

TEACHING IN THE NEXT MILLENNIUM: THE IMPLICATIONS OF AN
ORGANIZATION'S HUMAN RESOURCE MANAGEMENT INFRASTRUCTURE
ON THE ADOPTION OF ONLINE EDUCATION PRACTICES

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by

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Chapter 1

Introduction

This chapter introduces a study that will investigate the effects of an organization's human resources infrastructure on the adoption of online teaching practices. It describes the current problem in the adoption of these practices and the apparent technological disconnect that occurs in institutions that deliver instruction through technology mediated instruction. The chapter will elucidate the principal areas of concern, introduce the research questions, present a rationale for this study, and include operational definitions of terms.

School Reform

For years, the American public has been demanding change and reform from its educational system and schools. Yet, change has been slow in coming. It is arguable that American schools as a whole have not substantially changed their institutional cultures and their instructional practices in the past 150 years; however, what the American public expects of its educational system has changed dramatically. This recalcitrance to change begs the question, Why?—Why have our educational systems and institutions not been able to change as the American public has demanded? An overlooked reason for this inability to enact significant change is the failure to consider school culture. Stoll and Fink (1996) define school culture “...as how things are and acts as a screen or lens through which the world is viewed” (p. 82). Many reforms have been enacted in education, but because few of these reforms have sought to change the essential nature of the culture that underlies schools, these reforms have been ineffectual. These reforms often do not address the way in which school culture perceives the world and the way in

which school business is articulated. The way in which school business is conducted is the backbone of school culture. And school business is predetermined by teacher-district labor contracts. Contracts, then, are an essential element of school culture. According to Phillip C. Schlechty (1997), "...culture, as well as structure, is a part of the system and must be included in any useful discussion of systemic change and systemic reform" (p. 135). Educational labor experts, Kerchner, Koppich, and Weeres (1997) contend, "...conventional wisdom holds that teachers' contracts are a principal impediment to educational improvement" (p. 104). Hence any meaningful reform in school culture must also seek to change the contractual agreements between teachers and their employers, but this is rarely attempted.

Reformers have focused their attention on what happens inside the classroom and the practices conducted within it. Indeed, classroom practices should be regularly reviewed, assessed, modernized, and adapted to the constant changes taking place in society (Sagor, 1997). While this may appear to be the logical focus for school change, the well-meaning reforms often skirt this focus and, if not, are met with resistance. This resistance rarely comes from the classroom teachers, the administrators, school boards, or parents. What often obstructs reforms and attempts at change are the provisions and restrictions found within the system of education (Meyers & Goldstein, 1997). Part of this unwieldy system is the contractual agreements that follow the constructs required by state law, which is also known as the state's education code.

A recent attempt to circumvent contractual restrictions has been the growth of the charter school movement. Charter schools are often unbound by district/teacher contractual agreements and operate separately from them. Charter schools are often

exempt from many state educational codes as well. According to teachers' union critic Myron Lieberman (1997), charter schools are, "Conceptually...supposed to be public schools free of stifling state regulations" (p. 249). Charter schools are a direct challenge to the monopolistic nature of the traditional public school system. Charters schools have recently offered meaningful competition; however, charter schools, private schools, home schoolers, and other alternative educational options still only amount to a fraction of the educational institutions. If school reform is to take place on a wide scale, contractual agreements are the portals through which school reform and change must traverse, but many reforms are detained at the door because they have failed to address the legal parameters of labor contracts (Mauhs-Pugh, 1995).

The contractual obligations of K-12 and community college teachers vary only slightly from school district to school district. Thus a ninth-grade English teacher in one district will perform much the same duties as other ninth-grade English teachers in the state and in the country. These duties have been codified in the form of labor contracts that have clearly delineated the obligations and responsibilities of the professional teachers and their employing school districts.

Technology and Current Disconnect

There is a disconnect between traditional educational practices and the current utilization of new technologies. There is a tension between what traditional educational systems offer and what new online schools can offer. There is a gulf that separates what tasks the traditional teachers and students perform and what online teachers and students do. With the dawn of the age of information, external pressures are being exerted on the traditional educational systems that will force change on these time-honored systems.

Arthur Levine, President of Columbia University's Teachers College, suggested that the traditional brick-and-mortar schools will soon become obsolete (as cited in Press & Washburn, 2001). More than half of the nation's colleges currently deliver courses over the Internet. Online high schools are not far behind. This being the case, traditional contracts are no longer able to define the work of all teachers, especially those who work in distributed learning or online environments. Moreover, these inadequate contracts become obstacles to meaningful change and reforms. The obligations and responsibilities of teachers need to be redefined. However, education institutions are slow to change. Faculty members are resistant to accept the new methods, in part because various labor issues have not been resolved. Current labor contracts do not adequately define working conditions for faculty that teach Internet-based courses. Kerchner, et al. (1997) suggest that scholastic labor contracts cover three areas, "salary setting, defining the salaried workday, and achieving common organization of students for instructional purposes..." (p. 105). Consequently, if schools are to implement 21st century teaching strategies, deliveries, and methodologies successfully into their corpus of reform, then the traditional contracts need to be re-evaluated because the traditionally defined workday and the traditionally defined organization of students for the purpose of instruction have changed in the online teaching environment. Similarly, scholastic labor experts Charles T. Kerchner and Julia Koppich (2000) contend:

Neither school districts nor teachers unions seem to fully realize the extent to which teaching needs to be rethought: what teachers do all day and all year, how they allocate their time, what decisions they make, and how they create and enact quality standards.... (p. 285)

Kerchner and Koppich (2000) further suggest, “By ignoring labor relations policy, school reform has been tied to either an unsatisfactory present or an antiquated past” (p. 313). Clearly, school reform and new teaching practices must address the collective bargaining agreements if changes are to take place.

Faculty-Management Distrust

Generally, faculty members have a mistrust of decisions of consequence made unilaterally by administrators without adequate faculty participation. Indeed, surveys of faculty members consistently reveal a lack of confidence in administrators and a perception that they behave autocratically (Schuster, Smith, Corak, & Yamada, 1994). Conversely, administrators are often exasperated by what they perceive to be the power and control of faculty (Lieberman, 1997). The structures and processes of campus governance have frequently been found wanting. Teachers do not believe that decisions affecting the working conditions and the nature of the work and practice of teaching should be left solely to administrative management. Management does not believe that it should surrender its responsibility to make the final decision regarding these matters. Faculty holds that existing governance arrangements are not adequate for protecting the interests of faculty as its members begin to adopt new teaching processes that result from the adoption of online teaching practices (i.e. Internet and distance-learning practices). Consequently, online teaching practices will not join the list of readily accepted teaching practices until mutually satisfactory human resources management (HRM) mechanisms are in place.

There has been little in-depth analysis of the obligations and commitments required of faculty members who choose to create and implement instructional materials

for delivery over the Internet (Allison, 1998). Faculty obligations and expectations for using these new technologies have not been clearly defined. Faculty members will, however, most certainly be expected to assume a number of new roles in addition to, or instead of, the conventional functions they traditionally have. These new roles will include 21st-century educational tasks such as designing curriculum, facilitating learning, managing technology, and learning new software (Barr & Tagg, 1995; Beaudoin, 1990). Thus, faculty members not only will be subject matter experts and lecturers, but they also will be required to become courseware designers, instructional resource managers, and learning systems engineers so that they can design learning environments for their students, some of whom may be geographically isolated and never have face-to-face contact with the instructor.

In setting after setting, online education efforts have been launched without adequate attention being given to these HRM issues and the HRM infrastructure that would support and sustain them. The failure of management to negotiate these issues adequately has been cited as a barrier to greater faculty interest in adopting new instructional technologies (Olcott & Wright, 1995). Therefore, we hypothesize that an inadequate HRM infrastructure will jeopardize the adoption of innovative online teaching practices by teachers.

Statement of the Problem

The problem identified in this study is that teachers, administrators, and school boards do not have commonly accepted contractual language that defines and governs the responsibilities, duties, and rights of teachers and districts in distributed learning or online environments at the high school and community college (9-14) levels. Without a

working parameter of these responsibilities, duties, and rights, widespread adoption of distributed learning and online environments at the high school and community college levels will be hampered. If widespread implementation of the new technologies is to take place, the contractual obligations of both the teachers and their employing districts will need to be determined.

Statement of Purpose

The purpose of this study is to examine the effects of a school district's human resource management infrastructure on the adoption of online education practices. With the advent of the Internet, new course delivery methods have become available. Faculty members are, however, hesitant to accept these new methods, in part because various labor issues have not been resolved. This study will explore the current working conditions and contractual obligations of selected online educational institutions. Furthermore, the study will describe the elements of the human resource management infrastructures that currently govern online educational practices at these institutions. Once identified, the impact that the human resource infrastructures have on online educational practices, as well as their implications for further policy development, will be explored.

Research Questions

The research questions to be addressed are:

1. Does an institution's human resource management infrastructure discourage/encourage the adoption of online teaching practices? If so, in what ways?
2. Do online teaching practices change the role, duties, obligations, and responsibilities of a traditional teacher and/or management personnel (i.e. contractual

obligations, intellectual property rights, course ownership, and control)? If so, in what ways?

3. Are the working conditions (time/hours, class sizes, location, number and type of assignments) of a traditional teacher affected by the adoption of online teaching practices? If so, in what ways?

Significance of the Study

“The responsibility for institutional quality and control, the improvement of learning, and the aggregate effectiveness of distance learning still rests with the faculty” (Olcott & Wright, 1995, p. 5). It is, to a large extent, the human resources infrastructure that defines, supports, assesses, and sometimes restrains faculty performance (Kerchner, Koppich, & Weeres, 1998). Currently, online teachers are teaching in ill-defined, ad hoc situations that approximate the traditional classroom assignment. Therefore, it is important to evaluate an institution’s human resource infrastructure to determine its impact upon the adoption and integration of online teaching practices. This study seeks to determine if faculty resistance to the adoption of online teaching practices has, in part, been caused by the lack of an effective human resource management framework. The study also attempts to define those elements that contribute to, or detract from, an effective human resource management framework—one that supports faculty participation in online teaching.

New systems of support will need to be implemented to sustain and nurture online teaching practices in education (Miller, 1999). Currently, online faculty members in both high school and community college are teaching in ill-defined roles where traditional formulas for assignment and compensation may be inapplicable. This study will describe

the working conditions and the contractual responsibilities, duties, and rights of online/distributed-learning teachers. This will assist school districts and teachers in their movement toward online teaching that will augment, or in some cases supplant, the traditional classroom assignment.

Operational Definition of Terms

The terms needing operational definition in this investigation fall generally under the discipline of human resources management in public education. The following definitions will provide clarity to those terms as they are applied in this study. They are listed alphabetically for easy reference.

Administrator: those public education employees whose primary responsibility is the oversight, supervision, and administration of an educational institution. They may also be referred to as confidential or confidential/management employees or generically as management.

Certificated Employee: see **Faculty**.

Certified Organization; Certified Employee Organization: an organization that has been certified as the exclusive representative of the public school employees in an appropriate negotiating unit. This organization, as one of its primary responsibilities, will represent its employees in their relations with the public school employer.

Collective Bargaining: a method of bilateral decision making in which the employer and the exclusive representative of the employees determine wages, hours, and terms and conditions of employment of all employees in a negotiation unit. The negotiations normally result in a written agreement.

Collective Bargaining Agreement: a document incorporating any agreements reached between the exclusive representative and the public school employer, which defines the wages, hours, and terms and conditions of employment of all employees in a negotiation unit. When ratified by the negotiating unit and accepted by the public school employer, this document becomes legally binding upon both parties. In California this agreement may be made for a period not to exceed 3 years.

Compatibility: The degree to which an innovation is perceived as consistent with existing values, past experiences, and the needs of potential adopters (Rogers, 1995).

Complexity: The degree to which an innovation is perceived as relatively difficult to understand and to use (Rogers, 1995).

Distance Education: a method of instruction in which the student is physically removed from the instructor and/or other students in the course, and in which communication is mediated by electronic means. This may include e-mail, newsgroups, online chats, instructional television, or other methods.

Duties: the contractual obligations usually associated with a teaching assignment.

Employee: see **Public School Employee**.

Employee organization: see **Certified organization**.

Exclusive representative: see **Certified organization**.

Faculty: the teaching staff of an educational institution, specifically omitting administrators. Faculty also refers to certificated employees—those possessing a valid teaching certificate.

Human Resource Infrastructure: the corpus of policies, procedures, and agreements that are used to manage the personnel and human resource activities of an organization.

Impasse: the parties involved in a dispute over matters within the scope of collective bargaining have reached a point in their meetings and negotiations at which their differences in positions are so substantial or prolonged that future meetings would be futile.

Institutional Codification: The extent to which an institution recognizes, legitimizes, and authorizes the adoption of innovative practices by codifying these practices in its official documents.

Institutional Support: The extent to which an institution sustains and maintains innovative practices.

Internet-Based Instruction: a form of distance education that primarily utilizes Internet based modalities.

Labor contract: see **Collective Bargaining Agreement**.

Management: those members of the educational institution who are responsible for the management and operation of the institution. See **Administrator**. Management includes members of the governing board as well as administrators.

Negotiating Unit: A group of employees recognized by the employer as appropriate for representation by an employee organization for the purposes of collective bargaining.

Observability: The degree to which the results of an innovation are visible to others (Rogers, 1995).

Online teacher: a teacher who primarily uses online (Internet-based) forms of instruction for the delivery of course materials and interaction with students.

Online Teaching Practices: those educational practices used to offer instruction through an online environment.

Public School Employee: any person employed by a public school employer except for those persons elected by popular vote, persons appointed by the Governor of California, management employees, and confidential employees.

Public School Employer: the governing board of a school district, a county board of education.

Relative Advantage: The degree to which an innovation is perceived to be better than the idea it supersedes (Rogers, 1995).

Resource Infrastructure: the institutional definition and support of teaching practices, salary, benefits, working conditions, rights, duties, and obligations. This infrastructure is commonly defined within the collective bargaining agreement. See also **Human Resource Infrastructure**.

Responsibilities: the obligations usually associated with a teaching assignment but not explicitly required by contract.

Rights: the power to exercise control over certain situations as stipulated in contracts.

Scholastic Union: see **Certified Organization**.

Traditional Classroom Teacher: a teacher who teaches a traditional assignment as defined by the institution.

Trialability: The degree to which an innovation may be experimented with on a limited basis (Rogers, 1995).

Limitations

This comparative, multiple-case study of schools engaged in online teaching will be limited to those in California. The study will address the phenomenon of online teaching in high schools and community colleges within the state. Each state establishes its own educational labor codes and laws. As researcher Shermain Mills (1997) noted, “Since laws differ in many states, the laws governing education may also be different.... Collective bargaining in public institutions is regulated by state law” (p. 14). Therefore, the findings and conclusions of this study may not be applicable outside the state of California.

Furthermore, as with all case studies, the results “are generalizable to theoretical propositions and not to populations or universes” (Yin, 1994, p. 10). In this sense, this case study does not represent a *sample*, and the results should not be used to make statistical generalizations.

Chapter 2

Review of Literature

Teaching, as a profession, has had a unique history in the United States. The duties, responsibilities, and rights of teachers have followed a circuitous path that has reflected neither strategic planning nor logic. Schools exist in paradoxical frameworks. On the one hand, schools began from what Bolman and Deal (1997) would call an “adhocracy” (p. 68). An adhocracy is a freewheeling, loosely organized structure that exists without much predetermined planning. At the same time, however, schools have also evolved into a “machine bureaucracy” (p. 64) with fixed, nonflexible components that operate independently and work in routinely automated tasks. This paradox has created a culture that tends to operate very similarly from school to school—like a machine. The machine-like nature of the educational institution is what society seeks to reform because this paradigm is obsolete (Means & Golan, 1998). In this paradoxical culture, many schools have been able to create innovative programs that operate outside the traditional paradigm in an ad hoc fashion. It is this very paradox that has created a necessity for new contractual language to be studied and developed in order to accommodate the addition of online and distance learning practices. Online contractual agreements have only been considered on an ad hoc basis if the individual district has addressed this issue at all.

This chapter will examine the historical development of teachers’ unions, teachers’ contracts, collective bargaining, and online teaching practices in the light of human resource management policies. It will furthermore lay the conceptual foundation for this study’s examination of online-teaching contractual agreements. Teachers’ unions

are important to this study because they are the organizations that negotiate teachers' contracts with school districts. Collective bargaining is the process through which teachers' contracts are negotiated. An examination of the literature regarding teachers' contracts and collective bargaining is necessary to give context to online contractual language.

A Change in Paradigm Needed

The current educational system is based on the needs of the American 19th century agrarian society. This is most plainly demonstrated in the traditional school calendar, which releases its pupils in mid-afternoon and provides hiatuses according to agricultural timetables. The accepted curriculum for the common school consisted of an eighth grade education. At the beginning of the 20th century, this model of education was adapted to meet the rising needs of industrial America (Murphy, 1990; O'Banion, 1997). Schools operated under the theories of scientific management and produced students much like Henry Ford produced automobiles. Teachers were production workers, and students were the products moving through an assembly line. The shift between the agrarian and industrial model paradigms was marked by the creation of the Carnegie Unit by The Carnegie Foundation for the Advancement of Teaching. The Carnegie unit standardized educational curriculum and course time, and thereby, standardized the nature of the work performed by teachers. At the beginning of the 21st century, the first and second world countries had experienced yet another economic shift into the Age of Information, also known as the age of globalization. However, education has not kept pace with society and has not made the shift into the global society. Teachers, by and large, are still production workers and not knowledge workers (Jantzie, 1998). The

culture established by the agrarian model and the subsequent industrial paradigm is an anchor that hinders educational reform, “Among the barriers to the implementation and popularization of distance learning and other educational uses of telecommunications is the persistent application of outdated modes of credit granting by educational institutions and provincial/state governments” (para. 1). Online teaching and learning belongs to the Age of Information paradigm. However, education is still mired in agrarian/industrial paradigms. Cultural and framework changes need to be implemented before wide-scale educational reform can take place.

Brief History of Teachers’ Unions

There are three principal national unions for K-20 teachers: the National Education Association (NEA); American Federation of Teachers (AFT), which is affiliated with the AFL/CIO; and the American Association of University Professors (AAUP). The NEA organized in 1857 and was predominately controlled by school administrators up until the 1950s. For its first 100 years, the NEA opposed unionism and organized labor (Lieberman, 1997). The AFT organized and affiliated with the American Federation of Labor (AFL) in 1916. At its onset, the function of the AFT was to promote the teaching profession as a trade union. The AFT was the only functional union for teachers up until the 1950s. It was not until the NEA shed its school administrators and became a teacher-controlled organization that it took on unionizing characteristics along side of the AFT. The AAUP was founded in 1915, a year before the AFT. The AAUP’s first president was highly esteemed John Dewey. The AAUP is the only scholastic union that catered exclusively to the needs of higher education. These three unions are still the

primary national agencies that negotiate with scholastic management on the behalf of faculty.

In the 1950s, the NEA began to overtake the AFT in unionized membership. Although the NEA had always been the larger of the two organizations, the NEA had concentrated on professional issues rather than labor unionizing activities until the 1950s. As a matter of fact, teachers were pressured to join the NEA by their administrators prior to the 1950s. Administrators questioned a teacher's professionalism and commitment to the teaching career if that teacher did not join the NEA (Murphy, 1990). The leadership of NEA frowned upon unionist activities for its first 100 years. However, once unionism took hold of the NEA, it rapidly outpaced the AFT in union membership because of its base of teachers already affiliated with the organization.

The earliest members of the AFT and NEA differed in socio-economic status. The AFT, because of its affiliation with the AFL/CIO, was viewed pejoratively by many as being a blue-collar, nonprofessional organization. Indeed, many of its earliest members were teachers who hailed from the manual labor class of America. Many of the early American teachers were daughters of immigrant factory workers and knew intimately the struggles of the working class because their fathers and brothers were members of these work forces (Murphy, 1990). On the other hand, the NEA enjoyed the reputation of being a professional organization and operated from the framework of the professional development of its members. This reputation was largely because of the predominance of administrators in the early history of the organization who wanted a better work force. Many of the teachers who gravitated toward the NEA organization hailed from middle-class roots. The NEA adopted unionizing activities relatively late in its organizational

life. Hence, working class, blue-collar background teachers gravitated to the AFT while teachers from the middle class tended to affiliate with the NEA during the first half of the 20th century. However, in the second half of the century, both organizations competed for union membership. Often, the infighting between these two unions caused delight and amusement among scholastic management because the two local chapters were so occupied in mutual conflict that they often ignored their common struggle against institutional management (Lieberman, 1997; Murphy, 1990; Vinovski, 2000).

The AAUP organized under the same principles as the NEA and AFT. As early as 1915, C. J. Keysler (as cited in Origins, 1989) proposed that the AAUP:

...promote a more general and methodical discussion of problems relating to education in higher institutions of learning; to create means for authoritative expression; to make collective action possible; and in general to maintain and advance the ideals and standards of the profession. (p. 4)

The AAUP suffered from an identity crisis in its early development. Some of its members sought to keep the AAUP as a purely professional organization devoid of the mundane and worldly concerns such as unionism. Others sought to establish a pragmatic agenda that included collective bargaining agreements with the universities and colleges in which the professors labored. The AAUP seemed to have embodied both the early concerns of NEA's professional aspirations and AFT's unionistic pragmatism. The organization of the AAUP suffered from an identity crisis that mirrored the class-conscious struggle of American society.

After the 1950s, the AAUP, AFT, and NEA moved along similar tracks. The earlier class distinctions that divided the members of these organizations gradually

disappeared. The three organizations were interested in promoting not only the traditional planks of labor organizations such as salary, benefits, working conditions, contract negotiations, etc., but they also began to advocate educational issues on national, state, and local planes. The success of these efforts has made teachers unions among the most powerful and influential union lobbies in the country (Lieberman, 1997). The similarities between these three unions have caused a cessation of past differences. The NEA and AFT have participated in joint ventures, collaborative lobbying, and have entertained numerous investigations into merging since 1968 (NEA, 1998). The principal reason the two have not already merged involves organizational concerns stemming from incompatible HRM practices for their employees. The rank-and-file teachers of these two unions have no strong objections against the merger. These three scholastic union organizations are the principal collective bargaining agents in America today. If collective bargaining is to affect online teaching practices, then these three scholastic union organizations and their state and local affiliates must also be involved in the discussion. Indeed, all three organizations have nascent studies that have begun to explore the contractual agreements of online teaching practices.

The Current Milieu for Educational Unions

Most Americans have a commonly held conviction that the American educational system is in a state of serious decline. These detractors assert that American students are falling behind their counterparts around the post-industrialized world. They would insist that test scores are down, illiteracy is up, and the entire educational institution is a unresponsive bureaucracy. Given these perceptions, what has organized educational labor done in response to these accusations against their profession? The profession is also

facing the many challenges posed by an emerging socio-economic system known as globalization and the Information Age. America and a good portion of the world have entered a new postindustrial paradigm (Drucker, 1994). What will the teaching profession do to meet the needs of their students, their rank-and-file, and their critics? Will the teaching profession willingly join the ranks of the knowledge workers?

In response to these serious charges and questions, the educational unionists have worked an active public relations agenda, and they have embarked on an aggressive behind-the-scenes lobbying effort in Washington, DC and the state capitols. A Website recently created by the AFT stated that many states are meeting curriculum standards. The Website reported, “Twenty-one states have English standards that meet the AFT criteria at all three [elementary, middle and high schools] levels” (AFT, 1999). According to this web page, AFT has set a high standard that the states must meet for AFT approval. This is a much different approach from the usual reactive responses from the unions. Likewise, NEA has been pushing school violence prevention programs and an active peer review process. Thus, one of the battles fought by the unions is the perception that the American educational unions are stifling innovation and are looking out only for themselves rather than the interests of parents and students.

Scholars such as Leon Botstein (1997) have also joined the effort to oppose the attack on public education. Botstein contends that the golden days of education never existed. While he admits that public education ought to discharge its duties better and more efficiently than it is today, he holds that current academic institutions have actually outperformed previous iterations of public education. Botstein writes, “...there is no denying that there are many more literate Americans than there once were and that we

have a much better citizenry than we used to” (p. 23). Botstein contends that instead of trying to recapture the nonexistent golden age of education, society ought to to the future and devise a better educational system. Society’s focus on educational technology is an attempt to devise a better system to deliver the process of education. With a new system of education emerging in society comes the necessity for new contractual language.

Scholastic unions have begun to study online teaching and learning paradigms. Surveys and studies devised by the unions to study the contractual agreements for online teaching practices will be examined in this study.

Unionists have waged a war not only against bad public relations, but they have also sought out a new way to interact with management and the public. Unionists have come to realize that some of the complaints against their organizations are well founded. In an attempt to break from the traditional adversarial relationships with management and administrators, the unions have advocated a collaborative effort. Bob Chase (1998), the President of NEA since his election in 1996, has advocated a new unionism. Under the banner of new unionism, the NEA (Chase, 1999) has encouraged its membership to enter a new relationship with school districts:

Instead of relegating teachers to the role of production workers—with no say in organizing their schools for excellence—we need to enlist teachers as full partners, indeed, as co-managers of their schools. Instead of contracts that reduce flexibility and restrict change, we—and our schools—need contracts that empower and enable.... This new collaboration is not about sleeping with the enemy. It is about waking up to our shared stake in reinvigorating the public

education enterprise. It is about educating children better, more effectively, more ambitiously. (p. 1)

Chase (1998) suggests that the previous role of the teacher as viewed by management was that of production worker. Indeed, this industrial-age paradigm for years seemed to fit the function of teachers aptly. Teachers, in assembly line fashion, produced student after student with very little variation or enhancement. Each student received the same materials, content, message, and instruction—regardless of need or changing circumstances. We at times hear of a teacher who has not changed a lesson or lecture in more than a decade. In the industrial model, a teacher would not necessarily need to change the lesson. However, teachers in the age of globalization are no longer production workers. Teachers need to become full-fledged stakeholders and knowledge workers. Thus a change in contractual language is needed to reflect the changes in the society. The traditional teachers' contracts reflect the industrial age concept of teaching. In the age of globalization, a new language is needed that mirrors the changes demanded by knowledge work.

As co-managers of their schools, teachers will become more and more involved in the management of schools, including the ability and responsibility of teacher evaluation (Chase, 1998). Peer review is being negotiated across America today. The profession is taking steps to police its own. The State of California has tied incentive monies for districts to negotiate peer review and peer assistance plans with their teachers. It has been fairly obvious, even to the casual observer, that school managers and administrators have not evaluated teachers well. The complaint that there are incompetent teachers in the teaching profession illustrates this inability. There has been much trans-institutional

finger pointing in the assignment of responsibility for the existence of ineffectual teachers. Unions have blamed administrators for not doing their jobs while administrators have blamed the tenure policies. Tenure policies, as implemented in state education codes and collective bargaining agreements, have traditionally borne the onus of culpability. Into this conflict-ridden situation, peer review was introduced. Peer review, under the focus of new unionism, is established to put teacher performance evaluations into the hands of the teachers who have a working knowledge of the craft (Chase, 1998). Peer review requires a change in contractual language. Thus, this study will also include evaluation and assessment of online teaching practices as they affect contractual agreements and obligations.

The professional and career development of teachers also falls under the purview of new unionism as well. Professional development for teachers is largely overlooked in the industrial model, and career development is totally ignored. While the salary structure for teachers has rewarded teachers for advanced university training, it has always been up to the teachers to finance and obtain their own advanced professional development. The few district-sponsored in-services and training programs, such as sexual harassment and AIDS awareness programs, have usually been mandated by the state as a preventative measure against lawsuits. However, teachers are no longer at the mercy of district-sponsored in-service programs. New unionism suggests that state and local chapters sponsor their own career and professional growth programs for their member teachers (Chase, 1999). Local chapters will host their own programs and seminars to enhance the skills of teachers and will provide career counseling to their members. This study will

investigate professional development and career development issues as they affect online teaching practices.

However, not everyone thinks that union involvement in traditionally administrative tasks is a positive occurrence. Union critic Myron Lieberman (1998) suggests that this innovative program has yet to be proven cost effective. According to Lieberman, peer review has not provided a return on investment either in cost or student achievement. Lieberman is suspicious that a teacher-led evaluation will be biased on the behalf of teachers and will cast a blind eye on incompetent teachers, as the administrators have traditionally done. In Lieberman's summation, peer review's short history has proven to be inconclusive at best, because students' scores have not been raised in districts which employ peer review, and there has been no impact on the number of teachers dismissed under peer review. For Lieberman, the number of teacher dismissals and the rise in test scores are the only meaningful benchmarks for peer review and peer assistance. Regardless of the efficiency of new unionism, innovative contractual language will need to be developed and examined in regard to online teaching practices.

Collective Bargaining

On the national scale, the Wagner Act, also known as the National Labor Relations Act, established collective bargaining in 1935. Prior to the passing of the Wagner Act, labor had limited rights in only certain industries. The Wagner Act established the rights of unions in 1935 in the wake of the Great Depression. Among its many provisions, the Wagner Act provided unions the right to organize without employer interference. It established the National Labor Relations Board (NLRB) to which employees may petition if the employees believe that management has participated in

unfair labor practices. The Wagner Act also established the union's right to bargain collectively and exclusively on the behalf of employees (Mathis & Jackson, 2000).

