

FACULTY, TECHNOLOGY AND THE COMMUNITY COLLEGE:

FACULTY CULTURE AND CYBER CULTURE

by

Paula Smith-Hawkins

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As members of the Dissertation Committee, we certify that we have read the dissertation

prepared by Paula L. Smith-Hawkins

entitled Faculty, Technology, and the Community College: Faculty Culture and Cyber Culture  
and recommend that it be accepted as fulfilling the dissertation requirement for the

Degree of Doctor of Philosophy,

\_\_\_\_\_  
Dr. Sheila Slaughter Date: January 18, 2005

\_\_\_\_\_  
Dr. Gary Rhoades Date: January 18, 2005

\_\_\_\_\_  
Dr. Jennifer Croissant Date: January 18, 2005

Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final  
copies of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be  
accepted as fulfilling the dissertation requirement.

\_\_\_\_\_  
Paula L. Smith-Hawkins Date: January 18, 2005

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## ABSTRACT

A qualitative study of faculty work and technology was used to identify four areas of change to community college faculty work structures; specifically, time, work space, classroom teaching and faculty service work. By examining the policies, programs, and technology initiatives as negotiated by faculty members--their work, their interactions with students, other faculty, administrators, and the local community this writer argues that technology has destabilized the nature of faculty work and the structures once associated with faculty responsibilities. This ethnography relies heavily on the theories of Rhoades, Burris, Perlow, and Vallas to examine how technology has changed the daily work of the community college faculty member.

Using the ethnographic approach to qualitative research, the data for this study comes from meetings, formal and informal exchanges, writings, and promotional material handed to faculty over a two year periods. The participant/observer approach utilized in this study allows for insight into the complicated relationships between policies and practices, and formal and informal interactions between various campus groups. This particular campus site struggled with the new policies governing informational and educational technology decisions in a setting that promoted a high degree of faculty input and participation. The information gathered in this study points to the destabilizing nature of technology on faculty work.

## **CHAPTER 1**

### **INTRODUCTION**

This study examined how community colleges manage changing issues surrounding information technology and educational technology. Specifically, this study focuses on the changes to faculty work wrought through the process of technology implementation at one campus of a large southwestern community college. By examining issues of faculty work and informational and education technology stemming from the new technology, it is possible to determine how structures, such as classroom, time, that once determined the nature of faculty work change through the implementation of technology.

#### **Statement of the Problem**

Technology implementation as a process was seen by the administration as an opportunity to increase productivity and control faculty work. This process transformed faculty work and destabilized the teaching environment. This study examined the impact of technology on faculty contractual work. Faculty contractual work at the campus involved several components including a set number of days of “accountability” when faculty were expected to work on the campus site; a minimum number of classes or class “load” hours of teaching, typically 15 credit hours per semester; a number of posted office hours corresponding to faculty teaching loads (one hour per class taught), 27.5 hours of faculty advising where faculty met with students during registration periods, participated in student development activities, or otherwise assisted students; service on at least one campus level

committee and one district wide committee; and attendance at campus faculty meetings unless exempted by other service. Other activities that faculty were expected to do—but were not required to engage in—involved graduation events, professional development programs, service on hiring committees, and service on various review processes including outcomes assessment. Information technology, as a term, describes the “resources used by an organization to manage the information it needs to carry out its mission” (Griffin, 1996). The influence of technology on faculty contractual work at community colleges was relatively new, and thus research on the changing nature of faculty work is called for.

### **Significance of the Study**

This study sought to open the fields of sociology and higher education through an ethnographic exploration of faculty work and address the issues of time, space, and the changing nature of faculty labor through the introduction of technology into faculty workspaces. As late as 1990, comprehensive research on postsecondary teaching contained little on the influence of technology, other than its impact on students and student learning. The community college received less attention from researchers in higher education than other post-secondary institutions. (McKeachie, Pintrick, Yi-Lang & Sharma, 1990).

Contributing to the current literature on community colleges and faculty work, this study discusses the implementation of technology as a transforming process in academic work. The scholarly literature about community colleges, while discussing faculty work, has not focused on the influence of technology. The literature on technology at the community college on the whole is markedly uncritical of the changes technology brings to

teaching, committee work, faculty location, the dynamics of the work, and the position of faculty members within the college. Some advocacy groups, like *Educause* and the *League for Innovation in the Community College*, promote the use of technology in the community college (Miles, 1999). The literature as a whole takes the position that technology will save time, money, and institutional resources.

However, other advocacy groups have offered useful critiques of technology implementation for faculty. National Education Association (NEA) leaders have outlined the total costs of technology for university and college faculty and pointed to the myriad hidden cost of technology. (Finkelstein, Frances, Jewett, & Scholtz, 2000). For example, most estimates of the savings gained by reducing faculty fail to count the additional hires of technology support personnel, equipment costs, increased utility costs, and the rapid turnover in computing technology. Thus, the literature on technology in higher education is framed with limited conceptual understandings of the role of technology in work. Furthermore, much of the discourse on technology within the community college is promotional. Even seemingly professional outlets, such as *New Directions for Community Colleges*, a series of research, essays, and historiography on the community college, published materials on technology that had a promotional bent. These uncritical essays have offered suggestions on faculty use of technology, avoided any discussion of potential problems, or costs or training. For example, no research addressed the Apple/PC division within the education sector. In the 1980s, Apple Computer Company heavily marketed its products to educators and graphic artists, while the PC system clones targeted business and

industry. With the technology initiatives of the mid 1990s, the college studies chose PCs to attract business programs. However, many faculty members had only used Apple/MacIntosh and had difficulty using the PC and the larger computing system.

While a significant body of work exists on faculty, faculty labor, technology, and the community college, there is little work—quantitative or qualitative—that examines the influence of technology on faculty work. Yet, the changes brought about by technology were both intimate to faculty and integral to how faculty did their jobs. The daily work of faculty changed dramatically with the introduction of personal computers to faculty offices; to the transfer of all district-wide functions to the Oracle systems based Banner product; and the purchase of high tech telephones, printers, copiers, and online library systems. The nature of this change constituted an urgent area of study.

### **Purpose of the Study**

This study determined if faculty work changed because of the implementation of technology. Technology as a component was not a central feature of the study. Rather, faculty response to the hardware, software, and new systems served as the focus. Thus, the focus of this study was the experiences of faculty and the changes to their work environment, time structures, and role obligations.

### **Research Questions**

This study explored the impact of technology implementation on community college faculty. It began with a series of broadly worded questions about faculty work and technology. As a faculty member myself, I began to explore issues related to technology

use and the community college. In 1999, I soon realized how technology rapidly changed the nature, location, and ways in which I taught my classes, related to other faculty members, served on committees, responded to students, and kept current on campus and broader college issues. I began an ethnographic study, logging my experiences with technology in a daily journal. In doing so, certain issues emerged around information and educational technology and resulted in the following research questions:

- (1) How did technology implementation occur at the campus level? How did faculty members respond to the process?
- (2) How did technology change classroom teaching?
- (3) How did technology change faculty time structures?
- (4) How did technology change the spaces where faculty worked?
- (5) How did the implementation of technology change the other work required of faculty?

### **Summary**

In conclusion, this study explored the process of technology implementation at a community college campus site. This examination focused on the daily work of faculty, and how their work lives changed through the introduction of new technologies to the classroom, the faculty office, and the college system. Chapter 2 first provides a theoretical framework for this study. It continues with a review of the literature on technology in higher education, the community college and technology, and faculty work and technology in higher education. Chapter 3 explains the methodology used in this study. The chapter

discusses the campus setting, the faculty population, the primary ethnographic records used in this study, including my stance as a participant/observer, the relevant college policies with regard to technology, the various committees I worked with related to technology and some of the other literature on technology given to faculty members. Chapter 3 continues by explaining the data collection protocol and the data analysis schemes used, specifically the coding schemes. Chapter 4 presents the analysis of the data and findings, focusing on the four major categories: time, space, classroom teaching and faculty service work. Chapter 5 concludes this study by relating the findings to the literature on faculty work and technology in higher education, discussing the limitations of the study, and offering suggestions for future research.

## CHAPTER 2

### REVIEW OF THE LITERATURE

This chapter reviews the sociological and higher education literature on the community college, faculty work and professionals, and technology in higher education. It begins by framing the theoretical basis of the study and includes an overview on technology, specifically theoretical understandings of technology in higher education organizations. Next, the chapter addresses technology implementation at the community college. It continues by addressing the literature on faculty work. The literature on faculty work provides critical sources focusing on faculty work at the community college level. This chapter ends by demonstrating how the community college literature lacks solid research on the implementation of technology, a phenomenon that faces most community college faculty and administrators working at the dawn of the twenty-first century.

#### **Framework for the Study**

Drawing on theoretical frameworks for this study, I turned to the work of four scholars. Rhoades (1998) writes the seminal work on faculty contractual work. Perlow's (1999) work on time and work provides an understanding of how information technology changes our understanding of time. Vallas (1999) explored the technology implementation process at a paper mill. And, Burris (1993) examined the role of the technocrat in the workplace to understand how technology and bureaucracy operate in a work setting (See Table 1: Categories).



Table 1. Taxonomy of Subcategories and Initial Emerging Categories

<u>Subcategories</u>	<u>Emerging Categories</u>
<p>Changes in: Room features</p> <p>blackboards white boards, room layout teaching material student competencies curriculum development teaching experiences</p>	<p>1. Technology-classroom</p>
<p>Changes in ways teaching responsibility met</p> <p>student/faculty interactions faculty/faculty interactions</p>	<p>2. Technology-work patterns-time</p>
<p>Changes in workspace work locations</p> <p>home office PC</p>	<p>3. Technology- work environment-space</p>
<p>Changes in non-faculty teaching responsibilities</p> <p>support</p>	<p>4. Technology-faculty service work</p>

First, Rhoades contends that “[u]nionized faculty are managed, stratified professionals” (Rhoades, 1998, p. 257.) Rhoades argues that instructors at community colleges, some 60 percent who work in unionized settings, have lost professional autonomy during the last two decades of the twentieth century. By examining changes in college faculty contracts, Rhoades studied the erosion of faculty control over their work. For example, he documented the increasing use of part-time faculty in which he showed that part-time faculty members enjoy less time and resources, and are less likely to be unionized. In fact, Rhoades states that the specter of technology has historically been raised as a replacement of faculty. Community college faculty, who are not contractually required to publish research, face informational technology issues when they create on-line coursework. Rhoades’ evaluation of contract clauses dealing with technology reveals that intellectual property issues are rarely articulated clearly. As the current literature on community colleges does not yet include faculty work issues with respect to technology, this research creates a framework for discussing the technology implementation process and its impact upon faculty work.

The first research category I formulated, using Rhoades’ research as a framework, relates to faculty classroom work (Rhoades, 1998). Teaching is at the heart of community college faculty work, and Rhoades’ work on faculty contractual labor specifically addresses the issues surrounding classroom teaching. These contracts delineated the social roles of faculty and their respective responsibilities. The terms of the contract, specifically faculty responsibilities, workload, and accountability are outlined in Article II of the Pima

Community College Faculty Personnel Policy Statement. Using this category, I studied faculty discussions of technology in their classroom work, how this technology changed committee meeting dynamics, formal and informal discussion, and the literature that faculty received which promoted technology. I included my own experience as a faculty member, and the influence of technology on my pedagogy and classroom climate. I sought to understand how technology changed the nature of faculty work and the faculty role in the classroom.

For my second category of analysis, I turned to the Vallas' (1999) research on workplace sites. Vallas sought to develop a "viable conception of the work/technology nexus" (p. 57) and thus moved beyond strictly instrumental or material facets of change in the private sector workplace. Vallas' work at three paper/pulp plants examined the development of new norms of work practices and the interplay of cultural processes in the evolution of these norms. For example, one key feature of technology is the process of boundary delineation. One of Vallas' examples of class delineation, the rise of the engineer as line manager—and thus the decline of opportunities for mobility by the hourly personnel--exemplifies a pattern of exclusion. Technology implantation often breaks down some previous parameters and simultaneously creates new boundaries. Vallas notes "patterns of inclusion and exclusion"—and that these patterns illuminate boundaries and power structures. Vallas emphasizes how new technologies, despite the promises of utopians, seize on symbolic boundaries. Vallas' work proved useful in examining the delineation of faculty work space, and the dynamics of where faculty work is performed.

Other scholars write along a similar vein that “technology may alter the geography of education.” (Gumport & Chun, 2001, p.14.) Gumport and Chun argue that technologies shift educational settings in a way that changes the learning process. From viewing a ‘live broadcast’ via television, to extra-classroom communications via e-mail, list servers, online discussions, and websites, changes where students and faculty interact (Gumport & Chun, 2001.) This study sought to understand if and how the process of technology implementation created new boundaries for faculty.

For my third category, time, I turned to Perlow’s (1999) work on technology and time in the workplace. Perlow explains the findings of her qualitative study of professionals at a major corporation. Her work on ordering analyzes the mechanisms for control of work and family time. She found that the process of imposing demands, setting meeting times, subjecting workers to reviews, imposing internal deadlines, limiting vacations, numerous requests for extra work, the extensive monitoring of employees, and modeling behavior were mechanism for control over workers. Another important issues that surfaced from this article is the fuzzy and plastic articulation of worker responsibility.

Technology became a new site, providing mechanisms for controlling faculty time, but also broke down the home/work boundary. Between voice mail, e-mail, home and office PCs, work weeks expanded. Previous delineations of time, such as office hours, ceased to function as rigid periods for student/faculty interaction. Faculty and students using technology could communicate virtually anytime. This study explored how these delineations changed.

Indeed, time constitutes one of the focal research points of this study. Perlow's work on the concept of "time famine" matched my initial hypothesis about the influence of technology on faculty work. Perlow posits the "time famine" a "feeling of having too much to do and not enough time to do it." (Perlow, 1999, p. 57). The famine includes interruptions in work, unrealistic work schedules, and too many demands on time, and conflicting targets for time on tasks. Her work calls for a "sociology of work time," which she defines as "a framework of integrating individuals' interdependent work patterns and the larger social and temporal contexts" (Perlow, 1999, p. 58). I used Perlow's work to create a category for time to study if faculty suffered from Perlow's "time famine."

