SUPPORTING FACULTY DEVELOPMENT IN COMPUTERS AND TECHNICAL COMMUNICATION

Stephen A. Bernhardt
New Mexico State University
Las Cruces, NM

Carolyn S. Vickrey
New Mexico State University
Las Cruces, NM

Moving technical communications programs toward full and thoughtful integration of computers requires attention to faculty and staff development. The posture of faculty and staff toward technology is pivotal to a program's success: their attitudes, their willingness and ability to manage complex information resources, and their response to the demands for continuous learning can all make or break program development efforts.

Stresses and fractures are apparent in any writing program that moves to embrace technology. We see the stresses among those faculty who discover that technology changes traditional roles, including how classes are structured, what is taught and learned, and who has the authority in any given classroom situation. Technology defines faculty into new roles as they discover the need to support novices in technology-driven classrooms, create working relationships with campus computer-center personnel, and chase after funding to keep labs and microcomputer classrooms up to date. A fracture appears when the departmental computer guru starts to wonder about the rewards of being the tech support person to every faculty, student, and secretary in the department. Stresses show in the traditional practices of English departments when faculty devote time to developing software and instructional support materials with the expectation that such activities "count" toward tenure and promotion. Fractures are apparent in programs where the teaching innovations that follow technology in the classroom are embraced

primarily by graduate students, with no widespread participation by or support from faculty. Stresses appear in English department budgets when the costs of technological transformation become apparent and threaten to usurp traditional allocations of limited budget lines.

This chapter argues for directly engineering programs to prevent or at least alleviate such stresses and fractures. It argues for coherent approaches to faculty development that rely on natural learning within full social and technological contexts. Underlying the range of activities suggested here is the belief that the goals of those who promote the uses of computers in technical communication education must prominently include helping individuals form productive relationships with technology, relationships that are self-sustaining, that grow and are nurtured within communities of learners, and that embed rewards in enhanced individual performance and accomplishments. Our assumption is that becoming adept with technology contains its own rewards. Once teachers have successful interactions with technology, once they find ways to teach and do work in computer-supported environments, their engagement will be secured and "professional development" will gain a momentum of its own.

Our faith in a gathering momentum in successful programs, however, should not obscure an essential fact of life for those who work closely with computers: Computers present multiple and vexing problems. They are essentially disruptive forces in that they force changes in work habits, change the nature of group interaction, and create a chaotic environment because of constant changes in hardware, software, and netware. Many users, especially novices, tend to become frustrated quickly when problems arise:

> . . . instructors typically have little patience for software which doesn't perform seamlessly. The very nature of Aspects' [a collaborative editing program for the Macintosh] openess--its encouragement of options--makes it potentially

> problematic. . . . As some have written, humans tend to have low tolerance for imperfection in machines; students, too, are much quicker to blame Aspects than (I think) is necessarily warranted, though they may be picking up on their instructors' discomfort. Whatever the case, I am bothered by the suspicion that most instructors want *A* to lead to *B* to lead to *C*--predictable outcomes, with the instructor on top of everything all the time. (John M. Clark, jclark2@bgnet. bgsu.edu, mbu-l, February 13, 1995)

Even a pattern of successful interactions and problem-solving responses do not do away with the disruptions of technology. Rather, solving technical problems must simply be accepted as one price of technology, a price that is worth paying to have the advantages of technology. Problem-solving becomes one normal activity that, if not welcomed, at least characterizes the daily behavior of every person who maintains a productive relationship with technology.

This chapter promotes an environmental approach, suggesting that the best strategy for faculty development is to scaffold an environment where learning new technical skills is expected and supported. As teachers of technical communication, a discipline closely influenced by technology, we are "uniquely positioned to help people understand current changes" (Bernhardt, 1995, pp. 601-602). We assume that programs with strong faculty participation and full technological integration evolve over time–that it is not a <u>race</u> to get to some point of "state-of-the-art" instruction or lab, but a <u>process</u> of working to establish and deepen healthy relationships among people and machines.

We might draw a parallel to the processes of writing instruction, for many of us our home discipline, our point of entry into communication technology. Most of us would agree that what we teach about writing (and what is learnt) is difficult to measure, and we have research traditions

that demonstrate, if nothing else, the difficulty of measuring improvement in writing over the space of a term and establishing some cause/effect relation that ties improvement to some specific instructional intervention. We (rightfully) console ourselves with the belief that we are offering students ways to thoughtfully understand and engage with writing, under the assumption that thoughtful engagement over the years of school and beyond lead to gradual control and improvement of one's writing and thinking abilities. If we teach students (we tell ourselves) to analyze their writing situations with particular attention to audience and purpose, to write drafts on the way to final work, and to seek feedback at various stages of writing, then students can leave our classes feeling in control of their writing processes and able to undertake new tasks successfully. Continuing to write well then provides its own rewards: being able to analyze situations, find appropriate information and arguments, use whatever human resources are available, and deliver satisfyingly well crafted documents, all without extremes of frustration and inefficiency.

Similarly, a suitable goal for encouraging students to develop their abilities to use computers in technical communication might most usefully be based on helping students feel comfortable and confident around machines. As with writing, students should recognize a task that demands or would benefit from the use of technology, have strategies to learn what they need to know about technology to complete the task, know when to approach others for help and when to go to online and printed resources, and be able to deliver satisfyingly well crafted products that are enabled by technology. Tari Fanderclai speaks compellingly of the simple confidence people need to join the group of those who know how to learn technology:

> We're pretty far behind, mostly because we depend on a very few members of the community to take the strides forward, while the rest of us go "we're not techies

> and we don't have enough time to figure out how things work and even if we did we have small budgets and can't do anything we hear about." We look at the doers as if they've got some magic the rest of us lack. All they've got is the initiative to poke at complex things and figure them out instead of waiting and hoping that someone will make it easier. . . . (tari@ucet.ufl.edu, acw-l, February 18, 1995)

Fanderclai appropriately urges a change of attitude based on an acceptance of a new role for faculty as people who can teach themselves new technical skills.