In reaction to the Wagner Act, the Taft-Hartley Act in 1947 established more pro-management provisions in the National Labor Code. The Taft-Hartley Act forbade certain union practices such as a union's refusal to negotiate. An important provision that concerned teachers' unions is the *right-to-work* clause, which disallows closed-shop practices, wherein teachers are required to join the union before they are hired. The Taft-Hartley Act also provided for an agency shop wherein teachers who do not wish to join the union must pay a *fair share* to the union because they benefited from union representation at the bargaining table (Mathis & Jackson, 2000).

The Lundrum-Griffin Act of 1959 required unions to establish democratic practices and to have by-laws that govern their organizations. This act protected the individual rights of union members from the potential abuses of union bosses (Mathis & Jackson, 2000). Thus each local teacher's union establishes its own governance by-laws and holds regular elections.

In California, collective bargaining for teachers began with the passage of the Winton Act in 1958. The Winton Act made provision for school employees to form unions. It was considered weak by most California unionists because it only forced school employers to meet and confer with employee representatives. It made no requirements beyond meeting with teachers' representatives and thus did not enforce bargaining leverage, which unionists sought. The Winton Act was also considered ineffectual because it offered no provision for "exclusive representation" (Rodda, 1976,

p. 4), which meant any number of groups might meet with employers and represent the teachers. This complexity caused confusion and dissension among the teachers.

The next step in teachers' contractual evolution occurred in 1975 with the passage of the Rodda Act, which is officially known as the Educational Employees Relations Act. The architect of the act was Senator Albert Rodda, who was a former teacher and scholastic unionist. The Rodda Act provided teachers' unions the right to form, to be self-directed and determined, to have exclusive representation, to bargain collectively, and for school districts to recognize the union officially (Prasow, 1976). The Rodda Act repealed the Winton Act and was widely accepted and appreciated by scholastic unionists across California even though the Rodda Act did not contain a binding-arbitration clause that the unionists desired. Arbitration is a process whereby a neutral party hears and renders a settlement in a dispute. Binding arbitration is an agreement between two disputing parties that both parties will accept the settlement determined by the neutral party. In spite of this shortcoming, the Rodda Act enabled unions to bargain collectively with the employing districts. The Rodda Act is the primary statute that governs educational labor relations in California.

The California Education Code governs collective bargaining for school employees in the state. This code sets all the parameters to which all collective bargaining agreements must conform. Thus, provisions or agreements made regarding online teaching practices cannot be bargained independently. This is an important issue related to the present study. Provisions made for online teaching practices must be bargained through the regularly established system in which traditional teaching practices are bargained. Similarly, exclusive representation stipulates that online teachers cannot

bargain a separate agreement with employing districts. All online teaching practices collective bargaining must be done through the existing union infrastructure. There can be no separate representative bargaining only for online teachers.

Contractual Language and Teachers' Contracts

The legal document that governs the work and compensation of teachers with their employers is the teachers' contract. Each school district has its own contractual agreement with its employees. Contractual agreements define the working relationship, terms, and conditions under which teachers will provide educational services to the employing district (Ayers, 1993).

Each school district must negotiate with its local teachers. The provisions of their contractual agreement must align to the National Labor Code that includes the Wagner, the Taft-Hartley, and the Landrum-Griffin Acts. The teachers' contracts must also align to each state's own labor code. In California, the contracts must be aligned to the Rodda Act and the California Education Code. Some teachers' unions are certified and affiliated by the AFT with its state associate, the California Federation of Teachers (CFT), while others are with the NEA and its state association, the California Teachers Association (CTA). Some colleges are affiliated with the American Association of University Professors (AAUP).

The Need for Infrastructure Innovation to Accommodate Online Teaching

Contractual language particular to online teaching practices has yet to be universalized or codified. Current teaching contracts stipulate hours of work, class sizes, working conditions, benefits, rights, obligations, and duties. None of these has been translated into a universal, commonly accepted code for contractual agreement. What is

class size in an online class? What are office hours in an online environment? How does time spent online translate to hours in class? Or is it even desirable to make that translation? Should the school supply the online instructor with home online access? These are all bargainable items, and no universal contractual language has been developed or studied.

Before innovative programming can take place, an adequate infrastructure that supports the innovation needs to be constructed. In regard to the modernism of technology, the infrastructure involves more than just the machines, wires, and software. Technology infrastructure must also include a cultural change. According to a study sponsored by Ohio State University, if “the use of technologies for instruction is not a part of the ‘culture’ (i.e. no mentoring or training, resistance to change), or reward systems for faculty (i.e., no promotion and tenure benefits, recognition, or other incentives),” (Committee, 1999, p. 10) then the innovation of technology will fail. Contractual considerations such as tenure, benefits, remuneration, and working conditions must be part of the restructuring if change is to take place on a widespread scale. There is currently no widely accepted contractual language that defines the working conditions, rights, responsibilities, and duties of online teaching.

Technology Diffusion

Moore’s (1999) Technology Adoption Life Cycle depicts how technology is diffused into an organization. In this normalized curve, Moore suggests that technology adoption can be separated into five separate stages. The innovators are the earliest adopters of the technology and constitute a small minority of innovators. These are the pioneers of that particular technology. The early adopters follow the innovators and

quickly accept the new technology after seeing the innovators at work. The early majority delays adoption until the technology is somewhat refined and easy to implement. A dividing chasm separates the early adopters from the early majority. This formidable gulf requires bridging prior to adoption, but this chasm is often difficult to recognize. The late majority adopts the technology only after it is clear that the innovations are well established. The luddites are technology resistant, and some will never adopt the innovation (see Figure 1).

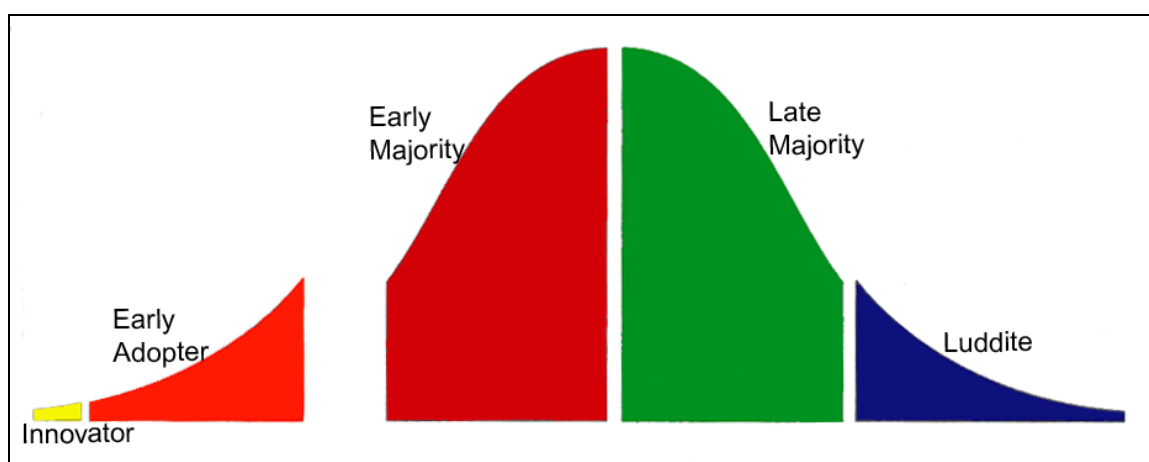


Figure 1. Moore's Technology Adoption Life Cycle (1999, p. 17) This simple bell-shape curve denotes the stages of innovation adoption. The gap between early adopter and early majority suggests an adoption barrier.

Teacher as Knowledge Worker

As the Age of Information replaces the last vestiges of the Age of Industrialization as the predominant paradigm for understanding our world, this understanding of the world will filter down through all its institutions. Already the Age of Information has revolutionized many businesses and institutions (Micklethwait & Wooldridge, 2000). However, the transition has yet to transform universally the teacher from the role of a production worker to that of a knowledge worker. A knowledge worker produces, manages, and interprets information and knowledge (Drucker, 1994). Hand in

hand with the knowledge worker comes the phenomenon known as globalization. The telltale signs of globalization include worker mobility and, subsequently, the loss of long-term job security; portability of benefits; flexibility of working conditions; and disintermediation (Proffitt, 1999). The scope of this study will focus upon contractual agreements as they affect online teaching practices, but these other aspects of globalization should also be examined in future studies.

Community Colleges

The growth development of community colleges has been a circuitous one. Community colleges have suffered from a case of schizophrenia since their inception. At their onset, at the beginning of the 20th century, the function of community colleges has been in turmoil. Large student demands for college education threatened to undermine the function of 4-year colleges and universities. Thus some envisioned community colleges as a pressure-valve that would relieve a cumbersome and odious burden from their 4-year siblings. Proponents viewed the 2-year junior colleges as a way to placate the enormous demand on their 4-year counterparts (Brint & Karabel, 1989). However, others saw the 2-year institutions as a means to democratize education to the masses. These proponents perceived the community colleges as a means to supply vocational training and terminal degrees. This democratization was never perceived to be egalitarian. For the masses, the community colleges were to supply educational training for “less than professional” (p. 87) level workers, while the colleges and universities were to train the professionals of society.

The beginning of the 21st century parallels the *sitz im leben* of the community colleges at the beginning of the 20th century. Once again a mass of students are

demanding college education. The availability of brick-and-mortar, 4-year schools will not be sufficient to manage the titanic demand. Community colleges will once again be called upon to relieve the pressure of student expectations. In addition, 4-year institutions will also turn to online teaching in order to meet the call for college education. It is incumbent upon academia to define online teaching practices and how to accommodate these practices into collective bargaining agreements.

High Schools

Whereas online education has taken a firm hold at the college level, it has only very recently been established in the high school arena. Of all colleges and universities, 90% have implemented or plan to implement some form of online instruction and distance learning (NEA, 2000), but there have been few high school-level classes online. The landscape is dotted only with the early adopters. The high school that has the most extensive online program is Virtual High School (VHS), which was created by the Concord Consortium and is located in the Boston area. Its spring 2001 offerings include 150 classes. They serve students from 31 states. However, in terms of human resource management, VHS skirts the issue because they do not employ their instructors. The individual school districts in the 31 states are the employers of these teachers, and therefore, the online instructors are governed by their own particular human resource policies and collective bargaining agreements (Virtual High School, 2001).

Florida High School (FHS) ranks second among the early adopters. In the Fall 2000 term, FHS offered 57 courses to all 67 school districts in Florida. Like their Boston counterpart, FHS also avoids the human resource management issue because each of its teachers is employed by his or her individual district. The teachers of the 57 courses are

compensated and governed by their individual school districts, not by the FHS system (Florida High School, 2001). Furthermore, since Florida is a right-to-work state, there is no collective bargaining, and each teacher negotiates directly with the administration. No wide-scale information is available regarding universal or general human resource management practices for high school-level online instruction. There are currently only a few online high school-level programs in California, but there is evidence of a groundswell of interest. This study will investigate two early adopters of high school-level online instruction in California.

Chapter 3

Methodology

This chapter focuses on the research methodology used in this investigation. It begins by restating the purpose of the study and then proceeds to present the research design, including the sources of data and the instruments that will be used for data collection, a description of the sites that will be studied and the criteria for selection, a discussion of content validity and reliability, a review of the data collection procedures and human subject considerations, and finally the procedures that will be used for data analysis.

Restatement of Purpose and Research Questions

Historically, educational institutions have been resistant to change (Lieberman, 1997). With the advent of the Internet, new course delivery methods have become available. Faculty members are, however, resistant to accept these new methods, in part because various labor issues have not been resolved. This study will explore the current working conditions and contractual obligations of selected online educational institutions. Furthermore, the study will describe the elements of the human resource infrastructures that currently govern online educational practices at these institutions. Once identified, the impact that the human resource infrastructures have on online educational practices, as well as their implications for further policy development, will be explored.

The research questions addressed were:

1. Does an institution's human resource management infrastructure discourage or encourage the adoption of online teaching practices? If so, in what ways?

2. Do online teaching practices change the role, duties, obligations, and responsibilities of a traditional teacher and/or management personnel (i.e. contractual obligations, intellectual property rights, course ownership, and control)? If so, in what ways?
3. Do working conditions (time/hours, class sizes, location, and number and type of assignments) affect the adoption of online teaching practices? If so, in what ways?

Research Design

This investigation utilized a multiple-case study approach that sought to understand the effects of an organization's human resource management (HRM) infrastructure on an institution's ability to adopt online education practices. This empirical inquiry investigated contemporary phenomena, at several selected school sites, in an effort to support (or reject) the researcher's theoretical proposition that online teaching practices will not become institutionalized until satisfactory HRM mechanisms are in place to support practices that are agreeable to both management and faculty. This multiple-case study approach employed an all-encompassing research method that incorporated appropriate techniques for data collection and data analysis. The multiple-case study approach was not just a data collection tactic or merely a design feature alone, but rather a comprehensive research strategy (Stoecker, 1991 as cited in Yin, 1994).

This research strategy employed an embedded, comparative, multiple-case replication design (Yin, 1994). The case study methodology gave the researchers the ability to deal with a full variety of evidence—documents, artifacts, interviews, surveys,

and observations. A case study is, therefore, a preferred technique for examining the contemporary events at the selected sites.

The multiple-case design also has an advantage over the single-case design in that the “evidence from multiple cases is often considered to be more compelling, and the overall study is therefore regarded as being more robust” (Herriott & Firestone, 1983 as cited in Yin, 1994, p. 45) than the single-case design. Furthermore, this multiple-case strategy incorporated subunits of analysis, allowing for a more complex—or embedded—research methodology.

The comparative or multiple-case study approach did not use sampling logic because, according to Yin, the results of multiple-case studies were not to be interpreted as if they represented multiple respondents in a survey or as multiple subjects within a single experiment (Eckstein, 1975; George, 1979 as cited in Yin, 1994). Rather, each case would be examined independently. Sampling logic would have required the researchers to select elements from a population in such a way that the elements were representative of the population. The resulting data from the sample would then have been a reflection of the entire universe or pool (Vogt, 1999). This procedure would then be followed by inferential statistics to establish the confidence intervals for which the representation would be accurate. “Any application of this sampling logic to case studies would be misplaced,” (Yin, 1994, p. 48).

On the other hand, replication logic, the logic used in this study, is analogous to that used in multiple experiments and attempts to reproduce the findings so as to increase confidence in (or refute) those findings (Hensen & Barlow, 1976 as cited in Yin, 1994). Replication logic required the investigators to treat the multiple cases as though they

were individual experiments. If similar results were obtained from two or more of the cases, then replication was said to have taken place. The assumptions used in this investigation were justified by cross-experiment design—not by intra-experiment design or logic. See Figure 2 for a graphic representation of the process used in this study.

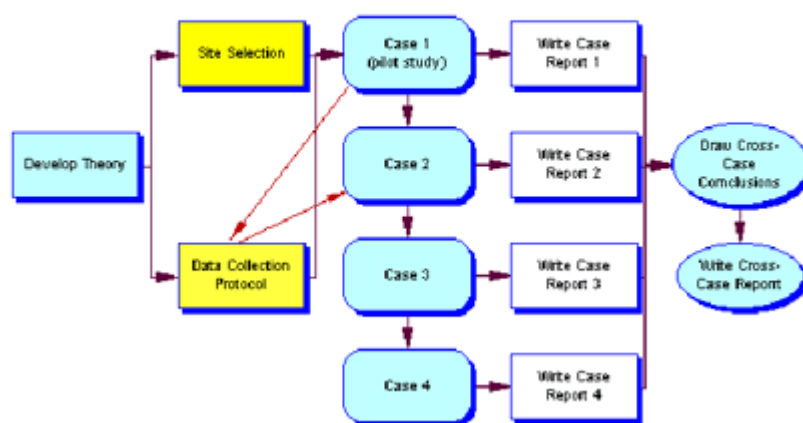


Figure 2. The Process of this Study. This figure depicts the sequence and development of this study.

The first case study in the series of this multiple-case investigation also served as a pilot for the subsequent cases. Any difficulties discovered in this first study were corrected, and the revised methods were then applied to the remaining cases. This single-case was subjected to careful review and analysis of the evidence before the other cases were conducted. This procedure minimized the chances for misrepresentation and maximized the opportunities to collect evidence from the remaining studies. The pilot study was included in the cross-case analysis of this study.

Each individual case study consisted of a whole study, in which convergent evidence determined the conclusions for the case. For each individual case, a case report indicated how and why a particular proposition was or was not demonstrated. Each case's

conclusions considered the information collected from the single case. Later, in the final analysis, a summative report was written that indicated the extent of the replication between the cases.

Data Sources

Evidence for this case study came from four principle sources: documents, archival records, interviews, and surveys. This section will review the processes used for data collection through these four methods.

No single source of data had a compelling advantage over all the others when conducting the case study (Yin, 1994). In fact, multiple sources of data can be highly complementary. Therefore, this study's design utilized as many sources of data as were practical and appropriate. The use of multiple sources of evidence allowed the investigators to address a broader range of historical, attitudinal, and behavioral issues. However, the most cogent advantage to using multiple data sources was that it allowed the investigators to develop converging lines of inquiry, a process frequently referred to as data triangulation (Creswell, 1994; Patton, 1987). As a result, the sources of evidence for each individual site were reviewed and analyzed so that each individual case study's findings was based on the convergence of information from the different sources available at the single site. Only after each individual case report was written did the investigators perform inter-case comparisons and analyses.

Documents

Document review and analysis proved to be an important source of data in this investigation. They were "cultural artifacts" (Hammersley & Atkinson, 1983, p. 129) in a literal setting and ranged from being formal to informal (Yin, 1984) in nature. Those

literal artifacts on the formal end of the spectrum were referred to as documents, while those on the less formal end of the spectrum, according to Yin's criterion were designated as archival records (Yin, 1994).

The most notable use of the documentary evidence in this investigation was for the formation of initial assumptions and foundations about a site's practices, policies, and procedures for dealing with HRM issues that involved faculty in online teaching practices. The contextual analysis procedures for documentary evidence are discussed later in this chapter.

The review of source documents included

- The collective bargaining agreement and/or faculty handbook,
- The school district's policy and procedure manuals and other relevant administrative communications,
- Job descriptions and announcements,
- Departmental letters, memoranda, and other communiqués that addressed the working conditions of faculty that may have changed as a result of the adoption of online teaching practices.

The usefulness of the documents was not based on their necessary accuracy or lack of bias (Yin, 1984). In fact, the documents were carefully evaluated and were not accepted as literal recordings of events. The investigators recognized that even official documents, in some cases, were deliberately edited before being printed in final form. The investigators further recognized that official policies and procedures might not necessarily be consistent with actual practice. Only after all of the evidence was collected

did the researchers determine a consistent picture. Only then were they satisfied that a particular event or condition existed and occurred in the manner specified.

Archival Records

Closely related to the document evidence was the archival records evidence. The functional distinction between the two was that documentary evidence was classified as those materials that were widely distributed among faculty, periodically updated and maintained by the author, and in most instances had legal implications. On the other hand, archival evidence was less formal in presentation, development, and maintenance. These records included departmental notes, staff assignments, miscellaneous departmental/divisional worksheets, budgetary worksheet and records, and pertinent Website information. Careful delineation between the two types of literary archives was not significant because they both had undergone the same systematic review procedures.

The most notable use of the archival evidence was the corroborative and augmentative evidence they provided. The records were used to corroborate specific details and information secured through the other sources. When the evidence was contradictory rather than corroboratory, the investigators were then compelled to inquire further into the specific topic under question.

Interviews

Another evidence-gathering technique utilized in this investigation was the use of focused, open-ended interviews. Interviews were an essential component of this study because the individual cases dealt extensively with human relations management issues. These HRM issues necessitated the reporting and interpretation of the issues as interpreted through the eyes of specific interviewees (Yin, 1994). School administrators,

faculty involved in online teaching, association representatives, campus technologists, and other appropriate site sources such as department chairs or curriculum specialists were asked to give facts, their opinions, and their own insights into issues related to the working conditions of faculty involved in online teaching practices. The interviews lasted approximately an hour, were conversational in manner, and followed a pre-established line of questioning. The interview schedule was amended when needed to pursue certain lines of information at specific sites. Additional questions were added if items found in the written evidence need clarification.

A major function of the interviews was to corroborate certain facts that already had been established from the written evidence. In addition, the interviews sought to reveal the respondent's attitudes regarding online instructional practices. The interviews were, however, considered verbal reports. As such, they were subjected to the common problems of bias, poor recall, and poor or inaccurate articulation (Yin, 1994). Despite these limitations, the interviewers attempted to corroborate interview data with information obtained from the other sources.

The investigators took notes during the interviews. In addition, the interviewers tape-recorded the interviews after they obtained permission to do so from the interviewees. All interviewees gave permission to tape-record the interview sessions. The recorded sessions were transcribed and the contents systematically reviewed and compared to the interviewer's notes. The notes of both interviewers were then compared for accuracy and completeness.

Survey

At the completion of the oral questioning, each faculty interviewee was given the American Federation of Teachers (AFT) Faculty Survey on Distance Education (see Appendix A). The survey took approximately 15 minutes to complete. AFT purports that this survey measures faculty impressions and attitudes about the use of Internet mediated instruction in academe (American Federation of Teachers, 2000). This survey produced evidence that enabled the investigators to triangulate the data by comparing the interviewee's responses to the results unveiled by AFT's national survey on distance education. The corroboration of the data allowed the researchers to infer characteristics, attitudes, and behaviors about the faculty at the selected sites, which were embedded sub-units of analysis (Babie, 1990 as cited in Creswell, 1994). A comparison of this data was compared to those discovered in the national sampling.

Figure 3 illustrates the sources of data obtained in this study. Interviews, documents and surveys were the collected for each of the four case studies.

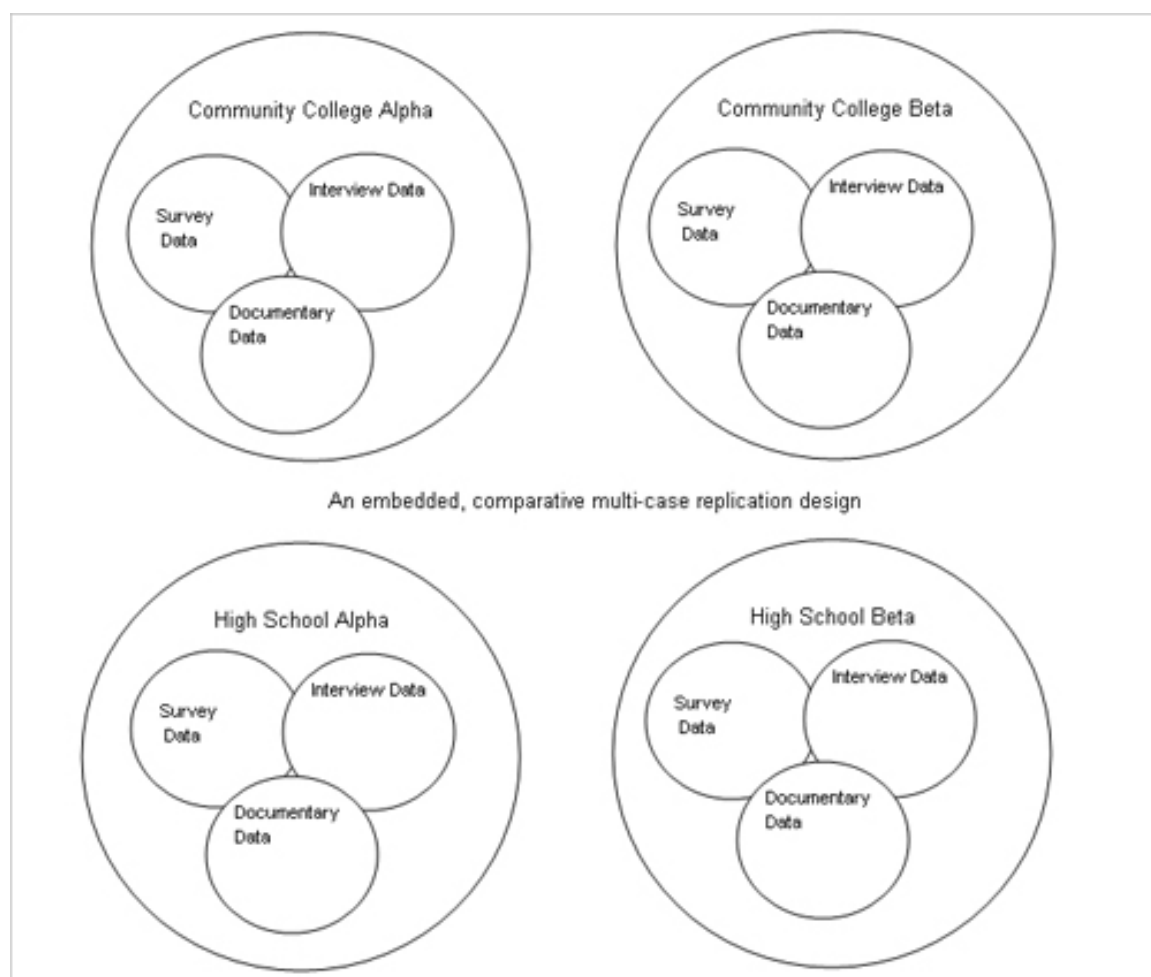


Figure 3. Sources of Data. This figure depicts the four case studies and the data collected at each site.

Site Selection

Given the purpose of this investigation, which was to determine what HRM infrastructure elements influenced the adoption of online teaching practices, case study site selection was purposive. Sites were selected in an effort to maximize the information that might be learned about the adoption of online teaching practices and HRM infrastructure (Stake, 1995). The comparative, multiple-case study examined four sites—

two from public high schools in California and two from the California community college system. The principle criterion used in site selection was not *What schools represented exemplary practices in online education?* but rather *What schools were engaged in online teaching practices that will help this investigation better understand the problems facing the development of an adequate HRM infrastructure?*

A panel of experts was consulted via e-mail (see Appendix A) to recommend school sites that would be able to contribute significant information to this investigation. The experts were asked to identify eight schools that:

- were engaged in online instruction
- were trying to deal with online teaching and HRM infrastructure issues in interesting ways.
- would be receptive to this type of investigation.
- would allow access to documentary evidence, and
- would encourage faculty and management personnel to respond to surveys and participate in interview sessions.

The panel of experts consisted of the executive director of the Academic Senate for the California Community Colleges (Julie Adams), the Director for Mediated Instruction and Distance Learning at California State University Dominguez Hills (Dr. Warren Ashley), and the Los Angeles County Office of Education, Telecommunications Consultant (Gayle Perry). Julie Adams was asked to select eight community colleges and Gayle Perry was asked to select eight high schools.

After the panel of experts made its recommendations, demographic information was added to each site's profile. Final site selection included sorting by a site's diversity

in academic program; nature of community, including racial, ethnic, and economic mix; student population; history of involvement in technology innovation; and location. Sites were chosen based on (a) availability, (b) accessibility to human resource management resources, and (c) dissimilar characteristics. Variety was important; however, the opportunity to learn from a site was a greater determinant when making final site selections.

The researchers then contacted the Chief Executive Officer (CEO)/Superintendent of each district and the President/Principal of each site to describe the study and to solicit his or her agreement and participation. The researchers assured the CEOs that the institution as well as its employees would remain anonymous and that all information would be kept in strictest confidence (see below Human Subject Considerations). Once participation had been confirmed, a cover letter (see Appendix C) was sent to the CEO/Superintendent and President/Principal explaining the study in detail.

Data Collection Procedures

The collection of data for this study involved several steps including site selection and notification, document collection, interviews, and survey administration. The following procedures were followed for data collection.

First, an initial phone call was made by the researchers to the CEOs of each site to enlist their participation in the study.

Second, once the sites were confirmed, each site was sent a packet containing a cover letter explaining the purpose and scope of the study. Included in the cover letter were a request for access to documentary evidence and a request for instructions for access and photocopying by the researchers. The documentary evidence included, but

was not limited to, the faculty collective bargaining agreement, faculty handbook, district policies and procedures related to online teaching practices, job descriptions of faculty engaged in online teaching, other departmental letters or memos that applied to online teaching practices, and other relevant documentary evidence that the site chose to include.

Also included in this packet were a letter of acceptance to participate in this research study, participant selection criteria, and forms that were completed by interview participants which granted permission to record the interview sessions. These items included instructions for signature and return mailing instructions.

Upon receipt of the acceptance letter, the researchers again placed a phone call to the site CEO. This call confirmed the site's acceptance to participate in the study, answered questions, encouraged and reinforced the collection and photocopying of the documentary evidence, and finally, initiated a discussion about site visits. Times, dates, and participant selection were the focus of this conversation.

On-site interviews lasted approximately 1 hour each. The interviews were conducted with the administrator responsible for online teaching programs, a faculty member who taught online, a faculty member who chose not to teach online, a union representative, a district technologist or online specialist, and others site specific specialists. Patton (1987) suggests that when multiple sites and multiple interviewers are used, a standardized, open-ended interview protocol is best. This practice reduces the possibility of bias. Thus, standardized open-ended interviews were employed by this study to minimize variations in the questions posed by the interviewers, yet this methodology was flexible enough to enable the interviewers to pursue lines of

questioning unique to individual sites and respondents. The interviews were highly focused, insuring that the time with the respondents was carefully used. The standardized open-ended approach also maximized the collection of systematic and comprehensive data from all of the different respondents. The interview sessions were tape-recorded, and the interviewers also took notes. Experts in the HRM field to ensure clarity and thoroughness examined the interview schedule, also known as questions. The experts consulted in this study included Ian Jukes, an educational technology consultant; Diane Clerou, a human resource specialist at Porterville Community College; and Jacques Bernier, a CTA representative in the Los Angeles area.

