THE DIGITAL DIVIDE: BEST PRACTICES FOR TRAINING ONLINE FACULTY IN THE USE OF EDUCATIONAL TECHNOLOGY

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Abstract

This study was directed specifically at university professors who teach online courses with an investigation into online faculty development practices for educational technology. The research project came forward with an observation of a problem: Many university faculty members continue to struggle with numerous aspects of educational technology. Understandably, one would think that faculty themselves are in the best position to identify their educational technology training needs, but unfortunately often have no input into the faculty development process (Okojie, Olinzock, & Okojie-Boulder, 2006). The intention of this research project was to go beyond the usual practice of training for simple "how-to" skills and to discover exactly what online faculty members find useful and valuable for educational technology training. The research project was a broad descriptive mixed-methods case study employing the Delphi technique that attempted to describe and interpret multiple realities, opinions, and meanings from online university professors. As a broad effort to provide information regarding best practices for faculty development with educational technology, a survey research design of one question allowed for interpretation of the data in a wide panoramic view. In the tradition of qualitative research methodology the research examined the depth of what was being said as well as finding linkage among main themes in order to discover the truth of the overall phenomena of faculty development of educational technology for online professors. The Delphi technique of returning again to the research participants was used to gather information regarding the degree of importance, or rating and ranking, of pertinent research findings.

Dedication

This dissertation is dedicated to a community college instructor, Patrick O'Brien. After dropping out of college twice for my perceived poor writing skills, Mr. O'Brien encouraged me to stay in school. Paraphrasing Mr. O'Brien, I don't care if you come into my class not knowing how to write, but just don't leave not knowing how to write. I will show you the process of writing and introduce some techniques for developing writing skills. Writing is often like building a block wall…you start with a foundation, build pillars, and then lay the blocks to fill in the wall. I remember these words spoken to me twenty years ago and took his advice. While I am not an accomplished writer, Mr. O'Brien's words of advice and encouragement has made my educational progress possible, and certainly this dissertation is the culmination of one community college instructor's influence on an adult learner.

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CHAPTER 1: INTRODUCTION

Introduction to the Problem

In the early 1980's the advent of the IBM Personal Computer ("PC"), along with software developed by Xerox and a startup company named Microsoft, ushered in an era of ubiquitous computing for all that has forever altered the future of communications and knowledge dissemination. There are now an estimated one billion PCs worldwide and the current growth of PC shipments continue to rise at a rapid pace. The third quarter of 2007 saw worldwide PC shipments increasing 15%, and Microsoft experienced double-digit gains on over $50 billion gross revenue for 2007 (Olenick, 2007). Coupled with inexpensive client/server technologies made possible by the PC computer architecture and computer networks evolving into the Internet, many colleges and universities quickly invested large amounts money and equipment in the pursuit of enhancing education with technology.

Unfortunately, for many, the use of computer technology is not a natural personal trait, but rather a skill developed through an investment of time and training. Even though the PC has been widely available for over twenty years, a problem exists where a large number of university faculty who are unskilled with the use of educational technologies. This problem has resulted in huge investments into faculty development and training designed towards improving computer skills and integrating computer technology into higher education pedagogy. As higher education increases its movement into online education, having online faculty unskilled with many of the educational technologies now available, as well as future technologies, will be of great concern for an institution

concerned with providing a quality learning environment. Proper faculty development training will become paramount to address the problem of online faculty members unskilled with educational technologies.

Much research has been published that examines how institutions of colleges and universities are responding to the necessity and urgency of training faculty in the use of instructional technologies in a manner that improves basic, intermediate, and advanced computer skills, as well as instructional course design strategies and distance communication techniques (Harris, 2005; Hutchison, 2001; Johnson, 2008). The majority of the research found was focused around the reflection of "best practices" for designing various technology training sessions, or steps for successful program implementation as seen by instructional designers, technical trainers, or administrators (Doutrich, Hoeksel, Wykoff, & Thiele, 2005; Epper & Bates, 2001). However, little research had been discovered that explores successful technology training exclusively from the perspective of a university professor who concentrates with online teaching.

This research project was conducted in order to gain understanding and knowledge of what online university faculty members consider to be effective methods of faculty development for educational technology training – what methods of training works for online faculty, and what methods do not. An attempt was made to discover exactly what faculty development practices are needed and useful for online university faculty members concerning educational technology. The main emphasis of this research project was to investigate what aspects of educational technology training online

university faculty members found attractive and useful in an attempt to reduce the numbers of faculty who remain unskilled with the use of educational technology.

Statement of the Problem

The main problem is that while colleges and universities extend resources towards technology training through faculty development initiatives such as workshops, online training, personal one-on-one assistance and faculty resource centers, far too many online university faculty members continue to struggle with computer technologies. The vast amount of research regarding faculty use of technology, in general, remains associated with the growth of e-Learning, the impact of technology on educational institutions, pedagogical development, and developing online communications, while little research is found regarding the attitudes online faculty members have concerning technology training (Baker, Boggs, & Arabasz, 2003). Adult learning theories present evidence that adults learn best when the training they receive is perceived as valuable, but especially when adult learners can have a voice in the learning process (Kelly, 2006), and this fact gave a foundation for the project. This research project was conducted to add to the body of knowledge regarding faculty development for educational technology by exploring technical training issues, strengths and weaknesses, solely from the perspective of online faculty.

Under the term 'e-Learning,' computer technologies and the Internet have rapidly become vital parts of the innovative strategies of colleges and universities for delivering postsecondary education. Concomitant with factors related to availability and growth, computer technologies develop at such an alarming rate that there is often confusion on

how to best integrate computer technologies into higher education (Redmann & Kotrlik, 2004). Computer technology has permeated all aspects of civilization with the resultant affects that not only alter ways in which higher education performs work, exchanges information, and communicates, it also has changed the very nature of creating and disseminating knowledge (Pierson, 2001). Epper and Bates (2001) concluded after a review of the 2000 National Campus Computing survey that assisting faculty with using technology and teaching faculty how to properly integrate technology into instruction is the single most important technology issue facing higher education (pp. 8-9). Assessment of faculty technology training remains a key factor towards not only the improvement of training, but also faculty acceptance of professional development programs geared towards technology (Covington, Petherbridge, & Warren, 2005). There exists little information on the effectiveness of these technical training efforts solely from an online faculty perspective.