In addition to being willing to learn new skills, faculty and their students must understand how computers influence work and culture, and they should have reasoned positions about which technologies offer useful tools in what situations. They should understand the costs and benefits of technology and be able to make reasoned decisions about its use. More than anything else, they should feel comfortable around technology, knowing they can learn (and will need to continuously learn) what they need to accomplish work, enhance communication, and make sensible decisions about how to apply technology to work.

This chapter discusses ways to encourage faculty to integrate technology in small ways, to share their successes, and to find ways to work with their students to advance the uses of computers. We encourage development of the support environment--the technical, documentary, and human sources of learner assistance--and suggest ways of structuring the built technological environment to support natural learning. The chapter is motivated throughout by the argument that is central to successful incorporation of technology in all settings: the need for people to define themselves as learners and to enter each new task with the expectation that they will increase their ability to work with technology.

This chapter draws on and reviews the scant literature on preparing teachers to be successful using computers to teach writing and the (almost non-existent) literature relating specifically to faculty development in technical communication. It also draws on opinions voiced on bitnet discussion groups, specifically acw-l (The Association for Computers and Writing), mbu-l (Megabyte University), and cwc95-l (Computers and Writing 95, the discussion leading up to the group's meeting in El Paso in May 1995). These latter sources of information appear to be the best current information on a topic such as we are addressing here. It is fair to say that the interests of most people in the field of computers and composition have been directed toward mainline composition teaching, not specifically toward the teaching of technical communication. Whatever practices exist for faculty development grow from our experiences in training teachers of writing in general and are modified as appropriate and necessary to training faculty to teach technical communication with computers.

What Must Be Learned

Before we address any issues of what a faculty development program might look like, we might ask "What do faculty need to know about computers and technical communication in order that they might best teach their students?" The broad scope of contributions to this book suggests just how complex is the answer to this question. A simple list of what someone needs to know or understand might look like this:

- The workings of the various software tools that are available to support document production, teamwork, distance communication, hypertext development, and computer-supported learning
- The nature of the changes computers bring to workplace communication and document production and the consequences for education

- The disciplinary understandings that usefully inform the teaching of technical communication with computers: document design, the psychology of reading and learning, instructional design, cultural studies
- Strategies for redesigning courses, curricula, and pedagogy to take advantage of technology
- Strategies for designing and funding the technological spaces (physical and virtual) to support communication for learning and work
- The social, political, and legal issues associated with computers

This breadth of knowledge and skills suggests that short workshops on computer skills, which may be useful for some highly targeted types of learning, are inadequate to establishing an informed praxis centering on appropriate uses of technology in professional communication. Any single area above encompasses several disciplines, none of which are standing still.

Even the first item on the list, the most "skills"-oriented area since it involves learning software, could occupy a person for a lifetime. Suppose one masters a set of advanced skills for one of today's sophisticated word processors. While that may have stood a technical writer (or technical communication faculty member) in good stead 5 years ago, we now have a plethora of other software applications begging to be learned: publication, presentation, animation, project management, whiteboards, groupware, application sharing, image and graphics creation and manipulation, networking, communication, net navigation and construction, hypertext and document database architecting, paper-document-to-online-help-system authoring tools, computer-assisted-training, and the list goes on. Each item on the list arrives on the market in a new version two years so, and many applications interact with others, so one needs to learn to

integrate applications through importing/exporting, file transfers, and the use of filters and protocols.

The only logical response to the issues of what might be learned and what taught, conditioned by the improbability of predicting what any individual student might actually need to do in some future work setting, is to recognize the need for learners to be self-motivated. Our fellow faculty and our students need to be adept at learning what they need to know, when they need to know it, for accomplishing a given task. If there is no set of essential skills and no clear "scope and sequence" determining what people ought to learn and in what order, then we need people who are confident enough around technology to be learners. In this era of technological change, nothing is more fundamental than "knowing how to learn, and the current contexts for learning are technological" (Bernhardt, 1995, p. 601). Therefore, rather than fearing technology or reacting out of anxieties or deciding to leave technology to someone else, the academic community must be a place where people expect to be challenged to learn new skills and to think about technology in complicated ways. They need to recognize a problem when they see one and have heuristic approaches in place for pursuing solutions.

Selber (1994) notes that learning and keeping pace with changing technology is the initial challenge for teachers; we are then further challenged with the tasks of critically evaluating "both the potential and the peril of these new technologies with our students" and of developing "productive strategies for introducing this instruction into our existing curricula" (p. 384). Selfe (1992) claims that our goal in teaching with computers is to become lifelong learners and technology critics as we evaluate new grammars of computers, new software and new hardware, new instructional methods and relationships, and new strategies for reading and navigating texts. Any training program therefore will not be comprehensive, but rather an introduction to make

people more comfortable with technology and more confident in their own ability to continue learning and evaluating on their own and within their community of learners in the English department and on campus.

The second conclusion that must be drawn is that faculty and students need to learn to work with computers within social environments, as part of teams. The diverse skills and aptitudes represented on teams can save one from needing or trying to know everything about computers. Teams rely on distributed expertise and group problem solving, both powerful tools in complex technological environments. Teams create situations where members learn in natural ways, through interaction in the context of performing tasks, so that what one person knows is naturally and spontaneously transferred in context to others.