For my fourth category of analysis, faculty service work, I turned to Burris' work on how technology affects the large segment of faculty work outside the classroom. This work links increasingly to technology. Burris (1993) offers a theory of "technocracy at work" (Burris, 1993, p.xxi), which paralleled the faculty response to technology implementation at my campus site. Her characteristics of contemporary technology, polarization, centralization/decentralization, skill restructuring, expertise as authority, and the technocratic ideology emerge in this study of technology implementation. I used Burris' work to create the category of faculty service work and examined the influence of technology implementation on the contractual work required of faculty outside the classroom.

## Technology and Higher Education

Two major theorists influence current understandings of the nature of technological change in organizations, Bijker (1995) and Thomas (1994). Both authors explore the social construction of usage and power surrounding technological innovation. Bijker's examination of the social construction of technology (SCOT) proves useful. Bijker posits three models for control of technology. First, no single, dominant group controls technology; therefore, no one group has vested interest in its control; second, one group becomes dominant in the control of technology, and thus insists on developing particular technologies; and finally, two or more groups emerge as strong proponents of particular technologies, and through their competition, different priorities and agendas emerge (Bijker, 1995). Bijker's exploration of the adaptation of three technologies challenges readers to avoid *a priori* distinctions between the political, technical, and scientific issues surrounding technology (Bijker, 1997). His concept of a "seamless web" of technological innovation contributes much to the understandings of technological change. Likewise, Thomas' (1994) challenges his readers to understand the "power process" model for technology implementation. Thomas argued for technology as an agent of organizational change. By negotiating between the notions that the physical world constrains the range of ways people can organize production and beliefs that people influence the use of technology, Thomas's work argues for the exercise of power over technology in social organizations.

Noble (1997) also provides a historical context for understanding technology and education. Noble argues that technology within education has become an instrument to control human behavior. Issues of efficiency and cost saving dominated both formal and informal discourse at the campus. He likens the current push for technology—as replacement and cost saving for faculty—to the push for correspondence schools at the turn of the previous century (Noble, 1997). As a Marxist, Noble faults the push for commercialization of higher education, which is predicated on the use of technology.

Slaughter (1990) wrote on technology in higher education. Like Veblen (1918), her research reflected increased university involvement with private sector corporations. Slaughter investigated how university involvement in high technology influences higher education policy. Her research involved a case study of the Business-Higher Education Forum, a liaison organization consisting of Fortune 500 Chief Executive Officers and presidents of well-known research universities. She explored the policy agenda of the Forum, the historical and structural antecedents of that agenda, and its organizational implications for various post-secondary sectors and their faculty (Slaughter, 1990). Slaughter's study focused primarily on the Extensive Research Institution, as a division within the Carnegie Classification system of higher education. The community college organization, structure, and funding sources remain understudied.

### **Community College and Technology**

This section of the chapter serves as an overview of the community college literature involving technology. Upon careful study, it became apparent that most of the

literature to date serves as propaganda, arguing for increased use of technology in the classroom, the office, the curriculum, and throughout the community college system.

The community college, as opposed to other institutions of higher education, has a different place within higher education, and should be placed in its appropriate historical context. Cohen and Brawer's (1982) text emphasized the community college structure as differentiated from both upper level educational institutions and the junior college in its function as a focus of community learning, transfer, vocational, occupational, and as a community resource (Cohen & Brawer, 1982).

As stated, much of the literature on technology at the community college is markedly promotional, and uncritical of the changes technology brings to teaching, committee work, faculty location, the dynamics of the work, and the position of faculty within the college (Anaham, 1998.) Ned J. Sifferlen (2003), Sinclair Community College president, outlined the promotional position with respect to faculty, teaching, and technology. Community colleges, he argued, have been home to innovation and creativity in teaching and reaching students. "Not all professors are as comfortable with technology. . . . But technology is here to stay, and everyone will have to learn how to juggle doing a good job today with creating learning options for the future" (p. 1).

In the professional development literature for faculty, learning to use hardware and software in and out of the classroom constitutes the best type of faculty training and re-training (Menges, 1998). Quick and Davies (1999) used qualitative methods to study faculty development programs. They conflated improved teaching methods with using



technology. However, they also concluded that faculty needed more resources to integrate technology into the classroom. New teaching approaches also confuse improvement with technology use (Herbert, 1994). Most of the promotional literature preached the formula ‘technology equals improvement in classroom teaching as dogma (Long & Warmbrod, 1982). Thus, resources needed for educational systems went lacking at the community college. “In general, the investment in the technological infrastructure is much greater than the investment in the educational infrastructure” (Cintron, Dillon & Boyd, 2001, p. 225.) Funding necessary for improved pedagogy, faculty hires, and other professional development opportunities within community colleges was diverted to purchasing technologies.

In an overview of the changes facing community college faculty, Dickinson (1999) writes that “many writers [on community college faculty] believe that these new technologies can be used to leverage faculty time so as to increase the amount and quality of interaction that they have with individual students” (Dickinson, p.6.) The notion that technology will change faculty roles permeates this promotional literature. Faculty will cease to be teachers; instead they will serve as facilitators for learning, and even “managers of information technology,” (Dickinson, 1999, p. 5) moving away from their traditional roles (Dolence & Norris, 1995).

Within the higher education spectrum, community colleges operate in a position closest to the private sector market with respect to curriculum and programs. A two year study examined the “threat” posed to community colleges by for-profit educational

companies (Bailey, Badway, & Gumport, 2001) and concluded that there was no threat from for-profit educational companies. However, the focus on technology training constituted the central curriculum at the for-profits, which pushed community college curriculum towards tech programs. As community colleges function within the educational hierarchy in a position much closer to the private sector, lower division level courses were viewed in the 1990s as easily transferable to online instruction (Dickinson, 1999.)

### **Faculty Work and Technology in Higher Education**

The literature on technology and the work place, specifically at the four-year college level, has grown rapidly in the past twenty years. This is not the case for the community college. Faculty struggled to maintain control over course material and content constitutes no new battle in higher education. Academic freedom, discipline area standards, and department guidelines all serve to shape the parameters of faculty work. Zuboff's (1984) work on computer-mediated technology in the workplace discusses the dimensions of power that management exercises through computer technologies.

However, the introduction of technology changes the mechanisms and historical structures of faculty work. Barley (1986) examined organizational implications of technological change on the technical and professional workforce. He argues that the introduction and use of technology in education as well as other workplace scenarios has unexpected consequences. Workers often use the technology in ways not anticipated by management. "Embedded practices and unanticipated side effects often slow technology diffusion, counteract intended consequences, and lead to undesirable secondary outcomes"

(Barley, p. 78.) For example, personal computers allow workers to engage in everything from online gambling to playing the stock market, while at work. Faculty members, like other workers, could use the technology in ways not imaged by administrators.

Furthermore, many faculty and administrators viewed the new technology as a new type of work for faculty (Cintron et al., 2001). The development of education materials, such as software, proved far more complicated and cumbersome than original projections predicted.

Frank (2001) argues that:

This type of development of computerized materials is an intensely time consuming process. It requires rethinking content and content display. In some respects, it is equivalent to teaching people to use a word processor when they do not know how to write." (p. 7)

It subtly changes the instructional task and explicitly changes delivery variables.

Actual development and implementation of computerized materials beyond information delivery were not a trivial task. So instructors are encouraged to use unfamiliar methodologies, unfamiliar tools and spend days or months fighting with the tools rather than thinking about the course.

Other more theoretical articles look at technology use in a generalized sense.

Minsky and Marin (1999) argue that faculty use of e-mail is a function of rational choice and individual differences in adopting innovation. Similarly, Rice, Collins-Jarvis, and Zydney-Walker (1999) look at individual and structural influences on information technology helping relationships. Their conclusion was that "Provision of help seems to be mostly confined to pre-existing workgroups" (Minsky & Marin 1999 p. 300). In other

words, “people may follow work patterns that are familiar rather than seeking help from formal support structures” (Frank, 2001, p. 9).

Some writers concentrate on faculty work by focusing on the promotion structures, such as tenure, for faculty. Dooris and Fairweather (1994) examined faculty cultures, including the teaching-versus-scholarship debate. They argue that the challenge of both mandates strain faculty; it is hard to do both well. They also posit that expanded class size, a result of both budgetary constraints and increasing use of technology, has mixed results for student learning (Dooris & Fairweather, 1994).

Grubb’s (1999) study concentrated exclusively on community college faculty. His work reflects how faculty members provide a central function in the operation of community colleges. However, he argues that faculty members are increasingly marginalized in resource allocation. Like Dougherty (1994), Grubb reported numerous contradictions in the community, specifically, the challenges faced by faculty. First, community colleges are expected to simultaneously operate as open-access institutions and yet must meet national collegiate standards. Thus, there is pressure to adopt technology to mimic other higher education institutions’ adoption schemes. A second conflict within community colleges rests on the comprehensive role of the community college. It tries to be all things to all its constituencies, providing vocational, academic, and even community resources to its localities. Many of these programs involve increased use of technology in the classroom and training for technological fields. This comprehensive nature, Grubb argues, fits into national values about the role of community college. Yet, community

college faculty still must weigh their work and credentials against the dominant, national academic norms. A third conflict involves the comparatively small resources allocated to community colleges.

[E]veryone complains about resources of course, but there is substantial basis for these complaints. In 1994-95, public two-year colleges spent an average of \$6,346 per full-time equivalent student, compared to \$12,925 per student in public four-year colleges, \$18,950 in public universities, and \$35,745 in private university. Funding in community colleges is more comparable to K-12 funding—which averaged \$5,988 per pupil that year—than it is to spending in other institutions of higher education. (Grubb, 1999, p. 322)

Faculty members face diminishing resources at a time of rapidly expanding community college missions, including the use of technology. The faculty, whose work is essential to institutional operation, received “honored” status but has become increasingly invisible with respect to access to resources. This is not surprising, as Rhoades and Leslie (1999) demonstrated how organization preferences put faculty increasingly farther from access to budgetary decisions. Administrators working closely with budgets increasingly allocated budgetary resources to administrative functions. Being closer to financial processes meant greater access. And, administrators’ believed that their work was more vital to the institutional mission than other constituencies within the college or university.

However, Grubb (1999) found mixed results in his 257 classroom observations. Computer use in the classroom was rare. Likewise, Grubb remained unimpressed with distance learning as an effective teaching practice. Transmission and feedback problems created difficulties for faculty and students, and the televised courses reverted to lectures,

which led to lack of participation by many students. He argued that faculty (and administrators) “underestimated” the work involved in distance learning courses. However, Grubb fails to develop technology use as a category, or even explain how the observations about technology were recorded.

Rhoades (1998) looked at all unionized faculty, including community college faculty members. He also described the vague articulation of the responsibility of technological implementation for the faculty member as a mechanism of control at the colleges. However, Rhoades chose unionized faculty as his subject, and his discussions of technology did not solely address the community college. His findings did reflect how technology affected social relations of power and technologies effects on social relations (Rhoades, 1998, p. 174.)

One final useful area of study concerns faculty workload. Many studies of faculty workloads reflect delineations of faculty responsibility (Meyer, 1998). The parameters of the workload, work week, and commitment were important to this study. Specifically, faculty workload refers to how much work is expected of a particular faculty member during a quarter, semester, or academic year. Studies of faculty workload used three measure of interest to assess such activities. First, the total number of hours faculty work to fulfill their minimum job requirements. The second interest centers on the number of hours faculty members spent on teaching or on instructional activities. Third, studies measure number of hours spent each week on research or other scholarly activities (Meyer, 1998). Some promotional literature on technology posits that new technologies can be used to

evaluate faculty performance (Colbeck, 2002). Thus, Rhoades' work and the faculty workload studies inform an understanding of contractual responsibilities.

### **Summary**

This study enhances the research on community colleges by exploring issues surrounding technology implementation. By addressing timely issues such as the rise of technology use and its implication for professionals at the community college, this study contributed to the literature on the community college by offering insights into this process. Issues of information technology use and instructional technology played out in the changes for faculty work in the community college. Understanding current changes in the nature of teaching, faculty work and workloads, faculty space, and faculty autonomy enhances our understanding of the role of faculty in community colleges in the twenty-first century.

## **CHAPTER 3**

### **METHODOLOGY**

Ethnography constitutes the heart of the methodology of this dissertation. The first half of this chapter provides an overview of qualitative research methods. The setting for this study of Pima Community College (PCC) includes its history, the history of the technology initiative, previous faculty issues regarding technology, and the particular campus site where this ethnography was conducted. The chapter continues by examining the population studied. The role of the participant/observer—specifically the position of the ethnographer as insider is explored, and the data collection created as a result of the ethnography. Other sources of data include: relevant policies, committee minutes and information, and other materials, such as professional development information and promotional literature given to faculty between August 1999 and May 2001. Data collection protocol and the methods of data analysis are explained with emphasis on the coding and display schemes chosen. The methodological approach used in this study was qualitative, ethnographic research. Thus, this study relies heavily on sociological and anthropological guidelines for ethnographic methodologies.

#### **Setting**

Pima Community College was founded in 1966 (Pima Community College Factbook, 2001-2002, Volume 29, May 2002.) The college serves a diverse community. The site chosen for this study was part of a multi-campus district. The multi-campus or multi-unit district reflected a trend in the community college and, multi-campus systems



have become the dominant model in public higher education in the United States. (Gaither, 1999). Thus, the college represented the norm for community colleges in the late twentieth century.

However, the history of PCC appears rather unique. The external constituencies influencing the institution's inception and growth played an important role in the organizational structure of the college. The college was founded with utopian faculty goals of shared governance, academic excellence, and commitment to community. These ideas veered sharply from widely held belief in higher education of the inherent inferiority of community colleges. As long ago as 1925, F.J. Goodnow, President of John Hopkins University, stated that the provision of the first two years of undergraduate work at the university was the "kind of instruction . . . given to masses of somewhat immature minds" (cited in Ignashi, 1992, p. 72) and impeded the "real" work of university, that of research and advanced level teaching. Levin (2001) explains further:

Community colleges, at least since the 1970s, and perhaps in their entire history, have not been the institutions that McGrath and Spear (1991) suggest they were: academically oriented and discipline based. Indeed, there has always been ambiguity over the purposes and identify of the community college, and its predecessor, the junior college. (p. 61)

PCC grew from one site in the urban center to five "brick and mortar" campuses and three learning centers by the late 1990s, the starting date of this ethnography. This period of expansion witnessed growth in student enrollment, minority enrollments, and degrees earned. Annual enrollments from the academic year 1994-95 grew from 53,657 students to 84,590 students (a 58% increase). Minority student enrollments for the academic year

1994-95 14,172 grew to 33,468 (a 136% increase); and in May 1995 1,060 degrees and certificates were awarded to 805 students. By May of 2002, 3,459 degrees were awarded to 2,727 students (Pima Community College 2002-2001, p. 16).