Purpose of the Study

The purpose of this study was to examine concerns and ideas related to the training of educational technology from the online faculty perspective in an effort to determine best practices for future faculty development. The intention of this research project was to go beyond the usual practice of training for technology use and implementation, but to discover exactly what higher education faculty members find useful and valuable with technical training programs. Just as assessment of education has become a major topic in higher education to determine Student Learning Outcomes (SLO's) as required by many accrediting bodies, this study was designed to assess the

concerns and ideas regarding the technical training of online education faculty in a manner to determine what online faculty view as beneficial and valuable training methods and gain insight and understanding regarding educational technology training.

Rationale of the Study

Despite over thirty years of ubiquitous computer technology made possible by a rapid decrease in hardware price coupled with an exponential increase in performance, far too many faculty members continue to struggle with computers and various educational technologies. Considering the fact that the fastest growing segment of education is online learning, many education experts feel the escalation of online education foreshadows an ever more radical transformation of education with the majority of higher education taking place online (Conhaim, 2003, p. 38). Since the year 2000, online education experienced enrollment growth from approximately 425,000 students to over 2 million currently, with an estimated enrollment number of 3.5 million by 2013, and online education is seen as a major component of U.S. higher education (Roach, 2009). For online education to become the majority component for delivering higher education, if it is to take place, there will be a requirement for online faculty members to make more use of computer technologies and also to keep pace with the rapid advancement of these technologies developed explicitly for the academic arena.

The requirement to train faculty in the use of educational technologies for online learning has surfaced in prior educational technology studies. A study in Louisiana's business education programs concluded that not only is training vital for successful technology integration, but faculty must be aggressive in making use of such training

programs in order to remain current with computer technologies (Redmann & Kotrlik, 2004). A research report presented at the Annual Meeting of the Association for the Study of Higher Education in Sacramento, California, presented evidence that administrators overwhelmingly felt that "technology support for instructional and administrative processes was the technology issue of greatest importance on their campuses," (Amey, VanDerLinden, & Wang, 2002, p. 9).

Despite the fact that local, state, and federal governments have invested heavily with educational technologies, instructors must be trained in the effective use and integration of these technologies or these dollars spent will be wasted and students will suffer the consequences of poor educational methods. Any new technology finding its way into higher education, and online education in particular comes with an expectation by faculty for training (Dempsey, Fisher, Wright, & Anderton, 2008). This expectation of training becomes an important issue for higher education administrators as a manner not only to accommodate online faculty, but also to assure quality in the online format as well as meeting accreditation requirements.

Far too often administrators and the information technology (IT) staff determine technical training sessions without consulting online faculty. Research is abundant that concludes the importance of faculty and staff technical training for successfully integrating computer technology in education. However, it does not distinguish what types of training faculty desire (Dusick & Yildirim, 2000). Faculty are in the best position to identify their technical needs but often have no input into the types of training they

receive (Okojie, et al., 2006). Understanding educational technology training from an online faculty perspective will help determine relevant technical training methods.

Research Question

This study will gain answers to the following research question:

Primary research question:

1. What concerns and ideas do online faculty members have regarding the current and future use of faculty development for educational technology training at their institution?

Nature of the Study

The research design for this study was a case study using mixed-methods research methodology incorporating the Delphi technique of iterative questionnaires. This research projects examined the perceptions that online faculty have regarding faculty development for educational technology. The study relied upon an exploratory survey instrumentation to gather information directly from online faculty in an effort to understand educational technology training perspectives in order to make improvements and changes to the methods for future training of online faculty for using educational technology. The study then returned with two additional questionnaires asking the online faculty to rate and then rank the importance of the data findings.

The research sample participants are online faculty members at a large public university in which the institution has a large number of online faculty members through a global campus division that manages and administers higher education worldwide. Volunteers were asked to complete three online surveys secured by password, private

URL, and available only through the university's choice of online survey applications, Zoomerang®. The survey instruments were made available during the 2010 school year. Privacy and confidentiality was assured by following established Internal Review Board (IRB) procedures from the researcher's institution responsible for the dissertation (Capella University), with the final IRB approval notification presented to the institution being surveyed.

Significance of the Study

Much of the prior research on technology in education focuses on the rapid growth of technological change and the impact these place on the institution, the changing roles of faculty in education, and the design of courses for online delivery. Research examining the attitudes of faculty, especially in regards to educational technology training, is much less common (Baker, et al., 2003). The literature clearly shows the need for providing faculty training, but seldom makes any distinction between the types of training faculty desire, nor faculty concerns and ideas for technical training (Dusick & Yildirim, 2000). Research also shows a poor level of faculty adoption of computer technology when institutions simply purchase equipment and software but provide little training or training that does not meet the expectations of faculty (Hall & Elliott, 2003).

This research project is important in that it will add to the body of knowledge regarding technology training for the online instructor. Through examination of the current literature, there seems to be a lack of research regarding faculty technology training solely from the online faculty's perspective, and this project intends to fill this

gap in educational technology research. In response to increasing numbers of students as well as tighter operating budgets, many colleges and universities are reviewing the manner in which technology is integrated into the educational process as well as faculty development efforts of these technologies. Data generated through this research will help administrators and IT training staff to improve technical training of online faculty by providing information that can help design and implement effective and cost-saving technology training programs.

Definition of Terms

Categories. In qualitative data analysis, higher-level concepts under which analysts group lower-level concepts according to shared properties. Categories are sometimes referred to as themes. They represent relevant phenomena and enable the analyst to reduce and combine data (Corbin & Strauss, 2008, p. 159).

Computer literacy. Hands-on capability with computers and computer applications. A computer literate person is one who possesses passion for the usefulness and power of computers (Liao & Pope, 2008).