Institutional Resources and Issues of Status

One particular aspect of computers and technical communication needs to be acknowledged and that concerns the status of computers in English departments. Most technical communication programs have been built within English departments, and English department faculty are overwhelmingly humanists with an orientation toward books and print, not toward technology. English departments have a tradition of library scholarship, a particularly low budget form of research. If a new faculty member arrives in biochemistry, there is likely to be $150,000-500,000 in expenses to set up a lab (with the expectation, of course, that this faculty member will start generating a flow of research contract dollars within a couple of years). If a new faculty member arrives in the English department, there might be $2,000 for a new PC (or a hand-me-down) and perhaps a library allocation of a few hundred dollars. The low cost of scholarship and teaching in the humanities leads to budgets that are traditionally high in personnel lines and very low on equipment and supplies. Computers compete for scarce resources and it takes clever

arguments and some leverage to pry additional dollars loose. Doing so can cause conflict between the humanists and the new humanistic technologists:

> Here at Community College of Southern Nevada (and I imagine I also speak for many other small colleges and CC's), the development of a computer writing classroom is primarily an individual effort. Partly that's due to the limited budgets we small fries have to deal with. I'm the only prof here (out of 20 full-timers) teaching in a computer classroom. . . .Political infighting between computer, English, foreign language, and developmental departments have left many angry and confused (I was supposed to develop a training program, but now I don't know). I imagine many computer writing classes develop in "fits and starts," as you [an earlier contributor] say, because budgetary constraints often give too few equipment dollars to those of us who want to use the technology. Too often I have found myself on the side of the techies and against my own colleagues. . . . (David E. Rogers, daver@nevada,edu, acw-l, February 8, 1995)

The humanistic tradition with its low equipment/high personnel budget is undergirded by the structural reliance of English departments on large cadres of supporting personnel, the people who do most of the teaching of writing, whether introductory or advanced. These graduate students, and to a lesser extent, lecturers and "visiting" professors, tend to be at the center of any change in the ways that writing is taught. Nowhere is this more true than with computers and writing.

Many programs begin with a single professor (typically an assistant professor) of composition or technical communication working either alone or with a group of graduate students to promote the uses of computers. In some situations, even this single professor is

missing and the program runs on the efforts of graduate students and lecturers. On many campuses, it is largely graduate students who staff the labs, push for additional equipment, prod the department into becoming networked, understand what a web site is, attend the conferences on computers and writing, conduct the research, and provide much of the momentum for any initiatives that move the teaching of communication toward computers. One only needs to listen to the conversations on email discussion groups or attend meetings on computers and composition to realize how important the participation of graduate students is in bringing computers into writing programs.

Too often, graduate students and their (often) low-ranking faculty sponsors are put in the position of needing the most in the way of resources, support, and training, while having the least authority, leverage, and understanding imaginable over budget and faculty development. It is a rare campus that undertakes faculty development in any systematic way. Professional development in English departments usually takes the form of support for individual initiatives: released time, summer stipends, travel to conferences, and the like tend to support individual research programs. Graduate students are typically not beneficiaries of such schemes. So we have the curious situation of those with the most technological knowledge and interest tending to be fiscally and politically marginalized in a situation where knowledge definitely does not equal power. Graduate students and new faculty tend to be poorly equipped to mount campaigns of faculty development and curriculum change not only because of their lack of experience, status, and authority, but also because to do so runs counter to typical patterns that systemically characterize the incentives for and patterns of professional development within university systems.

Walhstrom and Selfe (1994) make a strong case for senior, not junior, faculty taking the lead in drafting policies that affect not only English departments, but the university overall, since

all students have access to campus computer labs. These senior faculty may be more successful in educating department heads, deans and other administrators about the practical needs of teachers and students to justify the "expanding set of essential resources" (p. 38) as original equipment purchases must be supplemented with upgraded document and communication software. The respected voices of senior faculty are needed to explain how this cost is justified as "part of a necessary professional support system" (p.39), enabling teachers to re-organize their teaching, communicate with colleagues within and beyond their university, and conduct significant and timely research in computer classroom settings.

Some quite remarkable efforts have been and are being brought off on many campuses by coalitions of graduate students, lecturers, and junior (and, increasingly, senior) faculty. Just to take one example, a truly amazing development program that ran largely on student energies at the University of Texas throughout the 1980s can now be seen to influence the uses of computers and writing on other campuses as those graduate students have become faculty at Michigan, Texas Tech, and elsewhere. While faculty participation is certainly on the rise, it is fair to say that graduate student energies drive the attention to computers and writing at many state universities, including our own New Mexico State, but also Utah State, Michigan Tech, Bowling Green State, and many other schools with strong writing and technical communication programs. The closer one gets to cutting edge developments--WWW, MUDS, paperless classes, online documentation and hypermedia--the more likely one is to find graduate students playing leading roles. A department that honestly wished to create change through technology would need to begin by looking at the distribution of knowledge, status, power, and money, and to create a change initiative that worked both ends toward the middle, trying to align power, authority, and money with knowledge and vision.

Components of an Environmental Model of Professional Development

Given what is true about how much one might learn, the difficulty of predicting what students might need in their careers, and an awareness of the structural conditions of life in English departments, what would be the components of a program that attempted to encourage faculty development in the use of computers in technical communication programs? Each of the following sections outlines an component in an overall program that leads to a model that creates environments that facilitate increased use of computers in thoughtful ways.

The program provides easy access to technology.

People use technology not for its own sake but because it improves the quality and efficiency of work. If our goal is to encourage appropriate uses of technology in technical communication, the technology must be readily and conveniently available. This means sufficient labs and classrooms so that those who are inclined to learn to use technology have places to work and learn. Preferably, the technology is readily available where people normally carry our their business: in their own offices, buildings, and homes. Ideally, local labs and classrooms help establish communities of learners, where working alongside others who are engaged in writing and communication leads to spontaneous interaction and learning.

One of the best decisions we made at New Mexico State University was to place a lab and then a classroom in the English building. Although it meant giving up precious space in a cramped building, it also means that the space is close and familiar and welcoming. Technically, the lab and classroom are not an English facility, but a campus facility devoted to supporting writing-intensive courses. But because they are in our building, they are identified as English labs, we control the scheduling, and English faculty and students are comfortable working in the space. The proximity alone, because it is convenient to walk in and print a document or ask a question at the help desk,

encourages the use of the facility to a much greater extent than would be true if the facility were in another building, even the nearby computer center. Much of the learning that happens is unstructured, since there are always like-minded people around who can answer questions or guide someone through a technical process.