The following protocol for interviews was used:

1. Introduced the interviewers and thanked the respondent for choosing to participate.
2. Provided an overview and purpose of the study.
3. Provided an overview and purpose of the interviews.
4. Assured the respondent of the confidentiality and ability to review the transcript of the interview for accuracy.
5. Assured that permission to take notes and record the interview was on file.
6. Described the interview technique to be used.
7. Asked for and clarified any questions.
8. Obtained a signed Informed Consent form from the respondent.
9. Conducted the interview.
10. Introduced and administered the AFT survey.
11. Solicited additional documentary evidence.

12. Thanked the respondents for their time and participation.

At the conclusion of each interview, the respondent was asked to complete the AFT Faculty Survey on Distance Education (see Appendix B). The survey results were kept confidential. An institution's results were tabulated as a unit and later compared to the published results from AFT. The AFT survey was developed and created by AFT's Program and Policy Council for Higher Education. This group was composed of 19 professors from across the nation. The instrument they created was used to survey 200 distance education faculty members from across the nation.

At the conclusion of the survey, the researcher attempted to collect any missing documentary evidence. For example, if an interviewee's job description was not on file, the interviewee was asked to supply one. The interviewee was also asked to supply departmental letters, memos, and etc. that may have been mentioned or referred to in the interview.

Once data had been collected at a site, the researchers prepared a case-study report using a standardized format. A draft of the case study was sent to the participating site for verification of facts, accuracy, and comments.

Analysis of Data

"There is no particular moment when data analysis begins. Data analysis is a matter of giving meaning to first impressions as well as to final compilations" (Stake, 1995, p. 71). For this reason, the theoretical framework developed for the review of the literature and the development of interview protocols provided a structured template upon which the researchers developed the themes used for analysis of the data from this study.

Document and Archival Records Analysis

Documents and archival records were compiled by category, arranged in chronological order, labeled, and inventoried for the purpose of facilitating analysis. The rater analyzed each category of documents using the content analysis rubric (see Appendix D). Each rater coded the part or parts of the documents considered to match a particular frame or research question. Once all the documents were analyzed, the themes that emerged were compared and contrasted to the themes yielded by the analyses of interviews and the results of the survey information.

Interview Analysis

At the completion of each site visit, all audiotapes of interviews were transcribed as recorded to capture the exact communication of the interviewees. Because confidentiality was guaranteed, pseudonyms were assigned and entered into the written record. This process assured anonymity and confidentiality for the respondents. The researchers kept copies of original documents and would be able to produce verification of data instruments upon request. Each rater analyzed each transcript using the interview analysis rubric developed (see Appendix E). Each rater coded the part or parts of the document to match a particular frame or research question. Once all the documents were analyzed, the themes that emerged were compared and contrasted to the themes yielded by the analysis of the documentary evidence and the results of the survey information.

Survey Analysis

The survey component of this study provided a quantitative description of the attitudes and behaviors of respondents toward online teaching practices. By incorporating this data collection strategy into this investigation, the researchers were able to compare and contrast their responses to those reported by the AFT Program and Policy Council

(2000) when they used the same instrument to sample 200 educators nationally. The results were then used to corroborate or refute the inferences made by these researchers about the characteristics, attitudes, or behavior identified in the individual site investigations. The data were not used to imply statistical significance for the respondents.

Human Subjects Considerations

This research adhered to the ethical principles and standards promulgated by Pepperdine University, Graduate School of Education and Psychology (GSEP) and by the American Psychological Association. Furthermore, these principles adhered and complied with the code of federal regulations governing the protection of human subjects (Title 45, 1999). Their essence was summarized in the requirement that researchers conduct investigations “with due concern for the dignity and welfare of participants” (APA, 1992 as cited in Cone & Foster, 1993, p. 135). In discharging this responsibility, these researchers (a) obtained clear and fair, informed, and voluntary agreement by the respondents to participate; (b) protected the participant’s right to decline or withdraw from participation at any time; (c) protected the respondent from any physical or emotional discomfort that might be associated with the research procedures; (d) debriefed the participant(s) after data collection; (e) corrected any undesirable consequences to individuals, which might result from participation in the study; and (f) maintained strict confidentiality of any information collected during the course of the investigation in accordance with the terms of the Informed Consent (see Appendix F). Moreover, no names of respondents were attached to any comments. Pseudonyms replaced the names of participants in this study.

Because this research was conducted in established public school settings that had normal educational practices and utilized information that is generally considered to be in the public domain, there was minimal risk to human subjects. The dissertation committee chairperson reviewed the study's procedures and determined that this study had an exempt classification in accordance with departmental policies and procedures set forth in the GSEP, Education Division Dissertation Guidelines (1999) (see Appendix G).

The Validity and Reliability of This Study

“Qualitative researchers have no single stance or consensus on addressing traditional topics such as validity and reliability in qualitative studies” (Creswell, 1994, p. 157). Rather, the discussions focused on quality criteria such as the trustworthiness and authenticity of qualitative research. In these terms, validity became a matter of internal validity by seeking to determine the accuracy of the information and whether it matched reality. This investigation used multiple data sources that allowed the investigators to develop converging lines of inquiry (Yin, 1994). This process is frequently referred to as data triangulation (Creswell, 1994; Patton, 1987). The sources of evidence for each individual site were reviewed and analyzed, so that each individual case study's findings was based on the convergence of information from the documentary evidence, the interviews, and the survey results at each site. Furthermore, the internal validity was supported by providing a draft report to each site for verification of facts, accuracy, and comment.

There was a second type of validity to be considered, external validity. This questions whether a study's findings can be generalized beyond the immediate case study. When an investigator generalizes a particular set of results to a broader theory,

rather than to a population, analytical generalization can be claimed (Yin, 1994). The ability to generalize universally is not automatic, however. A theory must be tested through replication of the findings in a second or even third study, where the theory has specified that the same results will occur. Once such replication has occurred, the results might be accepted for a larger number of similar sites. This replication logic further supports the use of multiple-case designs and establishes a measure of external validity.

Creswell (1994) suggests that the uniqueness of a case study within a specific context mitigates against its replication in another context—the reliability issue. However, as Creswell points out, the multiple-case study design allows for and expects patterns, events, or thematic constructs to be replicated in different settings. In fact, Yin (1994) suggests that using a detailed protocol for data collection, similar to the one in this study, produces a case study that might be more easily replicated in another setting—thereby contributing to its reliability.

Chapter 4

Data Collection

The Multiple Case Study Approach

This chapter comprises four case studies conducted at two community colleges and two high school-level online programs. A brief description of each of the four sites is presented for contextual purposes. After the description, a depiction of the diffusion of each site's online program as it was affected by that organization's human resource management infrastructure is offered.

The case studies are constructed from diverse sources. The primary sources include the 25 interviews conducted by the researchers and an analysis of the documents collected at each site. The collected documents include collective bargaining agreements, faculty manuals/handbooks, teacher evaluation forms, newsletters, and memoranda. The secondary sources incorporate informal conversations with personnel such as secretaries and clerks, the official Websites of the educational institutions, the Websites of the cities in which the campuses are located, brochures, college catalogues, and other printed informational materials.

Also included in this chapter is a summary of an attitudinal survey. This survey was adopted from the American Federation of Teachers' (AFT) nationwide, attitudinal survey on distance education. This study's results are compared to the national survey.

The Diffusion of Online Teaching in an Institution

The degree of adoption of online teaching in an institution and its maturation process can be determined by its diffusion or rate of adoption. According to diffusion theorist, Everett Rogers (1995), "Diffusion is the process by which an innovation is

communicated through channels over time among members of a social system” (p. 5).

The social systems of any institution include its human resources management infrastructure. Rogers posits that innovations can be characterized by a classification scheme that comprises five attributes: *relative advantage*, *compatibility*, *complexity*, *trialability*, and *observability*.

Relative advantage describes “the degree to which an innovation is perceived as being better than the idea it supersedes” (Rogers, 1995, p. 212). Relative advantage is the perception that a particular innovation will bring some improvement. The improvement may bring an economic, social, or prestigious benefit. *Compatibility* describes “the degree to which an innovation is perceived as consistent with existing values, past experiences, and the needs of potential adopters” (p. 224). The innovation will be perceived as being congruent or incongruent with existing institutional values and goals. Compatibility, or the lack thereof, influences the adoption rate of the innovation in question. *Complexity* is the relative perception of the degree of difficulty involved in adopting an innovation. The more complex the innovation is perceived to be, the slower the rate of adoption. According to Rogers, *trialability* is “the degree to which an innovation may be experimented with on a limited basis” (p. 243). The more a potential adopter is able to try out the innovation, the greater the likelihood of its adoption. *Observability* is visibility of the innovation. The more the potential adopter is able to observe the innovation, the greater the likelihood of its adoption.

By considering these attributes, a rate of adoption can be predicted by Rogers (1995). *This study did not seek to predict the rate of adoption of online teaching practices but sought to identify the stage of diffusion for each institution and how the human*

resource management infrastructure impacted its diffusion process. Rogers' five attributes were utilized to determine the diffusion of online teaching in each institution.

In addition to Rogers' (1995) five attributes, this study added two additional attributes: *institutional support* and *institutional codification*. *Institutional support* is the extent to which an institution sustains and maintains innovative practices. Institutional support may include technology support in hardware and software, the granting of financial incentives, and the addition of specialized employees dedicated to the implementation of the innovation. *Institutional codification* is the extent to which an institution recognizes, legitimizes, and authorizes the adoption of innovative practices by codifying these practices in its official documents and thereby granting the innovation an official and permanent status.

Case Study Alpha

Nestled in an isolated community hours away from any major urban center, Community College Alpha is situated in one of the most geographically expansive community college districts in the United States. The district covers nearly 25,000 square miles. The district comprises three rather independent campuses, which were aligned in the late 1960s for financial purposes. Prior to the alignment, the three campuses were independently serving students for many years. One of these campuses is Community College Alpha.

Community College Alpha comprises four campus sites and an online campus. The four campuses serve an area of more than 18,000 square miles. The main campus and two of the other three campuses are situated in communities that were surrounded by a series of military installations. In the past, being situated near these military

establishments was a source of growth for these campuses. Community College Alpha had served many military personnel, their spouses, and dependents. However, since the end of the Cold War and the subsequent downsizing of the industrial-military complex, the communities in which these campuses are situated suffered a steady decline in population and economy. Only very recently have these communities been able to stabilize as they weaned themselves from their economic dependence of the industrial-military complex.

The fourth campus is the most remote and is situated furthest from the main campus. The fourth campus comprises two sites, which are located in two towns separated by nearly 40 miles. Each town has its own plant, but both shared the same faculty and often the same students. The major industry in both of these communities is tourism; therefore, these two towns were unaffected by the downsizing of the military. In fact, the fourth campus experienced unprecedented growth. Instead of scaling back its campus sites, this fourth campus embarked on an ambitious building program that will add a college library, student housing, faculty housing, a science building, a fine arts and performing arts center and theater, a hospitality and resort management center, and additional classrooms and administrative offices. The community passed a \$15 million bond measure, and the local education foundation committed to the creation of a complete community college complex. Ground was broken on this ambitious project and building began in earnest. The local education foundation and community members are responsible for this enterprise. The site's main campus and its home district have supported these efforts but have contributed little to the expansive building program. "The community really wants a college," (anonymous, personal communication, Case

Study Alpha, May 21, 2001) remarked one of the members of the resort community. In addition, Community College Alpha's online campus is administered from this remote but growing campus.

Community College Alpha and its district sought to stem the decline in student population. Thus, a lead administrator and a lead faculty member established an innovative online program that has since been a major source of students and revenue for Community College Alpha. The online program is presently second only to the main campus in student enrollment and revenue generation. In a district that covers nearly 25,000 square miles, an online program made sense to the innovators of the program. Presently, the online program offers seven Associate of Arts or Associate of Science degrees that can be completed entirely online. Five other Associate Degree programs are awaiting approval from California Community College Chancellor's Office, and a certificate program is also under the Chancellor's consideration.

While a virtual campus knows no physical bounds, it is institutionally significant that the district's online program is administratively located at its most remote location. The lead administrator and the lead faculty member, who were responsible for the creation of the online program, chose the location of the online program for a pragmatic reason. The site was chosen for its physical inaccessibility. The online program was purposefully located in the most remote area in the district in order to limit contact with its detractors. The site was chosen to sidestep other administrators who might be antagonistic to the project and to avoid union officials who might object to some practices on contractual grounds. The leaders of this project thought that physical isolation would be advantageous in order to enable the program to establish a firm

foundation before it would be submitted to the scrutiny of detractors. This sensible, yet Machiavellian approach seems to have achieved its intended purpose.

The Diffusion of Online Teaching and Human Resource Infrastructure in Community College Alpha

Attribute 1: Relative advantage. Online teaching for Community College Alpha has been a godsend. Enrollment had been in decline at three of its four campuses. Community College Alpha's administrator in charge of human resources and student services noted (anonymous, personal communication, Case Study Alpha, May 21, 2001):

The only other way we can see to grow is to continue to expand the online program, which basically opens up the world. Not only does it open up the world, but it also opens up greater potential for out of state students...which brings in more money to the college.

The online program provides student enrollment that had otherwise been in serious decline. Students in this expansive district who live 200 miles away from a campus may take online classes they need to fulfill degree requirements. Nontraditional students who could not attend courses during the traditional school hours (8 a.m. to 10 p.m.) or who are located too far away could take courses at their convenience.

Community College Alpha's student body and faculty operate beyond their geographical situation. Their virtual classrooms reach out to students throughout the United States and even beyond the nation's borders. Some of Community College Alpha's adjunct instructors have yet to set foot on one of the campuses. The online faculty and administrators' eyes sparkle when they talk about the out-of-state tuition that is generated by online students. There are many financial incentives for Community College Alpha to

adopt online programming. Faculty members are also encouraged to develop courses online when they receive a \$1,500 stipend to move a course to the virtual environment. Every instructor who chooses to teach online receives the stipend.

Aside from the monetary incentives, instructors are able to teach classes anytime and anywhere. The director of human resource management stated, "...you can manage an online class from anywhere. You can manage it from home...we had one professor who ran his course while he was out of the country, on some leave or some vacation time" (anonymous, personal communication, Case Study Alpha, May 21, 2001).

However, an instructor who declined to adopt the district's online program pointed out, (anonymous, personal communication, Case Study Alpha, May 21, 2001):

Within 10 years every community college, every university, and Cal State University is going to have an online program. So when everybody has online programs why would anyone in Bangladesh or Swaziland...sign up for a class at Community College Alpha when they have...choices from around the planet?

Some instructors teach online because they enjoy the environment. According to a union representative, "Some of the teachers find it rewarding, and the overload pay is...reward in itself" (anonymous, personal communication, Case Study Alpha, May 21, 2001). However, an instructor who declined to adopt the program had a more cynical view of some of the online instructors, (anonymous, personal communication, Case Study Alpha, May 21, 2001):

I've talked to a few instructors who really, really like the online environment. But they are also the same instructors that have a hard time in the classroom.... They

love the online environment because they don't have to sit here face to face.

They've got an electronic buffer.

Another relative advantage is pedagogically based. The director of human resource management stated, "I think the online environment allows you to be more consistent in the delivery of the curriculum" (anonymous, personal communication, Case Study Alpha, May 21, 2001). The content from one class to the other in an online class is more consistent because the material presented is static until the instructor intentionally changes it. However, an instructor who declined to adopt the program noted that class interaction could be at times frustrating, (anonymous, personal communication, Case Study Alpha, May 21, 2001):

I think the online environment is excruciatingly slow. It really takes a lot of time to go back and forth and answer e-mail questions. Many times questions have been posted in the online class that aren't answered, not even by the instructor.

Attribute 2: Compatibility. The compatibility of an online teaching program with traditional teaching is debated in the educational community. The supporters of online teaching often proffer the foremost characteristics of the Internet to be entirely compatible with online education. These supporters suggest that education should be anytime and anywhere. The director/instructor of the online program at Community College Alpha stated several favorable compatibility factors. One highly motivational compatibility factor is the relative stability and security online instruction has within the district. Classes at Community College Alpha's extensions average 10 students, whereas the online classes average 30-35 students. The director/instructor stated, "...our online courses...fill up and they always run" (anonymous, personal communication, Case Study

Alpha, May 21, 2001). Whereas, face-to-face courses that do not meet the minimum student enrollment are cancelled. Thus, there is relative security provided by the popularity of the online programs. Similarly, the online program at Community College Alpha is compatible in that it provides instructors with greater flexibility to teach diverse classes within their discipline, "...an online class has allowed some instructors to be able to teach something further along in their course work" (anonymous, personal communication, Case Study Alpha, May 21, 2001). That is, instructors are able to teach beyond the introductory courses offered in their disciplines and to delve deeper into their subject matter because online courses have allowed additional students to enroll in these more advanced courses whereas face-to-face advanced courses are often cancelled because of insufficient enrollment.

However, the detractors of online education state that the online environment cannot offer the same complexity of interaction as the face-to-face classroom. One faculty member who declined to adopt the program stated, "The online component is worthless. There is absolutely zero value added. In other words, give me the book and send me on my way..." (anonymous, personal communication, Case Study Alpha, May 21, 2001). This detractor thought that the online courses are nothing more than electronic correspondence courses. Detractors conclude that the online classroom is incompatible with the values, beliefs, and practices of the traditional classroom. However, it is noteworthy that the interviewees at Community College Alpha universally proclaimed that the duties, obligations, and rights for a traditional classroom instructor do not change when the class is taught online. The same standards are to be applied to both the traditional and the online classrooms.

The compatibility issue is a major institutional concern for Community College Alpha. Both the representatives from Community College Alpha's administration and the faculty union agree that online faculty evaluations should approximate those of the traditional classrooms. The contractual language that governs full-time faculty evaluations at Community College Alpha stipulates, "There shall be a uniform and consistent evaluation policy for all tenured and non-tenured faculty" (anonymous, personal communication, Case Study Alpha, May 21, 2001). Furthermore, information relating to the evaluative process is also governed in the contract, "Information shall not be obtained through the use of sources such as electronic media, listening or recording devices without the written permission of the faculty member" (anonymous, personal communication, Case Study Alpha, May 21, 2001). Thus evaluators may not monitor an online course without consent of the instructor. The contract further stipulates, "The evaluation of faculty teaching on-line, telecourse, and distance learning classes shall be the result of direct observation of the faculty member during the performance of his/her duties and shall not include any covert surveillance mediated by any technological devices" (Case Study Alpha, 2001, Article 5.A.1).

Thus fulltime, tenured online instructors are "observed by an evaluator" (Case Study Alpha, 2001, Article 5.A.1) while they are teaching the class. This seemingly reasonable position, however, means that an evaluator watches the online instructor type on a computer's keyboard while the instructor answers e-mail or monitors a threaded discussion for the online class. Since the contract stipulated a "uniform and consistent evaluation policy for all tenured and non-tenured faculty," (Case Study Alpha, 2001, Article 5.A.1) this evaluative process is carried out in the virtual classroom as well. One

online peer evaluator stated in frustration that the current evaluative process is not adequate for online instructors. The incompatibility of the current human resource infrastructure is a foundation of concern for the faculty union of Community College Alpha.

The compatibility of online teaching at Community College Alpha is affected by its “indigenous knowledge systems” (Rogers, 1995, p. 240). All educational institutions are embedded with particularized, reified practices and systems of knowledge. Public schools are also embedded with a codified system that carefully prescribes the relationship between the administration and the faculty. Online teaching broke new ground that was foreign to the indigenous knowledge system at Community College Alpha. For instance, the issue of intellectual property is not entirely settled. One administrator stated, the course “becomes institutional property. And probably one of the things that this district will have to do in the very near future is to solidify any documentation on intellectual property rights, but right now it is treated as institutional property” (anonymous, personal communication, Case Study Alpha, May 21, 2001). However, according to an online instructor, the format of a course developed for online instruction belongs to the institution while the content belongs to the course developer. While this may make sense at the *prima facie* level, it can have serious repercussions at a later date. How does one pragmatically separate the content of a course from its format? No similar demand is placed on traditional face-to-face classroom instruction in regard to intellectual property.

Attribute 3: Complexity. Complexity does not seem to be a major concern for the interviewees at Community College Alpha. The innovators of the district were willing to

endure any technological inconvenience, as is typical of all technology innovators. These early adopters had what Paul Saffo (1996) terms a high “threshold of indignation” (p. 87). That is, these innovators were willing to endure high complexity because they believed in the implementation of the innovation. For the faculty member, who declined to adopt the program and was interviewed, the complexity of the innovation did not prevent him from adopting it. For this person, the principal impediment standing in the way of adoption was the aforementioned compatibility issue.

Complexity also involves the issue of technological expertise and the learning of technology. According to an administrator, for some faculty there is an issue of technological phobia, “The bigger issues involve the fear of technology on the part of some faculty” (anonymous, personal communication, Case Study Alpha, May 21, 2001). One faculty member thought that there is a general lack of technological expertise among the teaching staff.

One Community College Alpha staff member did recognize that learning to use technology needed to implement an online classroom would raise the complexity issue. (anonymous, personal communication, Case Study Alpha, May 21, 2001):

There is certainly a greater demand in terms of technological expertise placed on the online faculty.... And there is the time involved in managing the site, in putting up the instructional material, and in monitoring the discussion groups that are a part of all of the classes. Some faculty will get into audio and video streaming, so that is a little more time intensive.

The director of online instruction also addressed the complexity issue. The director had created a series of courses for potential online teachers to acclimate

themselves to the online environment. Technology assistance was developed for both faculty and students to solve technical problems arising from the virtual environment.

Attribute 4: Trialability. The online faculty members of Community College Alpha were encouraged to develop online courses, but there was no requirement or mandate to do so. There was no pressure placed on tenured faculty members to continue to teach online once they had developed a course for online instruction. Thus tenured faculty members are free to experiment with teaching online. However, the majority of the faculty realizes that the most time-consuming aspect of online teaching is the initial course development. As a consequence, most online course developers continue to teach online to take advantage of the time already invested.

One online instructor had grown disenchanted with the online teaching program. This faculty member would choose not to teach online in the future because he was not sure that the quality of the interaction between students was as effective as it is in his face-to-face classes. Nothing in the contract is found that would prevent this teacher from making the decision not to continue online teaching. Thus a trialability phase has been informally established at Community College Alpha.

According to a union representative, the concept of trialability and adaptability is important to late adopting faculty members. Online practices "...would be optional and supplementary. And it would come with the idea of testing the water" (anonymous, personal communication, Case Study Alpha, May 21, 2001). Trialability could lead to the development of new hybridized classes that may include aspects of both face-to-face and online instructional practices.

Attribute 5: Observability. The success of the online teaching program in terms of revenue and income generation is undisputed and widely known throughout Community College Alpha. The online program has brought students back to the college that had witnessed a serious decline in the number of face-to-face students in recent years.

The practice of online teaching is both observable and nonobservable at Community College Alpha. It is observable in the sense that anyone could access the college's online programs and Websites because they are readily available on the Internet. In fact, the online program is highly visible and is featured on the main campus' Website. However, at the same time, placing the director of online instruction at the district's most remote site makes the online program nonobservable. Teachers and potential adopters may view the product of innovation at the campus Website, but the actual work performed by the online teachers is not transparent.

Attribute 6: Institutional support. Community College Alpha has provided institutional support for the adoption of online teaching. It has provided a financial stipend of \$1,500 for any instructor to develop an online course. The earliest adopters enjoyed special hardware and software support. The online program has also hired an online program director/teacher who administers the program. Technical assistance and support is provided to both teachers and students. The institution also filed a report indicating a significant change in instructional delivery to the Western Association of Schools and Colleges accrediting body. Both the administration and the faculty union agree that the application of the existing contract, the hiring process, payroll, and salary and benefits should be consistently applied for the traditional and online teachers alike.

Furthermore, the duties, rights, and responsibilities should also be the same—only the teaching environment and mode of delivery have changed.

New online instructors are also required to complete at least three online instructional methodology classes to learn skills and demonstrate online instructional practices proficiency. The recruitment of faculty maybe completed entirely online; however, certain issues make this process awkward. For instance, the state-required tuberculosis test seems nonsensical to online programs. Similarly, compensation and taxation issues remain unanswered for instructors who reside out of state and beyond the political boundaries of the United States.

Attribute 7: Institutional codification. Online teaching is recognized in Community College Alpha’s collective bargaining agreement in various sections. In the faculty expectations and duties portion of the contract, faculty are encouraged to use “alternative instructional delivery approaches” (Case Study Alpha, 2001, Article 4.D.6). Thus faculty members are encouraged to learn new technologies, methodologies, and different modes for the delivery of instruction. Teacher evaluations are expected to be the same for both the online and traditional, face-to-face teachers (Article 5.A.1). Teachers are rewarded with salary schedule progression for units taken to learn technologies provided that the teachers secured the approval of an administrative supervisor (Article 9.E.13). Sabbatical leaves for technical or creative skills development are also granted (Article 10.O.3.g).

While these particular issues have been identified by the collective bargaining agreement, one faculty member suggested, “...our recent contract is...fairly naïve or neglects addressing those sorts of issues” (anonymous, personal communication, Case

Study Alpha, May 21, 2001). This instructor stated that the evaluation process for online instructors is inadequate as an assessment of an online teacher's performance. He concluded, "There seem to be issues that need to be nuanced and refined.... They are certainly not developed to any great depth in policy" (anonymous, personal communication, Case Study Alpha, May 21, 2001).

Regarding intellectual property rights, there seemed to be a conflict in the interpretation of course ownership. An administrator stated, "Probably one of the things that this district will have to do in the very near future is to solidify any documentation on intellectual property rights, but right now it is treated as institutional property." (anonymous, personal communication, Case Study Alpha, May 21, 2001). The administrator supports this claim from the Collective Bargaining Agreement which stipulated:

Copyrights and patents developed from projects undertaken by a faculty member at the initiation of the district and/or college whereby the district and college commits resources to the project, including reassigned time of the faculty member, shall belong to the district....(Article 4.C.5)

However, faculty members are under the presumption that course content belongs to them. One online instructor stated, "The instructor who is developing this course owns the content of the course, but the college owns the template (anonymous, personal communication, Case Study Alpha, May 21, 2001). Faculty stake their claim to intellectual property rights from the Collective Bargaining Agreement which reads:

Each faculty member shall have the sole rights of ownership and the disposition of copyrightable materials and patents which are the sole product of the faculty

member's mind, time and talents, including the right to all royalties and profits except as limited by Article 4.C.4.a. (Article 4.C.1)

Article 4.C.4.a stipulates:

The District shall share with faculty members the ownership and disposition of faculty generated copyrightable material and patentable discoveries or inventions where there has been use of District and/or College personnel or facilities which were not uniformly provided to other similarly situated faculty members.

Further codifications regarding intellectual property include the Memorandum: Confirmation of Assignment- Online Course, which stipulates, "All content that you [the instructor] provide to the course will remain your property, but the Community College Alpha online template and use of it remain the copyrighted property of Community College Alpha" (anonymous, personal communication, Case Study Alpha, May 21, 2001). The Community College Alpha Website contains the same language regarding faculty ownership of content of the course but not its format.

Conclusion: Human Resource Management Infrastructure in Community College Alpha

Community College Alpha was an early adopter of online teaching. The creators of the online program reached beyond the traditional boundaries of the institution in order to implement the program. The ad hoc approach for Community College Alpha is common of all early adopters (Rogers, 1995). There have been attempts to address the needs of the online program by the human resource management infrastructure, *but these attempts have not adequately addressed important issues such as intellectual property and faculty evaluations*. The early adopters of the online teaching program have enjoyed the respect of later adopters who have sought the innovators' opinions regarding the

implementation of the new technologies. The early adopters were viewed as change agents and serve as role models for others to emulate and follow. In fact the early adopters of online teaching were viewed as saviors by providing additional student enrollment, which had been steadily decreasing at Community College Alpha. These innovators have averted the downsizing of faculty, staff, and programming through the implementation of the innovative online program.

Nevertheless, the human resource management infrastructure has not dealt with a variety of issues. For instance, substitute teachers are, at times, provided for face-to-face instructors who miss classes. However, no online teacher had ever had a substitute when he or she had to miss a class. The concept of anywhere and anytime learning and teaching is understood by the administration to conversely mean everywhere and all the time teaching.

Another human resource management infrastructure issue involves class size. The minimum and maximum number of students enrolled in online classes are higher than the minimum and maximum number of students required for face-to-face classes. Some faculty speculated that this is because of a higher attrition rate for online students.

Online instructors were also required to participate in additional training classes in order to teach online. These classes were not required of the traditional, face-to-face instructors. No compensation is awarded to the teachers who take these classes, with the exception of tenured teachers who are not required to pay the tuition. This discrepancy is a violation of the education code, which stipulates equal treatment for all staff members (California Education Code, Section 200).

Faculty evaluations remain problematic. Both the faculty and the administration have understood that faculty evaluations must be conducted by a physical observation of the instructor teaching the class. For an online instructor this observation has been interpreted to mean that the evaluator would observe the instructor typing on a computer. This clearly does not provide an adequate assessment of the online class; however, it does meet the requirements as stipulated by the collective bargaining agreement.

Regarding working conditions, the collective bargaining agreement stipulates, “Faculty shall spend an minimum of thirty hours per week engaged in professional activities on campus or in an assigned, approved work situation” (Case Study Alpha Collective Bargaining Agreement, 2001, Article 6.N.2). The definition of “approved work situation” (Article 6N.2) is not clearly delineated for the online instructor. In addition, the collective bargaining agreement stipulates, “Five hours per week shall be regularly scheduled office hours” (Article 6.N.2.b). What office hours meant for the online instructor is not certain.