Coding. Extracting concepts from raw data and developing them in terms of their properties and dimensions (Corbin & Strauss, 2008, p. 159).

Concepts. In qualitative analysis, words that stand for ideas contained in data. Concepts are interpretations, the products of analysis (Corbin & Strauss, 2008, p. 159).

Course management systems (CMS). Web-based Internet software applications that allows the support of e-Learning by placing electronic course materials in a virtual

environment for student access via the Internet. Popular systems are Blackboard®, Moodle, Sakai, and ANGEL®.

Delphi. A research technique used in an iterative manner to gather information from research subjects and then return to the subjects for either clarification or more data (Burns, 2003).

Dimensions. In qualitative analysis, variations within properties that give specificity and range to concepts (Corbin & Strauss, 2008, p. 159).

Educational technology. The broad term used to describe any aspect of technology used in the education enterprise (Ely, 2008).

e-Learning. The process of learning where the mode of delivery of information, methods for active student learning, and the availability of community relationships are electronic. Electronic means can be computers, CD-ROMS, digital video, email, newsgroups, as well as, but not limited to, the Internet (Dennis, 2007).

Faculty development. Faculty activities designed to improve teacher effectiveness at all levels of the educational curriculum. The broad range of activities used by educational institutions to renew or assist faculty with acquiring new skills, learning new technologies, or keeping abreast of improvements and new directions in education (Steinert, 2000).

Instructional designers. Individuals tasked with creating instructional material, designing subject courses in their entirety or as learning modules, often working in collaboration with subject-matter experts in order to translate knowledge into teaching objects or courses (Campbell, Schwier & Kenny, 2009).

Institutional technologist. One or more people employed directly by the institution to assist faculty, staff and administrators with the use of various educational technologies (Campbell, Schwier & Kenny, 2009).

Mixed-methods research. The combination of quantitative and qualitative research methods, with an understanding that the use of quantitative data combined with qualitative information can provide a better understanding of the research problem. Has the assumption that valid research can be gained from empirical data as well as opinions and ideas and observations of individuals or groups (Creswell & Plano Clark, 2007).

Online learning. The use of computing and telecommunications across the globe via the Internet in order to deliver educational material to students (Anthony, 2000).

Pedagogy. Study of teaching methods, including the aims of education and the ways in which such goals may be achieved. The field relies heavily on educational psychology, or theories about the way in which learning takes place (Encyclopedia Britannica, 2009).

Properties. In qualitative analysis, characteristics that define and describe concepts (Corbin & Strauss, 2008, p. 159).

Qualitative research. An approach to research from the philosophical understanding that knowledge is not an absolute truth, and truth is something constructed in the context of social reality. Research that includes in a holistic manner the social settings in which the data were generated. A position of truth is often interpreted through whatever meanings people bring to the situation. Synonymous with *post-positivist* and *interpretive research* (Gall, Gall, & Borg, 2003).

Quantitative research. An approach to research from the philosophical understanding that knowledge is an absolute truth, regardless of any person's perspective or experiences. Often called the 'scientific' method, or 'empirical science' method, data is regularly analyzed using statistical evidence and without regards to any social context. Synonymous with *positivist research* (Gall, et al., 2003).

Student learning outcomes (SLOs). Evidence of student learning usually needed for external accountability purposes (Steedle, Kuglemass, Nemeth, 2010).

Student centered learning. A socio-constructivist understanding of learning, where the students are responsible for their own learning by constructing meanings and relationships to new information through experiences of prior information (Stes, Clement, & Van Petegem, 2007).

Assumptions of the Research Project

There were several assumptions of the research project:

1. The participants respond honestly and accurately.
2. All data gathered was from willing participants; participation was voluntary.
3. Pilot testing the questionnaire resulted in an accurate survey question.
4. The time and effort on the part of the participants and the participating institution was kept to a minimum.
5. Qualitative analysis is an imperfect science:
    a. The researcher is never guaranteed to fully understand the replies of any respondent.

b. Qualitative analysis is considerably influenced by culture, worldview, attitudes and experiences.

c. The interpretation of qualitative analysis data can change over time.

d. A team of researchers working on one project can have different interpretations of the data than a single researcher (Corbin & Strauss, 2008).

e. The terms "validity" and "reliability" can be inappropriate with qualitative analysis; Corbin and Strauss prefer the term "credibility" (2008, p. 301).

Limitations of the Research Project

The limitations of the research project were as follows:

1. The online faculty participating in the project was from a single university and therefore may not be representative of online faculty at other universities.
2. The study was available to any and all online instructors regardless of teaching experience or years of service at the participating institution.
3. The researcher did not participate with any group or team of researchers; the project was a solo analysis.

CHAPTER 2: REVIEW OF THE LITERATURE

Introduction

Institutions of higher education have long recognized the need and value of using computer technology for a myriad of reasons. All areas of business, government, medicine, science, and even the arts have experienced a rapid computerization of information as well as productivity gains and communications on a global scale. This rapid development of technology impacted higher education not only in the same manner but also required higher education to meet student expectations for the use of technology in education as well as the need to prepare a new workforce with the technical tools of the modern global economy.

Although much computer technology was originally developed through various research initiatives by major universities and the origin of the Internet itself began with four mainframe computers located at the University of California at Los Angeles, the University of California at Santa Barbara, the Stanford Research Institute in Palo Alto, and the University of Utah at Logan (Shelly & Vermaat, 2008), the use of computer technologies by higher education faculty remains a great challenge to many, especially those outside of any technical teaching discipline. Testament to the importance and value of technology in higher education are the vast amount of research and journal articles covering a wide breadth of technology issues that colleges and universities face, as well as the large amount of journal publications dedicated solely to technology and higher education and faculty development.