Access also means personal access in private space. Each faculty member has an office machine and printer, and additional machines are available inside the English offices. As these machines become fully networked, the immediate access will encourage use of net resources, shared printing, and communication. Particularly for email and discussion groups, easy access in one's normal work area is extremely influential over patterns of use. As faculty become linked to the campus net, first through telephone-internal modems and soon through direct connections, they begin to participate in departmental communication for committee work, individual messaging, and discussion groups focusing on campus issues and areas of professional interest. This mode of learning is natural and spontaneous, requiring only occasional hand-holding as a faculty member needs help joining a discussion group or figuring out how to attach a file to a mail message to send to a colleague on another campus. As faculty see the advantages of electronic communication in their own scholarly lives, they begin to make connections concerning how they might communicate with their own students. It is a short step to forming class discussion groups, providing immediate answers to student queries, and posting provocative questions to students who are engaged with assignments.

The missing link in the scenario we lay out is, of course, graduate students and lecturers. The department head has a difficult enough time finding the budget resources to provide tenure-track faculty with up-to-date equipment, and others are left to the public labs and their own resources. This is not necessarily grim on a campus such as ours, where computers are readily

available and the network is well resourced, but it does point to an inequity in the distribution of resources between those with status vs. those who do much of the work and who use technology in the most adventurous ways.

Programs that grow naturally recognize the need for "a clean, well lighted place." The design of labs and classrooms is discussed elsewhere in this collection, so we would just stress here that these spaces should be inviting and commodious. Labs can be places where people like to be, where they like to gather and work. Making them a place where people naturally congregate to learn is in part a matter of providing comfortable furnishings and lighting, plenty of workspace, adequate cooling, and writerly resources. The program at Michigan Tech takes it a bit further:

> Then I went to Michigan Tech (where I am now) for a workshop and saw . . . no . . . experienced a computer room that *felt* comfortable to compose in. Plants on every pod, stuffed animals galore, names on every computer (I am writing this on Jane Austen), air filled-sharks, pterodactyls and pythons hanging from the ceiling, and my personal favorite, old network and video cards framed and hanging from the wall like art, all combine to make this a writer-centered space instead of a technology-centered one. . . . Bottom line? It's a pleasure for most folks to work here. (Allan Heaps, agheaps@mtu.edu, cwc95, May 3, 1995)

The lesson here is that if we want faculty to pursue learning about technology, we can build environments where such goals are likely to be fulfilled. For some faculty, that means a friendly sociable learning center. For others, it means personal access in a private work area. For all learners, it means easy access to the tools.

<u>The program provides technical support.</u>

Those program faculty who use computers or who would like to learn should be protected from having to become lab technicians. We would urge all those who develop computers and writing programs to also develop good working partnerships with the technical support people at the campus computer center. In their contribution to this collection, Selfe and Selfe present two models for managing computer labs: one by the central computing service on campus, the other by the English department. Selfe and Selfe note that drawbacks of the first model can include loss of control over hardware and software selections and lack of input into effective classroom design. Both of these result, according to Selfe and Selfe, from a lack of understanding on the part of the computer administrators regarding the goals, objectives, and activities for writing classes. However, we feel that these drawbacks can be overcome by having representatives from the English department (faculty, staff, and/or graduate assistants) maintain a strong and constant voice with those who manage the central labs: we can explain our needs for specific equipment or software; tell them what our students are doing (or need to be able to do) in the lab; and applaud them when they deliver what we need. For example, when we needed to have a groupware package installed for group project work for technical writing classes (and for doctoral research associated with that software), the central support group installed the software in the English lab for our classes to use.

On our campus, the computer center manages the classroom and lab; provides proctors for 14-16 hours/day (including weekends) who staff a desk and answer technical questions; takes care of all technical installation and maintenance with machines, software, and network; and budgets money for hardware upgrades. From the English end, we meet and plan with personnel from the computer center, help solve policy problems, contribute dollars for new equipment and software, and focus on supporting the teaching of writing. It is not a perfect solution and there are

many frustrations when problems are not quickly solved, but it is a solid working partnership. The English department devotes a reasonable number of hours of graduate assistant time (20-25 hours/week) to work with teachers new to the lab, to help smooth the start of the term, to manage the schedule, and to address whatever issues arise. The one key faculty member involved (Steve Bernhardt) coordinates the department involvement because he is willing and has always done so and because it fits with his interests and expertise, not because of any direct compensation or released time.

Overall, the arrangement is one that would be envied by many on other campuses who find themselves trying to support both the teaching of writing and the substantial technical upkeep of a lab. The rewards of developing a working relationship between the English Department and the Computer Center cannot always be anticipated. Because we had a working relationship over several years, it was only a little surprising when the director of small systems on our campus asked (over a chance meeting at lunch) whether we'd like to upgrade all our machines to Pentiums. His thinking was that the English classroom should be a model for the development of campus resources and he was willing to insure that our equipment was state-of-the-art. We said "Yes, thank you." Another gain from working with the Computer Center is that students in the technical communication programs learn something about working alongside technical support personnel, a kind of learning that is very useful in work situations. This kind of close working relationship with central computer facility helps us to have some control over our computer resources without draining the financial resources of our department.

Alternately, some departments find ways to make technical support a part of the English budget and like having full control over their own space. Texas Tech, for instance, decided to hire a full time technical support person from among their own graduates:

> Last summer, the English dept. here at Tech was given a lump of money by the upper administration for use only in maintaining current equipment and hiring staff. Since I was just completing my Master's degree and was finishing up a year of doing voluntary upkeep of our three computer classrooms, I was hired as a full-time staff member to do nothing but keep 120+ networked computers going and assist instructors, faculty, students, and other staff in anything computer-related. . . . after my first 80 hour week right before school started and a string of 50+ weeks well into the semester, it became clear that this was a full-time job year-round. The flood-gate came not so much from the classrooms where I had already done much work as a volunteer, but from the faculty and staff. Seven years of pent-up computer questions suddenly unloaded. . . . Now my Chair wonders regularly how the department ever got along without me. I think that's because I am the manual everyone goes to read. (Joseph Unger, cbjju@ttacs.ttu.edu, acw-l, February 19, 1995)

Texas Tech has a mature program in computers and writing because a core of faculty have been working there to create a strong program for a number of years. The important point to recognize is that it was because of this maturity that administrators who made funding decisions realized that they needed to get serious about providing technical support. The formalization of the technical support turned out to be long overdue. One imagines that the support person could be very valuable over time in helping faculty increase their technological sophistication, which in turn will lead to increased, innovative classroom use.