Mirroring the development of community colleges in other western states, the founders intended that PCC meet the needs of a diverse community, specifically underprivileged minority students. The urban area grew dramatically during the period of this study.

Richardson's work on organization, including data gathered near the dates of the college's inception, offered the normative, pervasive model of the organizational structure. Community colleges in multi-campus districts are organized such that the leader, or CEO, has the title of President, and the administrative heads of the various campus sites have the title of dean (Richardson, 1999). The head of PCC, however served as Chancellor, not President. Presidents led the individual campuses, and deans served under the campus presidents. Deans at comparable institutions served as campus heads and answered to the president of the entire district.

By 1995, the college began an initiative to purchase and equip administrators, faculty, and staff with informational technology. "Since a 1995 Pima County bond election, the college has been using taxpayer-supported bonds to finance much-needed expansion and important facility and technology improvements throughout the Pima County Community College District" (Pima Community College, Historic Profile) components of the initiative included the development of computer instruction programs, computing

programs for professionals, and eventually other programs based on the new technologies of the late twentieth century: the desktop computer, the internet and electronic mail, lasers and optics, and software development. The college chose a contract with Microsoft, so faculty computers were equipped with standard office software, such as Microsoft Word, Powerpoint, Excel, and Adobe Reader. (Pima Community College, Historic Profile).

Like other institutions in the state, PCC answered to a governing board of locally elected members who served for a term of four years. The board met monthly during the academic year to debate and vote on various issues presented to it by various groups.

The college is heavily influenced by another academic institution, the University of Arizona. The local university served as the largest employer in the city and a source of educators for continuing education for faculty and administrators, a powerful influence in funding, articulation, and program development, and provided transfer opportunities for students who wished to go on to the upper-division level to pursue a degree. Many university students took PCC courses. These ‘reverse transfer’ students often needed particular courses to fulfill coursework or had difficulties with university schedules and thus chose PCC course.

At PCC, technology initiative decisions of the early 1990s were made largely at the administration level, specifically the decision to purchase computing hardware and software to be used by administrators, faculty and staff. For example, an inter-office memo from the Chancellor to the college in May 2000 lists a “standards” section (not a specific Board) (SPG, or Standard Practice Guide) in which all technology decisions were made by the

Chancellor and Chancellor's Cabinet. The official initiative, a five year program promoted the following: a computer on every faculty member's desk, new technology classrooms and conferences, an on-line system for the library ([www.pima.edu/pimalink](http://www.pima.edu/pimalink)), an expansive web site linked to a mainframe integrated system, and Banner,<sup>®</sup> which combined student, faculty, finance, archives, class, course, program, and human resource information in one system. Other institutions had purchased this system, and the decision to purchase had been a college-wide effort. Prior to this study, the college began a massive effort to train all administrators, faculty, and staff on the use of the system. In the summer of 2000, the Banner<sup>®</sup> system went online and access became available for faculty, staff, and students through the World Wide Web. Finally, a seven-year bond project allowed the college massive expansion and renovation on four campuses, including the introduction of technology classrooms for reading, science, and technical fields.

The Desert Vista Campus (DV) is on the southwestern side of the city. Prior to use as a college campus, it had been the site for manufacturing. The 1999-2000 ethnography was done in places faculty members worked, congregated, and ate on campus. All full-time instructors had offices down one long hallway. Two faculty members shared each office, and often one printer connected to their two office computers. Almost all offices had a book shelf mounted in the middle to divide the office between the two faculty members. These rooms had no interior or exterior windows. Because of the rectangular shape of the office, one faculty member sat closer to the door than the other. However, most workdays faculty members chatted in and outside of the office. Most faculty members could be seen

in the offices if the wooden doors were left open. The narrow hallway lent passersby access to each door, so that daily people (faculty, administrators, staff, and students) would walk by and say “hello” to familiar faces. Faculty often congregated in the hall to speak with each other. In one direction, the hall turned to another hall housing all campus administration and business services offices. In the opposite direction, a double-door (always open) emptied into a main hallway for the campus that afforded congregating faculty members another space to speak. Conversations in this area were difficult to hear from the office hall. The library was situated across the main hall from the faculty office area/hallway. Faculty members had two spaces in the library where they could speak without disrupting the quiet of the library. The campus cafeteria, further down the hall from the library, also had places where faculty met and spoke. Specifically, faculty, staff, and administrators sat on the east side of the cafeteria, nearest to the windows and farthest from the doors, at tables segregated by job title. Students sat at tables closest to the door and the food. It was in these public spaces that most of the faculty comments, responses, and conversations about technology occurred for this ethnography.

During the second year of this study, the campus was remodeled. From the first year to the second, the new campus library was built with one level for student services and offices spaces were redesigned. Most faculty members, administrators and staff had to move during the summer of 2000. The campus was dedicated by the Governor in October of 2000.

## Population

This study focused mainly on the experience of 26 full-time faculty members at the DV Campus. DV had more full-time faculty than the other campus sites. There existed a distinction between instructional faculty who taught in discipline areas and educational support faculty who worked in library or students services. Instructional faculty members served on a nine month academic calendar contract, and educational support faculty members served on a twelve month calendar contract.

However, the research of the college's own statistics on adjunct faculty indicated that some 50% of college teaching was done by adjuncts, a marked increase from the original 20% set at the institution's founding. (NCA Self-Study, 2000). Indeed, in the ethnographer's department, the three full-time faculty outnumbered adjuncts 2:1.

Dickinson writes that "although research has shown that there is not significant difference in instruction generally provided by part-time faculty, concern about the use of such faculty remain" (Dickinson, 1999, p. 23.) Her overview of the research on faculty work points to the inaccessibility of adjuncts outside official class time, and the burden of the myriad other tasks expected by full-timers, who must pick up the administrative tasks associated with faculty work. Thus, this study focused on full-timers, primarily out of access to the subjects and the nature of faculty work, which involves committee and administrative responsibilities. However, this study does not discuss the changing responsibilities for adjuncts with respect to technology. I did not include adjunct faculty in this study, simply because I chose to focus on the role of the full-time faculty member only. I had, however,

worked as an adjunct at PCC for two years prior to my appointment, so I had some insights into the challenges adjunct faculty members faced.

The Faculty Senate and the Pima Community College Educator's Association (PCCEA) served as the representative bodies for the faculty members. Only one adjunct served on the Faculty Senate, and membership was elective only. Therefore, the Association was referred to as merely an "organization." Dues were paid voluntarily. PCCEA did have a formal mechanism to address the administration and the governing board with various complaints, issues, grievances: "Meet and Confer." The National Education Association (NEA) also provided representation for faculty. Both the professional and unskilled staff had national representative groups for action. During the two year period of this study, the faculty and administration fought over long standing issues of contention in the college, such as restricted budgets and autonomy and control. Because of the introduction of technology, the nature of these fights, and the nomenclature of the struggle, the discourse changed dramatically (Faculty Senate Minutes, 1999-2001).

### **Ethnographic Records**

As a participant-observer, I took part in a research setting while observing what occurred in that setting. Thus, this research was based on observation of a group of which I was a member. Participant observation is a straightforward technique: by immersing myself in the community being studied, I gained a deeper understanding of the culture of the respective group.

I recorded my observations following the basic guidelines of ethnographic research, namely beginning with observations, writing down my experiences as “jottings,” daily writing up the notes in complete form, then using the notes to create coherent narratives. Writing ethnographic field notes is a process that “consists of descriptions of and reflections on the meanings acquired and jointly constructed over the course of participation in relationships with those studied” (Emerson, Fretz & Shaw, 1995, p. 91). I kept a log for over two years, from fall semester 1999 to the end of spring semester 2001. Each day, I recorded comments, discussions, committee work, or policy change related to technology. Weekly, I expanded these jottings into full field notes. My choice for style was first person, including some dialogue. By the end of the spring 2001 semester, I had seventy-seven pages of notes. However, I had other sources of information, both given to me as a faculty member and information available to all college employees. I then began coding the log.

As a participant-observer, my research reflects my own experiences as much as my colleagues. Furthermore, my role as an insider rendered my observation specific to a particular approach in ethnographic research. The stance of the “native,” “insider,” or “member” of the specific group gave me insight into issues, situations, and conflicts that I could not access without extended involvement in the organization. Anthropologists discuss the difference between researchers who are not part of the studied culture (outsiders) and researchers who are inside the studied culture. Geertz (2003) wrote about the notion of “insider” research. He makes the distinction between “experience-near and experience-



distant” concepts. The goal for experience-near concepts, he argues, is to remain systematically aware of the “distinctive tonalities” of a particular culture. The goal of the anthropologist is “to listen to the experience-near concept, then connect these to theoretical (experience-distant) concepts meaningful to anthropologists” (Geertz, 2003, p. 7).

Ethnography itself seeks to understand the meanings of symbols, language and ritual in a culture. This “deep” approach to research is best explained by Geertz’ now famous use of Ryle’s concept of “thick description.” Thick description takes into account that various aspects of human behavior have multiple meanings. Indeed, Geertz’ work centers on a search for meaning through the examination of specific cultures. However, Geertz’ own work follows traditional anthropological practice through study in exotic places and examination of non-Western cultures. Anthropology has only recently moved from its limitation to the study of subalterns to the analysis of dominant society, such as the study undertaken here.

Forsythe challenges anthropologists to “study up” in applying anthropological methodologies to dominant cultures within the West (Forsythe, 1999). The theoretical and methodological approach used by anthropologists provided valuable tools for understanding groups and relationships within our own culture. Forsythe posits that researchers should concentrate on dominant cultures and cultural settings, such as the organizations where most Westerners work. The campus site constituted the type of setting Forsythe encouraged researchers to examine. Thus, this study utilized anthropological methodology

to examine faculty responses to technology implementation. Therefore, this study is interpretative ethnography.

Three new board policies and a pilot policy for distance education were created or were in the process of revision during the period of this study. Decisions at Pima Community College are officially made by the five elected Board of Governors of the College. The Board sets overall policies, narrower regulations, and then specific Standard Practice Guides (SPG) for regulating college business (See Table 2). From 1999-2001, technology issues were raised by the Chancellor with his Cabinet. The first policy, BP-2702, dealt with copyright ownership, an increasingly important issue as faculty members were encouraged to create online learning curriculum and enhance their current teaching with technology. The central issue for this policy for faculty involved the site of the curriculum creation; creation at a campus computer or other technology could be construed to mean that the curriculum or technology became college property. The policy left room for interpretation because the Board and administrators sought to encourage faculty engagement of technology.

Another pertinent policy, passed just before this study began, affecting the discussion of technology, related to standing committees. Regulation (RG) 1502-A (Appendix B) outlined the lines of accountability for standing committees, task forces, and faculty and staff governance review bodies.

The Chancellor delegates to the Vice Chancellor for Academic Affairs and Student Development the responsibility for maintaining an accurate listing of all of the College's standing committees and task forces, their charges, and the administrator

to whom each committee or task force reports. College administrators will be responsible for developing recommendations for one-half of the appointments to College standing committees and task forces which they or their designee will co-chair, and also for annually submitting an updated charge and/or a recommendation for discontinuance of the standing committee or task force if the charge has been fulfilled or is no longer relevant. Chancellor's Cabinet will assume responsibility for reviewing and approving all administrative recommendations for appointments to College standing committees and task forces, and for approving the creation of all new College standing committees and task. (RG-1502/A)

Table 2. Primary Document Source List: Technology Resources

<b>Document</b>	<b>Internal/External</b>	<b>Do faculty have input?</b>
Board Policies	Internal	Yes, through Faculty Senate
Board Regulations	Internal	Yes, through Faculty Senate
Board Standard Practice Guides	Internal	Yes, through Faculty Senate
NCA Self-Study	Internal	Yes, through committees
Faculty Survey: Faculty's Role and Competencies in the Application of Technology to the Learning Process, 2002	Internal	Yes, created by faculty members. Only faculty members responded
PCCEA Documents	Internal	Yes, through the organization and Senate
Chancellor's Cabinet Meetings Minutes	Internal	No
E-mails 1999-2000	Internal	No
Promotional Handouts	External	No
Committee Meeting Minutes	Internal	Yes, if they sat on respective committees
Grant offerings	Internal	No
Aztec Press: The PCC Student Newspaper	External	No
Field Notes	Internal	Yes

This policy would require regular meetings times, the recording and electronic distribution of meetings minutes, the specific purpose for the committee, and, if applicable, the length of the committee's charge. Finally, a pilot 'unit guideline'—a subset of the Board policy process—dealing with overload compensation models for televised and internet courses was created in 1999. Board policies constituted the larger rules for the college. The Board then passed Regulations, which were more specific and finally issued Unit Guidelines. For example, the televised and distance education course Unit Guideline pilot defined terms, set criteria for faculty overloads (class load differed from the regular load), outlined compensation but did not discuss pay specifically, and gave faculty options for compensation models.

### **Committees**

Several committees I observed or sat on dealt specifically with technology. However, just about every committee in the college during the period of this study in some way dealt with technology. Indeed, the closer to technology or technology issues the committee's charge, the more activity the committee members experienced. The Faculty Senate, the PCCEA, the Campus Technology Committee, the College Wide Technology Committee, the Title V Committee, the Department Chair Task Force, and the Classification and Compensation Study all dealt with technology issues, directly or indirectly during the period of this study. Also, the College went through a North Central Association (NCA) accreditation process in 2000, and a good deal of the discussion of accreditation dealt with technology (NCA Self-Study, 2000.)