The literature review is categorized broadly to reflect the many faculty and institutional issues surrounding educational technology, but remains focused on those issues where training is involved, or where issues surface that impacts faculty educational technology training. An exploration into past and present faculty development practices is also warranted in order to discover current principles of best practices in common between institutions of higher education. The literature review looks categorically at the following topics: 1. Institutional issues of educational technology; 2. Faculty and educational technology; 3. Technology training in higher education; and, 4. Faculty development in higher education.

Institutional Issues of Educational Technology

Leadership. For institutions to successfully integrate educational technologies, leadership must consider a large extent of issues throughout the hardware and software categories, but should remain focused on building a culture of institutional involvement in order to understand the changes that technology may bring (Amey, et al., 2002). Institutions of higher education have as its fundamental purpose to prepare students with the knowledge and skills required to become valuable assets to society and nowhere are the skills and knowledge required to do this reflected more than with the professors inside the classrooms or those teaching online. Not only are students expecting and in some cases demanding the use of technology to assist with their education (Conhaim, 2003), but technology has provided an enormous capability to communicate information, increase research productivity, and perhaps more importantly allow for more independent learning on behalf of the students (Lessen & Sorensen, 2006). Leadership in higher

education cannot ignore the current and future technical innovations, but leadership also cannot ignore student and faculty demands and expectations.

While providing end-user technical support remains a high priority, institutions are also faced with a large selection of technical tools and applications as well as assisting faculty to properly integrate educational technologies into the curriculum. Increased global market forces, as well as student expectations and demand, puts information technology at the forefront of decision making for institutions of higher education and calls for leadership to make careful decisions with technology integration. Roberts (2008) suggested that the integration of technology is far more difficult than simply installing an application, and calls for a strategic change process to be implemented across the institution with faculty collaboration as well as leadership support (p. 13).

Successful strategic development and implementation across institutions of higher education are best achieved through a broad-based team approach that includes members from all ranks, but in order to assure 'buy-in,' administrators must be sure to include faculty throughout all strategic design processes (Bates, 2000). Costello (1997) posits that technology will never provide real gains in education until an institutional vision is created from individual faculty visions of how technology should influence their work (p. 2). Much of the strategic design process begins with either changing the institution's mission to include the mention of technology, or, at a minimum, a beginning of discussions to examine ways in which technology has helped to meet the traditional mission and institution's goals (Amey, et al., 2002). A process of this importance

demands representation throughout the institution to act in accordance with the shared governance model of leadership distinctive of higher education.

Leadership with technology is having as a necessary requirement the ability to lead institutions into technology through a commitment to technology as well as developing broad-based participation across all ranks. In a recent study of a large mid-western community college in the process of a substantial technology change, the president along with the nine key administrators all indicated the importance of establishing a participative decision making process from the onset of the initiative (Owen & Demb, 2004). In an analysis of predictive factors of faculty's acceptance of technology, Sahin and Thompson (2007) posit that while faculty members will collaborate amongst each other in a natural occurrence over a period of time and after they have become leaders, it is up to instructional designers as leaders of technology to promote faculty leadership interaction at an early stage (p. 7). The @ONE Project, a California Community College instructional technology training project funded by the state Chancellor's office, confirmed in their summary of findings that support from key decision making groups such as the Academic Senate, the Curriculum Committee, and faculty and staff is not only a requirement for success, but inclusion at the early design stage is strongly recommended (Meehan, Obler, Schiorring, & Serban, 2002).

Educational leadership theorists have criticized many general leadership theories as being ineffectual for quality leadership for higher education. The majority of leadership theories stress individual leadership qualities rather than collective leadership distribution, however the past decade has seen more of a movement toward collective

leadership in education (Muijs & Harris, 2003). Joseph C. Rost (1991), in his seminal book *Leadership for the Twentieth Century*, posits that leadership is an influence relationship between leaders and followers, but that relationship must be unidirectional and active, implying equality amongst leaders and followers, and a relationship where followers can assume a leadership role. In the mid-eighties Thomas Sergiovanni (1984) stated, "But the burdens of leadership will be less if leadership functions and roles are shared…" (p. 13). The state of California went as far as making a state law decreeing a shared governance role between administrators and faculty in higher education through an Academic Senate (Simmons, 1995).

Leadership for any technical innovation or integration needs to be pro-active and from senior administrators, but must also remain specific regarding enhancing the institution's mission and also provide faculty with the necessary opportunity for development (Spodark, 2003). Unfortunately, instances where those senior administrators who attempt to lead a technology initiative have little IT experience are common, while few educational technologists or faculty with high IT skills are promoted into the ranks of institutional leadership (Nworie & McGriff, 2001). This is unfortunate since as technology constantly changes, those early adopters of technology and individuals who led the way often have gained the leadership skills necessary to guide faculty through a dynamic change process (McGriff, 2001). Early adopters who are associated with education and have ample technology experience can be highly effective leaders when they assist other faculty members with technology since they have experience and

competence working across the various domains of an institution and might seem to be a high-profile individual that other faculty would rely upon for technical training.

Financial support. Computer technologies, including hardware and software, as well as a talented team of IT professionals required for reliable operations and maintenance, are expensive ventures for any institution. Even as technology rapidly advances, rarely, if ever, does that make the integration or use of new tools less expensive (Katz, 1999). Barriers to successful integration of various technologies are many, but it is the cost of implementation that has administrators worried the most even though a high percentage of surveyed administrators responded that the creation of new technologies for teaching and expanding the use of current technologies rate as a "very high importance to their institutions" (Amey, et al., 2002, p. 10). However, the actual cost is just one factor in the budgeting process; the greater challenge faced by university administrators is creating strategic value with educational technology expenditures.

Although the raw cost of educational technology is substantial and large amounts of money must be allocated each year, simply throwing money at a resource can be a huge mistake that is well understood by most administrators. Delamarter (2006) posits that institutions cannot understand the true value of technologies until they create a careful strategic plan that includes early input from faculty in order to plan wisely for educational technology expenditures. Strategic value of educational technology implementation comes not from simply providing new and modern hardware and software, but instead lies with understanding how technologies can support the institution's mission, spawn creativity, add efficiency and help differentiate the institution

from another (Bannister & Remenyi, 2006). A formal budgetary process that places educational technology expenditures on a recurring life-cycle of improvement is recommended, as is avoiding a "one-time funding initiative that competes with other institutional projects" (Katz, 1999, p. 99).

