). Research is beginning to document the ways in which computer-mediated forms of collaboration are having their impact, both in terms of bringing learners together in the synergistic accomplishment of joint tasks—what researchers refer to as effects with technology (Kolodner & Guzdia, 1996) and of documenting the ways in which overall learning performance can be enhanced through CSCL (effects of technology). At the same time, researchers are also beginning to realize how improvements in performance, while appearing to be the effects of technology, may turn out on closer examination to be the result of students coming together to learn almost despite the technology.

Schutte (1997), in a paper which first circulated on the web, interestingly enough, compared the performances of two groups of students, those taking his class via the traditional classroom versus those taking it on the web. He found the performance of the latter to be significantly better than that of the former but concluded that much of the performance differences can be attributed to student collaboration as to the technology itself. In fact, the highest performing students (in both classes) reported the most peer interaction. Therefore, it is important that faculty contemplating the use of the virtual format pay attention to the issue of real-time collaboration, whether carried from within the traditional classroom or in the context of virtual space (Schutte, p. 3).

It is inevitable that the teacher's role will be transformed from that of transmitter of information to that of facilitator of the learner process. Becoming a facilitator will mean the decentering of teaching in favor of learning, thus hastening the move from the instructional paradigm to the learning paradigm, (Barr & Tagg, 1995). At the same time, the work of the classroom will become more authentic, real, real-time, just-in-time, problem- and project-based (Courtney, Vasa, Luo, & Muggy, 1999). Certainly, with responsibilities being distributed across teachers, the work of planning becomes much more crucial. The spontaneity of the teacher, his or her situated actions, will remain as crucial as ever. However, what these actions will look like will change. Inevitably, too, students will want to

engage with knowledge on their own terms and will want a greater say in what goes on in the classroom. And there are models for how this might look. Goldman (1996) has described mediating worlds in which work is organized along both social as well as a task dimensions. Groups organized into computer-supported, collaborative work groups are going to do what work groups do all over the world: integrate their social, emotional selves into their work lives, which of course will impact their identities and power as learners. If I am able to bring myself as a whole person into the classroom, then this affects how I see the relevance of learning to my life. It also affects my sense of agency or empowerment in my dealings with the world.

Tools and Technology

In a sense, everything that has been discussed in this essay up to now has been about technology, either directly or indirectly. Each of the dimensions of culture analyzed here has been touched in one way or another by the far-reaching impact of new informational forms. The traditional limitations of pedagogic space and time, for example, have been mitigated if not entirely swept away by the mere motion of a device called a mouse. Students from the other side of the globe can attend a classroom here at the University of Nebraska without ever leaving home. A teacher can attend a conference in Asia and still be available to teach a class back in the US (Palloff & Pratt, 1999).

At the same time, as technology gains in power and sophistication, more and more is possible in the transaction between learner and instructor. A century ago, learning at a distance meant contact by letter correspondence: Student and tutor experienced each other only as written forms. Today, with the right add-on or plug-in, I can send my image a 1,000 miles and obtain that of my student over the same distance. We are present to each other, visually, aurally, and orally through the use of technology.

If technology has shattered time and distance, created new spaces for interaction, and made possible virtual encounters between learner and teacher, its impact on the pedagogic text may be the most far-reaching yet. For now, we appear to be witnessing the true democratization of knowledge, as the formerly bounded world of the student and the teacher is permeated by a pervasive all-encompassing web of information and meaning. Within the traditional classroom, technology and tools are add-ons, for the most part. A presentation using slides may admit in a little of the outside world. A movie displays the intricacies and passions of that world more fully. For the most part, however, the manner in which

the world of the content is to be explored is handled by the medium of language, infrequently supported by sound or image, technology or tool. Not so with many of the new forms of computer-mediated communication for whom skilled tool use is an integral aspect of the teaching and learning environment. The computer opens a window to expertise wherever it exists. Both student and teacher can access it, instantly. Computers do more than access and organize information, however. They are capable of packaging it in ways that promise more long-lasting impact, a key element in the definition of learning.