In addition to providing technical support, it is equally important that users develop self reliance. They should know how to call a help line and get a fix, but they should also know how

to read the manual. Technical support in the form of manuals should be available and used. Manuals in labs tend to disappear and are quite expensive to replace, but to some extent this is alleviated by increasingly complete online help systems. Granted, manuals and online help are baffling to novices, but with each use they become more intelligible and useful. A technical communication program that wants to create self-sustaining learners must take a somewhat hard edged stand toward use of the manuals, similar to that expressed by Tari Fanderclai:

> Boy, I'm really in the rtfm [read the f***ing manual] mode this week. But I really see this fear or unwillingness or whatever it is--this thing that makes people complain about the difficulty of documentation that they haven't even spent any real time with and accuse those who do figure things out of everything from elitism to voodoo--as the biggest impediment to the progress of this community (and other traditionally "non-tech" communities trying to make use of technology). I bet if you poked around this week, you could discover at least one thing on your system that you didn't know you had and that would be pretty darned useful . . . and then think what would happen if you read the documentation associated with whatever you found, and determined to learn to use it, and did so. Probably by Friday you couldn't live without that application. And then you'd know how those elitist voodoo UNIX heads in the community go at it, and you'd be able to do it too. (tari@ucet.ufl.edu, acw-l, February 18, 1995)

Our culture has well established, built-up resistance to using manuals based on experiences in a wide range of technical documentation contexts: assembly instructions for toys and equipment, procedures for taxes and finances, rules and guidelines for dealing with bureaucracies. What has always surprised me (Bernhardt) is the resistance to reading the manual even among graduate

students in technical communication. I find myself teaching classes in computer systems documentation to people who intend to write such documentation and I find a need to structure classes in such ways that people are **forced** to read the manuals to accomplish actual tasks.

One truth about help systems, whether paper or online, is that the more one uses a system the more useful it becomes. Experts tend to make more frequent and more successful use of manuals and online help than do novices, in part because they can adjust their language and problem definitions to match the system. Many manuals and online help systems are baffling at first, but as one learns the language and the organization of the help system, the system reveals itself and starts to be beneficial. Unfortunately, many novice or casual computer users arrive with the attitude that manuals are baffling and help systems useless, rather than taking the time through repeated interactions to create an accurate mental model of how the help system works. Computer documentation has made tremendous strides over the past 15 years and there are some truly ingenious, smart, and useful help systems with the best software today.

There is a very natural fit that can be exploited here in the interest of learning. Technical communication faculty and students should be interested and immersed in technical documentation, and using various help systems repeatedly as part of completing tasks is the surest route to developing a deep understanding of how help systems can be made more helpful. We can encourage our students to develop skills in technical writing by asking them to create documentation or help sheets for use in campus labs. This is a challenging assignment that not only helps students and teachers to develop a better understanding of effective instructional documentation, but also extends learning to other students who will use the materials in the lab.

The best support environment offers scaffolding to those who would improve their skills through a combination of human, print, and online resources. While most learners prefer human

support--"Show me how to do it" remains the favored learning mode for technology--novices can be encouraged to become self-sustaining if those in the know demonstrate how help systems work, where the manuals are, and what sorts of strategies experts have for learning from the manuals and help systems.

The program offers targeted workshops and classes.

A program of faculty development should offer some level of support through structured training workshops or classes. These workshops can take different forms, some more casual and some highly structured. Whatever the format, the goal of such training is similar: "to help teachers learn and use computer technologies in innovative and contextual ways that support their instructional needs and objectives and the goals of their students and programs" (Selber, Johnson-Eilola, & Selfe, 1995, p. 582). Becky Rickly describes her experiences at the University of Michigan:

> It seems for me, learning about html and the web has been one of the most collaborative, one of the most . . . well, *webbed* experiences ever. I first heard about the web several years ago. . . . but didn't begin learning/playing until I moved to the University of Michigan, where web access is incredibly easy for students and teachers alike. . . . Then, when I was showing our peer tutors how to "surf the internet" in a brief demo about email, MUDS, and the Web . . . one of my peer tutors showed ME how to make a home page. I then showed a couple other colleagues in my department, found out that some had already started, and now, well, we're WEBBED. And the exciting part of it all is that we continue to teach each other--the students AND the faculty. . . .[E]very Tues/Thurs, I sit in on Wayne Butler's class, "Writing the Information Superhighway," and listen, learn,

> and help when I can. Learning about the Web has been one of the most satisfying collaborative/educational experiences of my life--probably because the learning has been fun and the boundaries of the traditional educational hierarchy have been dissolved. (becky.rickly@umich.edu, acw-l, February 20, 1995)

At the opposite extreme are universities that decide to "institutionalize" the teaching of writing with computers by building classrooms and moving all instruction into them. Northern Illinois University designated the English Department, and specifically the introductory composition program, as the place where students would learn to use computers. Carol Scheidenhelm describes the development:

> . . . we have recently gone to 100% computer-assisted in our freshmen writing program. The diversity of responses from our staff is amazing!! The biggest challenge I face as director of the CAI program is staff development: how do I convince instructors that they can, indeed, teach writing in a computer lab and that the technology becomes (with experience) a benefit rather than a hindrance. . . . Staff development sessions (designed to assist instructors with "converting" to the computer classroom) offer the forum to reevaluate WHAT we do as teachers of writing and WHY we do it. The CAI "twist" is, then HOW we do it. We have observed some incredibly creative metamorphoses in staff as they move to the labs. (tb0clsl%CSO.NIU.EDU, cwc95, April 28, 1995)
>
> We require that all CAI staff (@75 GAs and 15 instructors--no tenure-track faculty) come to three small-group sessions a semester. These sessions take a variety of forms. We have had in-lab exercise exchanges; critique sessions where we look at an activity and decide how it could be

> improved/expanded/implemented; in some sessions we exchange views on specific activities done in the classroom (as peer critiques)--these session have been MOST useful as we share ideas about the fundamental need for the activity and then decide WHAT makes the activity effective and HOW to do it in the computer lab. (tb0clsl%CSO.NIU.EDU, cwc95, May 2, 1995)

Here is an institution taking one route to "computerizing" the writing program. Northern Illinois University has decided that computer literacy is good for all students and selected the one course that all students take as the stage for gaining competency. Illinois State University pursued the same path over ten years ago, building a suite of computer classrooms and moving all writing courses into them. There are good egalitarian arguments for doing so, and good pragmatic arguments for placing computer literacy within a real context for using computers--writing instruction--rather than as a separate and artificial course on computer literacy. But one can imagine that such institutionalization causes stress, and one might question NIU's tactics, since the burden is placed on GAs and adjunct instructors, both to teach and to administer the program. The tenure track faculty are peripheral to this program and it is worth asking what that says about the University's commitment.

Holdstein (1989b) warns against making participation in teacher training workshops mandatory since "a small enthusiastic group is better than a large, frustrated one" (p. 131). Kiefer (1991) also believes that integrating computers into writing classrooms should be a choice made by teachers and administrators, rather than a mandatory requirement. Fred Kemp speaks from experience about this issue:

> I've been promoting networks and computer-based instruction for 10 years on two campuses, and I have learned through often bitter experience that people cannot be

> coerced or even cajoled into computer-based writing instruction. In the instances I know of where program directors have forced or even simply encouraged faculty to computer-based learning, disaster has ensued. Hell hath no fury like a teacher experienced in the traditional classroom who feels he or she is being considered, however gently, obsolete or ineffective due to technological progress. It's best for us to lead by example, let word of mouth spread concerning the good things that happen in our classrooms, and cater to the younger, more ambitious teachers. . . I don't think we should, or can, push local structures faster than they are capable of moving. (ykfok@ttacs.ttu.edu, cwc95, April 29, 1995)

There's obviously some middle ground, where a program is allowed to grow naturally, faculty are invited but not compelled to participate, and a department or university examines its structures for teaching writing and asks whether the implicit messages signaled by who teaches and who leads actually encourage or discourage change on the part of faculty.

While targeted workshops may help teachers become more comfortable with new technology, it is essential to provide follow-up activities and communication with teachers to continue the learning process (Holdstein, 1989a; Bernhardt and Appleby, 1989). Workshops are most effective when they introduce teachers to a small amount of knowledge that can be used immediately (Berry, Van Pelt, and Trilling, 1989), but extended growth in computer literacy comes from motivated learners who will join together as a community and continue to share ideas and practices for linking technology and learning.

<u>The program provides released time and recognition of accomplishment.</u>

One exchange from the acw-l highlights a too typical situation, where computers and writing initiatives run purely on the energy that individuals are willing to put in:

> I've been in a position where technology is valued and rewarded, and one where technology was seen more as a "service" that, while appreciated, wasn't valued in decisions or promotion and retention as were more traditional types of work (publishing, etc.). Are folks on this list given recognition for what they do with technology? Is it part of their job descriptions? Are they rewarded with promotions, tenure, release time? I can't help but think that a reward system like that would encourage many more folks, to, like Adrienne Rich said, "take responsibility for their own education" and (among other things) rtfm. (Becky Rickly, becky.rickly@umich.edu, acw-l, February 18, 1995)
>
> Promotions? Tenure? Release time? Hah. More like a few cents an hour over minimum wage to run a network, manage a lab, write documentation, assist users, train teachers to use the equipment and software . . . and those are just the big items. . . . unfortunately, though, it's a vicious cycle. Someone else who wants to learn badly enough to work for low pay in appalling conditions will take over . . . when she's burned out, they'll be someone else . . . and someone else . . . it's how the academy works. What do you suppose would happen if all the people whose depts are depending on their free technical services just started telling everyone to either cough up the big bucks or rtfm? Naw, never happen. (Tari Fanderclai, tari@ucet.ufl.edu, acw-l, 19 Feb 1995)

It is difficult to mount a serious initiative of faculty development, particularly through structured workshops, without moving toward some sort of reward system. There are just too many competing interests for people's time to rely on their good intentions, and there are too many political arguments against running on cheap graduate student labor. Within this collection, Ecker

and Staples describe technological changes in the corporate world that led to the creation of "information-technology-based workplaces." English departments must recognize these same changes within academia and build in appropriate reward systems for faculty who pursue learning and scholarship in this area.