Another troublesome area concerns the issue of the stipend earned by course developers. The \$1,500 stipend is not supported by the collective bargaining agreement. The contract stipulates, “The faculty assigned to develop curriculum shall be compensated by reassigned time, load-banking, or overload pay as determined by the faculty member. Compensation shall be one-half lecture hour equivalent per unit” (Case Study Alpha Collective Bargaining Agreement, 2001, Article 6.P). The stipend was not in accordance with the collective bargaining agreement.

There is no evidence that the entire faculty at Community College Alpha had received online teaching inservices and training. There is a perception among the faculty

and administration that there exists a computer phobia on the part of some faculty and staff. According to Sherry Turkel (1995), people often did not suffer from computer phobia but rather have a computer reticence which may be overcome with proper technology inservices. This issue of technology refusal among the late adopters and laggards needs to be addressed by the human resource management infrastructure.

The addition of the online program at Community College Alpha corresponds to Bolman and Deal's (1997) concepts of "adhocracy"(p. 64) and machine bureaucracy . The innovation of the online program at Community College Alpha was an ad hoc addition to their educational institution. There is little evidence that suggests that there was a preconceived strategy by which the online program would be administered. At the same time, the innovation has also clashed with the machine bureaucracy. Issues such as faculty evaluations, office hours, TB tests, and intellectual property clashed with the traditionally defined human resource management infrastructure.

Case Study Beta

In the midst of a major, densely populated urban center, a consortium of schools and businesses formed to implement innovative technologies and teaching strategies in its schools. According to the Case Study Beta Website (2001):

[The consortium] provides coordination in educational technology and telecommunications for educational institutions primarily within the Beta Consortium area and it provides opportunities for representatives from educational institutions, businesses and other appropriate groups to discuss and share ideas related to education, educational technology, telecommunications and school-to-career transitions. (para. 2)

The consortium comprises 14 school districts, which include a California Regional Occupational Center, the County Office of Education, five colleges and universities, eight major corporate businesses, and several participants from governmental offices.

The Beta Consortium is situated in a geographic area that supports a population of approximately 700,000 persons. This area has more than 103,000 children in K-12 classrooms. The communities, which compose the Beta Consortium, are ethnically, culturally, and economically diverse. As a whole, the consortium school districts have a heterogeneous population that is representative of the state of California: 37% Hispanic, 33% white, 16% African American, and 12% Asian. However, this seemingly welcomed racial balance obscures the great differences and inequities among the communities and neighborhoods that constitute the consortium.

There is an immense chasm between the affluent communities and cities on the one hand and the large inner-city communities on the other. One of the communities in the consortium is among the wealthiest communities in the state with a median household income of \$123,000 in 2000. Juxtaposed to this affluence, two other communities located less than five miles away have median household incomes of \$35,000. The affluent communities have higher proportions of white and Asian students, while the inner-city neighborhoods have higher numbers of Hispanic and African American students. For example, one affluent school district in the consortium has 28.8% Asian and 47.7% white students and another district has 6.8% Asian and 80.3% white students. On the other hand, one inner city community has 56.2% Hispanic and 41.6% African American students, and another community has 66.2% Hispanic student population and 20% African American. Thus the racial balance as reflected in the consortium's ethnic

composition is misleading. The individual school districts within the consortium are generally not racially balanced.

The income and racial gaps described above are also reflected in student achievement and dropout rate. Of the 14 high schools in the consortium, 4 are relegated to the lowest ranking (1) on the state's Academic Performance Index (API) in the year 2000 statewide assessment. Another inner city high school in the consortium has an API rank of 2. Contrastingly, three high schools within the consortium have attained the highest API rank of 10. The other six high schools rank between the scores of 9 and 7 of the API. Unfortunately, the dropout rate from the schools in the poorer neighborhoods is likewise high. The three lower-performing high schools have drop out rates of 21%, 15%, and 17%. It must be noted that when these dropout figures were calculated by ethnicity, the numbers of Hispanic dropouts was noticeably higher with 52%, 55%, and 57% not completing high school. While the inner-city schools struggle with their high dropout rates, the three affluent schools boasted that more than 95% of their graduates went onto higher education institutions.

As a whole, the Beta Consortium reflects the racial, ethnic, economic, and social balances that compose California. It also has balanced, standardized test scores. However, when the data are disaggregated, the outliers pull the statistical balance of the consortium in two directions, resulting in a bipolar distribution with very few students in the middle. The resulting frequency distribution takes on the form of a double-hump curve with concentrations in the upper and lower segments, with few students in the middle. In this milieu, the consortium was created to implement the use of technologies within its classrooms.

In its 10th year of operation, the Beta Consortium formed The Beta Consortium Virtual Academy. This virtual academy was intended to serve the diverse community represented by the members of the consortium. The consortium sought to create online classes that would benefit the high- and low-achieving schools, the affluent and the inner-city schools, and all ethnic groups.

The creators of the virtual academy originated from a subcommittee of the consortium's technology committee. This subcommittee was composed of the executive director of the consortium, personnel from 4 of the 13 consortium K-12 school districts, and a representative from a local California State University. Of these five members, only two had previous online teaching experience. The experienced university teacher was the director of the university's distance and extended education program. The experienced high school teacher had taught previously in Virtual High School (VHS), which is sponsored by The Concord Consortium based in Boston, Massachusetts. These two members led the Beta Consortium's efforts to create online programs at the K-12 level. All practical planning issues were deferred to these two key innovators.

The virtual academy began modestly, offering only seven classes: four college-level classes in art and music created by the local California State University for which students received both college and high school credit, two high school-level courses in American government and economics, and one middle school-level class in web design. The consortium planned to offer 25 courses within a few years. The purpose of the courses was to augment the services offered to students from within the consortium school districts.

The Diffusion of Online Teaching and Human Resource Infrastructure in the Beta Consortium

Attribute 1: Relative advantage. An online program for the Beta Consortium meets several needs. For high school students who have impacted schedules, these courses would provide relief in that students could take these University of California and California State University mandated classes outside of the normal school day. For example, high school athletes, who devote their afternoons to sports, often have to sacrifice electives in order to take the classes required by the university systems. As an illustration, these athletes would sacrifice a desired course in journalism for the mandated American government class. With the advent of the Beta Consortium Virtual Academy, the student-athlete could take journalism during the school day, athletics in the afternoon, and the American government requirement online.

For students who are struggling academically, the online classes provide an additional opportunity to meet the state required classes. According to the experienced online high school teacher, “My classes have both the high-achieving, university bound students and the students who are struggling to stay in school,” (anonymous, personal communication, Case Study Beta, June 18, 2001). Furthermore, this teacher related his previous experience in VHS:

There were predominately two types of students in my virtual classes. The smallest group had students who were accepted into MIT, University of Washington, Berkeley, and Boston University. By far the larger group was comprised of students who were in continuation high schools, mechanical arts and

technical high schools, and juvenile detention schools. I've never had such diversity in my face-to-face classes. This was exciting teaching.

The experienced university teacher said that faculty could benefit from earning additional income by teaching overload classes online, and these could stimulate their creativity by exploring teaching via the Internet. For new hires, the advantage would be for them to add online instruction as part of their professional portfolio, which is evaluated for granting tenure.

The executive director of the Beta Consortium stated that the participating districts could be involved in the online teaching world without incurring a major commitment of resources. The distribution of risks and resources through a cooperative consortium would minimize the risk and enable more districts to participate in the online teaching and learning medium. Similarly, the university director stated, "I think the strength of the consortium is the mutual support, the cross-fertilization, and the raising of expectations" (anonymous, personal communication, Case Study Beta, June 18, 2001).

Being able to teach with a flexible schedule is also perceived to be a relative advantage. The director of human resources at a local high school said (anonymous, personal communication, Case Study Beta, June 18, 2001):

As long as the teachers were getting their jobs done, it wouldn't matter where they taught the online class. For example, it would be ideal for new mothers to work with students and still be able to be at home with their children just like private sector people can do.

This personnel director also stated that this flexibility would not be confined to teachers who wish to teach at home, but that it would be possible to teach from exotic locations such as Hawaii.

The courses offered by the California State University benefit every stakeholder. The university benefits by serving more students, for which the State of California grants additional revenue. It also potentially will attract future students to the California State University system. The students benefit by having required courses available outside the normal high school day, and additionally, they also can have college credit by paying a modest transaction fee of \$3.50 per course. The high schools gain because they are able to serve students with impacted schedules better. The students do not take these classes in lieu of high school courses but in addition to, thus the high schools do not lose revenue to the colleges. High school teachers benefit in that their classrooms have fewer students and are a more manageable size. The parents are relieved that they do not have to make special arrangements in order to accommodate the needs of their children. In some instances, parents have to arrange transportation for their children on Saturdays to the local community college in order to fulfill the requirements.

Attribute 2: Compatibility. The courses offered by the Beta Consortium Virtual Academy meet state curriculum standards and are patterned after classes already taught in the regular, face-to-face classrooms. Seemingly, the online classes fit well within the existing educational system and are perfectly compatible. Yet the compatibility issue continues to be debated. Clearly the instructors of these online classes thought that their online courses were compatible with their face-to-face classes. But again, the person who chose not to teach online thought that online classes were not compatible with normal

classroom instruction. This teacher who declined to adopt the program stated that (anonymous, personal communication, Case Study Beta, June 18, 2001):

Teaching is a very personal relationship that a teacher develops with students.

And I don't know how that can happen online. I couldn't relate to students in the same way online as I do in my classroom. I want to look into their eyes. I want to see them talk. I want to see their body language and hear their tone of voice. I don't think you can do that online. It's a whole different way of relating that I just don't agree with in terms of educating people.

According to the instructor who declined to adopt the program, the relationship between student and teacher that takes place in the regular classroom cannot be duplicated in the online class. For this person, the online classroom is not compatible with existing educational values and beliefs. This person also perceived no need for this type of innovation.

Rogers (1995) posited, "One dimension of the compatibility of an innovation is the degree to which it meets a felt need" (p. 228). In the high schools of the Beta Consortium, the leadership of the school districts did perceive a felt need to provide greater opportunities and to provide services beyond the traditional day. While the Carnegie unit standardized the high school day, curriculum, and course time, the Age of Globalization has made the application of the Carnegie unit obsolete. Members of the Beta Consortium felt they needed to expand the school day. Online education seemed to be a way to expand the schools' offerings without a major overhaul of the entire school infrastructure. Thus the Virtual Academy meets a perceived need in the Beta Consortium's leadership.

Attribute 3: Complexity. Complexity played a major role in the Beta Consortium. Online teaching is regarded to be a very difficult task that would take enormous amounts of training before one could participate. Even the director of technology in one of Beta Consortium's school districts thought that training for online teaching could be demanding, "You are asking those teachers to go out and reach beyond what they know in teaching. You are asking them to train to teach using a totally different method" (anonymous, personal communication, Case Study Beta, June 18, 2001). There is a common perception among K-12 teachers in the Beta Consortium that online teaching belongs in the realm of higher education and that no K-12 district could possibly support such an enterprise.

Attribute 4: Trialability. The Virtual Academy of the Beta Consortium was a trial. There was no long-term commitment on the part of the any of the members of the consortium. However, there was an enthusiasm and anticipation among its leadership that the Virtual Academy would succeed in this experiment. The decision makers in the consortium had supported the venture with a commitment of some funds. The high school online instructor's employing district received funds from the consortium to reimburse the district for the expense of permitting the high school instructor to teach online. For the high school teacher, the online class was part of the year's teaching assignment. There was no doubt in anyone's mind that if the experiment in online teaching should fail to meet expectations, the program would be discontinued the following year.

During this period of trialability, the high school online instructor and the director of the distance education for the local California State University had met for the purpose of ensuring success. They had strategized and planned for success. These two innovators

had met not only to discuss practical concerns of running the program, but they had planned to dazzle and impress the students and administrators of the consortium with an assortment of teaching and learning strategies and technologies. Some of the learning and teaching strategies included online synchronous and asynchronous discussions, student-generated multimedia projects and presentations, and the use of online guest speakers. The technologies utilized included webcast, streaming video, newsgroups, chat interfaces, and a web-based library of materials.

Attribute 5: Observability. The online programs for the Beta Consortium were not readily observable. Blackboard.com's interface was the portal used for delivering online instruction. The online courses were housed on one of the servers at the local California State University. Blackboard.com's interface did not allow open access to courses. Access could be obtained only by using a recognized password that was unique to each individual. While the Beta Consortium has web pages that promote the online classes, the courses are not observable and accessible. However certain aspects of the online classes are highly visible. At the high school sites, students often use the schools' computers to access classes. These students are able to do much of their course work at the schools' libraries and computer labs. These highly visible students are often asked about their tasks on the computer to which they proudly reply, "I'm doing my class" (anonymous, personal communication, Case Study Beta, June 18, 2001). Teachers, administrators, parents, and students have noticed these innovative students participating in their online classes.

Attribute 6: Institutional support. The Beta Consortium had supported the online teaching program. As mentioned before, this program was and continues to be an

experiment. The consortium had put up some funding to support the Virtual Academy. The aforementioned reimbursement of the employing district by the consortium for the online teacher is an indication of institutional support. The consortium also sought out grants; however, at the time of the interviews for this case study, none had been secured.

The individual school districts that provided online instructors are also supportive of online teaching. The middle school online teacher's web design class was supplemental to the curriculum. This teacher's online class was in addition to his regular classes. He taught the online web design class after his regular workday at school. The consortium paid this instructor a stipend of \$1,500 to teach the 10-week course. Both the consortium and his employing district supported the middle school-level web design class.

The high school instructor's employing district released the teacher from one period in order to support the online class. This instructor did not receive any compensation or added stipends, but this was typical of many early adopters who desired the experience more than any other incentive.

The California State University is also supportive and supplied two dual-credit courses. The university's art and music classes were free to students and to the school districts in the consortium. The university paid the instructors and received no compensation from the Beta Consortium. The California State Office of Education provides financial incentives for the university to support such programming. Thus, the Virtual Academy not only enjoys support from the Beta Consortium, but the individual school districts and the university that provide instructors for these classes also support the Virtual Academy.

Attribute 7: Institutional codification. At the time of the case study interviews, there was virtually no codification of online teaching in the any of the Beta Consortium documents. The board of superintendents and the technology committee had both approved the Virtual Academy, but no documents had been written by the consortium to govern the academy.

Likewise, no document governs the work of the middle school- and high school-level online teachers. The director of personnel in the district that employs the high school instructor felt fortunate that no problems had surfaced in the arena of online instruction. The director stated (anonymous, personal communication, Case Study Beta, June 18, 2001):

In an environment where there is not any extra cash, and any cash you have needs to be applied to the students, we cannot spend time doing anything but making sure everybody has the right credential and the fingerprints are clear. Instead of anticipating these problems, we are reactive to them.

The university is a bit further ahead and had some evidence of codification that governed online instructional practices. The university had the Perceived Teacher Effectiveness (PTE) form that students filled out at the end of the course. This was a course evaluation. However, the director noted that nothing had been done with the Perceived Teacher Effectiveness unless there was a problem, and there had not been any problems up to the time of the interview. The university has also codified a stipend for course development. There are also text-based online faculty handbooks developed for online instructors. However, in terms of employment, compensation, and tenure for

online instructors, the university's administration and faculty follow the traditional contract.

Conclusion: Human Resource Management Infrastructure in the Beta Consortium

The Beta Consortium was an early adopter of online instruction for high school- and middle school-level courses. The consortium's approach to online instruction at the K-12 level was innovative. It has been noted by members of the consortium that it would have been most daunting had a single district attempted to implement online instruction on its own. However, with the resources of the consortium, the ability to implement such a program diminishes the risk taken by an individual district.

In terms of human resource management infrastructure, the Beta Consortium and its individual K-12 districts were in dire need of infrastructure. At the time of the interviews, there were no documents whatsoever that stipulated the duties, rights, obligations, and working conditions of the online instructor. The district has no legal means to govern the online work of the online employees, and these employees have no legal recourse if they feel that they have been treated unfairly in the conduct of their online courses. Both the faculty members and the administration assume that the existing collective bargaining agreement governs the online instructional practices. While this had been true, both the union representative and the human resource management director interviewed were evidently uncomfortable with such an informal understanding. Both these officials would have preferred collective bargaining language to govern online instructional practices. Areas of potential problems include online faculty evaluations and working conditions such as hours of work, absenteeism, and the provision of substitute teachers, course development, and class size.

Typical of other early adopters, the innovators in the Beta Consortium had leapt beyond the confines of their collective bargaining agreements that governed the relationship between the faculty and the administration. Both the union officials and the administrative officials have realized that the collective bargaining agreement would need serious modification to include online instructional practices.

Case Study Gamma

According to the Case Study Gamma Tourism Website (2001), “History whispers from the old buildings. Natural beauty beams from the varied landscape of mountains, valleys, coastal foothills, and the sea” (para. 1). Gamma City College is located in a city that overlooks “the harbor of one of the most beautiful cities in the world—where the mountains meet the sea” (para. 1). The campus rests above an idyllic scene. The school’s offices, classrooms, cafeteria, and library overlook a picturesque small-craft marina and have the expansive Pacific Ocean as a backdrop. The area is blessed with a desirable Mediterranean climate. Thousands of tourists vacation in the vicinity of Gamma City College throughout the year.

Gamma City College served more than 29,000 students in the 2000-2001 academic year. Of these students, 12,000 were enrolled in degree programs, and 17,000 were enrolled in certificate programs. The programs included more than 90 curricula granting degrees in Associates in Arts, Associates in Science, Certificates, Department Awards, and Skills Competency Awards. More than 42,000 students were enrolled in Gamma City College’s 2,200 non-credit and community-service classes. These classes were offered in more than 100 locations spread throughout the Gamma City College District area. The district employs 220 full-time professors and more than 400 part-time,

adjunct instructors. In the Fall 2001 term, Gamma City College offered 81 online courses. The online faculty members consisted of full-time and adjunct instructors. No faculty members taught exclusively online.

The need for an online program is not immediately evident given the success of the college's traditional face-to-face offerings. Enrollment in Gamma City College has never been higher than at the time of this case study. Therein lies the motive for Gamma City College's foray into the digital educational world. While some institutions have pursued online and distance education in order to attract new students to bolster a declining enrollment, others, such as Gamma City College, have looked to online programming to accommodate their student population that has outgrown their campus. Gamma City is locked geographically by obstacles that prevent further city expansion. From the Pacific Ocean on its west to the coastal mountains to its east, and other municipalities to its north and south, there is no room for either the city or the city's college to expand. Property values are nearly unreachable for even the middle class. With the unavailability of property and a zero-growth city policy, Gamma City College sought to expand the campus via the Internet.

The Diffusion of Online Teaching and Human Resource Infrastructure in Gamma City College

Attribute 1: Relative advantage. An online educational program enabled Gamma City College to expand in a geographic area wherein property values are among the highest in the state and country. Even if the college district were able to afford acquiring additional property for the campus, there is simply no more land available. The student

population at Gamma City College was at capacity. Growth via the Internet seemed to be a reasonable and viable way to meet the demand for additional programming and courses.

In the State Assembly Committee on Higher Education Hearing for SB 844 (2001) the committee ascertained that:

In the 12-year period between 1998 and 2010, college enrollment is expected to rise by 714,000 students. It is expected that each institution will face an average 35% increase in demand, however, in raw numbers this population will hit the community colleges the hardest, with an expected growth of 530,000 students. (p. 2)

This upcoming surge in the college population is euphemistically termed by the California lawmakers, Tidal Wave II. The California legislature has not invested enough resources in the building of higher educational facilities. Not enough buildings have been added to existing campuses, and an insufficient number of new colleges have been built. The legislature is seeking alternatives to building new structures. In that vein, Gamma City College has already determined that one way to meet the wave of future students is to accommodate these numbers through online programs since the campus has already reached capacity. According to Case Study Gamma Website (2001):

Online courses offer an excellent opportunity for busy students to pursue their educational goals at times and locations convenient to them. These courses are offered over the Internet, and in many cases do not require on campus attendance, except for orientations, review sessions, and exams. (para. 1)

While the ever-present, anytime and anywhere aspect of online education is appealing for some students, parking is a major concern for others. After arriving by

automobile to the campus, students find that there is simply nowhere to park the car. According to an administrative clerk at Gamma City College, the college has a “serious parking problem” (anonymous, personal communication, Case Study Gamma, September 14, 2001). A college dean, a union official, a technologist, and two other instructors echoed this sentiment. Online programs alleviate the need to acquire additional parking for students and teaching staff. The phrase found on the Website “...in many cases do not require on campus attendance, except for orientations, review sessions and exams” (Case Study Gamma Website, 2001). illuminates the parking problem at Gamma City College and clarifies the appeal of not meeting on campus for classes.

Monetarily, there is a nominal stipend for the developer of an online course. However, neither instructors nor administrators think that the nominal stipend is sufficient to motivate any teacher to move a face-to-face course to the online environment. Clearly, monetary gain is not the principal motivation for the faculty at Gamma City College. Relative advantages that were identified by the technology resource personnel include the intellectual curiosity accompanying a new medium. One online instructor stated, “I am always looking for new and exciting ways of delivery” (anonymous, personal communication, Case Study Gamma, September 14, 2001). In addition, the ability to teach from anywhere and at anytime is appealing. For some, the ability to retire and travel and yet remain a teacher has caused these teachers to migrate some of their courses to the virtual world. For the adjunct faculty, the online environment has afforded the opportunity to develop one’s curriculum vita. Currently, Gamma City College unofficially hires only tech savvy instructors who come experienced in technology and preferably have prior online teaching experience.

Economic factors also influence the idea of relative advantage in a secondary manner. The college has also used its online program to provide access to the non-traditional students. It was obvious to the researchers that there is genuine concern to provide access to education to the non-traditional or at-risk students. According to a union official, the need to reach out to non-traditional students is driven in part by the fact that “the traditional student base is diminishing” (anonymous, personal communication, Case Study Gamma, September 14, 2001). Thus Gamma City College’s outreach to the non-traditional students is both altruistically and economically driven. In regard to acquiring additional revenues, one instructor stated that the online program provides another means “to get that money needed to keep the ‘Good Ship Lollipop’ afloat” (anonymous, personal communication, Case Study Gamma, September 14, 2001).

The status-conferring quality of providing online education also influenced the concept of relative advantage at Gamma City College. With other community colleges offering online classes, Gamma City College did not “wish to be left behind” (anonymous, personal communication, Case Study Gamma, September 14, 2001), according to an online instructor. A union official and professor stated, “if you don’t, others will [offer online educational opportunities]” (anonymous, personal communication, Case Study Gamma, September 14, 2001). The fear that Gamma City College might not be among the cutting-edge community colleges was expressed a number of times by different interviewees. This form of adoption, known also as a preventive innovation, seeks to prevent or to avert a particular outcome. The relative advantage for preventive innovations is difficult to measure since the innovation itself seeks, “the absence of something that otherwise might have happened” (Rogers, 1995, p.

217). Gamma City College did not want to be grouped among the community colleges that do not offer high-tech, online programming.

Attribute 2: Compatibility. According to an online instructor who was one of the original innovators of Gamma City College's online program, the college sought to, "retain the quality of our current face-to-face courses, and we wanted the online courses to be the same as a face-to-face classroom or at least as close as we could make it" (anonymous, personal communication, Case Study Gamma, September 14, 2001). Thus the innovation encouraged by this instructor lay not in the strategies employed in teaching. The desired change resided only in the medium employed for the delivery of the course. The proponents of online education perceive virtual instruction to be as effective as traditional instruction. Some proponents believe online education to be even more effective because the online environment affords full participation to every student.

However, some teachers are convinced that the online environment could not achieve the same teacher-student relationship and could not duplicate the same classroom dynamics as a face-to-face class. Regarding online classes, a union official stated, "There is a lack of personal contact. Face-to-face student contact and interaction is different from interacting on a keyboard. Nothing can replace a student's response. There's something about being able to see you and probe you" (anonymous, personal communication, Case Study Gamma, September 14, 2001). So for some members of Gamma City College's faculty, there exists a compatibility issue. According to the antagonists, the values and beliefs regarding the relationship teachers have with online students is compromised or, at a minimum, different from their relationship with their traditional students. One

detractor of online classes contended that many of her students were not adequately prepared to use the technology even though the technology may be available.

Gamma City College's commitment to serving not only the traditional students but also the non-traditional students was evident in every interview the researchers conducted. The interviewees all acknowledged the positive inclusion of the non-traditional students offered by the online courses. Hence there is a positive compatibility with the idea of full inclusion and reaching out to the entire student population in the Gamma City College District.

The indigenous knowledge system in Gamma City College supports the concept of innovation and teacher training. The Faculty Resource Center (FRC) had existed prior to the creation of the college's online programming. Prior to the development of online programs, the FRC existed to help instructors hone their pedagogical skills and provided teaching aids and strategies to interested faculty. When the FRC changed its focus toward the development of online teaching, the college accepted this change readily since it was compatible with the FRC's previous function. One of the facilitators of the FRC stated, "Teachers, by and large, try to simply take the activities that they know that work in the classroom and then try them online" (anonymous, personal communication, Case Study Gamma, September 14, 2001). The function of the FRC is to facilitate and advise the faculty through this process.

Gamma City College's faculty members are free to experiment and adopt online teaching practices. Many face-to-face classes have adopted components of online teaching practices. Likewise many online courses utilize face-to-face meetings to expedite logistical and pragmatic educational practices such as the provision of a secure

test-taking environment. Consequently, Gamma City College has developed its own hybridized version of distance education.

Attribute 3: Complexity. The development of online courses was perceived to be time consuming and complex by every interviewee. Extensive training and a course-development period is part of the online culture at Gamma City College. Thus, there is a tacit understanding that teaching in the online program and developing a course would involve a commitment of time, effort, and resources. According to a college dean, many instructors viewed this commitment negatively and did not wish to participate in the online program because of the complexity issue. The dean reported (anonymous, personal communication, Case Study Gamma, September 14, 2001):

The only really discouraging aspect for faculty is the amount of time that it takes. Some faculty say that they just don't have enough time to do this. They don't have enough time to develop a new course. They don't have enough time to upgrade their courses, and they have so many other things going on. They don't have enough time to pilot new software that I want them to try.

The innovators and early adopters were undaunted by the complexity issue. They viewed the technology as being fun or new or exciting. The innovators overlooked the complexity issue because they were excited by the potential of online programming for their students and their own teaching careers. In other words, the innovators and early adopters have high "thresholds of indignation" (Saffo, 1996, p. 87) and would put up with great complexity in order to utilize the new medium.

Gamma City College's online dean had adopted a moderate philosophy for the adoption of the online program. The dean stated (anonymous, personal communication, Case Study Gamma, September 14, 2001):

If we keep throwing new technologies at the faculty that aren't going to work, they will become really frustrated and be completely put off to by the technology. So I think one of the lessons that I have learned is that you have to take it slowly. It is the waterfall effect rather than the tornado effect.

The complexity issue is manifested in the college's attempt to migrate student registration and student services to the online environment. A faculty leader noted, "We are one of the pilot schools that's developing the student information system that is going to be Oracle's product, but there are a zillion bugs and a zillion delays..." (anonymous, personal communication, Case Study Gamma, September 14, 2001).

Attribute 4: Trialability. Gamma City College experienced a very low attrition rate among its online faculty. Most faculty members who had developed and taught online classes were still doing so at the time of this study. Once a course has been developed, there is an agreement that the instructor would offer the same course for at least 4 semesters. According to a number of sources, most instructors have taught more than the 4-semester minimum after course development. Hence, trialability is built into the Gamma City College online infrastructure.

The FRC supports teachers' efforts to experiment with various technologies. An FRC facilitator stated, "Our philosophy was to offer a smorgasbord of different tools that the teachers could pick from. It would be based or matched to their different skill levels" (anonymous, personal communication, Case Study Gamma, September 14, 2001).

However, the administration's philosophy differs from that of the FRC. One facilitator noted, "But the administration was adamant about wanting only one tool to support..." (anonymous, personal communication, Case Study Gamma, September 14, 2001). Thus Gamma City College's desire to offer full trialability is diminished by fiscal concerns.

Attribute 5: Observability. Gamma City College offered 81 courses in the Fall of 2001. These courses have become part of the college's regular course offerings. There were approximately 45 online instructors out of a faculty of more than 600. While the number of online teachers may not have been numerically significant, they were certainly visible and had made an impact on the institution by providing additional revenues.

Teaching online affords a certain observable status at the college. One instructor noted, "Those teaching an online course are seen as being successful. You are seen as being on the cutting edge. You are seen as being innovative" (anonymous, personal communication, Case Study Gamma, September 14, 2001).

Attribute 6: Institutional support. Gamma City College actively supports its online programs and courses in a variety of ways. The aforementioned FRC sponsors online teaching workshops that guide faculty through the process of online course development. Faculty members submit course proposals to the online dean who selects courses for online development. The selected faculty members attend a 2-week summer workshop that trains the instructors in the use of technology involved in online teaching. Online faculty members receive a nominal stipend for attending the workshop. In the autumn, the online faculty members are released from a teaching assignment in order to develop the course and to learn online pedagogy. The faculty members are required to meet once per month individually and to meet as a group once per month with a member of the FRC

staff for advisement in online teaching strategies and further technological training. In the spring, the online class is ready to be offered.