### **Other Data**

The college hired a consultant to create a document reviewing the organization of technology at the college. This forty page document covered the focus group interviews the consultant had formed on each campus to assess technology at the college. The PCCEA also created several documents relating to faculty compensation packages elsewhere in the state and nation, and some of these contain information about technology and faculty work. As information on the college website changed frequently I made copies of all college sites relating to technology programs, distance learning, and other technology issues. The Title V Committee created an elaborate web site, and much of the committee's work involved choosing appropriate software for assessing student needs for students to facilitate student success. Lastly, the chair of the Campus Education Technology Committee created a faculty survey of technology for the year 2000.

### **Data Collection Protocol**

The information used in this study is largely interpretative and focuses mainly on my own experience as a community college faculty member. In countless discussions with colleagues at the college and around the nation, I have found my experiences resonate with other college faculty at various types of institutions. My protocol followed the guidelines of Emerson, et. al. 1995.) My notes were made in a timely fashion, daily, and then expanded when issues surrounding technology occurred. I collected every piece of information on technology given to faculty members. Only public documents are included

in this study, and since college policy and practice define electronic mail as not private, I included my own conversations, either face-to-face or via e-mail. I notified all faculty and the dean that I was working on this study. I did not include my summer teaching.

The new protocol is for researchers to include the name of the institution where they do ethnographic fieldwork (Wolf, 2003). However, I coded the names of all faculty members; therefore, no faculty member is identified by name or sex. In this instance, many of the faculty members at the campus site during this study have since moved elsewhere in the college or within academia.

### **Coding Schemes**

The mechanics of ethnographic research include coding systems for analysis of qualitative data. At first, I sought to create as many codes as possible (Emerson et al., 1995). Four major areas of inquiry emerged: time, work space, classroom issues, and faculty service work. When faculty discussed (complained, whined, or argued) about the implementation process, I viewed this as evidence of change and sought to understand how the process destabilized the workplace. Had I found no evidence of faculty discussion, this would have indicated negative results. In other words, without evidence of faculty comment and change, technology implementation would not have changed faculty work.

### **Data Analysis**

The data accumulation process began by using in the open coding of variables (Miles & Huberman, 1994) that which created the subcategories and in turn the larger four categories of classroom work, time, space, and faculty service work. These categories

served as my core variables, evidence that faculty discussed, complained, or took action over a specific issue or technology. This served as evidence that the variable was sound. I included information from policies and committee minutes and I compared the results of the faculty technology survey carried out by a fellow campus faculty member with my own log for triangulation. To clarify the organizational structure of technology at PCC, I also charted the college's organization using the Perez report (2000).

### **Summary**

This work used ethnographic research methods for a two-year study of technology implementation on faculty work. I used a participant/observer stance which reflected current methodological approaches for understanding deep issues in groups. A myriad of documents relevant to technology and faculty work were available to me. In chapter four, I present the findings of my study. The chapter is divided into four sections, one for each of the research categories of classroom work, time, space, and faculty service work.



## CHAPTER 4

### FINDINGS

This chapter presents the findings of a two year qualitative study of technology implementation on faculty work at Pima Community College at the Desert Vista (DV) campus site. Under the guidance of the Chancellor, administrators developed parameters for implementing technology into the classroom and faculty work in the mid-1990s. The organizational structure of the college, outlined in Board Policy 1502, offered the Chancellor leeway to create a five year initiative for technology implementation in the late 1990s. A college wide master plan, never published, was to place computers on every faculty desk, replace chalkboards with computer projection systems, and update the college information system with an integrated college-wide system. Board Policies, Standard Practice Guides, and Regulations relating to technology were fragmented across the policy spectrum from policies that governed leadership directives (Board Policy [BP] 1502 and 2403 [Appendix C]), to policies governing communication, catalog creating, and copyright (BP 3104 [Appendix D]. Standard Practice Guide 5701 & 3952) (Appendix E).

The exploratory study of this change sought to understand the process and response of faculty members as technology was introduced into their workspaces. I questioned how technology implementation changed the work of faculty in the community college setting. The analysis of data and presentation of findings derived from the ethnographic record, the coding process, subcategories to categories and the core variables or concepts which emerged from the record taken from August 1999 to May 2001.

## Classroom

As with other community colleges, the classroom is a category that is central to both administrators and faculty because teaching is the central activity at PCC. The administrators formulated a technology policy through the initiatives introduced in 1995. The Chancellor made it clear that the goal of technology implementation was to align student experience with the workforce. When assessing the future of community colleges, the Chancellor noted: “For our country to be competitive, we need a world-class workforce” (Aztec Press, p. 4.) In the 1990s, the administrators at PCC aligned the community college with the private sector, and thus moved away from promotion of a liberal arts education. The private sector, therefore, served as the model for organization and structure. However, institutional structures at PCC often created gaps in communication, access to materials, and technology training. PCC was not unique.

Similar to other community colleges engaged in technology implementation, the organizational structure of PCC hindered technology training and development. “[T]he organizational structure of reporting also seemed to hinder the implementation of technology training and innovation vs. supporting these efforts” (Pima Community College District Educational Technology Organizational Evaluation, 2002, 11.) At PCC, informational technology services were housed centrally at the District Office. For example, faculty had to contact the district to receive e-mail addresses, server space for web pages, and requests for hardware had to go through the District (i.e., administrative) channels for approval. Faculty in the focus group frequently complained about “the gap”

between the discussion of technology and access to appropriate material (Pima Community College District Educational Technology Organizational Evaluation, 2002, 21-23.) One difficulty with the discourse surrounding technology implementation lies in the difference between administrative and faculty perspectives.

The implementation of technology changed the work of faculty in the classroom. This category emerged from the ethnography, because much of the work of faculty at the community college level revolves around teaching. As in other types of higher education, such as Reed, faculty members at community colleges do not get promotions or tenure based on scholarship. For example, the professional opportunities stem from innovative teaching, development of programs and curriculum, and community service. For example, in 2000, the college offered small grants (under \$1,000.00 per request) for faculty members to integrate technology into their classrooms under the Computer Education Technology fund. A “Notice of Opportunity” went out in an August 24, 2000 memo, announcing the creation of a contact person for technology on each campus. With this position came funding for curriculum development related to technology. In a March, 28, 2001, faculty members at the DV campus were invited to submit entries for “Program Development Proposals.” This funding sought “projects that enhance student success at the Desert Vista Campus” related specifically to technology.

Therefore, technology implementation in the classroom constitutes a large part of this study. Specifically, Rhoades (1998) documents the process of deskilling faculty work through technology. At PCC, through the implementation of technology, control over what

happened in the classroom shifted out of faculty hands. I noticed issues related to the implementation of technology early in the fall semester of 1999.

For example, the campus had a new library room designated for computer use. The room was set up like a lecture hall. The students had tables with computers, instead of desks. Designers had positioned the desks on the right and left side of the room, creating a nave for speakers to walk to the whiteboard area at the front of the room. Four or five computers sat in a row on each side. In the front of the room a computer projected images onto a mounted, mobile Smartboard.® This technology allowed the instructor to project presentations from web sites for student viewing.

The regular classrooms used for teaching social science courses, however, had no computers and no permanent technology. Only the white boards, which had replaced chalk boards, reflected the push for technology. Because of the white boards and the new paint, some rooms were so white that students and faculty complained about the glare.

### **Blackboards, Whiteboards, and Smartboards®**

Much of the technology at the campus was new. Blackboards still hung in half the rooms for the first year of the study. They were replaced with whiteboards by the second year. These synthetic boards, also known as “dry erase” boards used markers instead of chalk. The look of the classrooms changed from academic to corporate. The boards made projections easier to view, although most rooms still had screens. Plus, four classrooms had one board that connected to a computer, incorporated the projection of video and CDs, and one computer screen. Because replacing the new boards incurred cost, most of the

classrooms were first equipped with the boards in the front of the room, and then additional boards were added, usually by faculty request. For example, math and chemistry courses often needed more board space. The technology for projecting information, and the Smartboard<sup>®</sup> capacity for projecting notes, and even saving these notes, was not fully utilized the first year of this study. Indeed, some faculty preferred the boards, because the space provided was large enough to leave equations visible to students while explaining and writing out new ones.

One classroom was equipped with white boards installed the full length of three walls. The classroom was redesigned to include computer access and ultimately online capacity. In one particular example, a department chair suggested that the use of this Smartboard technology, which could record notes taken by the instructor in class, could be saved for future use. Since this material was created on college property, the notes could be taken and used by another instructor. Although the Board Policies, Standard Practice Guides, and Regulations supported faculty ownership of their work, the March 2000 meeting of the Campus Technology Committee does not confirm this. Another faculty complaint was the cost of mounting the White Boards, which were simple replacements for chalk boards. In an informal discussion over lunch in late February 2000, the department chair for the science faculty mentioned how “expensive the new White Boards are” in comparison to regular chalkboards. They were an expense incurred without marked change for those faculty members who simply wrote in ink markers on them. This complaint was echoed by faculty at other institutions. For instance, University of Minnesota physics

faculty argued that the change from chalk boards “doesn’t have anything to do with education” (Retrieved 10/05/04 from [www.cnn.com](http://www.cnn.com).)

Originally, the DV campus was a manufacturing site, not designed for faculty use. The conversion of the old section of the campus from industrial to academic caused some problems for faculty. Incoming faculty and administrators petitioned for well-equipped laboratories with projectors, computer access, and online capacity. These rooms, and these faculty members, were the first to use computerized presentations in their daily teaching. Only four science rooms were outfitted with computerized projection screens. Even though most of the other rooms had the capacity for online access, the connections rarely worked. While the implementation process was intended to bring teaching into the classroom, such problems posed obstacles to faculty use of the technology.

To use the Smartboard<sup>®</sup> in the classroom, faculty members had to first reserve the equipment from the Audio/Visual or A/V office, which was housed in an old closet next to the Faculty Resource Center. The site was also used by clerical staff to make copies, send faxes, manage mail, and other support functions for faculty, staff, and sometimes students. A/V handled the projection system, housed overhead projection machines, stereos and CD players, slide projectors, and a television/VCR for classrooms that were not equipped with mounted TVs. The second year of the study, the campus acquired another television/VCR machine that also had DVD capacity.

After making a written request to reserve the equipment, faculty members would wait to be certain no other faculty member had reserved the projection system. (The A/V

policy was first-come-first served.) Faculty members could request a one-time or semester reservation. If no one else had reserved the equipment, faculty members could ask either for delivery of the equipment (set and ready to use) or could simply pick up the machines themselves. This procedure depended on the availability of the A/V staff: one individual and two student aides. During the semester, staff often had problems with faculty members taking equipment from one room to another.

When discussing these changes to classrooms, faculty members had similar responses. In informal conversations in hallways, offices, the library, and the cafeteria, faculty members commented on problems with technology implementation. Faculty members often discussed the cost of the equipment. “Is it really cheaper to replace chalkboards with White Boards?” said one faculty member over lunch. The comment, word for word, was repeated by another faculty member a few weeks later.

### **Handouts to Overheads to Web Sites**

Most faculty members found it very difficult to use the projection system. To set up the machine took about fifteen minutes, the time allotted between courses. Simply moving the technology could subject the system to damage. In the spring semester of 2000, the Social Science Department chair began a campaign to have the projection systems mounted permanently in specific classrooms. The science faculty, he argued, had permanently assigned rooms with projection systems. This made it easier for science instructors to use the technology to teach, because they could prepare for classes and remain assured that the technology was available to them in the classroom. In the two years of this study, social

science faculty never received the funding for the system. Neither did social science faculty get a commitment to designated rooms for use of this technology, although courses for the rest of this study were generally assigned to the same five rooms. Because it was easier and more accessible, the social science faculty took to reserving the overhead projector and making handouts for students, using the low technology.

However, in the fall semester 1999 at DV, four courses were held in the old library's computing instruction room. (A new library was built the second year of the study.) The room was laid out like a small classroom, with two Whiteboards in the front of the room, a small lectern, and four rows of tables. On top of the tables were computers equipped with standard software programs; these computers were also connected to the internet. Courses offered in the room ranged from mathematics to sociology. The courses were listed as traditional lecture classes. However, because each student sat behind a computer desk, faculty members said that they found it hard to maintain control of the classroom. Students played on the web during lectures, often deviating from web sites relevant to the lecture to work on material for other classes or personal matters. A third of the way into the semester, the library computing room had to be re-fitted for internet capacity, and so one class was moved into the cafeteria. One faculty member said that it was "quite challenging to try and teach over the din of the post-breakfast hub," and other students often sat in on class discussions. After a month, students moved back into the library computing room.



Faculty members complained this was an example of poor use of technology. According to administrators, students had to leave classroom space because this space was used to train administration and staff on the Banner<sup>®</sup> system. For these classes, technology implementation actually hurt enrollments, the opposite of the intention of the initiators of technology implementation. In the fall of the 2000 semester, a mathematics faculty member complained that he too had taught a summer course in the cafeteria, owing to construction on the campus. He felt that he got little support for his cause from administrators and lamented the push for capital development at the expense of teaching.

Faculty members were encouraged by a fellow faculty member, a computer whiz, to develop their own web pages. These web pages were local and difficult to access because of the long web addresses. During February 2000, a student support staff member indicated that these faculty web pages were similar to student government web pages in that both were local to the campus. She lamented the “lack of support” for development of more student-friendly web sites. The controversy over support was not unique to PCC. Faculty members around the nation struggled with administrators over the development of online courses, web-based material, and the development of educational technology for classroom use (The Chronicle of Higher Education, August 13, 2004, A27.) PCC had no locus for the development of educational technology for classroom use by faculty ((Pima County Community College District Educational Technology Organizational Evaluation, April 2000, 11.) Faculty members were housed on their local campuses, yet support for web services was largely housed at the District Central Office. The standard practice guide, a

sub-division of Board policies relating to college business, covered the creation of faculty web-pages. The guide gave faculty members control and responsibility of the web page; however, support for creating such pages required extra training and time not discussed in the guide (PCC SPG, 701/AB.)

### **Library and Testing Center**

During the period of this study, the process of technology implementation altered the classroom work. Specifically, some of the work of the classroom occurred in the library or the library's Testing Center. Faculty members on DV campus were encouraged to bring their students to the library, so that students could learn to use the online resources. These resources included new search engines, online reference material, the progressive purchase on e-books (entire manuscripts available on the web), and printing and copying systems (Library main page, [www.pima.edu/library](http://www.pima.edu/library) (Accessed 9/15/00.)) The library staff, which included two educational support faculty members (librarians with faculty positions) created a one hour seminar for instruction on the use of the new computer systems.