When an experienced hand like Dawn Rodrigues decides on a development initiative, she is careful to build in the rewards:

> A colleague of mine and I have submitted a teaching development proposal to develop our WWW server. We're going to do it by tandem teaching our courses: mine a 300 level tech writing course; hers a 300 level Information Systems course. We'll continue the development in a graduate course that we are proposing, too. So, we may get summer money to plan the course (the teaching development award), and we can do conference talks and write about it--ways for other kinds of credit. (There's also the wonderful opportunity to "write" the campus interface, a task that would not normally involve a "writing teacher.")
>
> (drodrigu@kscmail.Kennesay.Edu, acw-l, February 22, 1995)

There are other ways of creating reward systems for engagement with changing teaching through technology. Gerald Donelly-Smith at Clark College writes:

> Over the last year, we've developed several skills groups: classroom research, learning communities, and technology-assisted pedagogy. These teacher talk groups meet regularly, sharing information and classroom strategies. Next year the Computer Science department will offer a year long class in computer technology: internet, multimedia, and information systems. One member from each division will be [encouraged] . . . to take the year long class in order to develop a distance

> learning module. During the year, the teacher will become the information person for technology and pedagogy. Although [faculty] will not be . . . given release time, I've already reserved a spot in the class. Hopefully, I will be prepared to teach an internet composition class once our Computer-Assisted Writing Lab is fully functional. (SMITGM@hawkins.clark.edu, acw-l, February 8, 1995)

A program at the University of Hartford provides a model for faculty development that increases access while providing a social network:

> Here at the University of Hartford we are busily trying to overcome faculty reluctance to learn about new technologies. We just received a DOE FIPSE grant to introduce faculty from across the disciplines to multimedia authoring. We are trying to get faculty to author a few simple multimedia lessons so that we can begin a discussion of how such technologies change pedagogy. We have also gotten Culpeper Foundation support for the hardware necessary to put multimedia computers in faculty workspaces. This training is unique in that it is faculty training faculty (I am one of the two trainers), and we are gathering our trainees in small, disciplinary clusters to create a comfortable environment for technological learning and pedagogical discussion. (Ed Klonoski, klonoski@uhavax.hartford.edu, mbu-l, October 31, 1994)

And there are other signs of progress in reward systems, as in this scenario wherein a faculty member is asked to redefine what "counts" as activity toward tenure:

> My department did a curious thing at me (more than "to" me) at my third year review last October: they told me that *I* needed to come up with criteria for assessing all of the computer-related things I'm doing. The University has no such

> standards; my activities range from making sure there's paper in the printers in the department lab to working up computer-related classes to doing online research--both for the conventional publishing purposes and for trying to find out what I and we ought to be doing here at Bradley. . . . At least they asked me to come up with a way of making this stuff weigh into the tenuring process--it's respectable here--as opposed to their expecting me to do it out of love. (Seth Katz, seth@bradley.edu, acw-l, Feburary 19, 1995)

Each of these examples is meant to illustrate ways that colleges can "get serious" about supporting technology and those who bring about change. Each effort to work with a reward system changes the traditional college teaching situation just a little, toward models of team teaching, teachers teaching teachers, teachers being rewarded for bringing about change, and teachers defining how they are to be evaluated and rewarded.

<u>The program builds a learning community.</u>

Inspired uses of technology grow as the learning community grows. Faculty development happens as spaces are created that support revolutionary changes in teaching. Keifer (1991) suggests that "the best teacher-education programs are based on observations and research conducted in classrooms, that is, on the successful practice of teachers" (p. 120). Teachers can begin to imagine new ways to alter or enhance their classroom activities based on the success stories shared by colleagues. Some programs manage to bring the resources together with an articulated vision inside a community devoted to transforming the teaching of writing:

> Where people DO change their minds (and sometimes do a startling flip-flop) is when they get a chance to experience a rich, integrated network pedagogy. My point over the last several days is that nothing in my happy talk is going to change

> the mind of the skeptic who has perhaps limited experience with computer-based instruction (without realizing--and here's the main point--that it IS limited), and who says, "Is that all it is? Geeze. We can do peer critiquing with as much intensity as a network classroom just by having kids exchange their papers in class." I say it is as night and day the difference in moving papers around a class for critiquing, and sharing files over a competent file-managing network, and I've done pretty good amounts of both. (Fred Kemp, ykfok%TTACS.TTU.EDU, cwc95, May 1, 1995)

Kemp is talking here about transforming vision: what happens when someone understands in a deep sense through articulated experience how the processes of writing can be transformed by technology. It is experience in the context of teaching that can change faculty, when they have the chance to teach in a setting that supports writing through networked communication.

The situation is no different in industry. One of us (Bernhardt) consults with the pharma industry as they develop technology to support global drug development teams. These scientists, researchers, and regulatory professionals, working together to produce complex documents, discover amazing power in networked technology. The tools transform writing processes: document prototyping enabled by huge electronic whiteboards with simultaneous input from various sites; co-authoring through shared tools, shared drives and text exchange; reviewing and management signoff through groupware, collaborative editing programs, and revision tracking tools. Throughout the process, daily communication among widely dispersed team members (Switzerland, France, England, U.S.) is transformed by network tools: video conferencing, text projection systems, group decision making software, and data sharing. These are the new ways of working, in the university as well as the workplace, and once faculty experience transformed work

processes, there is a much reduced need for verbal arguments and a stronger sense of "Let's get on with the program. What can we learn to do next?"

It is possible to find in more than a few schools that it is possible to build a community that embraces technology and finds ways to allow a large segment of the school to become insiders and supporters. Ted Nellen, a high school teacher in New York eloquently describes the process at his school:

> I began teaching English to high school students in NYC 10 years ago. Software did not exist, so I wrote my own. I was in deep depression because my colleagues did not see the value of a word processor like WordPerfect. . . . Four years ago, I convinced another English teacher to join me. Now we have seven English teachers teaching in our computer labs. Our labs are currently being linked to each other and then to the Internet. By the opening of school in September we hope to have 200 computers in 5 labs, library, and offices connected and on the Web. I see our computers realizing the dreams and visions of the staff and of the students. We are writing grants to train teachers. Right now we will be spending the next five weeks training 30 staff members and 4 parents. With this core we will commence to train other members of our staff of 240 in a school of 3000 students. The excitement has been very hard to start, but once it was ignited it has been like an inferno. We are infected and we hope to serve as a model of how the net can work in education. Every discipline in our school is represented and the school has made a whole school commitment. Monies to cover costs have come from every corner and every purse in our school. We have come to see the importance of this move in education. We are not deluded that it will be a cure for education woes, but we

> are finding innovative ideas and plans emerging for our advanced students, our struggling students, our troubled students, our average students. We have come to realize a way to empower our students and excite our staff. (Ted Nellen, tnellen@dorsai.org, acw-l, May 10, 1995)

There's a clear message in Nellen's scenario that a change initiative can reach a critical mass and begin to generate its own energy. That energy comes from a community of people with a shared vision and a sense of working together to accomplish something important.