During the online course, the FRC continues to be of service to the online instructors. Students who experience difficulties during the online course may seek help in the college's academic computing center, which is exclusively devoted to helping students with technological needs.

The evaluation of online teachers turns out to be non-contentious since all but one of the online teachers teach face-to-face courses. Thus the observation component for teacher evaluations are all conducted in face-to-face courses. The online students are surveyed via e-mail. Administrators are able to peer occasionally into the online course with the permission of the online faculty. Thus the issue of teacher evaluation becomes unimportant and non-contentious for Gamma City College.

The institution attempted to sustain the online initiative by its lenient enrollment minimums. While face-to-face classes were typically held to a 36-student minimum, an occasional online class was allowed with a student enrollment of only 7.

Online instructors were also afforded aides who helped with the grading, course management, and synchronous online interface sessions. One online instructor noted, "I think most of us who started online teaching would not have started had we known the amount of work it involved; however, we do have aides who have help tremendously" (anonymous, personal communication, Case Study Gamma, September 14, 2001).

Another positive institutional support is Gamma City College's position on intellectual property. According to an online teacher (anonymous, personal communication, Case Study Gamma, September 14, 2001):

It was made very clear at the beginning that we owned the material, and we could teach this course as long as we wanted to. So even after we retired as a post-contract, we could teach this course as long as we are able to and as long there were students.

There are state moneys made available through the Partnership for Excellence funds that allowed the dean of the online college to compensate teachers to improve their courses in an effort to retain students and improve student success. Additionally, the union representative noted that excess funds were frequently allocated to support technology enhancement in preference to other programs.

A lack of institutional support was also present. Gamma City College had, on several occasions, changed course delivery platforms by discontinuing the technical support of certain course delivery interfaces, causing faculty to learn entirely new course delivery software. This frustration caused one faculty member to say, “I am the kind of person who just likes to get things done. I don’t like to re-do things forty-two times to get the same results” (anonymous, personal communication, Case Study Gamma, September 14, 2001). This same faculty member went on to say, “I was tired of doing that, so I bought my own Website and my own dot com” (anonymous, personal communication, Case Study Gamma, September 14, 2001).

Attribute 7: Institutional codification. Gamma City College has what they call a thin contract. The thin contract concerns only salary and benefits, duties and obligations, and the required legal parameters normally found in collective bargaining agreements with the exception of faculty evaluations. The Faculty Senate at Gamma City College governs faculty evaluations, faculty performance standards, professional development,

and other academic and professional concerns. In short, all monetary concerns are found in the collective bargaining agreement, and all academic concerns are found in the Faculty Senate handbook.

Gamma City College codified a number of technology related policies and procedures. These documents include an acceptable use policy, generous intellectual property rights for instructors, student evaluation of instructor surveys, and performance criteria guidelines for faculty evaluations. Online courses are reviewed and approved by the campus curriculum committee to assure that online courses meet the terms of the articulation agreements and past WASC guidelines.

The college also employs an institutional researcher who searched, gathered, analyzed, and interpreted data collected from throughout the college. The findings of the researcher are published, codified, and distributed annually. The data gathered from this work are used to plan and make decisions regarding the institution, including the online program.

Intellectual property rights were generously settled in favor of the faculty. The online college dean realized that not giving faculty full rights to their online courses would only stifle innovation. According to the institutional document entitled, *Intellectual Property Policy for Online* (2001), “A Gamma City College faculty member will hold all copyrights related to instructional materials that s/he develops for online courses” (p. 1). Pragmatically speaking, the dean thought that teaching is such a personal task that no one would want to teach another person’s course.

Conclusion: Human Resource Management Infrastructure in Gamma City College

Gamma City College was an early online adopter. It was among the early developers of online education in the community college arena. Gamma City College piloted two online courses in the spring of 1997. The college then took a 1-year hiatus from online teaching to develop courses. In the following year, 1999, they offered more than 20 courses. More than 50 courses in 2000, and in 2001, there were more than 80 classes offered. The growth has been astounding. The growth, in fact, enabled Gamma City College to apply for growth funding from the state. Had it not been for the growth of the online courses, Gamma City College would not have qualified for the grant because the traditional face-to-face classes have not grown since they are already at capacity.

Nevertheless, the institution is in the beginning stages of analyzing critically the benefits and the required resources. It appears that the time of uncritical, institutional support is giving way to a more moderate cost-benefits analysis. The institution supports the programs well. Gamma City College trains its interested faculty. It provides time and resources to develop courses. It provides technical support to both faculty and students.

The human resource infrastructure for online programming is well in place at Gamma City College. The Gamma City College environment fosters an atmosphere of experimentation and innovation. Consequently, faculty members have explored the best practices of both traditional and online methodologies resulting in new pedagogies.

Case Study Delta

The Delta County Office of Education received \$2.8 million from the U.S. Department of Education Innovative Technology Challenge Grant to implement their online high school program. With funds from the grant, Delta Virtual High School was

created. The concepts that underlay Delta Virtual High School originated from an innovative program that catered principally to special population students. In 1978 the Delta County Office of Education sponsored a nationwide high school program for migrant students in grades 9-12. It was designed to provide “units of study whereby migrant high school students throughout the state of California and 30 other states can receive credits toward graduation requirements” (Case Study Delta Website, 2001, para. 7). Migrant students have always been a particular concern for the educators in the Delta County Office of Education because migrant students have traditionally been unsuccessful.

Delta County is situated in the midst of one of California’s richest agricultural centers. The Case Study Delta City Website (2001) claims:

While Delta is popular with visiting farmers from around the world, who come to see this agricultural paradise, it also has many other attractions. A warm sunny climate, beautiful fruit blossoms in spring, and a friendly and welcoming local population make Delta an attractive place to live. (para. 1)

The abundance of agricultural products at an affordable price is a testament to communities such as Delta. However, the affordability of American agricultural products is dependent upon the low wages paid to migrant farm workers. The children of the migrant farm workers are among the most disadvantaged. According to the Migrant Education Program (2001) of the California Department of Education, “Migratory youth—children, who change schools throughout the year, often crossing school district and state lines, to follow work in agriculture, fishing, dairies, or the logging industry—are among the neediest students in California” (para. 3). Delta County has always

exceeded state averages in its number of special population students. Delta County had 27% of its students designated as English Learner Students whereas the state average was 24.7% in 2000; likewise, 61% of Delta County students qualified for the Free/Reduced Price Meals program while the state average was 47.6%; and 25.2% of Delta County students were eligible for the CalWorks Program, which was also known as the California Work Opportunity and Responsibility to Kids program, while the state average for the CalWorks Program was 16%. Delta County student ethnic composition consisted of 49% Hispanic, 30% White, 12% Asian, 7% African American, and 2% others. Delta County had the nation's largest Migrant Education Program, serving 10,000 migrant students, which comprised 12.5% of Delta county's student population.

Delta County's Migrant Student Education program has served students since 1978. After 20 years of successfully educating migrant students, Delta County applied for a federal grant to implement online education not only for migrant students but also to other students. Thus the Delta Virtual High School became an extension of the Migrant Students Program but did not entirely replace it.

Delta Virtual High School is chiefly sponsored by the Delta County Office of Education; however, the program also enjoys a number of other sponsors including the United States Department of Education, the California Department of Education, the Delta Unified School District, The Nevada Department of Education, The Delta County Court and Community Schools, Butte Canyon Research Associates, the Adobe Systems Incorporated, and several other county offices of education. The sponsorship of Delta Virtual High School by these educational and corporate entities has allowed it to offer online programs since 1999. Delta Virtual High School is, in reality, a consortium of

participating schools and school districts. The consortium has been able to offer free services to participating schools because of substantial federal funding under the Innovative Technology Challenge Grant. Some of these participants are not located in Delta County. In the 2000-2001 school year, there were 18 participating high schools located throughout California, Nevada, and Michigan. Of these 18 schools, 8 are traditional comprehensive high schools, 8 are continuation high schools, and 2 are court schools sponsored by the California Youth Authority. The traditional schools are mostly located in small population areas with student populations of less than 1,300.

The Diffusion of Online Teaching and Human Resource Infrastructure in the Delta Virtual High School Consortium

Attribute 1: Relative advantage. The Delta County Office of Education created Delta Virtual High School in order to serve and reach out to a greater number of disadvantaged students. Migrant students, traditionally unsuccessful students, multiple-failure students, court-supervised students, and home-schooled students are among Delta Virtual High School's student population core. The monetary incentives for the Delta County Office of Education are essentially not a factor. Individual participating schools are the chief beneficiaries of the Average Daily Attendance (ADA), the method by which the State of California determines a school's funding based on student attendance. Only students directly enrolled at the Delta County Office of Education bring ADA to the county office. There would be monetary benefits for individual participating schools and their districts. The attrition rate of students within the participating schools has decreased because of their participation in the Delta Virtual High School. New ADA has not materialized for the schools; however, no one had expected to attract new students to the

Delta Virtual High School. The program was designed to stem the attrition rate of students who traditionally had been unsuccessful.

Monetary incentives for the teachers in Delta Virtual High School were not compelling. One online instructor oversaw the learning for more than 200 students. The teacher was compensated at the *per diem* or hourly rate. While this teacher would only see 30 students a day for 1 hour, the hourly rate was not a great incentive for this teacher. He stated (anonymous, personal communication, Case Study Delta, September 20, 2001):

I know that some of the students would not graduate without Delta Virtual High. I would say that part is more important to me. I like the compensation. I always like a pat on the back, but the part that is the real reason why I do it over and over is student success. If I depended on the compensation, I would stop doing Delta Virtual High.... Finally when a student is able to graduate, that is the most exciting part to see.

This online teacher also enjoys working with the technology and is stimulated by the challenge the technology offers. The chief relative advantage for Delta Virtual High School is a selfless altruism that seeks to facilitate the successful completion of high school for traditionally unsuccessful students such as migrant students. The project director for Delta Virtual High School (anonymous, personal communication, Case Study Delta, September 20, 2001) said:

Faculty are motivated by the hope that this tool will speak more to the students than they have been able to in the past. Many times these students have had more exposure to technology, and what they are finding is that these students have a

proclivity to access the curriculum on the computer. So the teachers feel that this will motivate students to become successful academically.

The ubiquitous anywhere-anytime aspect of online instruction is not practiced at Delta Virtual High School. While students can work independently in the Delta organization, most students in the system work in real time with an online facilitator or teacher. The students and the online teacher meet regularly face-to-face. The distributed nature of this version of online learning and teaching lies chiefly not in the distribution of students, but in the distribution of course content. The majority of the students in Delta Virtual High School come from a single high school. This high school brings more than 200 students into the Delta Virtual High School system. These students are expected to work in the school's computer lab after school.

Another relative advantage for district-level administrators is that Delta Virtual High School is cost effective. One administrator stated, "You don't have to buy land and build buildings anymore" (anonymous, personal communication, Case Study Delta, September 20, 2001). Whereas other remediation programs and independent study programs have incurred high costs, the Delta Virtual High School is cost effective. Participating schools, which operate Delta Virtual High School beyond the normal school hours, qualify for additional remediation funding from the state.

Attribute 2: Compatibility. The Delta Virtual High School's curricula is an electronic version of the county's modular pencil and paper workbook program first created in the 1970s for migrant students. The migrant program created modules of courses that students could complete at an independent pace. Thus there is full compatibility with an existing program of instruction and learning. There is a

compatibility with the sociocultural values and beliefs of the Delta County Office of Education. It is entirely compatible with the program established in the 1970s. The needs of the district are to serve a significant number of students who are not successful in the traditional school setting. The online program was designed to be compatible with satisfying this need. There is complete compatibility with Delta County's indigenous knowledge system. In other words, there is compatibility with the way business is done at the county office.

The implementers of Delta Virtual High School updated the 1970s curricula by hiring teams of content specialists who re-created the course content and updated the courses to match state standards. The courses were then forwarded to the University of California system for course approval. The courses offered at Delta Virtual High School qualify under the A-G requirements for University of California and California State University entrance requirements. The compatibility of the courses offered in Delta Virtual High School with their counterparts offered in the face-to-face classroom appears to be perfectly matched.

However, several interviewees raised the issue of academic rigor. The courses at Delta Virtual High School are often viewed as being not rigorous and insufficient in content. One county office of education director (anonymous, personal communication, Case Study Delta, September 20, 2001) said:

From what I have heard in terms of the curriculum, there are some concerns about whether all the standards are being met and about the actual instructional materials.... I know one concerned area is science. It does not meet some of the California standards.

The typical students who enroll in Delta Virtual High School have generally failed the classes two to three times before enrolling in the online program. The fact that the students successfully completed the online courses after multiple failures in face-to-face classes had begged the question of academic rigor. Disaggregated standardized test results were not available at the time of the case study for comparative data. Additionally, a traditional classroom teacher thought that the online classes did not afford the same teaching-learning interaction as the face-to-face classes. However, an administrator of one of the participating high schools stated, “I sometimes find independent study programs to be not as rigorous or as challenging as a regular program. However, in Delta Virtual High School, this is not the case” (anonymous, personal communication, Case Study Delta, September 20, 2001).

A union official who stated that online teaching “does change traditional classroom” (anonymous, personal communication, Case Study Delta, September 20, 2001) raised another compatibility issue. The union representative identified areas of concern, which included class size, classroom discipline, teacher evaluation, surreptitious monitoring of the class, changes in the duty day, and other obligations that had not yet been identified by contractual negotiations. In contrast, a district official suggested that Delta Virtual High School was perfectly compatible with the traditional classroom: “It just lengthens their day and maybe a little more [work]” (anonymous, personal communication, Case Study Delta, September 20, 2001).

The online facilitator/teacher for Delta Virtual High School stated, “In a regular class they are all on the same page and are all doing the same thing. In Delta Virtual High, the students theoretically could be each studying a different course at the same time

in the same room” (anonymous, personal communication, Case Study Delta, September 20, 2001). Additionally, an administrator noted, “Kids really feel comfortable in studying online. I’m finding that they don’t have to deal with the human element, the teacher. They don’t have to try to figure out their personality and what is expected of them” (anonymous, personal communication, Case Study Delta, September 20, 2001).

Attribute 3: Complexity. The Delta Virtual High School system was designed for simplicity. It is a client-based model wherein the curriculum resides on the individual computers rather than on a web-based server. Thus an intermittent connection to the Internet is not a problem. The online teacher functions more like a facilitator rather than the traditional deliverer of content. The instructor does not deliver the lessons nor assesses the learners. Delivery of content and student assessment has been automated through an online mechanism. All the assessments are multiple-choice in nature and taken online. While the system allows for written student outcomes, most of the teachers rely on the multiple-choice assessments to determine student achievement. Thus the teacher could be credentialed in any content area and still oversee the online courses. The training that the online teacher received in order to teach in Delta Virtual High School includes how to download and implement the required software, which resides on most machines at school. No special pedagogy is provided for online instruction. The operation of the online program does not appear to be to be complex.

Attribute 4: Trialability. The Delta County Office of Education has been experimenting with alternative deliver methods of education since the 1970s. Their migrant student education program was not an application of the traditional classroom. This earlier intervention converted the traditional academic program into smaller content

units or modules. The Delta County Office of Education experimented with variations throughout this period. The online program can be viewed as merely a logical and technological extension of the 1970's program. The Delta County Office of Education, the Delta Unified School District, and the participating schools had been experimenting with different formats in order to serve a traditionally unsuccessful population of students effectively. These educational entities were open to change and were willing to experiment.

The Delta County Office of Education personnel are open to trialability. While they are committed to the program, they are also inclined to accommodate or adapt according to whatever is necessary to meet the needs of their students. The relatively new online program will be continued for as long as they perceive the program to be effective. Just as the County Office was willing to develop an online program from the successes of the 1970's migrant student program, it seems that the interviewees are willing to adapt and attempt innovations in order to serve students better. A union official (anonymous, personal communication, Case Study Delta, September 20, 2001) stated:

Teachers' unions, especially in the last 10 years, have been innovative players.

The unions have tried to look at the new world and have made changes and modifications in traditional labor relations. I think online teaching would fit into that. We may have to make specific provisions to the contract that apply only to online situations. This is where management and labor need to sit down and approach this as a problem that needs to be solved for the good of kids and for the good of education.

Attribute 5: Observability. The online program at the participating high schools is immediately observable. The students enrolled in Delta Virtual High School were primarily students concurrently enrolled in traditional, face-to-face classes. The online students augment their traditional classrooms with online classes. Most students enrolled in Delta Virtual High School are using the online program as a means to remediate and make up previously failed classes. The students working in the online program are visible, and the students' success or failure is immediately known to all. The online instructor taught five face-to-face courses and was compensated for an extra period of teaching for the facilitation of the online classes. His work was also immediately known by the participating high school.

Delta Virtual High School is a high-profile program, which had hosted visiting dignitaries such as state politicians and congresspersons. The work of students and faculty is easily observable because the program and students are on campus.

Attribute 6: Institutional support. Institutional support of the Delta Virtual High School from the participating high schools is minimal; however, not much support is needed. The technical designers of the program have sought to keep the technical aspects of the course as simple as possible. According to the online instructor, the most difficult part of managing the course from a technical standpoint is the installation of the software. After the software is installed, the students merely have to upload their assessments to the Delta Virtual High School Internet server. With the encouragement of the instructor, students tended to keep a hard copy of their work in case the upload failed. The simplicity of the technology enabled the participating schools to operate without much technical support. A single technology-savvy teacher was able to oversee the learning of

more than 200 students. In order to receive state funding, the participating schools had to furnish a certificated teacher to oversee the class. Thus a certificated teacher and a computer lab was all that was needed to operate and support the online program for more than 200 students.

The Delta County Office of Education has also officially supported the online program by putting the program together and allocating the initial resources for its planning and implementation. The county office had received a federal grant to create the program. The grant supplied the necessary funds for the creation of the course content and the creation of the online interface. At the time of this case study, the online program had less than 1 year of funding left. Alternative funding sources are being sought, including the concept of charging participating schools a fee to participate. County office support includes the operation and maintenance of the Internet server and the continual upgrade of the software needed to operate the online programs. The Delta Unified School District demonstrates its continual support of the online program by conducting periodic reviews of Delta Virtual High School to insure that the online program remains revenue neutral.

The application of the online programs centers only on the students with special needs or students who have been unsuccessful in the traditional classrooms. The advantages of online teaching efforts have not been universally applied to all the segments of the student population. The County Office of Education has intentionally been silent on policy issues regarding Delta Virtual High School. The County Office has not provided guidelines to participating schools when politically sensitive issues had arisen. Issues such as transfer credit, teacher of record for online courses, and grading

criteria had been left for each participating school to determine within its own political sphere.

One shortcoming of the delivery mechanism is that neither the students nor the teachers receive adequate feedback after student assessment and evaluation. The online instructor stated, “I don’t even know which questions the students missed. They don’t tell us that. The assessment is all computerized, and they don’t tell us. So I don’t know what the students missed or what their weaknesses are” (anonymous, personal communication, Case Study Delta, September 20, 2001).

Other technology related shortcomings include the district’s limitation in number of Internet Protocol (IP) addresses for networking the computers to the Internet. A campus administrator identified that, “At some point in the afternoon, many of the IP addresses were being used, and so when the students were ready to log in, the connections were not available” (anonymous, personal communication, Case Study Delta, September 20, 2001). The district was attempting to alleviate the bandwidth problem. Additionally, even when the students are able to make connection with the server to upload their work, the online program does not function within established parameters. The site administrator (anonymous, personal communication, Case Study Delta, September 20, 2001) stated:

With anything and everything we send down the ether, we have to make hard copies. This protects what the teacher and kids are doing. This makes sure that they don’t lose their units.... We are finding that we are doing a lot of duplication.

Attribute 7: Institutional codification. The institutional codification of the Delta Virtual High School is practically missing. The online teacher is not evaluated for his

work in the online program. The teacher was evaluated only in the teaching of the face-to-face students in the traditional classes. No manual or faculty handbook has been developed. The only published item was the CD-ROM, which contained an introduction to the program and the software to run the Delta Virtual High School.

In regard to amending the contractual agreement to accommodate online teaching, a union representative stated, “It may very well be addressed in the next round of bargaining...but currently there just has not been the need to address it” (anonymous, personal communication, Case Study Delta, September 20, 2001). A campus administrator indicated that no handbook, online manual, or codifications of practices have been developed. “It has been a work in progress. We are a pilot program. So we have discovered a lot of things.... You know that there are going to be a lot of growing pains, and there have been quite a few” (anonymous, personal communication, Case Study Delta, September 20, 2001).

Conclusion: Human Resource Management Infrastructure in the Delta Virtual High School Consortium

Delta Virtual High School is a canned online program. Students work at their own pace. Students complete learning modules and then move on to the next module when they are ready to do so. The teacher provides technical, affective, and personal support to the students. While the online instructor does not deliver any content, the instructor does provide a human interface to the electronically delivered curriculum. The courseware is an electronic workbook. The use of a facilitator to manage or oversee students taking courses is necessary in order to meet the requirements of the California Education Code. When students meet for a class, the presence of a certificated teacher is mandatory. With

this stipulation met, the school qualifies for state remediation funds. Remediation funds require not only the presence of a certificated teacher, but it also mandates that the remediation program meet outside the normal school day. Thus Delta Virtual High School has held their online courses after school during an eighth period in a seven-period day.

Delta Virtual High School was an early adopter. However, the electronic-notebook or canned-program approach has suffered academic criticism and has not been widely diffused into the academic world. The electronic workbook format is much like the better known Nova Net program used to deliver high school courses throughout the nation.

The human resource infrastructure for Delta Virtual High School is nonexistent. All matters that concern working conditions, rights, duties, and obligations in the contract pertain only to face-to-face teachers. The online instructor however, is provided with the best computers and Internet connection in the school. The classroom in which the online instructor taught mathematics for five periods was also the classroom in which the online students met. Thus the school provides the online instructor with equipment not available to other teachers. The teacher also receives additional compensation at the *per diem* rate.

Comparison of Four Case Studies with National AFT Results

The current study collected data from multiple sources. The data collected from interviews and documents were reported in the four case studies above. Another source of data was collected using the American Federation of Teachers (AFT) nationwide survey of distance education teachers in 2000 (see Appendix H). The researchers adopted this survey and modified it to meet the needs of this study (see Appendix I). The results of

this survey provide a quantitative view of the attitudes and behaviors of respondents toward online teaching practices. As part of the case studies, the researchers interviewed, at each site, a faculty member who was currently teaching online, the collective bargaining unit president or designee, the CEO/principal or designee, a district technology specialist or online curriculum specialist, a teacher who was not currently engaged in online teaching, and others identified at the sites who could offer unique insights. At the end of the interviews, the researchers had the interviewees respond to the modified AFT survey. It is important to note that the AFT surveyed only faculty members who were engaged in distance education, while this investigation included other respondents who were not engaged in online education. Furthermore, the AFT survey's definition of distance education included instructional television, CD-ROM delivered instruction, and other forms of distance education such as radio and correspondence courses. This investigation centered exclusively on online, Internet-base delivery. The data reported below reflect human resources infrastructure issues only; for the complete results that compare AFT data with this current study's survey data in tabular form, see Appendix J.

Preparation Time

The AFT survey reveals that most faculty members believe there is a difference in the time it takes to prepare distance education classes when compared to traditional class preparation. Of those respondents, a majority believes that more time is required, especially up front, to prepare a distance education class. Only a small minority believes that less time is required in preparation. Similarly, this current study's survey reveals that most faculty members also believe that there is a difference in the time required to

prepare for an online, Internet-based class. Again, most thought that more time is required, especially up front for course development. These results are shown in Table 1.

Table 1

Preparation Time for Distance Education

Question: Is there a difference in preparation time?	AFT Results	Current Study Results
Yes	80%	93.5%
No	20%	6.5%
More time required	90%	88.5%
Less time required	0.0%	3.4%
Time not measured	10%	0.6%

Stipends for Distance Educators

AFT's survey indicates that a majority of faculty who teach in distance education programs received some form of compensation for the extra time involved in teaching the courses. This current study's survey indicates that only half of the respondents received additional compensation as shown in Table 2.

Table 2

Additional Compensation for Distance Education

Question: Were you compensated for the extra effort ?	AFT Results	Current Study Results
Yes	66.7%	50%
No	33.3%	50%

Class Size

In both the AFT survey and this current study's survey, most class sizes range from 20 to 50 students. This current study finds that the four campus systems also conducted online classes with fewer than 20 students. The national survey reveals that no classes operate with fewer than 20 students. While more than 20% of the respondents indicates that their classes number more than 50 students in the AFT survey as demonstrated in Table 3.

Table 3

Distance Education Class Sizes

Question: What were the sizes of your distance education classes?	AFT Results	Current Study Results
Less than 20 Students	0.0%	32%
20 – 50 Students	64%	56.9%
51 – 100 Students	17%	7.6%
More than 100 Students	5%	3%
Not Applicable	0.0%	0.5%

Intellectual Property

The AFT survey reveals that most of the faculty members surveyed have no concerns about the ownership of intellectual property in distance education classes. As shown in Table 4, the results from this current study, also reflect a lack of concern regarding the issue of ownership of intellectual property. According to the surveys, Gamma City College had little concern for intellectual property issues because intellectual property had already been settle in the favor of the faculty. However,

Community College Alpha had concerns about intellectual property because the issue had not yet been fully resolved. At both institutions, intellectual property rights did not affect the staffs' ability to work collaboratively with administration in curriculum development.

Table 4

Intellectual Property Concerns of Distance Educators

Question: Are you concerned about intellectual property?	AFT Results	Current Study Results
Yes	25%	37.7%
No	75%	62.3

Technical Support

The AFT survey reveals that a majority of the faculty respondents believe that they had adequate technical support to conduct their classes for distance education. This current study's survey confirms the national results that most faculty members believe that there is adequate technical support. These results are demonstrated in Table 5.

Table 5

Technical Support for Faculty

Question: Was there sufficient faculty technical support?	AFT Results	Current Study Results
Yes	71%	70.2%
No	29%	29.8%

Faculty Attrition

AFT respondents indicate that given the opportunity, an overwhelming majority would teach in the distance education program again. Our survey corroborates the AFT findings as shown in Table 6.

Table 6

Faculty Attitude Regarding the Desire to Continue to Teach Distance Education

Courses

Question: Would you teach a distance education class again?	AFT Results	Current Study Results
Yes	75%	84.5%
No	25%	15.5%

Chapter 5

Discussion and Conclusions

Summary

This chapter compares the four cases studies conducted by the researchers. The analysis begins with an interpretation of the diffusion attributes (relative advantage, compatibility, complexity, trialability, observability, institutional support, and institutional codification) as encountered by the four case studies. The AFT survey results are then compared to the four case study survey results. Analysis and interpretation of the data as they apply to the three research questions are presented. This is followed by a discussion of the innovation of process and the innovation of product aspects of online teaching. The chapter concludes with researchers' suggestions for further research.

Comparison of the Four Case Studies

The two community colleges and two high school systems examined in the case studies yielded several important commonalities. Both community colleges had human resource infrastructures in place. Gamma City College's human resource infrastructure had reached a point of being well established. Gamma City College had matured into its second generation of innovation adoption. They had settled the troublesome question of intellectual property in favor of the teachers. Gamma City College had an extensive technical training and support system in place for faculty and, to a limited extent, for the students as well.

Community College Alpha's human resource infrastructure was not as well developed; however, it was functional. The intellectual property issue had not been settled. Faculty members had thought that the faculty had possession of the courses they

developed while the administration thought that course ownership favored the institution. Alpha Community College had an online training system that was required for all online faculty members. Both Alpha Community College and Gamma City College had developed some human resource infrastructures for their online teaching programs. They had legitimized online-learning practices through the process of codifying contract language and/or district policies.

In contrast, the two high school systems were lagging far behind in terms of the online courses offered, sophistication of online programming, and the human resource infrastructure to support their online programs. Neither high school system had made any accommodations in its human resource infrastructure for the online programs.

It was interesting to note that 75% of the colleges and universities in the United States had or were planning to have their own version of online classes (AFT, 2000). In contrast, high schools had tended to form consortia or rely on existing ones to develop online programs. Of the two schools examined in the case studies, the Beta Consortium Virtual Academy was sponsored by a 14-district consortium; similarly, the Delta Virtual High School was based out of the Delta County Office of Education and encompassed multiple school districts in California, Nevada, and Michigan.

The Diffusion of Online Teaching and Human Resource Infrastructure in the Four Case Studies

Attribute 1: Relative advantage. Every institution wanted more students enrolled in its programs. The financial realities stipulated that the greater the number of students enrolled, the greater the revenue stream. Community College Alpha and Gamma City College looked to online instruction to generate new growth in enrollment, which in turn

generated more funding. The Beta Consortium and Delta Virtual High School saw online classes as a way to retain their student revenues. While financial incentives were not the exclusive motivations for these schools, not a single school would offer online programming had the financial incentives not been present.

The virtual nature of online programming also afforded institutions the ability to expand their services without having to incur greater costs in the construction of additional buildings and classrooms. All four institutions recognized their physical plant limitations and saw online delivery as a means to expand service while incurring minimal costs in the operation of their facilities.

Another relative advantage for the institutions was the “status conferring quality” (Rogers, 1995, p. 214) of providing online education opportunities. In other words, online programs confer a high status for institutions that implement this innovation. For Community College Alpha and Gamma City College, the desire not to be left behind in the digital college world was a motivating factor. The two high school systems were the early pioneers of online programming at the high school level. This early entry provided them prominence and the status of being innovators.