Faculty development and training with instructional technologies and computer equipment has experienced unprecedented funding by both state and federal governments. Just one federal grant program alone, the U.S. Department of Education's Preparing Tomorrow's Teachers to Use Technology (PT3), awarded over $338 million dollars during the years 1999 – 2003 (Gaytan, 2006), while the Advanced Technological Education (ATE) program funded over $100 million dollars (Hanssen, Gullickson, & Western Michigan Univ, 2004), with much of these dollars awarded to institutions of higher education. The competitive nature of today's global economy will also require colleges and universities to maintain a high priority with technology funding or risk losing students to institutions that do (Banks, 2005). Computer technology and the Internet have not only made educational resources more available to both students and faculty, they have provided the means for institutions to reach well beyond the local populace for new learners. However, if faculty do not find the training to be useful, they will revert back to teaching without some technologies, or fail to attend more training sessions (Hartman, Dziuban, & Brophy-Ellison, 2007) (Bower, 2001).

The prospect of obtaining grants to fund educational technology is one method to explore enhancing educational technology budgets. However, the competition can be severe and the application processes a laborious task. Recently, the John D. and Catherine

T. MacArthur Foundation awarded $2 million dollars to seventeen projects from a pool of 1,010 applications (Wallace, 2008), and recently North Carolina State University, out of a pool of a dozen applicants, received a $2.4 million dollar grant from the Intel Corporation along with a $1.2 million dollar grant from IBM to create a virtual computer lab that requires remote access only (Young, 2008). It is reported that nearly $250 billion philanthropic dollars were available in the U.S. economy for the year 2007 (McCune, 2007).

Of particular interest regarding budgetary processes and methods of costs control come from rural community colleges. Institutional collaborations and partnerships have shown to be effective methods for sharing resources and faculty training, and allows for cost savings by combining the efforts of several regionally close institutions as well as providing the opportunity to increase the pool of technically competent faculty members willing to share their experiences and train other faculty members (Eddy & Murray, 2007). Although rural community colleges pride themselves with being autonomous regional institutions, new challenges have surfaced in higher education that requires solutions from outside the traditional methods of operation.

Educational consortiums are rising throughout the nation in an effort to bring together a variety of individuals and educational institutions, as well as other organizations of the business sector, in a manner to enhance the effectiveness of meeting the challenges that no single community college could afford (Pennington & Williams, 2002). A dozen community colleges located in western North Carolina formed an alliance to share information and resources, as well as drawing from a pool of specialists,

to help solve critical problems with educational technology and soon developed training sessions for each institution in order to gain the needed expertise to develop technical programs for students (Sink, Jackson, Boham, & Shockley, 2004). By forming a consortium, several community colleges have seen the benefits of close collaboration across many facets of educational technology. Cost savings is also achieved for educational technology training through consortium collaboration, as these community colleges exemplify.

Internal talent. As information technology continues to become an expensive but ubiquitous form of educational delivery and productivity tool, administrators often look inside the institution for those who possess technical skills for several reasons. Panda and Mishra (2007) validated earlier research that revealed faculty with a personal interest to use technology as the leading motivating factor to encourage other faculty members, but also indicate the need for continuous training as the fourth motivating factor (p. 334). During a successful transformation into a web-based delivery system at Northeastern University, one faculty member led the transition for the entire program (Lifter, et al., 2005). In a university study of beginning teachers, 67% of the participants reported that having a peer support group increased their enthusiasm and improved their confidence with the transition of being a student to becoming a teacher (Dewert, Babinski, & Jones, 2003). Internal talent, while not a panacea of educational technology training solutions, should never be ignored and can quite possibly be a source of training that should be developed more.

Administrators are also responsible for creating an environment where faculty have the freedom to explore learning new technologies by becoming involved with the technologies and the training as well as creating relationships between IT staff and faculty. Southern Illinois University Evansville had school deans sit in on training (Lessen & Sorensen, 2006), while Sinclair Community College defines specific responsibilities among the IT team that aids in building relationships with faculty, such as teaming together in order to explore new technologies and any educational benefit of such (Sifferlen, 2003). Internal personnel, especially administrators, taking part in training as well as developing IT teams with faculty as members can be an effective method for creating a positive learning environment where technology can be explored, and also help create a trusting relationship that helps aid in the integration of technology into the curriculum.

Internal talent can create two types of training methods: small group or one-to-one. The University of Houston System established a training seminar for transitioning to e-Learning where thirty faculty members from the four major campuses apply yearly to attend. The CampusNet Online Workshops (COW) uses internal staff members to instruct faculty, however one of the greatest benefits, according to faculty participants, is developing a network of colleagues throughout the university system (Kidney, 2004). DePauw University discovered that working in small groups not only allowed participants to share their expertise, but also saved time when inexperienced faculty did not have to constantly re-invent the prior work of fellow faculty (David & Lynda, 2005).

While group training remains the norm, many faculty members have benefited greatly from the help of a single internal colleague. One young professor at Brigham Young University not only initiated his course management system experience through a personal teaching assistant, he also used the TA to learn the various tools inside the CMS application Blackboard® (West, Waddoups, & Graham, 2007). A survey at a large California community college showed that when given a choice, faculty prefer small group training where one-on-one time is available as opposed to larger groups (Dusick & Yildirim, 2000). Whether or not training comes in the form of group work or individual attention, internal talent can provide effective training and support with educational technologies.

Faculty and Educational Technology

As computers and information technologies continue to pervade every aspect of society, dependence upon these technologies will only increase. Unfortunately, there is ample evidence that instructors fail to take full use of educational technologies developed for everyday classroom use. The reasons behind the lack of educational technology integration into the classroom are many and range across concerns such as lack of equal access, perceived changes in teacher roles, technical problems, support, and adequate training. While this list is incomplete and the literature is sparse with responses coming directly from instructors, several themes tend to permeate the research regarding faculty hesitance with using educational technologies: (a) computer literacy, (b) computer anxiety, (c) faculty workload, (d) pedagogical integration, and (f) training resources.