The same feeling is present in John Slatin's description of what has been taking place the last few years at the University of Texas in a program committed to taking writing online. In a long post, Slatin describes the addition of labs and classrooms, an upper division course on Computers and Community, a Ph.D. specialization, the development of new model syllabi, a grant for evaluating learning in virtual environments, creation and participation in newsgroups, and a Web site attracting thousands of visits per day. What is clear from his comments is that Slatin sees a radical and unpredictable redefinition of writing culture rapidly taking place in our midst:

> Something very profound is going on. Two years ago, I wrote a policy document . . . in which I said that our efforts to improve the quality of undergraduate writing (and writing instruction) at the University could succeed only if the University itself evolved into a culture in which writing was pervasive and important. Astonishingly, that is what seems to be happening. And the students who participate in this evolving electronic culture . . . are involved, more or less willy-nilly, in a culture that extends far beyond the local campus environment into the larger world of writing. . . . It seems clear that trends toward increasing use of both synchronous and asynchronous online communication will continue their

> explosive growth; if text is dying, it's doing it supernova style. . . . And so when I talk about training instructors . . . I mean among other things helping them learn to see themselves in this odd new light, helping them learn to exchange what they know about rhetoric and text--and collaboration--for what students know about sight and sound and about the world they inhabit. And I see us developing resources to help faculty--particularly older faculty--find their way intellectually and cognitively in what is for many a bizarre and hostile environment. . . . these are the issues with which I expect the students and faculty in the Computer Writing and Research Lab to be grappling over the next couple of years, and for a long time to come. (jslatin@mail.utexas.edu, acw-l, May 10, 1995)

There's a blurring of traditional boundaries in these last couple of posts. A writing culture creatively transformed by technology appears in places we like to think of as different: high schools, college writing programs, technical communication programs, the world of work. The underlying continuity in these situations reflects new cultures of discourse enabled by technology. It is, finally, as people recognize a new culture as radically transforming, accessible, exciting, desirable, that issues of training evaporate. People--faculty, students, workers--discover that the new forms of communication, learning, and work are worth pursuing, possible to learn, and embedded within patterns made interesting by new forms of social interaction. Learning to do things with technology, changing one's teaching, and becoming someone who shows others how to do things are behaviors that become naturally inscribed on daily activity.

References

Bernhardt, S. A. (1995). Teaching for change, vision, and responsibility. Technical Communication 42 (4), 600-602.

Bernhardt, S. A., & Appleby, B.C. (1989). Integrating computers and composition at Southern Illinois University-Carbondale. In C. Selfe, D. Rodrigues, & W. R. Oates (Eds.), Computers in English and the language arts (pp. 141-156). Urbana: NCTE.

Berry, E., Van Pelt, W., & Trilling, N. A. (1989). Faculty development for computer literacy at the University of Wisconsin-Milwaukee. In C. Selfe, D. Rodrigues, & W.R. Oates (Eds.), Computers in English and the language arts (pp. 157-175). Urbana: NCTE.

Holdstein, D. H. (1989a). Preparing teachers for computers and writing: Plans and issues at Governors State University. In C. Selfe, D. Rodrigues, & W.R. Oates, (Eds.), Computers in English and the language arts (pp. 131-140). Urbana: NCTE.

Holdstein, D. H. (1989b). Training college teachers for computers and writing. In G. E. Hawisher and C. L. Selfe (Eds.), Critical perspectives on computers and composition instruction (pp. 126-139). New York: Teachers College Press.

Kiefer, K. (1991). Computers and teacher education in the 1990s and beyond. In G. E. Hawisher and C. L. Selfe (Eds.), Evolving perspectives on computers and composition studies: Questions for the 1990s. (pp. 117-131). Urbana and Houghton: NCTE and Computers and Composition Press.

Selber, S. A. (1994). Beyond skill building: Challenges facing technical communication teachers in the computer age. Technical Communication Quarterly 3(4), 365-390.

Selber, S. A., Johnson-Eilola, J., & Selfe, C. L. (1995). Contexts for faculty professional development in the age of electronic writing and communication. Technical Communication 42 (4), 581-584.

Selfe, C. L. (1992). Preparing English teachers for the virtual age: The case for technology critics. In G. E. Hawisher and P. LeBlanc (Eds.), Re-imaging computers and composition: Teaching and research in the virtual age. (pp. 24-42). Portsmouth, NH: Boynton/Cook.

Wahlstrom, B. J., & Selfe, C. L. (1994). A view from the bridge: English departments piloting among the shoals of computer use. ADE Bulletin 109, 35-45.

Biographies:

Dr. Stephen A. Bernhardt (Ph.D., University of Michigan) is Professor of English at New Mexico State University, where he teaches courses in computers and writing, text design, and professional communication. His training and workplace literacy projects have taken him into hospitals, high tech companies, and government agencies. His publications on computers and professional communication have appeared in many journals, including College Composition and Communication, the Journal of Computer Documentation, and the Journal of Technical and Business Communication. He recently completed a one-year leave as Senior Consultant, Scientific Services, Franklin Quest Consulting Group (formerly Shipley Associates), working with F. Hoffmann La Roche pharmaceuticals in Basel, Switzerland, helping teams use global communication technologies to deliver new drug applications.

Carolyn S. Vickrey is a Ph.D. Candidate in Rhetoric and Professional Communication at New Mexico State University where she has taught courses in rhetoric and composition, business writing, and technical writing. In addition to teaching, she has shared responsibility for administering a computer classroom in the English building and helping teachers who are new to this environment. She also has over seven years experience in industry as a Technical Editor working on engineering specifications and proposals. Her research interests include the effects of computer-mediated-communication on collaborative writing teams.