Teachers benefited from online instruction in a number of ways. The anywhere-and-anytime nature of online instruction provided teachers greater mobility and flexibility. Teachers could teach from virtually anywhere and at anytime. Teachers also appreciated the ability to experiment with innovative pedagogical approaches and techniques. For the early adopters and innovators, the opportunity to utilize the technology was a strong relative advantage. The technology’s ability to reach beyond the traditional classroom and access historically underserved populations was also a strong

motivating factor for faculty. For some faculty members, the monetary rewards were a relative advantage. The compensation was a token amount. However, it was enough for some faculty members with a predisposition for using technology to overcome any reservations about spending additional time and effort in the learning of previously unexplored educational technology delivery methods and in online course development.

Attribute 2: Compatibility. “Change agents seek to determine the needs of their clients and then to recommend innovations that fulfill these needs” (Rogers, 1995, p. 228). The institutions and teachers needed to emulate their traditional classrooms and structures in their online programs. In other words, they wanted their online programs to replicate their traditional classrooms. Gamma City College wanted to match their online programs with their face-to-face classes as nearly as possible. The Beta Consortium and Delta Virtual High School wanted to offer online classes that met University of California and California State University requirements. Further, Delta Virtual High School’s efforts transformed its existing paper-and-pencil learning tools to the Internet.

Affective and effective student-teacher contact was identified as a major concern for each institution. The two consortia overcame the inherent limitations of impersonal online delivery by building into their system a mandatory face-to-face component for their courses. Delta Virtual High School students could only access their online courses with their online facilitator present. The Beta Consortium remedied the affective student-teacher contact issue by requiring students to have face-to-face, on-campus sponsors who monitored student learning and progress in online classes. Gamma City College began developing hybridized classes as its remedy for the seemingly impersonal characteristic of online classes.

Some opinion leaders felt that online instruction lacked the complexity and rigor of their traditional, face-to-face counterparts. Every teacher opting not to deliver online instruction at all four sites did so because he or she had major reservations regarding student-teacher interactions, academic rigor, and the quality of online instruction. These teachers believed that the teaching dynamic found between student and teachers in a traditional classroom cannot be duplicated in a technology-mediated environment. The sentiments of all the interviewees who decline to adopt online programs may be reflected in the following statement, “When I look at the students eye to eye and tell them what I feel, and they tell me what they feel, it makes a big difference. You can’t do this online” (anonymous, personal communication, Case Study Beta, June 18, 2001).

Most teachers and administrators agreed that online teaching involved more work on the part of the teacher. All agreed that the initial course development of an online class was much more work than the development of a traditional class. Most of the interviewees thought that the longer the online course was taught, the more equitable the workloads became. Most interviewees believed that the roles, duties, and obligations of the online instructor did not fundamentally change. However, the medium through which the class was conducted dictated a change in what teachers did to fulfill the rights, duties, and obligations of online teachers.

Faculty evaluations of online instructors were thought to be incompatible with the current evaluation practices for traditional teachers. Unions held to the principle that faculty evaluations should be uniform and consistent for all instructional employees. None of the case study sites had been able to devise an evaluation process that was completely consistent with the union mandates. Issues such as classroom observations,

classroom visitations by evaluators, and observing the faculty member at work were problematic in the virtual classroom.

Attribute 3: Complexity. Online teaching was considered to be complex by all the interviewees. From the beginning of course development to the delivery of course assessments, the process was considered to be technically challenging. Initially, the operation of the software had to be learned. Then the course interface had to be mastered, and the content of the courses had to be transferred to the online environment. Once the class was running, answering student's questions via e-mail and electronic discussion groups was deemed to be a daunting task because of the sheer volume generated by students and the nature of the virtual environment. As if these complexity issues were not enough, a faulty electronic infrastructure and the lack of just-in-time technical support, resulting in frequent episodes of frustration often challenged the faculty members. This contributing factor explains why the late-majority adopters and the non-adopters felt apprehension when asked to use new technologies.

Delta Virtual High School minimized the complexity issue by having the course content delivered by a canned program as opposed to a human instructor who utilized the technology for the delivery of instruction. However, as Delta Virtual High School simplified the complexity issue, the question of academic rigor grew. Serious questions about academic rigor had been aimed at the courses taught at Delta Virtual High School.

Attribute 4: Trialability. Online teaching was optional and supplemental at all four sites. No faculty member was forced to teach online. The program only recruited teachers who were willing to experiment with technology. At two sites, the faculty initiated the online programs. The programs operated at the discretion of both management and

faculty. If either entity were not a willing participant in the online enterprise, the programs would have been discontinued.

Online teaching was at the experimental stage at all four sites. These innovative programs were still in the developmental stages, and trialability was expected. No teachers were required to bring courses online. There was little indication that long-term commitments existed on the part of the institutions and teachers. Only Gamma City College had committed ongoing general budget funding, albeit limited, for online instruction.

Attribute 5: Observability. At all four sites, the online programs were paradoxically visible and yet they were also difficult to observe. This inconsistency can be explained in a contradiction of goals. The earliest proponents of online classes at each institution had an agenda of survivability. They surmised that keeping a low initial profile would benefit the program most. A low profile kept detractors from making open criticisms. As program viability became more certain, visibility became more prominent. The axiom held true that with economic viability comes program visibility. At the same time, there was an immediate desire to showcase innovative practices and to be numbered among the technologically elite.

Attribute 6: Institutional support. As the online programs matured, more and more institutional support was provided at all four sites. At the earliest stage, considerable resources were allotted for program development and experimentation. Teachers were provided with release time to plan and implement online programming. The earliest innovators were also provided with some of the best equipment in the school in order to pursue experimentation. As situations arose, innovative administrators supported the

programs in any fashion they could. Once the programs were established, the ad hoc nature of institutional support gave way to more formal expressions of institutional sustainability. Canonical training programs were officially established. Technical support was afforded. Systems of compensation were implemented for developers of online programming.

It is important to note that the funding for long-term sustainability was remarkably absent at each site. The programs were initially begun with soft money sources. The researchers found little evidence to indicate that general funds were allocated in support of the online programming.

Attribute 7: Institutional codification. According to institutional sociologists, institutional codification occurs only after the first generation of innovators and pioneers have implemented and established their work. Codification is needed when the second generation is ready to participate in the institution. The first generation innovators do not require codification because of the ad hoc nature of innovation. However, when the second and subsequent generations or adopters are ready to participate in the innovation, formal institutional guidelines and procedures must be developed. The codification of an institution's practices formalizes and regularizes its practices. According to management theorists Maurizio Zollo and Sidney Winter (2002), "...codification facilitates the diffusion of existing knowledge" (p. 12).

The two college sites had developed past the first generation and were beginning to codify the procedures, support, and policies needed to sustain the development of the second generation of technology adopters. The two colleges had codified procedures to govern online curriculum review, procedures for faculty recruitment for online teaching,

compensation, intellectual property, statistical and financial review, and other facets to encourage the use of technology in the institution. Unresolved were issues regarding the evaluation of online faculty.

The two high school sites had no codification in place for their online programs. This clearly identified the institutions as being in the first generation of technology innovators.

Conclusion: Human Resource Management Infrastructure in the Four Case Studies

The human resource infrastructure for the online schools revealed the schools' development and placement on the sociocultural innovation continuum. The two colleges were entering the second generation of technology innovation adoption. The early majority stage of innovation diffusion indicated that the pioneering work of the earliest innovators was completed. The development of the institutional codification enabled the early majority to participate as second-generation players in the diffusion of online teaching within the sociocultural innovation continuum as illustrated in Figure 4.

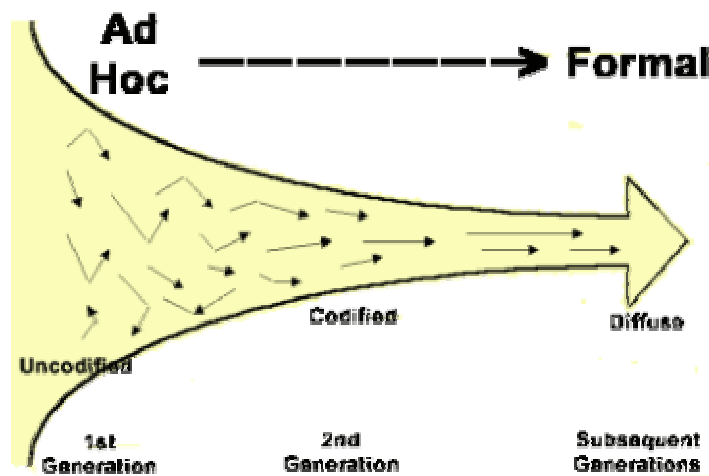


Figure 4. The Sociocultural Innovation Continuum. This continuum shows, that in the first generation of technology adoption, practices are uncoded and become codified as diffusion progresses.

The two online high school systems lacked any form of codification. This indicator placed them among the first generation of technology adopters. The innovators were pioneering the schools' entries into the online teaching arena. These innovators had little need for institutional codification because the processes were still in evolution. The two high school sites were consortia based. The reliance on consortia infrastructure for online high schools reflected the two largest online high school programs that currently serve multiple districts in the United States. Virtual High School was sponsored by the Concord Consortium in Boston. Florida High School was sponsored by the Florida State Board of Education. The researchers concluded that online high school systems gravitate toward cooperative joint ventures. Joint ventures enable districts to share in the risks of undertaking online programming.

Online teaching was optional and supplemental at all four sites. No faculty member was forced to teach online. Not only was this phenomenon a marker of innovation diffusion, but it was also an indicator of maturity of the human resource infrastructure. The four sites were still at an early stage of development. Innovators and early adopters do not require elaborate or mature systems of institutional codification and resources.

The diffusion of innovation is as much a social process as it is a technological matter. For an innovation to be adopted across a sociocultural system, the innovation must become user oriented as well as technologically oriented.

AFT Survey and Multiple Case Study Conclusions

Conclusions from the current study were based on a comparison of the American Federation of Teachers (AFT, 2000) nationwide survey of distance education teachers

and the results of the modified AFT survey administered by the researchers of these case studies. The results of this comparison were used to corroborate or refute the inferences made by these researchers about the characteristics, attitudes, or behaviors identified in the individual site investigations. These data were not used to imply statistical significance. It is important to note that the AFT only interviewed faculty members who were engaged in distance education, while the current study included other respondents who were not engaged in online education. Furthermore, the AFT survey's definition of distance education included instructional television, CD-ROM delivered instruction, and other forms of distance education such as radio and correspondence courses. In contrast, the current study centered exclusively on online, Internet-based courses.

The AFT nationwide survey corresponded with this study's research questions in the following issues: (a) working conditions in terms of class size and compensation; (b) the perceptions of the rights, duties, and obligations of online teachers in terms of intellectual property rights and contractual obligations; and (c) the influence of human resource management infrastructure on the adoption of online teaching practices.

The AFT nationwide survey corroborated the findings of this study in terms of working conditions. An overwhelming majority of both the AFT respondents (93.5%) and this study's respondents (80%) felt that more time and effort were required to deliver online and distance education courses when compared with traditional classes. Because of this perception, most felt that some system of financial compensation was appropriate to remunerate the extra time required to create and offer these courses. Means of compensation were consistent with those identified in the national survey and were significantly less than the teachers' regular hourly rate. Remuneration most often

consisted of release time for the course developer and stipends of more than \$1,000. Additionally, the AFT survey corroborated the results of the current study in terms of working conditions as they related to class size. Online classes were generally held to the same standards as their face-to-face counterparts. This study confirmed the AFT findings that show online class enrollments to be between 20-50 students.

According to the AFT nationwide survey, only 35.9% of distance education classes required face-to-face student-teacher contact. In contrast, 63% of the respondents in this study believed that face-to-face contact was an integral part of effective course delivery. This can be explained by the geographic demographics of the targeted student population. When the student population was in close proximity to the site hosting the delivery of the course, the preferred delivery method required face-to-face contact. However, when the targeted student population was geographically dispersed, no face-to-face contact was required.

The AFT nationwide survey corroborated the findings of this study in terms of the rights, duties, and obligations in relation to intellectual property rights of online teachers and their employing institutions. AFT respondents were more concerned (37.4%) about issues regarding intellectual property rights than this study's respondents (25%). This can be explained in part by the development of the online programs that had already settled the question of intellectual property rights. These second-generation respondents were less concerned with this issue because the question of course ownership had already been codified. The first-generation respondents also demonstrated little concern because the online program had not developed to the extent that intellectual property rights had become an issue.

Both AFT survey results and this study's survey results showed that faculty members believed, without exception, that material created for their courses, regardless of the mode of delivery, belonged to faculty. When faculty members perceived that they held undisputed ownership of their course content, they were more inclined to teach in distance education and online programs.

Technical support was an important element for the success of distance education and online learning programs. AFT's and this study's surveys concluded that more than 70% of the respondents were satisfied with the technical support they received, which reflected, in part, the effectiveness of the institution's human resource management infrastructure and the institution's commitment to online programming. Furthermore, AFT's and this study's surveys indicated that more than three fourths of those teaching online and distance education courses would do it again if given the opportunity. Clearly most teachers were satisfied with their experience with online teaching. An adequate human resource management infrastructure must exist for satisfaction levels to be this high.

Answers to Research Questions

The current study proposed to answer three research questions about the effects of school districts' human resource management infrastructures on the adoption of online teaching practices. This multiple case study explored the working conditions and contractual obligations of four selected online educational institutions. Furthermore, the study compared and contrasted elements of the human resource management infrastructure that governed each site.

Research Question One

Research question one was stated:

Does an institution's human resource management infrastructure discourage/encourage the adoption of online teaching practices? If so, in what ways?

It was evident that the four institutions that utilized online teaching practices were at different stages of development in their human resource management infrastructure. Yet it can be concluded that an institution's human resource management infrastructure does encourage or discourage the adoption of online teaching practices, depending on the codification of the institution's practices. An institution's collective bargaining agreement, board policies, faculty handbooks, memoranda, working documents and forms, technology training manuals, indigenous knowledge systems, technology training and support, Websites, and cultural artifacts influence the adoption of online teaching practices.

The collective bargaining agreement determines the compensation and evaluation procedures for faculty. Second-generational or better-developed collective bargaining agreements promote the adoption of online teaching practices. Conversely, first-generational or underdeveloped contractual language discourages the adoption of online teaching practices. The immature or underdeveloped codification of documentation causes relational tension between the faculty and management. Ambiguous language leads to misunderstandings because each party interprets the contractual language to its own relative advantage.

Support documentation codifies the dynamic capabilities for institutions (Zollo & Winter, 2002). The cognitive activities required in the process of codification stabilize the

operational routines or dynamic capabilities of an institution. Thus, board policies, faculty handbooks, memoranda, working documents and forms, and technology training manuals regularize the collective activities of organizational procedures and relationships. Mutually developed and commonly understood support documentation promotes the institutionalization of online teaching practices. For instance, Community College Alpha and Gamma City College codified the compensation and training of online course creation, which promoted the adoption of online teaching practices for the later adopters. For the innovators and early adopters, monetary incentives and training support were not critical to the successful adoption of online teaching practices. They were generally motivated by their own internal locus of control.

Unresolved issues, such as online faculty evaluations, discourage the adoption of online teaching practices. Diffusion theorist, Geoffrey Moore (1999), suggests that social uncertainty causes conflicts to occur during the implementation of an innovation. Ill-defined procedures such as online faculty evaluations discourage later adopters from online teaching because of social uncertainty.

The formalization of technology training, the convenient access of technology support, and the institution's commitment to the provision of these services encourage faculty adoption of online teaching practices. Technology training and support are a form of normalized knowledge and an institution's intellectual capital. The transmission of highly codified knowledge, in the form of technology training and support acquired by the early adopters, accelerates the adoption, replication, and precision of online teaching practices for the later adopters (Zollo & Winter, 2002).

Research Question Two

Research question two was stated:

Do online teaching practices change the role, duties, obligations, and responsibilities of a traditional teacher and/or management personnel (i.e. contractual obligations, intellectual property rights, course ownership, and control)? If so, in what ways?

The role, duties, obligations, and responsibilities of online teachers and/or management personnel are no different from those of the traditional teacher and/or management. The evidence clearly indicates that the duties, obligations, and responsibilities of teachers such as grading, class management, content delivery, assessment, student-faculty communications, and the facilitation of learning are common to both online and traditional classroom teachers. The duties do not change. The difference lies only in the manner in which these duties are performed.

Therefore, contractual obligations such as office hours, student contact, grading, and class management must be transferred and reapplied to the online venue. The question of intellectual property and course ownership, likewise, should be transferred and reapplied to the online venue. There should be no dispute over course ownership or intellectual property because there is no such dispute in the traditional classroom. Ownership belongs to the faculty. Gamma City College is an example of a second-generation adopter of online teaching practices having codified the issue of intellectual property in favor of their faculty.

Research Question Three

Research question three was stated:

Are the working conditions (time/hours, class sizes, location, and number and type of assignments) of a traditional teacher affected by the adoption of online teaching practices? If so, in what ways?

The working conditions of traditional teachers are affected by the adoption of online teaching practices. The popularized anytime-and-anywhere perception of online teaching has serious repercussions. It is commonly believed that an online instructor may teach from the convenience of a home or an exotic location. Similarly, it is also assumed that an online teacher may teach at the time of the instructor's choosing. These perceptions are true; however, the inverse is also true: anytime and anywhere is translated to all-the-time and everywhere. A common student and institutional expectation placed on an online teacher is that the faculty member answer e-mail within 24 hours. However, answering student queries within 24 hours is not expected of the traditional, face-to-face instructor. For instance, when traditional faculty members are absent from an institution because of circumstances or illness, they are often replaced by a substitute teacher. Conversely, when an online teacher is absent, typically, no substitute teacher is provided. The online faculty member is expected to fulfill his or her teaching assignment regardless of location, time, or circumstance.

Class size and the workload of online teachers have been consistent and compatible with the class size and workloads of traditional teachers. The same standards are usually applied to both. Our findings, like those of the AFT national survey, show that class size, regardless of mode of delivery, averaged between 20 and 50 students. Faculty members teach the same number of courses irrespective of mode of delivery.

Teachers tend to give the same assignments online as they do in their traditional classrooms. The performance expectations placed on both online and face-to-face students are comparable.

The Human Resource Management Infrastructure Support of Innovation

According to Everett Rogers (1995), the diffusion of innovations into a sociocultural system is a transmission of innovative ideas, concepts, and processes throughout the organization. Rogers wrote:

If the first adopter of the innovation discusses it with two other members of the system, and each of these two adopters passes the new idea along to two peers, and so forth, the resulting distribution follows a binomial expansion, a mathematical function that follows a normal shape when plotted over a series of successive generations. (p. 259)

The authors of the current study have found that this normal curve is institutionally disrupted when the organization's human resource management infrastructure does not support the work and practice of the innovation. A resulting chasm divides the innovators and early adopters, otherwise known as the first generation, from the later adopters or subsequent generations as shown in Figure 5.

The chasm that divides the first generation from the second and subsequent generations in the adoption of innovation in an online teaching institution involves the seven attributes of diffusion. The relative advantages that motivated the first generation may not necessarily be the same relative advantages that will entice the later adopters. For instance, infatuation with technology was a primary motivator for the earliest adopters of online teaching. This love affair with technology is absent from subsequent

adopters. Thus the human resource management infrastructure must bridge this chasm with other relative advantages, such as stipends and compensations, in order to promote continued diffusion of online teaching practices.

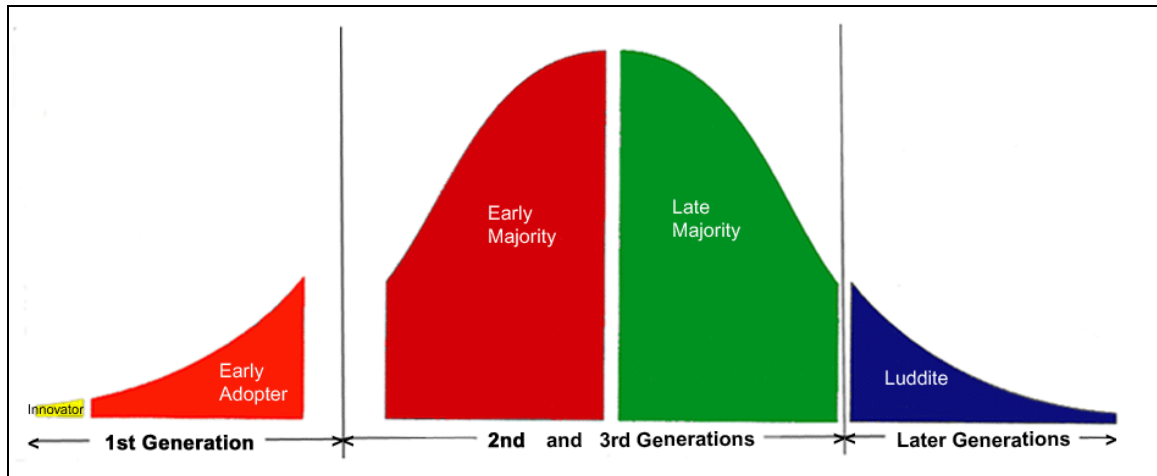


Figure 5. The Generations of Technology Diffusion. This figure demonstrates the relationship between the category of adopters and the stage of adoption.

The complexity of the innovation in the current study was not problematic for the innovators and early adopters who had high thresholds of indignation because they were familiar with computer technology. In contrast, later adopters had low thresholds of indignation for the technology and would abort their adoption of online teaching practices quickly. Therefore the human resource management infrastructure must provide just-in-time technical training and support to gird the later adopters through the technical aspects of online teaching practices.

The compatibility between the existing practices of the traditional classroom and those of online teaching were determined to be congruent by the earliest adopters. If inconsistencies were found to be present, the early adopters chose to disregard these inconsistencies because they viewed them as trivial. For instance, the issue of student identity and security in the virtual classroom was not problematic for the technology pioneers; however, the later adopters found this issue to be a barrier to adoption. For the

later adopters, the question of student identity had to be resolved prior to adoption.

Gamma City College bridged this gulf by requiring proctored final exams for their online students. Thus the human resource management infrastructure of Gamma City College established relationships with individuals throughout the community to provide secured, proctored environments for the students and online faculty.

Trialability was promoted by the human resource management infrastructure for existing faculty because online teaching did not become a requirement for continued employment. Faculty were encouraged to adopt innovative practices but were not penalized for technology refusal. Adopters of online teaching who experimented with the innovations were free to discontinue at their will. However, most early adopters have continued to teach online. Therefore trialability is an essential element for the human resource management infrastructure. There is a trend, especially among second-generational institutions, to hire faculty members who possess the knowledge skills and ability to manage new educational technologies.

An effective human resource management infrastructure promotes high observability of innovative practices. Institutional leaders held the earliest adopters who participated in online instruction in high regard. The adoption of online teaching practices bestowed a “status-conferring quality” (Rogers, 1995, p. 214) upon these institutionally visible early adopters. For instance, management showcased the earliest online teachers’ efforts and products for visiting dignitaries, the press, and their peers.

The human resource management infrastructure confers institutional support by allocating institutional resources such as equipment acquisition, computer network

infrastructure, maintenance and support, faculty training, faculty compensation and release time, budgetary considerations for sustainability, and administrative oversight.

The codification of institutional support is manifested in the official documents produced by the human resource management infrastructure. The codification process requires institutions to determine which artifacts have become essential to their organization and which of these artifacts need to be codified and normalized into the organization's human resource management infrastructure (Zollo & Winter, 2002). This form of organizational self-reflection is a sign of second-generational growth. The maturation of the human resource infrastructure management is reflected in the development of documents that support online teaching. When the traditional documents such as the collective bargaining agreement, faculty handbooks, board policies, training manuals, Websites, and institutional forms and paperwork include aspects of online teaching, the institution displays characteristics of having a maturing human resource management infrastructure that supports online teaching.

The human resource management infrastructure is the critical component necessary to overcome the chasm between the first and subsequent generations of innovation adoption. The diffusion of online teaching innovation is disrupted by deficiencies in the human resource management infrastructure. These deficiencies must be overcome if online teaching practices are to be adopted by later generations as represented in Figure 6.

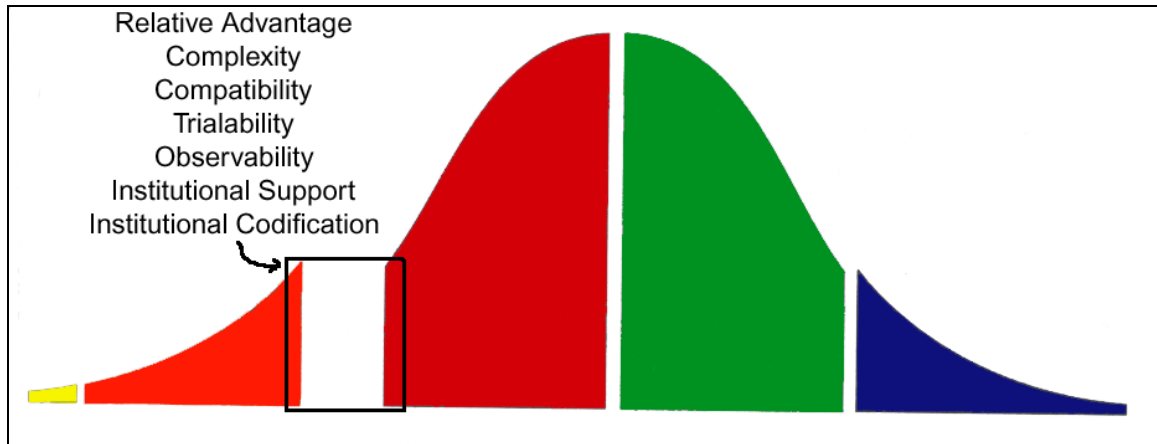


Figure 6. Attributes that Disrupt the Diffusion of Online Teaching. This figure identifies the diffusion characteristics that separate early adopters of technology from the later adopters if they are not reconciled by HRM.

Innovation: Online Teaching as Product and Process

Social scientists often segment the subjects of their analyses into chronological or developmental periods. James Utterback (1996) divided the dynamics of innovation into two categories: the innovation of product and the innovation of process. The initial driving force of any developing technology is the innovation of product. The innovation of product is the search for a dominant design. The desired features of a technology are being defined in this search process. The desirable features, the functionality, the human-technology interface, the defining characteristics and attributes, and the internal technical capabilities are all negotiated by the technology's developers and users. Once these capabilities and attributes have been accepted by a majority of users and developers a dominant design emerges. Utterback contends:

A 'dominant design' in a product class is, by definition, the one that wins the allegiance of the marketplace, the one that competitors and innovators must adhere to if they hope to command significant market following. The 'dominant design' usually takes the form of a new product (or set of features) synthesized

from individual technology innovations introduced independently in prior product variance. (p. 24)

The innovators and developers of online teaching have defined the characteristic features of the products utilized in online teaching. The dominant product design has emerged. Online instruction customarily involves a system of Internet-based content delivery, predominantly in the form of text. The dominant design for online instruction also includes the use of e-mail for communications between students and teachers. Newsgroups are used for virtual classroom discussions. Web-based resources are utilized as a virtual library. For institutions with sufficient bandwidth, video-streaming features are included. Synchronous chat rooms are possible. Class registration and the reporting of grades are accomplished electronically. Student support services, while not universal, are available. The emergence of the dominant design for online instruction creates an implicit understanding of the performance requirements to be met by the product. For instance, no one needs to inquire whether an online class uses e-mail. It is expected that this capability is inherent in the product design. According to Utterback (1996), a dominant design has emerged in online enterprise solutions to online teaching. Hence few substantive product innovations have entered the marketplace in the past 3 years.

Utterback (1996) further stipulates that when the innovations of products reach a plateau, the innovations of process become the major impetus. “Product innovation and process innovation are interdependent; as the rate of product innovation decreases, it is common to observe a growing rate of process innovation” (p. 83). Hence, few capabilities have been added to the online teaching environment in the past 3 years because the period of product innovation has slowed with the emergence of a dominant design. Figure

7 illustrates that with the emergence of a dominant design, innovations in product decrease while innovations in process increase.

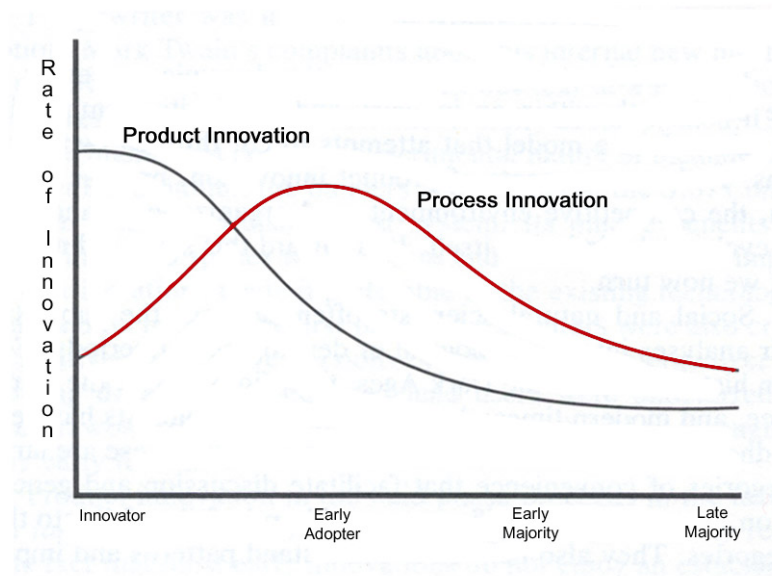


Figure 7. The Product and Process Innovation Curves. As product innovations decrease, process innovations increase.