During each semester of the period of this study, faculty members were encouraged to use this resource for teaching. However, this alternative to the classroom, and new teaching methods created new problems. For example, in the spring semester of 2000, in the second Faculty Senate Meeting, another problem emerged relating to technology. On another campus site, the campus president shut down the computerized Testing Center, because he felt that faculty members were abusing the Center. Some Senators hinted that the Testing Center had been shut down because certain, unnamed faculty members had sent

their classes to the Testing Center during scheduled course time. This violated their teaching course load time commitment. One Senator, a member of their math faculty, explained how he and his colleagues used the Testing Center extensively. For these faculty members, having students test on the computers in “the Center freed up valuable class time, allowed students opportunities to re-take examinations or challenge examinations, offered students flexibility in testing times, and increased retention as students did not have to be in class to take examinations. A missed class, therefore, did not necessarily result in a lower grade.” Most of the Senators agreed. It also meant that traditional lecture courses were being treated as self-paced. Some Senators voiced fears that their own Testing Centers would be closed. Faculty members were thus using technology in a manner unintended by the administrators who planned the implementation. By having students test in the center, faculty members freed up class time for instruction, relying on the center’s technology for testing.

Although DV campus faced the threat of a Testing Center shutdown, the campus administrators decided against this move. Through faculty meetings and informal discussion, instructors voiced concerns that the DV campus would suffer a similar fate. During the fall semester 2000, the campus president set a new procedure for the DV testing center; faculty members could not use the center to administer final examinations. The staff was unclear on the nuances of this procedure, and even make-up examinations caused difficulties. (The exception was for disabled students in the Disabled Student Resource, or DSR program, who could take finals as their disabilities needed to be accommodated with

increased test times, a quiet room, or specialized voice recognition software.) Several faculty members simply resorted to calling their final examinations by number, instead of “Final Examination,” to avoid any hassle at the end of the semester. When faculty members on the campus used technology to expand their scheduled class time, this created the perception that faculty were not meeting their responsibilities in class, where testing had traditionally taken place. Here, a technological resource that could have eased the “time famine” worked ineffectively.

Therefore, faculty received mixed messages about the use of this alternative classroom. Encouraged to use the new technology and enticed by the promises of improved student performance, some faculty members at DV embraced the library resource, while other faculty members simply ignored the resource altogether. However, as Rhoades (1998) predicted, the social relations of the faculty, students, staff, and administrators changed through the implementation of the computerized system. Faculty received mixed messages about Testing Center use. Staff took on increasing responsibility for managing actions that had previously only taken place in the classroom or the instructor’s office. Faculty felt that students were caught in the ever-changing and sometimes contradictory rules governing library use and appropriate testing policies.

### **Curriculum and the Web**

Rhoades (1998) asserted that faculty, as “managed professionals” were losing control over the curriculum. However, loss of control of the curriculum by faculty members at PCC was not originally driven by technology, but through re-organization of the

administrative roles and the diminution of the function of various committees. As this situation progressed, technology implementation complimented this process; standardizing degrees, programs, courses, course descriptions, course performance objectives, and course outlines became a major task for faculty and administrators.

Re-organization of the college occurred in the early 1990s, under a previous Chancellor, whereby cross-college faculty discipline committees were dissolved and replaced with campus based departments (Fridena, 1997). In this process, faculty no longer engaged in master scheduling (scheduling courses across the campuses); departments reflected campus interests, not specific field areas, and the college created the new position of “curriculum specialist” for each campus. The curriculum specialists took responsibility for aligning and maintaining curriculum, answering to the administration rather than to peers in the discipline areas (BP 3105, SPG 3105-A, and RG 3106. [Appendix F]).

By the final year of this study, all degree, program, and course information was available online and was to be connected to statewide course articulation information via the web. The newly appointed curriculum specialists were responsible for keeping degree requirements, programs, and courses current on the college web pages. Part of this push included a drive for more online courses.

For example, in the fall semester 1999, faculty members on the campus were encouraged to attend a seminar on web-based course development. The teacher, an instructor himself, had been instrumental in developing an online course and one televised course. Campus and college-wide leaders encouraged faculty members to explore the

process of curriculum development for online learning. The educational technologies (ET) included specific software and web development for courses, such as Plato.®

The instructor's own televised course was offered via one of PCC's two cable television stations. The online courses usually involved minimal meetings with students, perhaps one meeting at the beginning of the semester. The instructor came to DV campus, arranging to meet with faculty in the library computing room in late October. This is a busy time in an academic semester. Only one faculty member came to the meeting. This is telling. Half of the DV faculty members did not have the training to develop their own online course. Faculty members cited a lack of time to work on this kind of course development.

The instructor began the small meeting with an interesting discussion over software options for instruction. He knew the history of software choices for curriculum development. Four DV campus faculty members later mentioned that they had participated in a pilot test of some educational software which was unsatisfactory to faculty members across the college. They tried the software and rated its performance as poor. However, the administration decided to purchase the software anyway, with the result that few faculty members across the college chose to use it. A scan of the web delivery courses on PCC's college electronic catalog showed that almost every distance learning course developed by a full-time faculty member used the software of their choice, not the administrator's choice (PCC Catalog, 2000.)

The instructor explained that he was happy to initiate the distance learning programs, because he was able to choose software. The instructional software he chose in the early 1990s became increasingly expensive to purchase. But early efforts at purchasing the software had saved the college money. (The instructor noted that purchasing the software “when it was new and cheaper kept upgrades affordable.”) The instructor enjoyed working with the system, and had worked with one of the librarians—an educational support faculty member—to develop better web sites. Both men believed that technology enhanced the learning process and that distance learning was the wave of the future. While faculty members expressed interest in developing coursework using the web, only two found the time.

In my own personal experience, I went to the West campus the following afternoon to learn how to scan slides into Powerpoint<sup>®</sup> to “enhance my lectures.” The work was so tedious I left after an hour. One year later, the department chair pointed out that images such as those found on the slides, were available from textbook companies, which provided such programs for free, pre-designed and matching the format of their textbooks.

Most faculty members did little more than set up a web site, occasionally updating it. Only one faculty member, a computer technology instructor, regularly updated her site. She also worked with most faculty members at the study site to upload syllabi and other useful documents, assist with Banner<sup>®</sup> training, and explain the use of newer equipment.

In informal conversations, faculty members voiced fears that the encouragement of the development of online courses belied a move to reduce the role of faculty teaching. As

Rhoades (1998) discusses, many senior faculty had seen a similar push with television in the 1970s. Indeed, almost every classroom at DV was equipped with a mounted TV/VCR. Several faculty members questioned the cost of such equipment when funding for hiring instructors was so restricted.

As Rhoades (1998) mentioned, several faculty members voiced concerns that conversion of their teaching materials into online courses would alienate them from their work, and thus “de-skill” faculty labor by making it redundant or tantamount to flipping a switch. At the January 2000 campus faculty meetings, the newly elected president of the pro-technology consortium EDUCAUSE came to speak to faculty at the behest of college administrators. While his comments concerning the need for technology were met with little resistance, he did generate faculty response with a comment about the institution. He asserted that the college was an “employee friendly institution, but needed to become a student-friendly institution.” Two faculty members interpreted this comment to mean that “employee” meant “faculty” and that this indicated that the EDUCAUSE leadership considered technology a replacement for faculty. “Technology is a way to replace faculty cheaply.” In informal conversations later in the month, faculty members mentioned the creation of the “curriculum specialists” and IT personnel to manage technology as a mechanism for replacing faculty control of curriculum and teaching.

However, the better criticism of this process is that administrative implementation of smaller software and larger college computing systems did little to change what was taught in the classroom, but created another system that required a lot of faculty and



administrative labor and cost to manage and maintain. Keeping materials “current” involved less discussion about pedagogy and current discipline area research and more discussion of the appropriate paperwork necessary to place course descriptions, objectives, and outlines up-to-date on the college web pages. This problem was reflected in numerous college-wide discipline area committee meetings held throughout the fall semester 1999. Another committee dealt with the numerous new challenges to the curriculum, to pedagogy, and to the institution created by the new technology. As predicted by Rhoades (1998), the outcome was the de-skilling of faculty work.

Another meeting set up by the college-wide technology committee met in the spring semester 2000. It dealt with the pedagogical difficulties raised by distance learning. Well-attended, all sitting members of the committee, administrative and faculty, had experience in developing courses using technology. The committee’s main focus was a new board policy dealing with distance learning curriculum development. The policy covered several issues: intellectual property, course load issues, and compensation. This meeting carried a collegial tone, as committee members addressed many sides, both pro and con, for educational technology. In one exchange, an administrator answered the faculty concern over class size by including retention issues. While faculty members mentioned the difficulty in making time for students online, the administrator voiced concern that these large classes could lead to larger attrition. One of the faculty members from a campus with a history of experimentation with learning modules cited a history with self-paced learning modules with a low completion rate. (In the social sciences department on the DV Campus,

the department chair commented that “self paced courses don’t do well because our freshmen don’t have the self-discipline to finish.” He was not convinced that adding technology would help lower the attrition rate.)

One faculty member, who had taught the online community college certification course, explained how student/faculty interactions change from classroom environment to a distance learning environment. Whereas students in class may rarely or never interact directly with faculty, distance learning students are usually required to telephone, e-mail, or come in to meet with faculty during office hours. Office hours for faculty are the same as class time, yet the distance learning format makes the office the classroom site. Some committee members suggest capping online courses at 30 students, well below the 42 student per course guideline. This committee proposal contradicts the promotional literature on distance learning, which touted opportunities for huge enrollments that enticed administrators to embrace educational technology (Anaham, 1998). Another committee member, a veteran of the college, praised the college intellectual property policy, which defaults in protection of faculty work and faculty members’ ownership of their created curriculum.

Thus, as Rhoades (1998) predicted, the nature of faculty work changed with the implementation of technology. Faculty experienced a de-skilling of their work as their control over the curriculum diminished. The creation of the positions of campus curriculum coordinator (Fridena, 1997) combined with the implementation of technology, gave faculty less control of the development of curriculum. The social relations between faculty and

administration changed as faculty lost power to control system changes to their work. The example of the technology meeting provides evidence of faculty as reactive to the change wrought by technology; faculty did not have much input over the decisions involving the adoption of the computerized system. Some, like the senior instructor who used her computer as a plant stand, refused to use the technology.

### **Perceived Performance and the Web**

This research does not address student learning, but it does address faculty perceptions of student learning. The promotional literature, administrative advocacy, and frequent messages to faculty asserted that student learning would improve through the implementation of technology. However, over the period of this study, faculty comments, interactions, and experiences reflected, instructors felt that technology either did little to change student learning or in certain instances impeded student learning. For example, early into the second semester of the study, campus librarians initiated a discussion with faculty about the difficulties they had with students using the new computers. One of the librarians served as an educational support faculty member, the other was staff. Both vented their “frustrations with students’ lack of computer skills.” A great deal of their time had been used teaching students the basics of computer use. The online catalog was new and most students did not know how to retrieve books. The librarians discussed the concept of “digital divide”—the socio-economic gap for lower class students and their disadvantage with respect to computing skills. Many of the students on the campus site are Hispanic, and some come from families who had recently emigrated from Mexico. Others had computers

in the home, but have not used them for academic purposes. Thus, students were unfamiliar with using computers for academic work. Worse, the administrative decision to eliminate the old card catalog made previous library experiences obsolete, so the only mechanism for library searches was the computer.

The administrators sponsored seminars, speakers, and training that advanced the notion that student learning is enhanced through different modalities, access to information, the increased availability of sources, and the ease of editing created by improved word-processing software. All College Days, campus faculty meetings, and special events featured the adoption of technology as a positive process for the college. A college wide-committee was created just prior to this study to deal with technology issues.

Administrators mandated that each campus set up a committee to deal with local issues surrounding technology. In 2000, administrators offered small grants to promote the use of technology in the classroom. The campus president copied “Innovation in Teaching Abstracts” from X (National Institute for Staff and Organizational Development) and placed them in faculty mailboxes. Titles such as “Successful Strategies to Support Student Learning and Retention and Online Courses” (NISOD Innovation Abstracts, Volume XXIII, Number 4) offered that colleges could increase enrollments and make “students responsible for reading each chapter.” Faculty members mentioned in the article were “amazed at the level of exchange that took place online.” Here, making students more responsible and more responsive was directly linked to the technology even as the article mentions that Atlantic Cape Community College, the source of information, was still

engaged in a study of the effectiveness of online instruction. The article does not indicate how or when the study began, measurement mechanism, or report results. Readers are to infer that technology is good and will enhance enrollments and teaching. Therefore, technology improves instruction.

However, the faculty members' perceptions of experience with technology were often the opposite. In 1999, DV students had little access to online information from the computers. This began to change by the fall semester of 2000, when new library equipped with computers and a library computing classroom was installed.

In August 2000, faculty regularly took students, class by class, to the library computing room. Most faculty members then devoted an entire class period, one for every course, to the task of learning to use the library systems. This was especially pertinent for the social sciences, humanities, reading and writing courses, and ESL, although these learning units were not always successful. For example, one of the two educational support faculty librarians taught each course. They instructed the students on how to access the college homepage, how to link to the library main page, how to access books, news and scholarly articles, search engines, word processing materials, and how to access the local universities' library system. However, in my own experience, which was verified by other faculty, I brought my class to where the librarians had tailored the instruction to specific topics, for example one assignment involved a scholarly bibliography. When grading the second assignment, I wrote in my log notes that " I found that less than 20% of my students included a bibliography! In comparison to previous years the reverse was true. Without the

library instruction, 80% of students had included an acceptable bibliography. One student chose abortion as her topic. She questioned my demand for a bibliography, complaining that, 'I can't find anything but a couple of web sites.' This student had not only attended the library session where I helped her look for scholarly sources, but I had specifically brought a famous history book on reproductive rights to class, handed it to her, and told her to put it in her bibliography!"

Why in the previous year had students completed the bibliography assignment? Students lacked the skills to identify scholarly material on the web. The format for the presentation of information had changed, and students' research skills were now obsolete. In numerous discussions with faculty, all mentioned problems with student learning and the new technology. "It doesn't help them if they don't use it," one faculty member commented. "We still teach critical thinking skills; if they can't think critically, the computer won't help them," said another.