Computer literacy. While it has long been a belief that educators in higher education should use computers in their profession, and many would declare it nearly impossible not to, there is no proclaimed set of computers skills required for teaching and only a general understanding of what basic computer skills are required in the teaching profession. A problem with any conceptualization of the term *computer literacy* is that what we consider computer literacy is changing as rapidly as are the advances of the Internet, computer operating systems, computer applications, and a new variety of new communication devices. Even from the professional computer organizations, such as the Consortium for Computing Sciences in Colleges, there remains no standardized or maintained definition of computer literacy (Mason & McMorrow, 2006). Without a clear definition of computer literacy any training on what may be deemed important with educational technology might be insufficient when educators leave training sessions with unanswered questions, or training fails to address more fundamental aspects of computer technology.

Historically, the term computer literacy was reserved for computer scientists and computer programmers until the mid-eighties when the personal computer (the PC) brought what these scientists and programmers did in computer laboratories and research centers into the hands of those outside of the computer sciences. This allowed many people to become interested in the new technologies and capabilities of computer technology, but also extended the term computer literacy to a broader audience. The dawn of the Internet Age coupled with high-speed computer networking and more user-friendly computer operating systems and software applications created a ubiquitous tool

that allowed the mainstream of society to involve themselves with these new technologies, and thus the term computer literacy was now extended beyond the scientists and into the public arena. The paradigm shift of computers from scientific experimentation to user-friendly devices brought the definitions of computer literacy down from the higher levels of abstract science and into more basic computer technologies and software application uses (Hoffman & Blake, 2003). Computer literacy, while remaining ambiguous, is now a term associated with rudimentary aspects of life such as reading and writing, and is associated in higher education as well as in industry with employability and on the job productivity.

Two higher education professors interested in computer literacy have divided the term into two distinct components, computer competency and computer awareness. These professors argue that the two components should remain important but separate in any definition of computer literacy (Mason & McMorrow, 2006). Mason and McMorrow posit that while computer competency denotes a more hands-on capability with computers and computer applications, the pervasiveness of computer technology and its impact on society in general warrant a need for a greater awareness for the general public in understanding how computers can influence people's daily lives and workplace functions (p. 95). In the design of computer literacy courses for higher education students, Hoffman and Blake (2003) posit that the traditional method of teaching computer literacy through computer applications has become obsolete since so many students enter college with a high degree of computer application experience. Hoffman and Blake, through several years of survey research and teaching experience, declared

that students entering college possess neither little understanding of the underlying technologies or the social implications of how computer technologies are changing people's lives. Computer literacy courses need to make students more fully aware of these technologies and the impact they have on society (p. 222). Liao and Pope (2008) extended the definition of computer literacy beyond any efficiency or simple knowledge description by viewing a computer literate person as one who possesses passion for the usefulness and power of computer science (p. 232). The definitions of computer literacy presented here remain general enough that applicability can be extended not only to college students and society in general, but directly to higher education faculty with the implication that computer literacy goes well beyond simple computer use.

There is a great disparity among higher education faculty regarding computer literacy when looking at computer skills associated with higher-order computing. In a study at a large Puerto Rican university, an overall sampling of faculty computer use resulted in a typical bell-shaped curve distribution which tells us that few faculty possess high technical skills, many faculty possess moderate technical skills, and few faculty possess little technical skills. However, a very sharp decline of technical skills appears across the entire faculty sampling when moving from the considered more easier technical skills such as word processing, presentation software (PowerPoint®) and email to what is considered higher-order technical skills associated with statistical analysis software (SPSS®), html, databases and listservers (Lamboy & Bucker, 2003). This study did not investigate the causes behind this reality but one recent study across K-12 and higher education faculty did shed some light on the underlying causes. While almost all

instructors used technology in teaching by employing low-end and popular software applications such as the overhead projector, presentation software and email, an attempt of deploying high-end anatomy software was considered a significant barrier by most faculty due to the time needed to learn it coupled with a lack of expert training and support (Weston, 2005).

Where computer literacy levels do make an impact is with the integration of technologies across an institution. The Diffusion of Innovation theory presented by Everett Rogers (1995) categorizes five adoption processes measureable once an innovation has been adopted across a social system: (a) innovators, (b) early adopters (c) early majority (d) late majority, and (e) laggards. Hall and Elliot (2003) posit that early adopters of educational technology are those who possess high computer skills and are able to learn technology on their own, while Jacobsen (1998) posit early adopters in higher education are more experienced with technology and tend to rate themselves much higher in technical skills than those in the other innovation adoption categories. Interesting to note, however, is that Jacobsen mentioned that while some instructors possessing high technology skills fall into the late-majority and laggard category, this is usually associated with an attitude that these instructors remain unconvinced of the benefit of technology integration into the classroom setting, and the number-one reason for technology integration into the classroom remains with a personal desire to learn new technologies (p. 3). Beneficial to institutions is when innovators and early adopters with good technical skills assist other faculty members with learning and using technologies,

as a myriad of issues can be addressed with in-house training, especially computer anxiety.

Computer anxiety. Although computer technology has existed for decades and has become a ubiquitous tool for education, to say that the transition of using educational technology into the classroom has been an easy move is suspicious thinking at best. Higher education faculty have long been viewed by students as having a high level of expertise in their subject matter as well as experienced educators, but the infusion of computer technology into education can cause anxiety by taking faculty outside their area of expertise and introducing new skill sets required for successful teaching (Lee & Hirumi, 2004). The development of new skills for experienced faculty members represents a large change, and any change can bring anxiety, but computer technologies are seen by many faculty as a large-scale change accompanied by many uncertainties (Adams, 2002). Computer anxiety is one problem that prohibits faculty from using educational technology and represents a challenge across the institution.