Online educational organizations must shift their focus from innovative product development to a standardization of the product with a concurrent increase in process innovation and development. The ad hoc nature of infantile process innovation must give way to an emphasis in structure, rules, and the codification of practices. The system becomes more hierarchical and rigid and the tasks become more formalized and institutionalized. The obligation of human resource management infrastructure is to oversee these processes. Thus the human resource management infrastructure must formalize the process of innovation for online instructors. They must resolve any unsettled question of the intellectual property debate, online faculty evaluations procedures, and the working conditions such as time/hours and location.

For more than 100 years, education has been regulated by the agriculturally-based dominant design known as the Carnegie Unit. The Carnegie Unit has defined American

education in terms of how much time a student spends in the classroom for learning to take place. Consequently, the Carnegie Unit has created an industrially based measure that has determined the contractual obligations for teachers. With the dominant design of the product innovation being established and the emergence of a dominant process design in online teaching, the Carnegie Unit has become obsolete. According to David Tyack and Larry Cuban (1995), “Influential organizations and individuals agree that it was time to overthrow the Carnegie Unit, the egg-crate classroom, the teacher-dominated traditional curriculum, passive styles of learning, and the isolation of teachers from each other” (p. 103). Human resource management needs to come to understand that the Carnegie Unit’s standardization of “time, subjects, space and class size...no longer served goals...and based on a constricted view of human nature” (p. 102). The working conditions of teachers (especially online instructors) imposed by the application of the Carnegie Unit are no longer viable definitions by which to measure faculty performance and job duties.

Practical Implications of this Study

The current study determined that the human resource management infrastructure has a direct impact on the implementation of online teaching. Human resource management is the source of the support, training, and remuneration necessary for the acquisition of technology tools for teachers, administrators, and staff (see Figure 8).

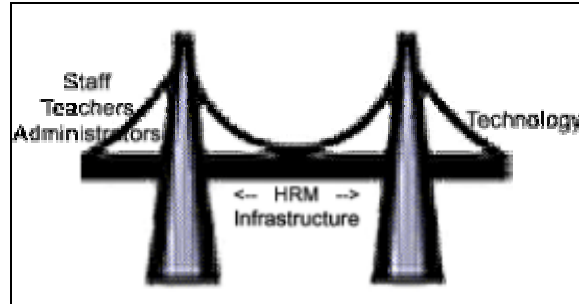


Figure 8. The Infrastructure Bridge. HRM bridges educational personnel with technology.

In similar fashion, the chasm between the first-generation early adopters and the later adopters is bridged by the institution's human resource management infrastructure. A thorough and well-developed human resource management infrastructure enables the second-generation adopters to cross the chasm of the technology-motivated refusal to adopt online teaching practices (see Figure 9).

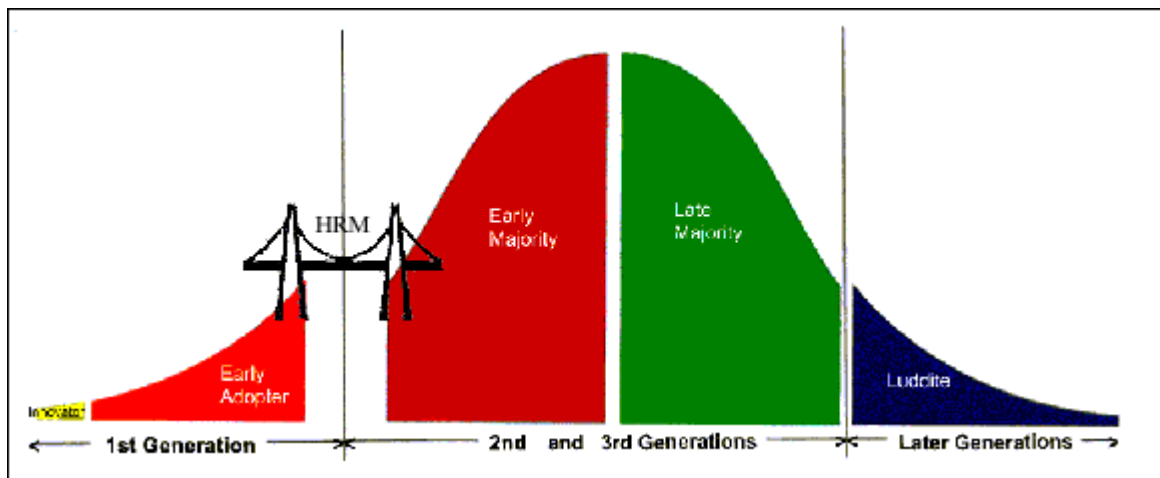


Figure 9. The Bridge Over Technology Refusal by Later Adopters. HRM bridges the chasm between the first and subsequent generations.

Recommendations for the Institutional Adoption of Online Teaching Practices

Based on the findings of the current study, the researchers recommend the following parameters for the adoption of online teaching practices. These

recommendations “are generalizable to theoretical propositions and not to populations or universes” (Yin, 1994, p. 10).

- No time or location restrictions should be placed on online instructors (anytime and anywhere);
- Instructors should be given remuneration and/or release time for their course development and training;
- Institutional services should support faculty efforts to serve traditionally underserved student populations;
- Line-item funding for the support of technology, technology maintenance, and technology training should be budgeted;
- Criteria for effective student-teacher contact in the delivery of online curriculum should be established to overcome the inherently impersonal nature of online learning;
- Online instruction should not be automated to protect academic quality and rigor, the appropriateness of content, relevance to standards, and the dynamic interaction between students and teachers and students and peers;
- Faculty evaluations for both online and face-to-face teachers should be based upon peer review;
- The normal operation of online courses should be open and transparent for all to see;
- Without long-term commitment, faculty should be allowed to experiment with online instruction;
- No faculty member should be forced to teach online, and online teaching should be optional;

- The infrastructure should provide just-in-time technical support;
- Institutional support in the form of administrative oversight and clerical help should be provided to formalize and codify online instruction and ancillary services;
- Financial review and oversight should be formalized to ensure program viability;
- Intellectual property and course ownership should be decided in favor of the faculty;
- Online class size should be held to the same standards as their face-to-face counterparts. Ideally, the classes should range from 20 to 50 students;
- Contractual obligations such as office hours, student contact, grading, and class management should be transferred and reapplied to the online venue;
- Online instructors should monitor online classes at least once a day;
- Online instructors should answer e-mail within 24 hours of the inquiry;
- Online instructors should take reasonable precautions to assure student identity and testing security.

Recommendations for Further Study

The current study used a multiple case study approach to investigate the effects of an organization's human resource infrastructure upon the adoption and diffusion of online teaching practices. The authors of the current study recommend that other research methodologies be employed to explore the same phenomena. For example, a researcher could conduct a traditional diffusion field study designed to benchmark the rate of adoption in an educational setting (Rogers, 1995). Next, the researcher would apply a treatment (i.e. initiate a change to an element of the HRM infrastructure such as intellectual property rights). And finally, after some unit of time, the researcher would remeasure the rate of adoption and report how the treatment affected the rate of adoption.

This type of investigation would provide evidence as to how a specific element of the human resource infrastructure affects adoption.

Another area of investigation recommended by the authors of the current study would be to study the roles that opinion leaders have on the adoption of online teaching practices in a specific educational system (Rogers, 1995). This investigation would include sociometrics, informants' ratings, self-designation techniques, and/or observations. Once the key opinion leaders are identified, those individuals would be targeted as change agents to study their influence on the adoption and diffusion of online teaching practices.

A study of product/process innovation would add to the body of knowledge regarding online education innovation. The authors of this current study recommend the exploration of educational technology product innovations and comparing them to online instructional process innovations to determine if there is interdependence. One might theorize that as the rate of product innovation decreases, the rate of process innovation increases, which might result in a codification of online teaching practices.

Conclusion

The purpose of the current study was to examine the effects of a school district's human resource management infrastructure on the adoption of online education practices. With the advent of the Internet, new course delivery methods have become available. Faculty members are, however, resistant to accept these new methods, in part because various labor issues have not been resolved. In addition, faculty members have concerns about teacher-student contact and academic rigor in the online environment.

This study explored the current working conditions and contractual obligations of four online educational institutions. Furthermore, the study described the elements of the human resource management infrastructures that governed the online educational practices at these institutions. Recommendations for human resource management infrastructure were proffered.

Reference List

Allison, R. D. (1998). Faculty obligations and compensation: The necessity of a new approach (revised January 21) (Report No. JC 980111). East Lansing, MI: National Center for Research on Teacher Learning. (ERIC Document Reproduction Service No. ED 416911)

American Federation of Teachers. (1999, December 11). Making standards matter. AFT. Retrieved May 5, 2000 from the World Wide Web: <http://www.aft.org/edissues/standards99/findings.htm><http://www.aft.org/edissues/standards99/findings.htm>

American Federation of Teachers, Higher Education Program and Policy Council. (2000, May). Distance education: Guidelines for good practice. Washington, DC: Author.

Ayers, W. (1993). Chicago: A restless sea of social forces. In C. T. Kerchner & J. E. Koppich. (Eds.), Union of professionals: Labor relations and educational reform (pp. 177-193). New York: Teachers College Press.

Barr, R. B., & Tagg, J. (1995). From teaching to learning: A new paradigm for undergraduate education. Change, 27 (6), 13-25.

Beaudoin, M. (1990). The instructor's role in distance education. American Journal of Distance Education, 4 (2), 21-29.

Bluestone, B., & Harrison, B. (1999). Growing prosperity. Boston: Houghton Mifflin Co.

Bolman, L. G., & Deal, T. E. (1997). Reframing organizations: Artistry, choice and leadership. San Francisco: Jossey-Bass Publishers.

Botstein, L. (1997). Jefferson's Children: Education and the promise of American culture. New York: Doubleday.

Brint, S., & Karabel, J. (1989). The diverted dream: Community colleges and the promise of educational opportunity in America, 1900-1985. New York: Oxford University Press.

California Education Code, Section 200 (2000).

Case Study Alpha (2001). Collective bargaining agreement. Source withheld to maintain confidentiality.

Case Study Beta Website (2001). Source withheld to maintain confidentiality.

Case Study Delta City Website (2001). Sources withheld to maintain confidentiality.

Case Study Delta Website (2001). Sources withheld to maintain confidentiality.

Case Study Gamma (2001). Intellectual property policy for online courses. Sources withheld to maintain confidentiality.

Case Study Gamma Tourism Website (2001). Source withheld to maintain confidentiality.

Case Study Gamma Website (2001). Source withheld to maintain confidentiality.

Chase, B. (1998, September 18). New unionism. National Press Club. Retrieved May 10, 2000 from the World Wide Web: <http://www.nea.org/nrst980211.html>

Chase, B. (1999, December 1). The new unionism: The course for school quality. NEA. Retrieved June 1, 2000 from the World Wide Web: <http://www.nea.org/newunion/>

Committee, F. I. T. D. (1999). Integrating technology into the teaching and learning process at the Ohio State University . Ohio State University. Retrieved April 4, 2000 from the World Wide Web: <http://telr.ohio-state.edu/faculty/de/resources/fitd.cfm>

Cone, J. D., & Foster, S. L. (1993). Dissertations and theses from start to finish: Psychology and related fields. Washington, DC: American Psychological Association.

Creswell, J. W. (1994). Research Design: Qualitative and quantitative approaches. Thousand Oaks, CA: Sage.

Drucker, P. F. (1994, November). The age of social transformation. Atlantic Monthly, 53-80.

Eckstein, H. (1975). Case study and theory in political science. In F. I. Greenstein & N. W. Polsby (Eds.), Strategies of inquiry (pp. 79-137). Reading, MA: Addison-Wesley.

Education division dissertation guidelines. (ed. 1999). (Available from Pepperdine University, GSEP, 400 Corporate Pointe, Culver City, CA 90230).

Florida High School. (2001). The Florida online high school fact sheet. Florida High School. Retrieved March 3, 2001 from the World Wide Web: <http://www.fhs.net/FHSWeb.nsf/Home?Open>

Hammersley, M., & Atkinson, P. (1983). Ethnographic principles in practice. London: Routledge.

Jantzie, N. (1998). Distance learning and the end of the Carnegie unit. Retrieved February 14, 2001 from the World Wide Web:
http://www.ucalgary.ca/~gnjantzi/distance_learning_and_the_end_of.htm

Kerchner, C. T., & Koppich, J. E. (2000). Organizing around quality. In T. Loveless (Ed.), Conflicting missions? Teachers unions and educational reform (pp. 281-315). Washington, DC: The Brookings Institute.

Kerchner, C. T., Koppich, J. E., & Weeres, J. G. (1997). United mind workers: Unions and teaching in the knowledge society. San Francisco: Jossey-Bass.

Kerchner, C. T., Koppich, J. E., & Weeres, J. G. (1998). Taking charge of Quality: How teachers and unions can revitalize schools. San Francisco: Jossey-Bass.

Lieberman, M. (1997). The teachers unions: How the NEA and AFT sabotage reform and hold students, parents, teachers, and taxpayers hostage to bureaucracy. New York: The Free Press.

Lieberman, M. (1998). Teachers evaluating teachers: Peer review and the new unionism. New Brunswick, NJ: Transaction Publishers.

Mathis, R. L., & Jackson, J. H. (2000). Human resource management. (9th ed.). Cincinnati, OH: South-Western College Publishing.

Mauhs-Pugh, T. (1995, July 12). Charter schools 1995: A survey and analysis of the laws and practices of the states. Education Policy Analysis Archives, 3(13). Retrieved April 25, 2000 from the World Wide Web: <http://olam.ed.asu.edu/epaa/v3n13/>

Means, B., & Golan, S. (1998). Transforming teaching and learning with multimedia technology. Menlo Park, CA: SRI International.

Meyers, K., & Goldstein, H. (1997, January). Failing schools or failing systems? 1997 ASCD yearbook: Rethinking education change with heart and mind, 111-127.

Micklethwait, J., & Wooldridge, A. (2000). A future perfect. New York: Crown Publishers.

Migrant Education Program. (2001). Migrant education: Guide to program services in California. California Department of Education. Retrieved August 1, 2001 from the World Wide Web: <http://www.cde.ca.gov/iasa/migrant.html>

Miller, J. (1999). An operational model for a technology high school in the information age. Unpublished Dissertation, Pepperdine University, Culver City.

Mills, S. M. (1997). The dismissal of tenured teachers in higher education and the first and fourteenth amendments. Unpublished Dissertation, Pepperdine University, Culver City.

Moore, G. A. (1999). Crossing the chasm: Marketing and selling high-tech products to mainstream customers. New York: Harper Business.

Murphy, M. (1990). Blackboard unions: The AFT & The NEA 1900-1980. Ithaca, NY: Cornell University Press.

National Education Association. (1998, December 2). NEA/AFT unity. NEA. Retrieved May 28, 2000 from the World Wide Web: <http://www.nea.org/unity/chron.html>

National Education Association. (2000, June). A survey of traditional and distance learning higher education members Washington, DC: Author.

O'Banion, T. (1997). A learning college for the 21st century. Phoenix, AZ: Oryx Press.

Olcott, D., & Wright, S. J. (1995). An institutional framework for increasing faculty participation in postsecondary distance education. American Journal of Distance Education, 9 (3), 5-17.

Origins. (1989, May-June). Academe. 75, 4.

Patton, M. Q. (1987). How to use qualitative methods in evaluation. Newbury Park, CA: Sage.

Prasow, P. (1976). Impact of the Rodda act on California public education. In F. Hinman (Ed.), The Rodda act (pp. 38-49). Los Angeles: The Institute of Industrial Relations, University of California, Los Angeles.

Press, E., & Washburn, J. (2001). Digital diplomas. Mother Jones, 26 (1), 34-39, 82-83.

Proffitt, S. (1999, October 10). Amy Dean: Labor plugs in to the uncertain lives of knowledge Workers. Los Angeles Times, pp. M3.

Rodda, A. S. (1976). Breakthrough in California. In F. Hinman (Ed.), The Rodda act (pp. 4-13). Los Angeles: The Institute of Industrial Relations, University of California, Los Angeles.

Rogers, E. M. (1995). The diffusion of innovations (4th edition). New York: The Free Press.

Saffo, P. (1996). The consumer spectrum. In T. Winograd, Bennett, J., Young, L. D., & Hartfield, B. (Eds.). Bringing design to software (pp. 87-99). New York: ACM Press.

Sagor, R. (1997, January). Collaborative action for research for educational change. ASCD yearbook: Rethinking educational change with heart and mind, 169-191.

SB 844. (2001, July 21). Public education facilities bond act of 2002. California Legislature Assembly Committee on Higher Education. Sacramento: Assembly Committee on Higher Education.

Schlechty, P. C. (1997). Inventing better schools. San Francisco: Jossey-Bass.

Schuster, J. H., Smith, D. G., Corak, K. A., & Yamada, M. M. (1994). Strategic governance: How to make big decisions better. Phoenix, AZ: Oryx Press.

Sibbet, D., & Le Saget, M. (1998). The Sibbet/Le Saget stages of organization model. Groves Consultant International. [Online] Available: <http://www.arthuryoung.com/sibbet2.HTML>

Stake, R. E. (1995). The art of case study research. Thousand Oaks, CA: Sage.

Stoll, L., & Fink, D. (1996). Changing our schools: Linking school effectiveness and school improvement. Philadelphia: Open University Press.

Title 45, 46 C.F.R. § 46.101–46.103, 46.110–46.112, 46.116–46.117 (revised 1999, October 1). Subpart A—Health and Human Services Policy for the protection of human research subjects. Washington, D.C.: National Archives and Records Administration, Office of the Federal Register.

Turkel, S. (1995). Life on screen: Identity in the age of the Internet. New York: Touchstone.

Tyack, D., & Cuban, L. (1995). Tinkering toward utopia: A century of public school reform. Boston: Harvard University Press.

Utterback, J. M. (1996). Mastering the dynamics of innovation. Boston: Harvard Business School Press.

Vinovski, M. A. (2000). Teachers unions and educational research. In T. Loveless (Ed.) Conflicting missions? Teachers unions and educational reform (pp. 211-239). Washington, DC: The Brookings Institute.

Virtual High School. (2001). Virtual high school: About us-what is VHS. Virtual High School. Retrieved March, 3 2001 from the World Wide Web: <http://vhs.concord.org/Pages/About+Us-What+is+VHS>

Vogt, W. P. (1999). Dictionary of statistics and methodology: A nontechnical guide for the social sciences (2nd ed.). Thousand Oaks, CA: Sage.

Yin, R. K. (1984). Case study research. Thousand Oaks, CA: Sage.

Yin, R. K. (1994). Case study research: Design and methods (2nd ed.). Thousand Oaks, CA: Sage.

Zollo, M., & Winter, S. (2002) Deliberate learning and the evolution of dynamic capabilities. Organization Science [Online]. Available: <http://web.gsm.uci.edu/orgsci/>

Appendix A
Letter to Panel Members

Dear [name],

Please allow me to solicit your help. As a recognized expert in public education, you may be aware of community college and/or high school districts that have successfully implemented online teaching practices into their curriculum. Would you identify eight (8) schools that are effectively dealing with the human resource management issues created when faculty teach in this new venue--online.

As part of our doctoral studies, Ray Gen and Ron Glahn will be conducting an research study, utilizing a multiple-case study approach, that will seek to understand the effects of an organization's human resource management (HRM) infrastructure on an institution's ability to adopt online education practices. This qualitative inquiry will investigate contemporary phenomenon at several selected schools sites in an effort to support (or reject) the theoretical proposition that online teaching practices will not become institutionalized until satisfactory HRM mechanisms are in place to support these practices--ones that are agreeable to both management and faculty.

Please reply to this email with the names and contact information of eight (8) schools that:

- Are dealing with online teaching and HRM infrastructure in interesting ways
- Would be hospitable to this type of investigation
- Would allow access to documentary evidence (faculty contracts, faculty handbook, district policies and procedures), and
- Would encourage faculty, and management personnel to respond to surveys and participate in interview sessions.

Your time and help are very much appreciated.

Sincerely,

Ray Gen and Ron Glahn
Doctoral Candidates, Pepperdine University

Appendix B
Copyright Permission

November 14, 2001

Mr. Jewell Gould
American Federation of Teachers, AFL-CIO
555 New Jersey Ave., NW
Washington, DC 20001

Dear Mr. Gould,

We remember with fondness our visit with you and your staff last spring. Your hospitality was one of the highlights of our research excursion to Washington, D.C. As part of the contingent from Pepperdine University, our visit with your office was both informative and enjoyable.

Ray Gen and I are now embarking upon our dissertation and research. We are writing to ask permission to use a survey produced by AFT's Higher Education Program and Policy Council. In an AFT report entitled "Distance Education: Guidelines for Good Practice" (2000, May), there is a questionnaire we would like to use for research purposes in our dissertation. The questionnaire is entitled, "Distance Education: Practitioner Questionnaire" which surveyed 200 faculty members. We would like to use the survey to help us collect data that will be triangulated with other data we will collect from institutional documents and personal interviews.

You may respond by mail or email. Our return information is below.

Thank you for your consideration.

Sincerely,

Ronald Glahn
557 N. Kevin Lane
Porterville, CA 93257

rglahn@pc.cc.ca.us

Appendix C Site Acceptance Letter

November 14, 2001

[name]
[address 1]
[address 2]
[city, state, zip]

Dear [name],

I want to thank you for your willingness to participate as a case study site in this multiple-case study investigation. As you may recall from our telephone conversation, this study will look into the effects of an institutions human resource management infrastructure on the adoption of online teaching practices. This investigation is part of a doctoral dissertation in educational technology at Pepperdine University being conducted by Ray Gen and Ronald Glahn.

The research questions for this study are:

1. How does an institution's human resource management infrastructure discourage/encourage the adoption of online teaching practices?
2. How do online teaching practices change the role, duties, obligations, and responsibilities of a traditional teacher and/or an administrator (i.e. contractual obligations, intellectual property rights, course ownership and control)?
3. How are working conditions (time/hours, class sizes, location, number and type of assignments, compensation, evaluation, etc.) of a traditional teacher affected by the adoption of online teaching practices?

The information needed to answer these questions will be collected in three ways:

School Documents: Please have available the following public documents. We would be pleased to copy them upon our arrival. If these materials are available in electronic format we will gladly accept them. Please do what is most convenient for you.

- 1) faculty collective bargaining agreement and/or
- 2) faculty handbook,
- 3) school district's policy and procedures related to online teaching,
- 4) other relevant administrative communications,
- 5) job descriptions and announcements of those faculty engaged in online teaching,

- 6) departmental letters, memoranda, or other communiqués that addresses the working conditions of faculty that may have changed as a result of the adoption of online teaching practices.

Interviews: We will be holding hour-long interviews with the following people:

- 1) CEO/Principle or designee (i.e. an administrator familiar with faculty negotiations).
- 2) Collective bargaining unit president or designee (i.e. member of the negotiating team).
- 3) A faculty member who is currently teaching an online course.
- 4) A district technologist or online curriculum specialist.
- 5) A faculty member who has chosen not to teach online.
- 6) (optional) other district personnel, not described above, that can offer insights not otherwise available.

Please complete and return the attached form, “Interview Participants,” which identifies those individuals chosen to participate in the interviews. We will contact each participant individually to make arrangements for an interview. We will also send him or her a copy of the interview questions so they will have an opportunity to review them before the interview.

Survey: At the completion of the interview, each participant will be asked to complete an AFT survey about online teaching. This process should take less than 15 minutes.

If you should have any other questions please feel free to contact Ray Gen at raygen@earthlink.net or by phone at 310.287.2722 or Ronald Glahn at rglahn@pc.cc.ca.us or by phone at 559.791.2274.

Again, thank you for your willingness to participate as a case study site in this investigation.

Sincerely,

Ray Gen and Ronald Glahn
Doctoral Candidates, Pepperdine University

Enclosure:

Form, “Interview Participants” w/ return envelope

Interview Participants

1. CEO/Principle or designee (i.e. an administrator familiar with faculty negotiations).

Name: _____

Phone: _____

Address: _____

City, State, Zip: _____

Email: _____

2. Collective bargaining unit president or designee (i.e. member of the negotiating team).

Name: _____

Phone: _____

Address: _____

City, State, Zip: _____

Email: _____

3. A faculty member who is currently teaching an online course.

Name: _____

Phone: _____

Address: _____

City, State, Zip: _____

Email: _____

4. A district technologist or online curriculum specialist.

Name: _____

Phone: _____

Address: _____

City, State, Zip: _____

Email: _____

5. A faculty member who has chosen not to teach online.

Name: _____

Phone: _____

Address: _____

City, State, Zip: _____

Email: _____

6. (optional) other district personnel, not described above, that can offer insights not otherwise available.

Name: _____

Phone: _____

Address: _____

City, State, Zip: _____

Email: _____

Appendix D

Document Rubric

Document Analysis Rubric 1: Does an institution's human resource management infrastructure discourage/encourage the adoption of online teaching practices? If so, in what ways?

Compensation
Class size
Time/hours of work
Release Time
Professional development
Location of work
Evaluation of teacher
Other

Document Analysis Rubric 2: Do online teaching practices change the role, duties, obligations, and responsibilities of a traditional teacher and/or management personnel (i.e. contractual obligations, intellectual property rights, course ownership and control)? If so, in what ways?

Contractual obligations
Intellectual property issues
Course development
Course instruction
Course ownership
Course control
Teacher evaluation
Type of evaluation
Autonomy
Other

Document Analysis Rubric 3: Are working conditions (time/hours, class sizes, location, number and type of assignments, compensation, evaluation, etc.) of a traditional teacher affected by the adoption of online teaching practices? If so, in what ways?

Compensation & benefits
Class size
Time/hours of work
Release Time
Professional development
Location of work
Evaluation of teacher
Technical support
Other

Appendix E

Interview Rubric

Relative Advantage:

Is an innovation perceived to be better/worse than the idea it supersedes?

If so, in what ways?

Compatibility:

Is the innovation perceived to be consistent/inconsistent with existing values, past experiences, and the needs of potential adopters?

If so, in what ways?

Complexity:

Is the innovation perceived to be relatively difficult/easy to understand and to use?

If so, in what ways?

Trialability:

Is the innovation able to be experimented with on a limited basis?

If so, in what ways?

Observability:

Are the results of an innovation visible/invisible to others?

If so, in what ways?

Institutional Support:

Does the institution sustain and maintain innovative practices?

If so, in what ways?

Institutional Codification:

Does an institution recognize, legitimize, and authorize the adoption of innovative practices by codifying these practices in its official documents?

If so, in what ways?

Appendix F Informed Consent

We would like you to participate in a research study titled “Teaching in the Next Millennium: The Effects of an Organization’s Human Resource Infrastructure on the Adoption of Online Education Practices.” The purpose of this study is to gain a better understanding of how an organization’s written procedures, faculty handbook, and collective bargaining agreements affect the faculty’s willingness to adopt and implement online teaching practices. If you decide to participate in the study, your involvement will take no more than an hour of your time. We will ask you a series of questions in an informal interview setting. The questions will be about your perceptions, thoughts, and opinions of online teaching. At the conclusion of the interview, you will also be asked to complete a short survey where you will rate various statements about Internet based instruction.

Your participation is completely voluntary, and you will be free to refuse or stop at any time. Your terms of employment will not be affected in any way if you decide to stop. All information will be coded and strictly confidential. Your name or any other identifying characteristic will never be attached to any comments you might make. The interviews will be tape recorded to insure accuracy.

Do you have any questions?

If you have any questions later, please feel free to contact us.

Ray Gen, Doctoral Candidate
Pepperdine University, Graduate School of
Education and Psychology
Phone: 310.287.2722

Ronald Glahn, Doctoral Candidate
Pepperdine University, Graduate School of
Education and Psychology
Phone: 559.791.2274

Please read the following paragraph, and, if you agree to participate, please sign below.

I understand that any information about me obtained from this research will be kept strictly confidential. I further agree to allow the interviews to be tape-recorded.

Signature: _____

Date: _____

Investigator: _____

Date: _____

_____ Initial to indicate that you received a copy of this form.

Appendix G

Interview Questions

1. Where are the employees' working condition, rights and responsibilities, and duties of an online instructor defined in your organization? Are they in writing? If so where? Are they adequate? Why or why not?
2. Do online teaching practices change the role, duties, obligations, and responsibilities of a traditional teacher? If so, in what ways?
3. How are online teachers evaluated?
4. How would you compare the amount of work and the hours required to deliver an online class to that of a traditional class? If the workload and compensation are different, is the compensation fair?
5. Are the working conditions of a traditional teacher changed by online teaching practices? If so, in what ways? How are hours of employment measured in an on-line environment?
6. What is the motivation for a regular faculty member to pursue online teaching practices at your institution?
7. What current practices encourage online instruction?
8. What current practices discourage online instruction?
9. Is there something that you would like to say that we have not yet covered?