In the late fall 2000 a language faculty member e-mailed an article to the campus faculty list serve in which the author discussed student preparation levels and faculty responses. She moved to require computer-generated student assignments and submissions for all of her courses without exception. Faculty discussed how this changes the requirements for student learning and competencies. Prior to the 2000-2001 academic year, two faculty members accepted handwritten assignments from students. Over the period of this study, faculty course requirements were increasingly tied to technology, from requiring computer generated essays to web search exercises to testing on computers.

Faculty at the DV campus voiced vociferous opposition to proposed board changes in the textbook policies. Textbooks increasingly came bundled with CDs and other web enhanced programs, raising the cost of books for students. The faculty debate focused on the administrative push for a “one book per course across the college” policy suggestions. The policy was introduced on the floor of the Faculty Senate in February 2000, but did not go before the Board of Governors. The humanities and social science faculty voiced concerns about student learning and academic freedom. Some faculty even chose materials for their courses online, and the textbook publisher bundled and sold the copy through the local bookstore. Increasingly, the bookstore’s textbook debate revolved around technology and the one book per course across the college issues. Faculty members would no longer pick their own textbooks. Again, this reflects Rhoades (1998) assertion of the de-skilling of faculty work, in this case through administrative encroachment on curriculum issues.

### **Time**

The implementation of technology affected faculty notions of time. Faculty teaching load, office hours, required hours of advising, the times spent in committees, and other ties on faculty time changed dramatically with the introduction of technology. Perlow (1999) found that technology created a “time famine” for engineers. Likewise, DV faculty almost unanimously claimed to have “a feeling of having too much to do and not enough time to do it” (Perlow, 1999, p. 57.) For instance, while the yearly faculty contracts and academic calendars appeared to delineate faculty time commitments, the implementation of technology created more responsibilities and broke down previous parameters, such as load

requirements, office hours, advising time, time spent on committee and other work.

Throughout the study, I took ethnographic field notes daily, faculty consistently commented on time as a resource in short supply.

### **Teaching Load**

New faculty signed their one year contract in early August, before the fall 1999 semester began. Senior faculty received their contracts via post in mid-July. Most taught five classes, or fifteen credit hours per semester. This “norm” on paper, breaks down in practice. During the period of this study, only two faculty members took release time to work on projects related to technology. If release time was unavailable, faculty did not have time to develop their curriculum. “Instructional faculty members shall maintain office hours consistent with their assignments and shall be available to students.” The Faculty Personnel Policy Statement also offers an example. “This equates to five office hours per week for Faculty members teaching 15 load hours of regular load during a 16 week semester.” (Pima Community College, Faculty Personnel Policy Statement, 2001/2002, Article II, General Responsibilities, Section 3.)

In the fall of 1999, many faculty who wanted to do more innovative things with technology in the classroom were derailed by time constraints. In other informal conversations, faculty revealed that class work and committee work created a strain on their time. The October 1999 meeting with a faculty member about developing online curriculum, for example, did not result in any campus member developing online coursework during the period of this study. Faculty members consistently mentioned time



constraints in conversations about these classroom efforts. In an informal lunch conversation, as faculty members discussed the advantages and disadvantages of integrating more web-based material into their lectures and discussions, faculty members clearly viewed such development as “extra work.” One lamented “When will I find the time?” In an April 2000 e-mail, another faculty member suggested that time for web development existed only in the summer. “I propose that we do this sometime during the summer.” Because during summers faculty did not get paid, few took an interest in this option.

### **Office Hours**

Faculty members, by contract, were required to keep one hour of office time available per course per semester. Usually, this meant five hours per week. (Faculty members with leave time kept less; and, any overload—a sixth or seventh class—did not require extra office hours.) Instructional deans required that faculty members submit their scheduled office hours along with the new online “faculty loading form” which identified the courses faculty taught during the 9-month academic year, office hours, and committee work.

As time went on, fewer and fewer students came during posted office hours. During the second year of the study, when faculty offices were divided into “pods,” students either visited my office by appointment during non-office hours or simply caught faculty members in the pod during other times. As contact information was required on all syllabi, all faculty members at the site found that students increasingly contacted them via e-mail from 1999-2001. Faculty felt that students missed out on the one-on-one

interactions. One of my pod mates commented that she “missed seeing her students” and that “they come by less and less, thanks to computers and e-mail.” I wrote the following in my field notes in late September, 2000. “I asked my students this morning, whether they viewed my office as “safe space” or preferred that I speak to them in the halls and in our campus atrium. They saw no difference in *where* I spent time with them; even commenting that offices are “where people go when they are in trouble.”

### **Advising**

Faculty members, by contract, were expected to advise students for at least 27.5 hours per 9-month academic year. This involved a flurry of advising at the beginning of each semester. When this study began in August of 1999, instructional faculty members joined educational support faculty members and academic advisors in the registration center. Faculty sat at computerized workstations, and students were sent over to faculty on a first-come-first-served basis. The use of the Banner<sup>®</sup> system was essential to this procedure. For the first year, faculty were required to attend four hours of training on how to use the system to register students, check for current addresses, and access to student records. During the All Campus Day orientation in August 1999, one of campus deans joked in a televised skit that “after 96 hours of Banner<sup>®</sup> training, I was finally able to help my secretary fill out an expense form for \$36.95.” The audience broke out in laughter. Training on the system took a lot of faculty time during the period before fall semester classes began, which was a hectic time for faculty and administrators who were preparing for the upcoming semester.

The following year, the Banner<sup>®</sup> system went online, and many faculty members simply logged on and used their pages to check information such as enrollments.

Department chairs continued to use the Banner<sup>®</sup> system for some tasks, such as adjunct faculty rosters. It became easier for students to access their personal, financial aid, and academic information online. By the end of the 2001 school year, advising in the registration center was largely reduced to teaching students how to use the online system.

The construction of the student “one stop” registration, financial aid, advising and counseling center was completed in the fall semester 2000. When faculty members arrived for the four hour blocks of student advising, they were assigned to a computer terminal equipped with hard copies of the catalog, printed class schedule, and program completion sheets. About a third of the time in this advisory capacity, the computers either shut down or were too slow to process student information. As students were registering across the college, the system usually became overloaded. The deans actually e-mailed the campus community asking faculty members, administrators, and staff to log off unless they were actively registering students.

One of the most frustrating aspects of this activity involved timing. Students did not magically come into the advising center when a representative of their major sat at a terminal. Often, general education faculty members were teamed with occupational faculty and vice versa. Because their curriculum required more orientation, occupational faculty members voiced their concern with this process and students were often “misinformed” about their programs. Likewise, general education faculty members in specific disciplines

increasingly did student advising in their offices, not in the registration center. By the end of the study, the college had re-evaluated office hours and began to discuss even the idea of at least two hours per week of faculty time designated as “on line” advising. However, this issue was not resolved during the period of this study.

### **Committee Work**

During 1999-2000, some faculty members were assigned to an excessive number of committees. Contractually, faculty members were required to sit on two committees: one campus committee and one college-wide committee. During the first year of this study, the social norm for faculty meetings was face-to-face. However, during 2000-2001, faculty members across the college increasingly used online messages to communicate. Correspondences became increasingly formal, as information sent via e-mail served as a record. However, monitoring of faculty commitment to these meetings became increasingly difficult for administrators. The end result was that all on-line faculty meetings must be reported.

### **Other Work**

In late October, the central administration scheduled a meeting with a higher education consultant, who was working on an organizational model of technology systems at the college. The meeting was lively and heated. Several faculty members asked that administrators consider offering “release time” from classroom load hours for technology training. The meeting went on for an hour and a half, significantly longer than most other

committee meetings. Faculty members noted that administrators were willing to spend more time than money on technology issues than other issues instructors held as more important to student success. After this meeting, faculty members discussed the issues raised in the hall. One educational support faculty member, having worked at the college for many years, recounted how committees were often formed, faculty input solicited, and “the committee’s suggestions go off into la-la land and nothing happens.”

A week later, in early November, faculty members expressed strong feelings about this type of meeting. Some felt that the practice of convening a meeting and then doing nothing with the discussion was a waste of time. Another faculty member mentioned that she felt “overwhelmed” with “too many responsibilities that were once doled out to other workers.” For example, the word processing capacity of the new technology eliminated some of the clerical support, so faculty had to do the work themselves. This relates to Rhoades’ assertions about de-skilling/en-skilling faculty (Rhoades, 1998). While some faculty knowledge about technology, in large part faculty members wound up doing more of the clerical work necessary for teaching and committee work.

The typical pattern during the two year period of this study for time witnessed a rise in the “time famine” during mid-semester, in late October and early November, and again in March, before and after midterms. In my log I noted that I “had no time” to attend to activities outside of classroom teaching and committee work. In numerous hallway discussions, over meals, before, after (and sometimes during) meetings, faculty at the DV campus expressed concerns over the lack of time. During the semester, faculty had less and

less time for reading scholarly journals, engaging in other scholarly activities, for in-depth conversations about pedagogy and college issues. During the 2000-2001 academic year, three of the five faculty members who shared the office area all suffered health issues they believed related to stress. They attributed the stress to increasing demands on their time.

### **Space**

The implementation of technology changed how faculty worked and saw the places where they worked. Vallas (1999) found that boundary delineation changed with the implementation of technology into work places. DV faculty members also faced changes to their work spaces with the implementation of technology. Faculty work at the community college revolved less around the faculty office and occurred in such places as the library, the atrium area near the cafeteria, or the classrooms. Increasingly, faculty members took their work home, because they were bogged down with more work, including the clerical duties now relegated to faculty through the implementation of computers. After the design changes to faculty offices during the summer of 2000, the work space for faculty changed dramatically. Faculty moved from shared offices in one campus location to separate offices located around the campus. The design change supported larger numbers of faculty and was a cost-effective solution to problems arising from the expansion of DV. For example, during the period of study at DV, seven full time faculty members were hired; however, only two full-time clerical positions were added for the entire campus. Thus, faculty work changed through the addition of these tasks. The

boundaries of “who is supposed to do what” changed because of technology implementation.

### **The Office Equipment**

For the first year of this study, 1999-2000, 20 faculty members shared offices; three worked as educational support faculty and two had offices in off-campus locations. Faculty members in each office were divided by a large metal bookshelf that acted as a cubicle wall. Within each office faculty members were assigned computers and desk printers. Some offices had laser printers and others had ink jet printers with color. Most printers were second-hand. The computers came with licensed software, usually a Microsoft<sup>®</sup> office package, including word processing, spreadsheet, presentation, and calendar software. Each computer was connected to the central system and to the internet. Occupational faculty off the campus site had no access to e-mail during the first year of the study.

During budgetary meetings in the spring semester 2000, social science faculty requested computer hardware including zip drives, color printers, and funding for software and educational videos. Faculty members as a group received more support for shared equipment, such as the software and videos, which were housed in the library. During the two year period of this study, before the new office spaces was remodeled, faculty members held many conversations with their office mates concerning technology. Most faculty members, although not all, were paired with other instructors from their department areas. Also, the proximity of most of the full-time faculty down one long hall created closeness for discussion and exchange. With open doors, faculty could often hear not only their office

mates, but conversations in the hall and adjacent offices. Although this might have led to a great deal of animosity, the office layout created a vibrant forum for exchanges. Faculty members lamented the loss of closeness when the office structure changed a year later. Offices had been re-structured to accommodate the cables necessary to handle the PC traffic coming from each desk.

After the summer construction of 2000, offices areas were re-designed such that each faculty member had his/her own office. Offices were clusters into three main “pod” areas: A, B, and C. Pod A, for example, had seven offices. Faculty members who had once seen each other daily now saw some colleagues only for specific reasons or by happenstance. As the building had few windows, the offices were designed with a wooden door surrounded by glass windows to the side of the door, for most of the length of the office, and above the door. Students could see in; faculty could see out.

The offices were 8’X 9’ with 8’ ceilings. With the installation of new, gray, computer desks, the rooms appeared very small. Because the desks were designed for private sector work, they were ill-suited for most faculty members. The new design featured only two bookshelves; therefore, an extra four level bookshelf was moved into each office. The walls in some offices were painted with muted colors, and some simply featured white walls. Fluorescent lighting came from above. The new center of the office was the PC computer. Two faculty members on the DV campus retained their MacIntosh computers, and both had difficulties finding compatible printers. By the second year of the study, one of the Mac users opted to change to a PC.



This re-design was not unique to the DV campus site. All brick and mortar campuses at PCC saw some construction begin during the 1999-2001. The faculty offices were re-designed to accommodate the hardware for the new technology; indeed the offices design reflected a dot.com company more than academic office space. The indoor windows reflected cubicles more than quiet space for study and meetings. During the September 8, 2000 Faculty Senate Meeting, Senators referred to the design as the “fishbowl effect.” One Senator commented that students could look through his window, see his computer, and tests. Another claimed that this design led to a breach of student privacy, and passers-by could look in and see confidential student information on the screens of working faculty members. Two Senators commented that they felt “pushed off campus” as their offices afforded no privacy. And most administrative offices, they argued, while having the “fishbowl” windows, were also equipped with window coverings for privacy, making the open office design irrelevant. The Chancellor countered that closed doors indicated to students that “no one” was on campus to help them, and that an open campus appeared friendly to students. Some Senators in the back rows said that this was simply a mechanism for monitoring faculty work—the open offices made it easier to watch faculty. In November 2000, I polled my students as to why some were reticent to meet me in my office. With the new pod layout, faculty offices became harder to find. Many students held that hall space, atrium or student areas, and the library, or electronic contact felt “safe.” One student claimed that “offices are where people go when they are in trouble.” In communicating this to fellow faculty, three colleagues claimed that they had identical

experiences with students, and one worried that designated office time did not account for this interaction with students outside the office space.

### **The Classroom**

The classrooms, unlike the rest of the campus, were painted bright white during the period of this study. The expanse of what artists call “negative wall space” was broken only by the white boards or old chalk boards (Form, Shape, and Space, para ). Even in the three painted classrooms, the focus was on the technology in the front of the classroom: the projection screen and the mounted TV/VCR.