Which brings us full circle back to the question of learning itself. The traditional view of the learning process, one that fits easily with many of the traditional practices of teaching at our institutions of higher learning, defines it as the acquisition of conceptual knowledge by an individual learner, knowledge that is found represented by schematic structures in the brain or consciousness (Sfard, 1998). Schools and universities, for the most part, still support an interpretation of learning as an abstracted manipulation of symbols in an environment that is largely individualistic and competitive (Resnick, 1987). Given a view of learning as mere cognitive information processing, it is but short step to seeing teaching as the transmission of that information and of the lecture as the preferred mode of transmission. Finally, learning that emphasizes acquisition and transmission will call for a technology that merely facilitates information retrieval and storage.

But new cultures of pedagogy require new theories of learning. Competing with the traditional model is one that sees learning as the construction of new knowledge based on prior experiences (Courtney et al., 1999; Pratt, 1998). That construction takes place in a context of use, a community of practice in which authentic knowledge is manipulable through tool use and capable of immediate application in real-world settings. While traditional classroom-based learning can certainly accommodate the pedagogical implications of this new analytic perspective (Lave & Wenger, 1991), it may well be the world of computer-mediated pedagogy that sees the coming into fruition of the exciting implications of new theories of learning, particularly those that tie learning to context and tool use (Rogers, 1997).

Discussion

In the long run, the pendulum is likely to swing too far in the direction of technology at all costs. It seems inevitable. From the statistics on distance education cited at the beginning of this report to the cautionary example of what happened with educational television in the 1950s and

1960s (Tiffin & Rajasingham, 1995), we must expect the sentiment to prevail that if something can be done on the Internet, it ought to be, and that if it can't, it is probably not worth doing at all. However, when the pendulum does swing back, and many smaller swings are already occurring, the result I feel sure will be an enormous enriching of our educational discourse, an extraordinary enlarging of our pedagogic vocabulary, and a much needed redefinition and revitalizing of our roles as teachers. As faculty and faculty developers, that future really is in our hands.

REFERENCES

- Barr, R., & Tagg, J. (1995, November/December). From teaching to learning: A new paradigm for undergraduate education. *Change*, 27 (6), 13-26.
- Chapman, V. L. (1998). Adult education and the body: Changing performances of teaching and learning. *Proceedings of the 39th Annual Adult Education Conference* (pp. 301-306). San Antonio, TX: University of the Incarnate Word.
- Courtney, S. (1997). "The class started without me": Toward a new culture of learning and teaching. *Proceedings of the 17th Lilly Conference on College Teaching* (pp. 63-66). Oxford, OH: Miami University.
- Courtney, S., Vasa, S., Luo, J., & Muggy, V. (1999). *Characteristics of adults as learners and implications for computer-based systems for information and instruction*. Minneapolis, MN: America's Learning Exchange, Minnesota Department of Economic Security.
- Courtney, S., Jha, L., & Babchuk, W. (1995). "Like school": A grounded theory of life in an ABE/GED classroom. *Adult Basic Education: An Interdisciplinary Journal*, 4 (3), 172-195.
- Downes, S. (1998). *The future of online learning*. Unpublished manuscript, Assiniboine Community College.
- Duffy, D. K., & Jones, J. W. (1995). *Teaching within the rhythms of the semester*. San Francisco, CA: Jossey-Bass.
- Fox, D. (1983). Personal theories of teaching. *Studies in Higher Education*, 8 (3), 151-163.
- Goldman, S.V. (1996). Mediating micro worlds: Collaboration on high school science activities. In T. Koschman (Ed.), *CSCL: Theory and practice of an emerging paradigm* (pp. 45-92). Hillsdale, NJ: Lawrence Erlbaum.
- Herron, J. (1996). Helping whole people learn. In D. Boud & N. Miller (Eds.), *Working with experience*. (75-94). London, England: Routledge.