Appendix H

AFT Survey

Appendix I Modified AFT Survey

Survey for Technology Users

1. Indicate the mode(s) of distance education you have employed:

- a. One-way audio/visual (example, telecourses)
- b. Two-way audio/visual (real-time, Interactive Television (ITV))
- c. Two-way audio, one-way video
- d. On-Line/web-based/Internet, asynchronous or real time
- e. Desktop video conferencing, real time or asynchronous
- f. Asynchronous desktop conferencing combined with CD-ROM
- g. Other. (Please specify) _____

2A. Describe the course(s) that you teach or have taught at a distance:

- a. Humanities
- b. Math & Science
- c. Social Sciences
- d. Technology
- e. Career
- f. Child development/education
- g. Writing
- g. Other _____

2B. # of credits:

- a. 2
- b. 3
- c. 4
- d. 5
- e. 6
- f. other ____
- g. N/A

2B1. Course format:

- a. quarter
- b. semester
- c. year-long
- d. other _____

2C. Level(s):

- a. Freshmen
- b. Sophomore
- c. Junior
- d. Senior
- e. Mixed Levels
- f. Graduate Level
- g. Other _____

3. Have you taught equivalent courses for on-campus classes?

- a. Yes
- b. No

4A. Did you find any difference between the preparation time required for your distance education v. traditional classes?

- a. Yes
- b. No

If yes, please describe:

- a. More time needed, especially up front
- b. Less time
- c. Never Measured

Explain:

4B. Were you compensated, given release time or otherwise rewarded if the distance education preparation time exceeded traditional preparation time?

- a. Yes
- b. No

If yes, please describe:

- a. Stipend: (1) Less than \$250 (2) \$250-\$1000 (3) * Over \$1000
- b. Yes, but no amount specified
- d. Course Credit/ Release Time
- e. Other _____

5A. How many students were in your largest class (all sites combined) taught at a distance?

- a. Less than 20
- b. 20-50
- c. 51-100
- d. More than 100
- e. N/A

5B. In conducting your distance education course, please tell us what methods you used to maintain personal interaction between

(a) yourself and the students

- (1) Email
- (2) Discussion Groups online/web postings
- (3) Audio/Video Conferencing
- (4) Campus Visits
- (5) Onsite Visits
- (6) Telephone
- (7) Mail
- (8) Fax
- (9) Other _____

(b) the students with each other?

- (1) Email
- (2) Discussion Groups online/web postings
- (3) Audio/Video Conferencing
- (4) Campus Visits
- (5) Onsite Visits
- (6) Telephone
- (7) Mail
- (8) Fax
- (9) Other _____

(circle all that apply)

5C. Did you require students to come to the campus (or elsewhere) at least once during the course to meet with you as a group?

- a. Yes
- b. No

5D. In terms of interaction, what strengths and shortcomings did you find compared to the traditional classroom?

6A. Did your distance education students have regular access to an adequate physical library?

- a. Yes
- b. No

6B. If not, how did you handle the issue of getting instructional and research materials to your students? Describe in what ways, if any, you were limited.

- a. Library on campus
- b. Web based/internet
- c. Library Web sites
- d. Sent books
- e. Local Library
- f. Textbook
- g. Fax
- h. N/A
- i. None
- j. Other _____

7A. Were there any differences in the persistence dropout rates of students in distance vs. traditional courses?

- a. Yes
- b. No

7B. If there is a problem with persistence, do you have any thoughts on what causes it or how

to combat it?

8A. What criteria did you employ to grade students in your distance education course (papers, multiple choice testing, essays, etc.)?

8B. Does this differ from the criteria you might have used in a traditional classroom course?

- a. Yes b. No

If yes, please describe:

9A. If tests were given at the end of the course, were students in a proctored environment?

- a. Yes b. No

9B. Do you have any concerns/recommendations about security related to papers, tests, etc., in a distance learning environment?

- a. Yes b. No

If yes, please describe:

10. Have any questions about ownership of intellectual property arisen concerning your work in distance education?

- a. Yes b. No

If yes, please explain:

11A. On the average, how did your students perform compared to students taking similar classes through traditional means?

- a. Better b. Worse c. About the Same

12. Did you notice that some particular kinds of students perform better than others in a distance education mode?

- a. Yes b. No

Please explain:

13A. What kind of technical support were you provided in conducting your distance education course(s)?

- | | |
|------------------|----------------------------|
| a. Help Line | b. Technical Support Staff |
| c. Seminar/Class | d. Distance Ed office |
| e. Minimal | f. None |
| f. Other: | |

13B. Was it sufficient? a. Yes b. No (if no, please explain)

13C. Did your institution provide satisfactory technical support to students in the distance learning course(s) you taught?

- a. Yes b. No

14. If you have an opportunity to teach courses through distance education again, would you want to do so?

- a. Yes b. No

Please explain:

15. In your opinion, how much of a student's coursework could be taught by distance education without impairing the educational experience?

- a. 100 - 76% b. 75-51% c. 50-26% d. 25-1% e. Other

Please explain:

16. Are there any other important points to be made about good practices, practices to avoid, etc. in distance education that you have not addressed in your other answers?

Survey for Non-Technology Users

Please answer these questions based on your teaching experience.

1. Indicate the mode(s) of education you have employed frequently (circle all that apply):

- | | |
|-----------------------------------|---------------------------------|
| a. lecture | b. discussion |
| c. student projects/presentations | d. group work |
| e. simulation | f. lab/hands on |
| g. Internet | h. CD-ROM |
| i. personally developed website | j. email or threaded discussion |
| h. Other. (Please specify) _____ | |

2A. Describe the course(s) that you teach or have taught:

- | | |
|--------------------|--------------------------------|
| f. Humanities | b. Math & Science |
| d. Social Sciences | d. Technology |
| e. Career | f. Child development/education |
| g. Writing | g. Other _____ |

2B. Number of units/credits:

- a. 2 b. 3 c. 4 d. 5 e. 6 f. other ____ g. N/A

2B1. Course format:

- a. quarter b. semester c. year-long d. other _____

2C. Level(s):

- | | | | |
|-----------------|-------------------|----------------|-----------|
| a. Freshmen | b. Sophomore | c. Junior | d. Senior |
| e. Mixed Levels | f. Graduate Level | g. Other _____ | |

3. Would you consider teaching an equivalent course online?

- a. Yes b. No

4A. Did you think there will be any difference between the preparation time required for a distance education v. traditional classes?

- a. Yes b. No

If yes, please describe:

- a. More time needed, especially up front
g. Less time
h. Never Measured

Explain:

4B. If you were compensated, given release time or otherwise rewarded, would you consider developing an online course

- a. Yes b. No

If yes, please describe:

- a. Stipend: (the minimum amount it would take for you to do this) _____
b. Course Credit/ Release Time
c. Other _____

5. How many students were in your largest class?

- g. Less than 20
- h. 20-50
- i. 51-100
- j. More than 100
- k. More than 200

6. In conducting your course, please tell us what methods you used to maintain personal interaction between you and the students (circle all that apply)

- (1) office hours
- (2) before/after class
- (3) Telephone
- (4) Email
- (5) Mail
- (6) Fax
- (7) Other _____

5c. In terms of interaction, what strengths and shortcomings did you find most noticeable?

6A. Did your students have regular access to the Internet?

- a. Yes
- b. No

7. Did you provide students with electronic supplemental materials? (cds, web sites, email, etc.)

- a. Yes
- b. No

8A. What criteria did you employ to grade students in your course (papers, multiple choice testing, essays, etc.)?

9. Have any questions about ownership of intellectual property arisen concerning your work?

- a. Yes
- b. No

If yes, please explain:

11A. If one of your courses were moved to an online environment, how do you think these students would perform compared to students taking the same class face-to-face?

- a. Better
- b. Worse
- c. About the Same

14. If you have a risk-free opportunity to teach courses through distance education, would you

want to do so?

a. Yes

b. No

Please explain:

15. In your opinion, how much of a student's coursework could be taught by distance education without impairing the educational experience?

a. 100 - 76%

b. 75-51%

c. 50-26%

d. 25-1%

e. Other

Please explain:

16. Are there any other important points to be made about good practices, practices to avoid, etc. in distance education that you have not addressed in your other answers?

Survey for Administrators

1. Indicate the mode(s) of distance education you have employed:

- a. One-way audio/visual (example, telecourses)
- b. Two-way audio/visual (real-time, Interactive Television (ITV))
 - i. Two-way audio, one-way video
- j. On-Line/web-based/Internet, asynchronous or real time
- k. Desktop video conferencing, real time or asynchronous
- l. Asynchronous desktop conferencing combined with CD-ROM
- m. Other. (Please specify) _____

2A. Describe the course(s) that you teach or have taught at a distance:

- i. Humanities
- e. Social Sciences
- e. Career
- g. Writing
- b. Math & Science
- d. Technology
- f. Child development/education
- g. Other _____

2B. Number of units/credits:

- a. 2 b. 3 c. 4 d. 5 e. 6 f. other ____ g. N/A

2B1. Course format:

- a. quarter b. semester c. year-long d. other _____

2C. Level(s):

- a. Freshmen b. Sophomore c. Junior d. Senior
- e. Mixed Levels f. Graduate Level g. Other _____

3. Have you taught equivalent courses for on-campus classes?

- a. Yes b. No

4A. Did you find any difference between the preparation time required for your distance education v. traditional classes?

- a. Yes b. No

If yes, please describe:

- a. More time needed, especially up front
- j. Less time
- k. Never Measured

Explain:

4B. Were you compensated, given release time or otherwise rewarded if the distance education preparation time exceeded traditional preparation time?

- a. Yes b. No

If yes, please describe:

- a. Stipend: (1) Less than \$250 (2) \$250-\$1000 (3) * Over \$1000
- b. Yes, but no amount specified
- l. Course Credit/ Release Time

m. Other _____

5A. How many students were in your institution's largest class taught at a distance?

- l. Less than 20
- m. 20-50
- n. 51-100
- o. More than 100
- p. N/A

5B. In conducting your distance education course, please tell us what methods you used to maintain personal interaction between

(a) your teacher(s) and the students

- (1) Email
- (2) Discussion Groups online/web postings
- (3) Audio/Video Conferencing
- (4) Campus Visits
- (5) Onsite Visits
- (6) Telephone
- (7) Mail
- (8) Fax
- (9) Other _____

(b) the students with each other?

- (1) Email
- (2) Discussion Groups online/web postings
- (3) Audio/Video Conferencing
- (4) Campus Visits
- (5) Onsite Visits
- (6) Telephone
- (7) Mail
- (8) Fax
- (9) Other _____

(circle all that apply)

5C. Were students required to come to the campus (or elsewhere) at least once during the course to meet with you as a group?

- a. Yes
- b. No

5D. In terms of interaction, what strengths and shortcomings were there compared to the traditional classroom?

6A. Did distance education students have regular access to an adequate physical library?

- a. Yes
- b. No

6B. If not, how were instructional and research materials obtained by students? Describe in what ways, if any, you were limited.

- | | |
|------------------------------|-----------------------|
| a. Library on another campus | b. Web based/internet |
| c. Library Web sites | d. Sent books |
| e. Local Library | f. Textbook |
| g. Fax | h. N/A |
| i. None | j. Other _____ |

7A. Were there any differences in the persistence dropout rates of students in distance vs. traditional courses?

- a. Yes
- b. No

7B. If there is a problem with persistence, do you have any thoughts on what causes it or how to combat it?

8A. What criteria were employed to grade students in distance education course (papers, multiple choice testing, essays, etc.)?

8B. Does this differ from the criteria found in the traditional classroom course?

- a. Yes b. No

If yes, please describe:

9A. If tests were given at the end of the course, were students in a proctored environment?

- a. Yes b. No

9B. Do you have any concerns/recommendations about security related to papers, tests, etc., in a distance learning environment?

- a. Yes b. No

If yes, please describe:

10. Have any questions about ownership of intellectual property arisen concerning work in distance education?

- a. Yes b. No

If yes, please explain:

11A. On the average, how did the students perform compared to students taking similar classes through traditional means?

- a. Better b. Worse c. About the Same

12. Did you notice that some particular kinds of students perform better than others in a distance education mode?

- a. Yes b. No

Please explain:

13A. What kind of technical support were provided in conducting distance education course(s)?

- | | |
|------------------|----------------------------|
| a. Help Line | b. Technical Support Staff |
| c. Seminar/Class | d. Distance Ed office |
| e. Minimal | f. None |
| q. Other: | |

13B. Was it sufficient? a. Yes b. No (if no, please explain)

13C. Did the institution provide satisfactory technical support to students in the distance learning course(s)?

- | | |
|--------|-------|
| a. Yes | b. No |
|--------|-------|

14. If you have an opportunity to teach courses through distance education, would you want to do so?

- | | |
|--------|-------|
| a. Yes | b. No |
|--------|-------|

Please explain:

15. In your opinion, how much of a student's coursework could be taught by distance education without impairing the educational experience?

- | | | | | |
|--------------|-----------|-----------|----------|----------|
| a. 100 - 76% | b. 75-51% | c. 50-26% | d. 25-1% | e. Other |
|--------------|-----------|-----------|----------|----------|

Please explain:

16. Are there any other important points to be made about good practices, practices to avoid, etc. in distance education that you have not addressed in your other answers?

Appendix J

Comparison of AFT Survey Data with this Current Study's Survey

Question	Survey Results (%)	AFT (%)
<i>1. Modes of Distance Education (DE) delivery:</i>		
a. One-way audio/visual (example, telecourses) (2, 17%)	17	15.5
	17	41.5
b. Two-way audio/visual (real-time, Interactive Television (ITV)	17	3.5
	92	64.5
c. Two-way audio, one-way video	17	2.5
d. On-Line/web-based/Internet, asynchronous or real time	0	1.5
e. Desktop video conferencing, real time or asynchronous	0	13
f. Asynchronous desktop conferencing combined with CD-ROM		
g. Other. (Please specify)		
<i>3. Equivalent courses taught online and face-to-face:</i>		
a. yes	75	93
b. no	25	7
<i>4a. Is there a difference in preparation time?</i>		
a. yes	80	93.5
b. no	20	6.5
more	90	88.5
less	0	3.4
never measured	10	.6
<i>4b. Were you compensated for extra effort?</i>		
a. yes	66.7	50
b. no	33.3	50
<i>5a. Class size:</i>		
less than 20	0	32
20 – 50	64	56.9
51 – 100	17	7.6
more than 100	5	3.0
n/a	0	.5
<i>5c. Require a face-to-face component to class?</i>		
a. yes	63.6	35.9
b. no	36.4	64.1
<i>6a. Adequate access to a library?</i>		
a. yes	75	77.2
b. no	25	22.8
<i>7a. Is class drop rate higher in DE?</i>		
a. yes	83	42.8
b. no	17	57.2
<i>8b. Is the grading criteria different in DE?</i>		
a. yes	10	30.6
b. no	90	69.4
<i>9a. Were proctored tests given?</i>		
a. yes	58	57.1
b. no	42	42.9
<i>9b. Are there concerns about course security?</i>		
a. yes	50	44.9
b. no	50	55.1
<i>10. Concerned about intellectual property?</i>		
a. yes	25	37.4
b. no	75	62.6

11a. Perceptions about student performance:		
a. better	42.6	28.9
b. worse	30.8	13.7
c. about the same	23	57.4
12. Did some types of students perform better?		
a. yes	87.5	86.2
b. no	12.5	13.8
13b. Was there sufficient faculty technical support?		
a. yes	71	70.2
b. no	29	29.8
13c. Was there sufficient student technical support?		
a. yes	73	66.7
b. no	27	33.3
14. Would you teach DE again, if given the opportunity?		
a. yes	75	84.5
b. no	25	15.5
15. How much of a student's course work could be taught online?		
a. 100 – 76%	41	16.7
b. 75 – 51%	17	2.3
c. 50 – 26%	25	27
d. 25 – 1%	17	26
other	0	27.3

Appendix K

Review of the Interview Schedule

Hi [Name],

I have a small favor to ask. One of the little details that Ray and my dissertation committee asked, is that we follow-up to verify that we are asking the right questions in our f2f interviews. The committee suggested that we run the questions by a couple of recognized experts to get their opinions as to whether we are asking the right things. This is where you come in... Would you please take a look at our questions and comment?

Briefly, the purpose of our case study is to gain a better understanding of how an organization's written procedures, faculty handbook, and collective bargaining agreements affect the faculty's willingness to adopt and implement online teaching practices.

We will be meeting with 6 different people at each school site. They will be:

1. CEO/Principle or designee
2. Union President or designee
3. A faculty member who is currently teaching online
4. District technologist or online curriculum specialist
5. A faculty member who is not using online technology in their teaching
6. (optional) other depending upon the site

The questions we will be asking are:

1. Where are the working conditions, rights and responsibilities, and duties of online instruction defined in your organization? Is that definition adequate? Why or why not?
2. Do online teaching practices change the role, duties, obligations, and responsibilities of a traditional teacher? If so, in what ways?
3. How would you compare the amount of work required to deliver an online class to that of a traditional class? Are the benefits and compensation for online teaching fair?
4. Are the working conditions of a traditional teacher changed by online teaching practices? If so, in what ways?
5. What is the motivation to pursue online teaching practices at your institution?
6. What current practices encourage online instruction?
7. What current practices discourages online instruction?
8. Is there something that you would like to say that we have not yet covered

Ian, I know how busy you are. Ray and I appreciate your time and efforts. We hope that this will not be much of an inconvenience. We thank you in advance for your valued assistance and help.

Ron and Ray

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Raymond M. Gen

Teaching and Professional Experiences

Technology Department Chair, (Fall 2000-Present) El Segundo High School. Coordinated and led the Technology Committee in development of technology plan and teacher professional development.

Peer Assistance & Review Panel, (Fall 2000-Present) El Segundo Unified School District. Created and implemented the district's PAR program.

Teacher Virtual High School (Fall 2000-Spring 2001) The Concord Consortium. Taught Folklore and Mythology at VHS.

English Department Chair, (Fall 1994-Present) El Segundo High School. Coordinated and led the English Department in planning, curriculum development, and articulation.

Technology Trainer, (1998-Present) El Segundo Unified School District. Designed, led, and taught technology courses for teachers (web design, graphics, presentation, various software and hardware).

Teacher, (Fall 1991-Present) El Segundo High School. Taught classes in English, journalism, and technology.

Professional Growth Advisor, (Fall 1995-Present) El Segundo Unified School District. Advised and mentored teachers in the area of professional development.

Graduate Teaching Assistant, (Summer 1999) Pepperdine University. Introduced new master's and doctoral students to the technology and community of Pepperdine University (Virt Camp).

CLAS Reader, (Summer 1992) Los Angeles County, California. Evaluated standardized testing essays for the State of California.

Graduate Teaching Assistant, (Fall 1989-Spring 1990) UCLA History Department. Taught and graded classes in the History Department.

Graduate Teaching Fellowship, (Fall 1986-Summer 1989). Fuller Theological Seminary. Taught Koine Greek courses.

Conference Speaker and Seminar Presenter

(2001, April) "CD-Zines: A how to guide." Presentation to be given at the National Scholastic Press Association's national conference.

(2000, June) "Illuminations CD-Zine: A multi-media student literary, arts, multimedia magazine." Presentation given at Technology for Learning sponsored by Los Angeles County Office of Education.

(2000, May) "Learning multiple intelligences, and technology." Paper presented at the meeting of the Computer Using Educators (CUE).

- (2000, March) "Technology and multiple intelligences: The praxis of learning intelligences in the classroom." TechEd 2000.
- (2000, April) "Developing a CD-Zine." Journalism Education Association National Conference.
- (2000, July) "Web design for teachers." BTSA Workshop. Seminar for beginning teachers to learn web design.
- (1999) Use of multi-media in the classroom. Paper presented at the meeting of the Computer Using Educators.
- (1999) Teaching writing with multi-media technology. Presentation given at the UCLA Writing Program.
- (1998) Developing CD-Rom magazines in high school. Paper presented at the meeting of the National Journalism Convention.

Published Articles

- (2000, March) Technology and multiple intelligences: The praxis of learning intelligences in the classroom. In P. Hoffman & D. Lemke (Eds.) Teaching and learning in a network world: TechEd 2000 Proceedings (pp. 68-73). Amsterdam: IOS Press.
- (1999, November/December) Learning multiple intelligences, and technology. Computer Using Educators.

Educational History and Professional Development.

Doctorate of Education in Educational Technology, Candidacy.
Pepperdine University, Culver City, California

Professional Clear Teaching Credential, Secondary, Spring 1991
Loyola Marymount University, Los Angeles, California
Credentials: (1) English and (2) Social Studies

Master of Divinity, Winter 1990
Fuller Theological Seminary, Pasadena, California
Major: History of Early Christianity

Master of Arts, Spring 1986
Fuller Theological Seminary, Pasadena, California
Major: Ancient Literature and Languages

Bachelor of Arts, Spring 1980
California State University, Stanislaus, Turlock, California
Major: Sociology

Professional Association and Activities

ACM-Association of Computing Machinery (Communications SIG)
 ADA-American Diabetes Association (South Bay Board of Directors)
 CUE-Computer Using Educators
 CATE-California Association of the Teachers of English
 NCTE-National Council of the Teachers of English
 NCSS-National Council of the Social Sciences
 JEA-Journalism Education Association
 WASC/CDE Accreditation—Steering Committee Member
 NEA-National Education Association—national delegate
 CTA-California Teachers Association; ESTA-El Segundo Teachers' Association, past Vice-President

Leadership in Professional Development

Planned and implemented the Peer Assistance and Review program for the District.
 Led professional growth seminars to maintain professional clear credential
 Led District seminars for Internet and technology training
 Tutored future English and social studies teachers to pass National Teachers Exams
 Wrote two prep manuals for National Teachers Exams

Teaching Awards

2001 Education Technology Service Award—ADTECH Consortium
 2001 California Media and Multimedia Festival—First Place
 2000 California Media and Multimedia Festival—First Place
 1999 Pacemaker Award for CD-Rom Development—National Scholastic Press
 1998 El Segundo Unified School District's Teacher of the Year
 1998 Recipient of Los Angeles' Most Inspirational Teacher Award
 1997 Recipient of Los Angeles' Most Inspirational Teacher Award

Ronald A. Glahn

Professional Experience

Professor of Health, Physical Education and Recreation—Porterville College, Porterville, CA: August 1983 to present. Assignment includes Adapted Physical Education, Nutrition, Health Education, Beginning and Intermediate Swimming, Lifeguarding, Cardiopulmonary Resuscitation, First Aid, Water Safety Instruction, Snow Skiing, Exercise Evaluation and Prescription, and Care and Prevention of Athletic Injuries.

Head Athletic Trainer—Porterville College, Porterville, CA: August 1979 to June 2000. Duties include: the prevention and care of athletic injuries for nine intercollegiate teams, supervision of an associate trainer, and supervision of student trainers.

Division Chair, Health, Physical Education and Recreation—Porterville College, Porterville, California: August 1992 to 1994.

Fitness Coordinator, City of Porterville Wellness Program—Porterville College, Porterville, California: August 1983 to January 2000. Duties include liaison and service provider for Porterville College to the City of Porterville.

Co-Chairman, Central Valley Sports Medicine Institute—Tulare County, California: 1988 and 1989.

Secretary, Coast Valley Conference, Athletic Trainer's Association—1989.

1984 Olympic Games—Athletic Trainer of Yatching, Los Angeles California: July 1984.

United States Olympic Training Center, Volunteer Staff—Colorado Springs, Colorado: August 1983.

Medical Aid Coordinator, St. Patrick's Day Marathon—Porterville, California: 1982 to 1992.

Educational Experience

Doctorate of Education in Educational Technology, Advanced to Candidacy—Pepperdine University, Culver City, California: April 2001.

Masters of Science Degree in Fitness Management, Exercise Physiology—United States Sports Academy, Mobile, Alabama: July 1985.

Bachelor of Arts Degree—California State University Long Beach, Long Beach, California: June 1978.

California Community College Teaching Credential—The California Community Colleges, #282365, Subject—Physical Education: Valid for Life.

Exercise Specialist Workshop—American College of Sports Medicine, Stanford University, Stanford, California: July 1981.

Certified Athletic Trainer—National Athletic Trainers Association, #D8-239: June 1979.

Certified Exercise Test Technologist—American College of Sports Medicine, University of California, Davis, California: July 1980.

Beckman Metabolic Measurement Training Course—Beckman Instruments, Inc., Brea, California: July 1983.

Honors

National Focus Group on Distance Education, Participant—National Education Association (NEA), Washington, D.C.: June 23, 2000.

Master Teacher Award—The National Institute for Staff and Organizational Development, The University of Texas at Austin: May 1990.

Innovator of the Year—The National League for Innovation in the Community College: May 1983.

Kappa Delta Pi, Honorary Member—National Honor Society for Educators: June 1970.

Phi Kappa Phi, Honorary Member—National Honor Society: June 1979.

President's Honor List—California State University, Long Beach: 1976 and 1977.

Publications

Geshuri, Y., and Glahn, R. (1995). Locus of Control and Exercise Adherence. East Lansing, MI: National Center for Research on Teacher Learning (ERIC).

Presenter, Making Fitness Centers Handicapped Accessable, NISOD Annual Conference, Austin Texas: May 1990.

Grants and Fellowships

Fellow, Computer Literacy Project—Title III Grant, United States Federal Government: June 1991—July 1992.

Recipient, Metabolic Measurement Project—Beckman Instruments, Inc., \$50,000. May 1983.

Recipient, Grant for Improvement of Instruction—State of California, \$15,000. 1981.

Committees

Legislation and Governmental Relations Committee, Academic Senate for the California Community Colleges, Member: 1999 to present.

CCA/CTA/NEA Kern Community College District Contract Negotiator: 1998 to present. Responsible for representing Porterville College certificated faculty at contract negotiations.

Kern Community College District, Fringe Benefits Committee Member—1998 to present. Responsible for collaborating with confidential management and classified staff representatives for the negotiation of fringe benefits for all KCCD employees.

Kern Community College District, Distance Learning Online Pilot Project—1996 to 1998. Committee responsibilities include the articulation of courses between the three District campuses, application of District policies related to distributed education, and shared development efforts.

PC Instructional Technology Committee Member—Porterville College, Porterville, CA: August 1998 to present.

Academic Senate, Vice President—Porterville College, Porterville, CA: August 1997-July 1998.
Responsible for; the revision of the Porterville College Academic Senate Constitution, creation of the Academic Standards and Appeal Committee by-laws.

Budget Review and Planning Committee Member—Porterville College, Porterville, California: 1992 to 1994.

Curriculum Committee Member—Porterville College, Porterville, California: 1992 to 1994.

Staff Development Committee Member—Porterville College, Porterville, California: 1992-1994.

Academic Senate Member—Porterville College, Porterville, California: 1990-1992.

Campus Safety Committee Member—Porterville College, Porterville, California: 1985-1988.

Community Service

American Red Cross, Health and Safety Committee Member—Tulare/Kings Chapter: 1998 to present.

American Red Cross, Instructor Trainer—Tulare/Kings Chapter: 1998 to present.

AYSO, Soccer Referee—Tulare County, CA: 1995-1997.

Chair, Orange Belt Christian School Parent's Association—Strathmore, CA: 1994-1996. Responsible for raising \$20,000 for technology in the classrooms.

Sunday School Teacher, Church of the Nazarene—Porterville, CA: 1994-1997.

Software development, Auctionware—Developed a freeware program distributed to Rotary International for the management of Rotary Club auctions: 1995

Member, Kaweah Flyfishers—Visalia, CA: 1992 to present.

Dedication

The authors dedicate this work to our supportive spouses and accommodating children. The authors could not have completed this work without their patience, understanding, and sacrifice. We recognize and appreciate their love and sustenance.

We also wish to dedicate this study to our Committee Chair, Dr. Michele Stimac for her unwavering support, encouragement, and counsel. Her leadership and academic acuity have transformed and inspired our educational endeavors and us.

Acknowledgements

We would like to thank our dissertation committee. Drs. Michele Stimac, Ruth Johnson, and Bill Watkins expertly guided our work to its completion. Their unceasing devotion to the causes of education is an example to us all. They have inspired many generations of students, causing them to fulfill their potential.

We would also like to recognize the innovators and early adopters of educational technology for their pioneering efforts. Without their commitment to technology innovation, frequently at great personal and financial expense, the adoption of online educational practices would not be reachable.

Abstract

This investigation utilized a multiple-case study approach to explain the implications of an organization's human resource management (HRM) infrastructure on an institution's ability to adopt online education practices. This empirical inquiry investigated contemporary phenomena at select school sites and supported the theoretical proposition that online teaching practices will not become institutionalized until satisfactory HRM mechanisms are in place to support the practices that are agreeable to both management and faculty.

The current study determined that the following institutional elements should be in place in order for an institution to adopt online education practices successfully: (a) no time or location restrictions should be placed on online instructors; (b) instructors should be remunerated for their course development and training; (c) institutional services should support faculty efforts to serve underserved student populations; (d) line-item funding for the support of technology should be budgeted; (e) criteria for effective student-teacher contact in the delivery of online curriculum should be established; (f) online instruction should not be automated to protect academic quality and rigor, the appropriateness of content, relevance to standards, and dynamic interaction; (g) faculty evaluations for both online and face-to-face teachers should be based on peer review; (h) normal operation of online courses should be open and transparent; (i) faculty should be allowed to experiment with online instruction; (j) no faculty member should be forced to teach online; (k) the infrastructure should provide just-in-time technical support; (l) administrative oversight and clerical help should be provided to formalize and codify online instruction and ancillary services; (m) financial review and oversight should be

formalized to ensure program viability; (n) intellectual property and course ownership should be decided in the favor of faculty; (o) online class size should be held to the same standards as their face-to-face counterparts: classes should range from 20 to 50 students; (p) contractual obligations such as office hours, student contact, grading, and class management should be reapplied to online classes; (q) online instructors should monitor classes daily; (r) online instructors should answer e-mail within 24 hours; (s) online instructors should assure student identity and testing security.

Further research at other school sites is recommended to generalize the findings of this study.