### **The Computer**

In early September 2000, the pod office area members faced a challenge. All faculty members had a computer on their desk; however, administrators reasoned that the college had to save resources with printers. Faculty members were told they could choose, per pod, to elect to have small inkjet printers in each office or one laser printer for the pod area. The dean appointed an office area or ‘Pod chairperson’ to survey faculty members in their pod. Then the chairperson was to report the respective preferences and printers would be set up.

Most faculty members did not realize they were parts of ‘pods’ and numerous jokes about ‘the pod people’ reminiscent of the old horror film *Invasion of the Body Snatchers* went around among faculty. On the basis of privacy considerations and convenience, Pod A members chose to have small printers in their offices. A week after the chairperson reported the faculty members’ decision, Pod A was equipped with a laser printer located in an open hallway.

Part of the responsibility of the college-wide faculty during the period of this study involved curriculum updates. Faculty members at the DV campus found this process had changed, becoming an electronic procedure instead of a paper one. Several faculty members noted changes in tone between in person and electronic interactions. As a participant/observer, I experienced a particularly strange series of exchanges with an adjunct faculty member in the late fall semester of 2000. Her updates failed to meet the discipline area criteria. Having a four year history of contentious personal encounters with faculty and administrators on other campuses, CDAC members chose to conduct the exchanges only via e-mail. Like many new users to electronic mail, she had difficulty understanding the accompanying policies. Misunderstanding that electronic mail was not protected or private, she argued with CDAC members and administrators that her exchanges were “private.” In all the heated exchanges, she never once met with a faculty member or administrator in person, a distinct change from her previous encounters. This indicates the marked change in faculty interaction.

Faculty members at DV also used e-mail to document encounters with contentious students. During the fall semester 2000, one student in particular caused a series of problems with most of the faculty, staff and administrators at the campus. One of the educational support faculty members, serving as advisor and counsel, reminded faculty members to retain all electronic correspondence with this student, so that if issues escalated, the institution would have documentation. Thus, faculty members used electronic mail in a way unintended; that is, to protect themselves in contentious situations. During this same

period, a faculty member noted that unlike memos, which had previously arrived in faculty and staff mailboxes without signatures, naming the originator, e-mails always came with addresses, and these were attributable to individuals, increasing accountability.

During the two-year period of this study, I received 1,386 e-mails from students, fellow faculty, staff, administrators and some spam. I sent 1,112 e-mails. Fifty two percent of the received e-mails came from students. Eighteen percent were sent in response to student issues. Twenty percent of my e-mails related to CDAC issues. Eight percent related to cross college issues, especially PCCEA information. Over the course of a two year period, I spent more and more of my work time on the computer.

### **Committee Work**

The location of committee meeting work changed dramatically over the two year period of the study. During the first year, the twenty seven faculty members included in this ethnography met largely in person. Some e-mail information was exchanged, but most of the work of the committees was done on a face-to-face or group setting. However, during the second year, committees met with decreasingly frequency, some not at all. Most of the work was then done via e-mail. During the spring of 2001, faculty members were charged with documenting their meetings. Instead of recording minutes, faculty members forwarded e-mail discussions to chairs of committees or appropriate administrators. One e-mail to the Social and Behavioral Science College Wide Committee (CDCAC) from the chair asked that all faculty members weigh in on votes simply by responding to e-mails from campus curriculum specialists with a “yes” or “no” to proposed changes.

## Home

The home/office boundary increasingly broke down as a work site for faculty during this study. One provocative breakdown in the boundaries between where faculty worked emerged as certain faculty members sought further education at the local universities. Three faculty members had earned degrees at one state institution while working at PCC; four others were pursuing doctoral degrees in various programs at University of Arizona; two others had laid plans for further education during this study but had not yet begun. It was professionally advantageous to pursue a second master's or doctorate for many faculty members. Once the widespread use of computers was available, faculty members increasingly used the computer to mitigate challenges to research, such as online library searches instead of weekly visits to the University library, electronic correspondence with advisors, and writing at home and sometimes on campus.

Furthermore, two faculty members noted that campus work and their university studies sometimes inverted the location where they worked. Graduate projects on campus were easier to work on because of access to materials, better technology on campus, and printer and copier were available. Grading, reading, and lesson planning were increasingly done off campus. Reading in the office appeared unproductive to passers-by. Some faculty did not feel that the open offices afforded privacy for grading.

One faculty member noted “that as professionals, we are deeply committed to the college and, therefore, don't see vast divisions between these aspects of our lives.”

However, the burden of this breakdown weighed on other faculty members. “I just don't

feel that I can get it all done, and do all the things I want to do,” a faculty member noted in late 2000. Working at home or doing homework on campus sometimes became indistinguishable. One afternoon in December, a faculty member worked on a creative writing project for her university course on campus. That evening, she took home more than fifty examinations to grade over the weekend. This blurring of the home/office boundary through the implementation of technology changed to locus of where faculty worked.

Vallas concluded his study of paper mills by writing that “in workplaces undergoing dramatic technological change, symbolic boundaries are of material significance, insofar as they help shape the re-design of workers’ jobs” (Vallas, 1998, 367.) Faculty members at DV felt the dislocation of their workspaces, and their experiences represent a type of alienation of work during the transitional period of this study.

### **Faculty Service Work**

The implementation of technology changed the nature of faculty service work. Faculty service work included responsibilities outlined in the yearly faculty contracts. Service on committees, both campus level and district level, was required by the terms of the contract. Conversations with fellow faculty members and experiences in these settings offer insight into how technology changed this aspect of faculty work. Burris’ (1998) work on technocracy is useful here; although her work focuses on highly automated workplaces, the move toward technology at PCC involved systematic, standardized, and easily replicable materials which mirror organizations with automation. Thus, the features of a

technocracy emerged with the implementation of technology; specifically, the polarization of faculty and administrators, the appearance of de-centralization when control (such as that of the curriculum) is concentrated, changing skill sets, and the emergence of experts as authorities.

### **Other Work**

Other committees were slower to adopt electronic exchanges. However, in many committee meetings, task forces, and on the floor of the Faculty Senate, discussions of technology were frequent. One particularly heated exchange came in the fall of the 1999 semester.

What are we, *Microsoft Community College*?" the Faculty Senator bellowed at the Vice Chancellor for Information Technology. "We could put the Microsoft logo on our web site!" said another. Several other Faculty Senators shuffled nervously in their seats. The live broadcast of the monthly Faculty Senate meeting was not even half over when the fight broke. The administrator nodded demurely in assent to the contention that the college might be turning over resources to the all-powerfully global conglomerate.

The disagreement continued even further. Faculty, including many senior senators, had chosen MacIntosh computers in the mid-1980s. Some of these senators did not understand that while PC desktop computers were compatible with the Banner<sup>®</sup> system, MacIntosh was not. The administration, they felt, had shut them out of the larger system, while simultaneously requiring system training for Banner<sup>®</sup>. The session became a debate between pro and anti-PC user both faculty and administrators. Some faculty understood the mechanics of the system, others did not. The Banner<sup>®</sup> system codified the online college materials and easily interfaced with PC word and spreadsheet software programs. The

Macintosh users had difficulty using the online materials available through the college system. Even supporters of the PC choice questioned the increased control the college would have over curriculum and faculty work.

At a later session, the issue of e-mail privacy was raised. A few senators were shocked to learn that all computer activity was monitored by the college. Another meeting addressed the board's web page creation policy, which sought to create a uniform template for official college material. In a heated discussion of college choices about system purchases, decision, and policy creation, a Faculty Senator in the back of the room asked "why decisions policies are made by the system?" I noted how he continued in my log notes:

The example is paychecks, which "can only be generated by the system every two weeks." When egregious payroll errors occur, the Senator claims that the Banner system is used to stall. "I can show you how to use the system to print out paychecks," he barks. The IT Department Head ignores the specific example, and pleads that policy is separate from the system, and agrees to clarify policy versus system capabilities.

Thirty minutes of discussion on the Senate floor led to a faculty/administrative agreement that official documents did not necessarily mean individual faculty web pages; this issue was not resolved during the period of the study. Again, the issue of the use of technology for control created tension between faculty and administrators. One wondered about the policy aloud, "Does it attack academic freedom?"



## **Cyber Meetings**

From the first year to the second year of the study, faculty increasingly met via e-mail. Faculty members in the social sciences at the DV site, who shared the same CDAC designation, cited the following reasons: ease of resolving schedule conflict; no travel time, and the electronic record which served as proof of participation and useful mechanism for protecting participants. Again, as Rhoades (1998) asserts, the implementation of technology changed the social relations among faculty. In this instance, faculty across the college, who had previously met face-to-face, now communicated largely through electronic mail. The medium created less opportunity for open discussions because e-mails remained permanent and traceable documents. Faculty members also commented on the loss of collegial interactions. However, some informal discussion and the faculty exchanges over a curriculum challenge in the fall 2000 semester revealed some of the strengths of electronic communication, as faculty members could provide evidence for communications.

## **Support**

In the log for the study, the word “support” appears twenty-three times. Faculty members used the word to indicate financial resources available for technology purchases, release time for curriculum development using technology, training for the use of technology, and even assistance with innovative programs using technology. The gap between faculty interpretations of support for technology use and administrative goals was revealed by the discourse concerning “support.” Faculty members expressed the desire for workshops, access to software and hardware materials, and resources for conference travel

concerning technology. Administrators voiced “support” for technology in meetings yet were often short of funding for the material support demanded by faculty. This created a gulf between faculty expectations and administrative expectations.

### **Summary**

In conclusion, the implementation of technology changed the nature of faculty work. With respect to faculty classroom work, time, faculty workspace, and faculty service work, technology altered the interactions between colleagues, students, staff, and administrators. In chapter five, conclusions drawn from the study are presented, along with the limitations of the study and suggestions for further research.

## **CHAPTER 5**

### **CONCLUSIONS**

In this dissertation I have examined technology implementation at Pima Community College from a faculty perspective. The relationship between the findings and the literature are examined in this chapter. How technology destabilizes some aspects of faculty work is also explored. These findings explain changes to work with respect to the categories of classroom teaching, time, space, and service work. This chapter concludes by delineating the limitations of the study and suggesting areas for future research.

#### Relationship of Findings to Review of Literature

By exploring changes brought through the implementation of technology, this study compliments the literature on technology, faculty, and higher education. As expressed earlier in the promotional literature on technology and the community college, all the benefits were not realized. In addition, as perceived by faculty and technology advocates, technology implementation did not immediately improve student performance or retention. Furthermore, the rhetoric promoting technology was not always met with hardware or software support in the classroom or office. The previous research on the implementation of technology did not anticipate the ways faculty members communicated using technology.

First, this study was framed by four theoretical frameworks. This study adds to Rhoades' (1998) work by offering a micro-sociological study of faculty work and

technology implementation. Rhoades' assertions of de-skilling through technology proved correct at this academic site. This study explores Vallas' (1999) conceptions of the "workplace/technology nexus" (p.57) in the public sector, confirming his ideas about changes in boundary delineations brought about by technology. Third, as with Perlow's study, this research also found a "time famine" for workers experiencing the implementation of technology.

This work adds to the literature on technology and higher education. The faculty experience with technology implementation reflects issues in the work of Bijker (1998) and Thomas (1994). Noble's (1997) studies of commercialism, technology, and education lend historical context to studies of technology implementation. Slaughter's (1990) research on increased university involvement in the private sector examines in greater detail the mechanisms of commercialization. This work adds to the literature by focusing on the community college, rather than the university systems examined by Noble (1997) or Slaughter (1990.)

This study enhances the literature on the community college in two ways. First, it counters the promotional literature on technology implementation by providing a two-year ethnography demonstrating the destabilization that comes through technology in faculty work. Anandam (1998) failed to consider possible problems, such as the erosion of traditional time structures, that come with the implementation of technology. Quick and Davies' (1999) conflation of faculty development and technology missed significant issues for faculty. For example, instructors did not always feel that technology constituted the best

mechanism for improving teaching. Dickinson's (1999) prediction that faculty would use technology to make more time available with student did not ring true for faculty members at the DV campus site.

Finally, this study adds to the literature on faculty work on technology in higher education. Both Zuboff (1984) and Barley's (1986) work studies changes to power structures wrought by technology. PCC faculty did experience "unexpected consequences" such as the reduction of face-to-face interactions with students and fellow committee members because of the implementation of technology (Barley). As in Frank's (2001) study, PCC administrators underestimated the time and tools necessary to develop online and web-enhanced classroom materials. The DV faculty reflected Minsky and Marin's (1999) argument that individual differences appeared in adopting technology, for example e-mail use. Faculty members in this study specifically addressed problems raised in Dooris and Fairweather's (1994) study on promotion structures. In committee meetings and informal discussions, faculty expressed their concerns and experiences about student learning and technology. Grubb's (1999) study of community college faculty, like Dougherty (1994), recorded similar issues with contradictory goals and roles faced by faculty members in this study. Because Dougherty (1994) and Grubb (1999) did not focus on the process of technology implementation *per se*, this work adds to our understanding of community college faculty work with respect to the implementation process. This study enhances a final area of research by examining the changes to faculty workload (Colbeck, 2002.)

### **Destabilization**

One of the most dramatic findings of this study is the destabilization wrought by technology implementation. Technology in the classroom, office, and committee meetings changed the social norms and the social relations in which faculty members did their work. When and where faculty members worked, how they worked, and what they worked on shifted because of new technologies. In each of the research categories, i.e., classroom teaching, time, space, and faculty service work, technology changed faculty work in many unexpected ways as discussed below.

### **Classroom Teaching**

First, classroom teaching was destabilized by technology. The material changes to the classroom, the process of moving rooms, changing chalkboard to white boards and adding material, altered the classroom environment. While the literature promoted technology as a mechanism to improve teaching, faculty found that technology implementation often impeded student performance. Class sessions spent in the library computing room working with technology took away from coursework. Faculty members were moved around as classrooms were outfitted for technology use. While faculty members were encouraged to add technology to their teaching in the form of websites, Powerpoint<sup>®</sup> presentations, and interactive games, hardware support was not always available. Thus, technology implementation changed the classroom environment without

concretely improving the learning experience. Changes in faculty contractual work, as anticipated by Rhoades (1998), were experienced through the implementation of technology at the DV campus. Rhoades posited that technology could be used to de-skill or in some instances en-skill faculty members. Faculty at Desert Vista Campus did express concerns about the uses of technology to remove control of curriculum, alter classroom interactions, and increase workload. Faculty found their teaching and interactions with students and colleagues changed by the implementation of technology.