- Jaffee, D. (1998, November). *Pedagogical isomorphisms and resistance to change in higher education*. Paper presented at the 8th Annual Conference, Creating Alternative Learning Cultures, SUNY, New Paltz.
- Kolodner, J., & Guzdial, M. (1996). Effects *with and of* CSCL: Tracking learning in a new paradigm. In T. Koschman (Ed.), *CSCL: Theory and practice of an emerging paradigm* (pp. 307–320). Hillsdale, NJ: Lawrence Erlbaum.
- Koshman, T. (1996). *CSCL: Theory and practice of an emerging paradigm*. Hillsdale, NJ: Lawrence Erlbaum.
- Laurillard, D. (1993). *Rethinking university teaching: A framework for the effective use of educational technology*. London, England: Routledge.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York, NY: Cambridge University Press.
- National Center for Education Statistics. *Distance education at postsecondary institutions: 1997–98*. [online]. Available: <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2000013>.
- Palloff, R.M., & Pratt, K. (1999). *Building learning communities in cyberspace*. San Francisco, CA: Jossey-Bass.
- Pratt, D., & Associates (1998). *Five perspectives on teaching in adult and higher education*. Malabar, FL: Krieger.
- Resnick, L. (1987, December). Learning in school and out. *Educational Researcher*, 16 (9), 13–20.
- Rogers, Y.(1997). *A brief introduction to distributed cognition*. Available: <http://www.cogs.susx.ac.uk/users/yvonne/dcog.html>.
- Scardamalia, M., & Bereiter, C. (1996). Computer support for knowledge-building communities. In T. Koschman (Ed.), *CSCL: Theory and practice of an emerging paradigm* (pp. 249–268). Hillsdale, NJ: Lawrence Erlbaum.
- Schutte, J. (1997). *Virtual teaching in higher education: The new intellectual superhighway or just another traffic jam?* [online] Available <http://csun.edu/sociology/virexp.htm>
- Sfard, A. (1998). On two metaphors for learning and the dangers of choosing just one. *Educational Researcher*, 27 (2), 4–13.
- Snyder, M. (1995). *An investigation into the factors that encourage university faculty to use information technologies in their teaching*. Unpublished doctoral dissertation, University of Nebraska, Lincoln.
- Tiffin, J., & Rajasingham, L. (1995). *In search of the virtual class*. London, England: Routledge.

- Tisdell, E. (1993). Interlocking systems of power, privilege, and oppression in adult higher education. *Adult Education Quarterly*, 43 (4), 203-226.
- University of Illinois (1999). *Teaching at an Internet distance: The pedagogy of online teaching and learning. The report of a 1998-1999 University of Illinois Faculty Seminar.*
- Weiss, G., & Haber, H. F. (1999). *Perspectives on embodiment: The intersection of nature and culture.* New York, NY: Routledge.

ENDNOTES

1. According to the federal government, 79% of public four-year institutions, as of 1997-98, were offering distance education classes. While the number of courses and enrollments nearly doubled between 1994 and 1998, the fastest growth occurred with the use of the Internet to offer education, jumping from 28% of institutions in 1995 to 60% in 1998 (National Center for Education Statistics, Distance Education at Postsecondary Institutions: 1997-98).
2. Currently, the range and complexity of the various technologically mediated formats for educational purposes is considerable. For present purposes, when I speak of technology transforming postsecondary teaching, I am mainly referring to the use of computer-based formats, such as the Internet.
3. Quotes generally are taken from students participating in a course taught using Lotus Notes, an enhanced email communication system, in the fall of 1996 and 1999.

Contact:

Sean Courtney, Associate Professor
Department of Educational Psychology
University of Nebraska
Lincoln, NE 68588-0345
(402) 472-5927 FAX: (402) 472-8319

Sean Courtney has been at the University of Nebraska since 1989. Originally trained in the areas of adult education and human resource development, his current work focuses on improving college teaching and assessing the impact of technology on teaching and learning. He has a strong interest in facilitation and collaborative forms of inquiry, and in working with faculty to integrate complex models of teaching into their practice. Recent publications include "Characteristics of adults as learners and implications for computer-based systems for information and instruction" (p. 79), *America's Learning eXchange*, Minnesota Department of Economic Security. (January 1999). He is currently an Associate Professor in the Department of Educational Psychology, at the University of Nebraska-Lincoln.