Computer anxiety appears to be a major issue with higher education faculty for several reasons. An early report found that two out of three professors were not only technically stressed, but the stress level to keep up with technical advances were greater than the stress caused by research demands, publishing pressure, and teaching loads (McQueen, 1999, p. 1). Faculty also experience fear with technology when working with students. Many teachers have expressed concern of being embarrassed trying to trouble-shoot a computer problem in front of technically savvy students as well as simply staying one step ahead of students with new technology (Brinkerhoff, 2006). Keeping up with

technology is a fear expressed by faculty members with many stating that the rapid changes with technology actually increases the tension when using a computer-based tool or once learning several applications a new one is introduced in what seems to be a never-ending drive into educational technology (Owen & Demb, 2004). As it appears that several distinct areas of a professor's computer use can cause anxiety, more and more professors will experience computer anxiety sometime in their career and the need to reduce computer anxiety among faculty will have to be addressed.

Several research studies have focused on various demographic characteristics of computer anxiety, however mixed results are predominating and a call for further research is the norm. Buche, Davis and Vician (2007) reported that computer anxiety can not only change over time, but even in a computer-intensive environment that change can increase or decrease regardless of prior computer experience. Seyal, Rahman and Rahim (2002), in a study of a Brunei academic setting, discovered a higher rate of personal computer ownership did not correlate with a higher rate of computer use in the academic setting. Adams (2002) determined that females show a greater technology integration level than males, while Buche, Davis et al (2007) reported females having more anxiety in a computer-intensive environment. However, Dusick and Yildirim (2000) reported that of 117 faculty members, 85% had computers at home while only 44% used computers in the classroom and it was the group of non-classroom users that possessed a high-level of computer anxiety, thus prompting a suggestion to address computer anxiety in faculty computer development programs (pp. 3, 7). To further complicate the demographic nature of computer anxiety, as one would think anxiety stems from lack of confidence, an

early research report among university faculty found that while males reported more confidence with computers, females actually used them more in the classroom (Spotts, Bowman, & Mertz, 1997). Based on the results of these studies, it is apparent that computer anxiety, while a major issue, has no clear demographic boundaries.

Faculty workload. Even though institutions of higher education have spent enormous amounts of money, outfitted thousands of classrooms with 'smart' classroom technologies, and devoted countless hours of technology training for faculty, a significant barrier to the effective use of technology is the amount of time required, or perceived to be required, by faculty to learn and use the technologies. Educational technology concerns by faculty show the two predominate factors requiring a large amount of time are with learning both the various computer technologies and software applications available (Kessler, 2006). Vodanovich and Piotrowski (as cited in Kessler, 2007) reported that even those faculty who possess a positive attitude towards educational technology identify preparation time to integrate technology into a course as a predominate obstacle (p. 175). At several Omani higher education institutions the integration of many advanced technologies face a serious challenge due to the lack of skilled staff and faculty who cannot allocate the necessary time to become proficient with the technologies (Al-Musawi, 2007). In a recent survey of faculty at the University of Helsinki, faculty (89%) reported that information and communication technology training (ICT) was available to them in a satisfactory a manner but the main obstacle for attending ICT training was the lack of time (Lofstrom & Nevgi, 2007).

Nursing faculty can be particularly challenged by being required to learn several technologies involving software applications as well as physical equipment such as hand-held devices, interactive mannequins, and various body monitoring devices. Also, as nursing instruction moves more to an online format, faculty members as well as instructional designers are challenged to find substitutions for the physical equipment used in a face-to-face environment and make them suitable for equivalent SLOs for those learning from a distance (Naqvi, 2005). Due to the high amount of educational technology often incorporated in a nursing curriculum, three nursing professors at Coppin State University in Baltimore, Maryland, are suggesting innovative strategies to alleviate some time constraints on nursing faculty by proposing unconventional workload distribution, online office hours, release time and co-teaching classes (Murray, Belgrave, & Robinson, 2006). For faculty to become proficient with educational technologies, it is clear that considerable amount of time must be spent across both the hardware equipment and software application requirements that many educational technologies demand for proper use, as are the methods to simulate physical hardware tools for online learners.

The expanding roles of faculty are placing much pressure to keep current in several areas of education that will require them to invest more time engaging in professional growth. Faculty throughout the academy state that balancing current teaching and research requirements, and finding time to stay current in their field, as well as assuming new roles and learning technology will remain significant issues of concern during their entire career (Sorcinelli, 2007). With an average work week consisting of 57 hours, faculty development may meet resistance (Davidson-Shivers, Salazar, &

Hamilton, 2005). Many new faculty members are even questioning the plausibility of surviving a career with such demands as teaching, research, technical skill development, marketability, online teaching pedagogy, and a demand for change in higher education (Rice, 2006). With the demands of a more than full-time workload, the professorate is choosing carefully what professional development training sessions and programs are worthwhile.

Online education has many aspects that demand an increase in workload for faculty, and many of the challenges result directly from learning educational technology tools. There exists a large selection of technical tools available for the delivery of materials in the online class such as email, discussion boards, synchronous video chat, exam generators, blogs and wikis, as well as real-time desktop conferencing, and each tool places a certain amount of pressure on faculty to invest the time to learn the tools and to properly integrate them into the online delivery format (Keramidas, Ludlow, Collins, & Baird, 2007).

Panda and Mishra (2007) reported that the amount of time required to learn how to use technology as the top-most barrier for faculty to use e-Learning (p. 327), and Restauri (2004) posit that much of the time faculty members expend while moving to an online environment comes from learning many new technical tools, which even taken singularily these technical tools can be very time consuming to learn. In an interview with thirty faculty members using the Blackboard® CMS at Brigham Young University, not one instructor began using all the features incorporated in Blackboard®. As all faculty had to take time to experiment with the tools most found many tools too time

consuming to continue use, such as the exam generator to create exams where the exam required many images. Also, many faculty noted a large amount of time was necessary to make a Blackboard® tool useful, especially noting the chat feature (West, et al., 2007). While it has been the result of many research studies that online education requires more time from the instructor for a variety of reasons, the time required to learn and use the many technologies available anywhere in the curriculum can easily overwhelm anyone.