### **Time**

The breakdown of the meaning of time structures had a profound influence on the work of faculty at Desert Vista. Students increasingly communicated with faculty members via electronic mail outside of traditional office hours. In fact, over the period of this study, the structured time set aside for office hours became less and less meaningful. Faculty increasingly contacted each other via electronic mail, conducted committee business, intellectual interactions, personal exchanges, and even arguing via e-mail.

The home/classroom/office boundaries also broke down with the implementation of technology. Between voice mail, e-mail, home computing, and cyber-space, faculty work spread into the home. In some instances, faculty took their campus-related work home. Almost every faculty member at the campus site complained that they lacked the time to engage in all the activities they needed and desired to participate in during the academic year. Many experienced fatigue that they attributed to long hours on computers and the expansion of work into their home life. Perlow's (1999) "time famine" was experienced by

DV faculty members. Workers experienced the “time famine” as “a feeling of having too much to do and not enough time to do it” (Perlow, 1999, p. 57.) Like the workers in Perlow’s study, DV faculty needed long periods of “uninterrupted time during which one can concentrate, or collaborative activities, which require periods of interaction with others” (Perlow, 58.) Between class preparations, grading, administrative tasks, and committee work, technology disrupted work patterns. And, finally, Perlow questions whether technology improves worker effectiveness, which the implementation of technology at DV did not improve (Perlow, 59).

If the promoters of technology sought more control over faculty time, their aspirations were realized through the implementation of technology. Indeed, previous structures for faculty time broke down with the new technologies. Faculty members felt technology allowed encroachment upon their time, destabilizing contractual notions of when faculty members should be available for work. Perlow’s (1999) suggestion of a “time famine” was realized by faculty members as more students and faculty members interacted using the web; the traditional time frames for office hours, meetings, and informal interactions changed as cyber-time encroached on contract time. Faculty reported that previous student/faculty exchanges were limited to classroom or office hours; now these interactions occurred at all hours of the day. While previously, some shy students or colleagues would be less likely to interact, they were now on the Internet communicating with faculty; this raised questions about appropriate class size, especially for web courses because of the time involved in responding to all student messages. Previous discussions of



class size related to the amount of time needed to teach, communicate, and grade assignments. With increased interactions, time to finish what were once manageable workloads eroded.

### **Space**

Work spaces became less clearly defined during the period of this study. As Vallas (1999) asserts in his research on paper mills, workers experience a change in boundaries when technology is brought to their work spaces. Vallas explored the social restructuring that occurs when technology replaces some aspect of the work process. Faculty office spaces also changed; their office space increasingly mimicked corporate workspaces where technology was dominant, rather than academic spaces. The new desks brought in during the summer of 2000 were designed to accommodate the new computers. There was no administrative concern about academic needs, such as shelf or work space. The re-designed pod clusters of summer 2000 reflected a layout conducive to computer cable networks, not faculty-faculty or faculty-student interaction. All library and testing center spaces were re-designed around computing technology. Vallas' (1999) anticipation of new boundaries and worker organization were realized in this study. The place where faculty members worked was destabilized by the implementation of technology. For example, student reluctance to come to faculty offices reflects the growing use of the computer as a communication device. Also, while conducive to technology, the offices were less accessible, i.e., harder to find after the construction was completed in 2000. Vallas' (1999) theorization of new

delineations became part of the work life of DV faculty. Home/work/extracurricular boundaries eroded with the implementation of technology.

### **Faculty Service Work**

The interactions between faculty on campus, within discipline areas, and off campus changed dramatically with the implementation of technology. Within the period of this study, faculty increasingly relied on technology to communicate, to tele-commute and even to argue about curriculum, policy, and roles. In the two years of this study, discussion of technology dominated committee meetings ranging from Faculty Senate to discipline area meetings. Forms went from paper to electronic; fewer and fewer memos were delivered on paper, and personal exchanges gradually decreased. Formal meetings in specific locations were increasingly replaced by e-mail exchanges. The mechanics of documenting meetings did not exist with technology as it had with physical meetings documented with minutes. Faculty worked as much, yet had less evidence of their work. This work also encroached more often than scheduled meetings, as individuals could contact each other whenever or wherever they chose. Thus, the implementation of technology disrupted work patterns and work spaces. Burris (1993) theories of technocracy anticipated faculty experience with the new technology. Faculty members skilled with computers were able to adapt faster, reply faster to requests from administration, respond to student requests, and participate in the cyber-meetings held by committees. Inability to understand or use the technology left some members out of the feedback loops previously associated with faculty interactions; for

example, discussions previously held before or after committee meetings where members were physically present. Faculty in leadership positions, such as department chairs, had greater access to resources if they could use technology well. For example, members of the physical sciences department levied their knowledge of technology into greater access to new materials, hardware, and software. The social science members, headed by a MacIntosh user, lost resources and were often latecomers to information about resources. The struggle over technology implementation reveals wider conflicts between interest groups on the campus. Science faculty received more space and equipment than did faculty in other field areas.

### **Recommendations**

Following the findings of this study, this section offers recommendations for future projects where education and information technology is implemented into faculty work. The categories of classroom teaching, time, space, and faculty service work frame these recommendations. First, it is recommended that classroom technologies be implemented with faculty input before final product decisions are made. Faculty members should receive adequate software training and funding for necessary hardware purchase. Equity and consistency should be a goal in the implementation process. Second, it is recommended that faculty be allowed to reserve some office hours for e-mail correspondence with students. The number of required office hours should not change with the implementation of technology. And, special consideration must be made for online and distance learning courses, because more time is needed to respond to students via e-mail online than in

physical class spaces. Faculty need to encourage and set boundaries in allotting time for their work. Third, because academic and corporate spaces have different layouts and their respective workers have different needs, such needs can even be discipline specific. Faculty input is essential in making decisions about work spaces and layout. Fourth, faculty and administrators need to strive to restrict the encroachment of cyber-exchanges in committee work. Administrators, faculty, and staff need to set parameters for e-mail exchanges, document sharing, and the posting of committee minutes before disagreements arise.

### **Limitations of the Study**

Generalization of the present study to other community college settings has several limitations. First, this research focused on the interactions of one faculty member at one campus site in a multi-campus district. The multi-campus district structure varies from institution to institution, and many community college campuses are not multi-district at all. Second, the campus itself was in transition during this period. Community college faculty members in static institutions may not experience technology implementation in the same fashion. Third, the ethnographic approach to this topic research represents a “thick description” and not a broad approach. It covered an experience in depth but not across college. Finally, this research represents a distinct period in the history of Desert Vista Campus of Pima Community College during 1999-2001. This study also represents a distinct moment in time: the generation of technology for faculty and administrators which is a unique experience in community college history.

### **Implications for Future Research**

A comparison of faculty member attitudes towards technology implementation and administrative attitudes would yield insight into the conflicts between faculty and administrators. And, although complicated, researchers should analyze the costs of technology implementation for faculty workstations and classrooms. A singular study of changes in faculty communication via the new technology would prove useful in understanding communication breakdowns within community colleges. Finally, ethnographic studies similar to this one would prove useful if replicated at other sites.

### **Summary**

In conclusion, this ethnographic study found that technology implementation for faculty at a single campus community reflected current controversies and points of contention at the campus. These controversies and points of contention existed prior to the information technology and educational technology implementation, such that technology served as a new site for debate. They changed the nature of the debates, since the technologies are not neutral. It is possible that the behavior of both faculty members and administrators may have been precipitated by the introduction of technology. After the passage of time, all the variables that changed faculty contractual work benefited faculty in some ways, yet were detrimental in others.

**APPENDIX A  
PROJECT APPROVAL FORM**

FOR ETHICAL REVIEW OF ACTIVITIES INVOLVING HUMAN SUBJECTS  
(QUESTIONNAIRES, INTERVIEWS, **OBSERVATIONS, VIDEO/AUDIO TAPES,  
ETC.**)

**1. PRINCIPAL INVESTIGATOR**

By signing below the Principal Investigator assures to the IRB that all other investigators (co- investigators, collaborating

investigators, involved statisticians, consultants, or advisors) are fully aware of, and concur with, the project submission and that all Human Subjects training verification information provided in this form is accurate.

Principal Investigator (typed)

Signature/Date

Department: Higher Education

Title

of

Project:

\_\_\_\_\_ "Faculty, Technology, and the Community College: Faculty Culture and Cyber Culture"

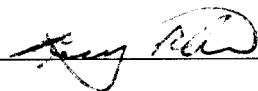
**2. SUPERVISING OFFICIAL**

I certify that (1) facilities are available to the investigator for assuring the safety and well-being of human subjects involved; (2) I assume responsibility for ensuring the competence, integrity, and ethical conduct of the investigator(s); (3) no procedural changes relating to the human subjects involved will be allowed without prior review by the Human Subjects Committee; (4) I am satisfied that the procedures to be used for obtaining informed consent comply with the spirit and intent of DHHS regulations; (5) I certify that the investigator(s) is/are fully competent to accomplish the goals and techniques stated in the attached proposal; (6) the signed consent forms will be filed in the Departmental file and retained for a period of six years.

Gary Rhoades, Department Chair, Higher Education

\_\_\_\_\_  
Head of Department, Dean of the College or comparable authority

Signature



10/14/03

Title

Date

## APPENDIX B

### Pima County Community College District Board Policy

**Board Policy Title:** College Organization  
**Board Policy Number:** BP-1502  
**Adoption Date:** 3/14/90  
**Revision Date(s):**  
**Sponsoring Unit/Department:** Chancellor  
**Motion Number:** 4650  
**Legal Reference:**  
**Cross Reference:**

The Chief Executive Officer of the College is charged by the Board of Governors with the responsibility for implementing the goals and policies of the College as established by the Board. The Chief Executive Officer is expected to design, implement and evaluate an organizational structure for the College. In carrying out the goals and policies, the Chief Executive Officer shall place College functions and activities under administrators and establish reporting lines in the manner felt to be most effective to meet the established goals and policies of the Board.

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**APPENDIX C****Pima County Community College District Board Policy**

**Board Policy Title:** Budget Control  
**Board Policy Number:** BP-2403  
**Adoption Date:** 12/17/80  
**Revision Date(s):**  
**Sponsoring Unit/Department:** VC Finance  
**Motion Number:** 4048  
**Legal Reference:**  
**Cross Reference:**

The Board of Governors delegates to the Chief Executive Officer, who in turn may delegate to the Chief Fiscal Officer, authority to implement the budget as approved by the Board of Governors. A report of expenditures as compared to budgets shall be submitted to the Board of Governors by the Chief Executive Officer on a monthly basis.



**APPENDIX D****Pima County Community College District Board Policy**

**Board Policy Title:** Catalog  
**Board Policy Number:** BP-3104  
**Adoption Date:** 3/18/81  
**Revision Date(s):**  
**Sponsoring Unit/Department:** AVC Educational Services  
**Motion Number:** 2459  
**Legal Reference:**  
**Cross Reference:**

The College will publish a catalog containing general information, requirements for all instructional programs, and a description of all courses.

**APPENDIX E****Pima County Community College District Board Policy**

<b>Board Policy Title:</b>	College Publications
<b>Board Policy Number:</b>	BP-5701
<b>Adoption Date:</b>	1/10/01
<b>Revision Date(s):</b>	
<b>Sponsoring Unit/Department:</b>	VC Enrollment Services and External Relations
<b>Motion Number:</b>	6105
<b>Legal Reference:</b>	
<b>Cross Reference:</b>	

To keep the College's name, image, and institutional information consistent and current, both internally and externally, the College will establish and maintain standards and guidelines for College publications ensuring that they reflect its values. These standards and guidelines shall include college publications regardless of the media or mode of delivery. College publications do not include syllabi or instructional materials.

## APPENDIX F

### Pima County Community College District Standard Practice Guide

<b>SPG Title:</b>	Instructional Web Pages
<b>SPG Number:</b>	SPG-5701/AB
<b>Effective Date:</b>	7/1/01
<b>Approval Date:</b>	5/22/01
<b>Review Date(s):</b>	
<b>Revision Date(s):</b>	
<b>Sponsoring Unit/Department:</b>	AVC Information Technology
<b>Regulation Title &amp; No.:</b>	Communications Responsibility, RG-5701/A
<b>Board Policy Title &amp; No.:</b>	College Publications, BP-5701
<b>Legal Reference:</b>	
<b>Cross Reference:</b>	

#### 1.0 DEFINITION

1.1 Instructional Web pages are those pages developed and maintained by a faculty member or academic department to provide instructional content for students.

#### 2.0 PURPOSE

2.1 Instructional pages may be created:

- a. By a course instructor to communicate course content or to supplement the educational program.
- b. By students under the direction of an instructor as an educational activity.

#### 3.0 CONTENT & DESIGN

3.1 The content and design of instructional Web pages must follow the General Web Page Standard Practice Guide.

3.2 The developers and maintainers of instructional Web pages are strongly urged to comply with the College Web Standards, particularly the navigation schemes, although it is recognized that instructional pages may vary significantly in format and design from

institutional pages as faculty and students create products to meet a wide variety of educational goals.

3.3 Instructional pages may not display the PCC logo.

3.4 Syllabi must follow the guidelines for traditional, printed syllabi, but may include appropriate navigational aids. They may utilize external links. They must link to the calling or parent page.

3.5 Supplementary materials for non-web based courses or for a discipline should be available in other, non-web based, formats or traditional formats if possible, reasonable, or practical.

3.6 Student-produced pages created to fulfill course requirements or created as part of a course may remain on a PCC server only for the duration of the course unless there is a compelling reason to do otherwise. Student pages must include the course name, instructor name, and instructor e-mail address. This instructor reference must be included, at the very least, within a non-displaying field or within a comment so the information is available by viewing the document source.

#### **4.0 RESPONSIBLE PARTIES**

4.1 The faculty member creating an instructional page is responsible for all links made from that page.

4.2 The Dean responsible for a given academic area shall be responsible for implementing a procedure for the review of all course instructional pages created by/for the academic area to ensure professionalism and adherence to College policy. The Dean must assure that the responsible faculty members conduct a periodic review of their Web pages to ensure accuracy and timeliness.

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