Pedagogical integration. Simply having various types of educational technology is no guarantee that they will be used or that they will be used in an effective manner that enhances education by improving SLOs. While innovation has yielded many new forms of technology, Brill and Galloway (2007), studying technology use at a large British university, found that most instructors rely primarily on simple technologies such as the overhead projector, the VCR and slide projectors, while at the same time attest to the desire to use more sophisticated technologies (p. 99). Unfortunately, the attitude of just wanting to use more modern technologies says nothing about the desire to use technology in an appropriate manner to enhance education and SLOs. Zhu and Baylen (2005) posit that learning should take place in a collaborative manner with interaction between the individuals involved and aligning curriculum with real-world contexts. Methods of collaboration, according to Zhu and Baylen, can be learning communities, communities of practice, and communities of scholarship (p. 266).

However, the technologies supporting these pedagogical methods are effective only when combined with strategies and activities by means of technologies that enhance collaboration in a manner that goes beyond simple delivery of information. Ilacqua, Park,

Gannon and Allen (2007) asserted that learning takes place in an active environment that demands students become intellectually challenged and involved with the subject, and points out how PowerPoint® can reduce learning activities when only used in one-way lectures where students only view information, memorize facts, then recall information for exams. In this study, a small liberal arts university realized success with implementing active learning environments by providing laptops coupled with a software application built specifically for enhancing student/teacher collaboration. The software application provides means for instantaneous feedback, surveys, exams, shared notes, as well as real-time communication between participants (p. 225). Although technology can save instructors time with tasks that might be deemed managerial, or provide ease of delivery with educational materials, the role of educational technology remains with increasing SLOs and this task is something that requires careful thought and planning.

One technology that has gained much attention regarding misuse is Microsoft's PowerPoint® presentation application. A major critic of PowerPoint®, Edward Tufte, whose essay *The cognitive style of PowerPoint* (2003) seems to have created a stir against its use and argues that the trouble with PowerPoint® lies is an overabundance of the simplification of information through a predominance of bulleted lists of abbreviated information. Tufte also noted the misuse or overuse of poor graphics easily inserted into any PowerPoint® presentation and other visual decoration that often serves no real purpose and can actually detract from the information presented. Bell (2004) asserted that it is the ease of PowerPoint® that facilitates poorly designed communication which can cause a presenter to have less contact with an audience (p. 56). Exemplifying poor

audience communication, Maurer (2006) described a presenter so engaged in the details of each PowerPoint® slide that this person failed to recognize various signs of boredom from the audience, which included people leaving to the back of the room for coffee and not returning, people using their PDA's, and some people reading the morning newspaper (p. 25).

In a research project studying the effectiveness of PowerPoint for university history students, Clark (2008) posits that through proper use and design of PowerPoint® there can be an increase in attention among students with a greater increase in learning, but instructors must take into account how PowerPoint® can easily lead to bullet-point styled lectures absent of constructivist learning (p. 43). Clearly, the problems associated with PowerPoint® stem not from the technology itself, but rather from a misunderstanding of design concepts and poor communication with an audience. Craig and Amernic (2006) asserted that instructors have only a rudimentary understanding of how visual technologies can effectively enhance a lecture (p. 155).

Over the years, education professionals and researchers have determined that the uses of various educational technologies were often poorly used due to the manner in which technologies were employed. Often, the use of educational technologies remained focused around the simple delivery of material, or simply seen from the focus of just what a computer can do. Solutions to the physical boundaries and time constraints that created an awkward or impossible obstacle for many students were gained with the rapid rise of the Internet coupled with the many computer-aided programs and applications developed for education. One such software application that facilitated the rise of online

and hybrid education are the course management systems (CMS) such as Blackboard®, WebCT®, Educator® or Moodle® which allows the delivery of educational materials to students via an online environment. However, as noted by Ron Bleed, the Vice Chancellor of Information Technologies at Maricopa College, instructors make the mistake of simply attempting to deliver a traditional face-to-face education via the Internet by simply "bolting on" technology to current class curriculums (Vaughan, 2007, p. 82). CMSs, as providing communication technologies for online education as well as traditional classes, are often used in a mechanical, sporadic, or low-level manners that ignores not only the true capabilities of the technologies, but also the expectations of students looking for more than mindless activities presented over the Internet (Moule, 2003). Although many institutions have introduced various CMSs and provided user training, the training has been predominately centered on the technology rather than how to use the technology to create an effective learning environment. Little concern has been dedicated for a pedagogical framework design model that aids the development of a learning community through technology, either in a traditional class or online class (Salter, Richards, & Carey, 2004).

The use of technology in education is something that needs to be considered as a relationship with pedagogy, and as many instructors have received little training regarding pedagogical design in any teaching methodology, it can be safe to assume even less training has been offered that teaches instructors how to blend technology with pedagogy. Okojie, Olinzock and Okojie-Boulder (2006) described a process of technology integration through coordinating various technologies at the early design

stage, selecting appropriate technology to facilitate learning based on the needs of students and guided by learning theories. However, these researchers posit that most instructors have a narrow view of technology integration and cannot identify how technology can improve teaching or learning (p. 68). A report by Lofstrom and Nevgi (2007) showed that while many teachers viewed educational technology as in integral part of teaching activities and ample training is usually available, there still remains a need to align pedagogical skills with training and to re-evaluate this training on a regular basis (p. 320).

The teaching profession, especially at the university level, is one that has been viewed and distinguished from other professions by the high amount of liberty and freedom someone is permitted to employ methods often defined by personal beliefs. However, Judson (2006) noted no significant correlation between teacher pedagogical beliefs with their integration of technology, and Levin and Wadmany's (2008) longitudinal study suggest that a combination of internal and external factors and beliefs is what really matters most and technology integration is a multi-dimensional process associated with beliefs and practices stemming from their own education (p. 259). Ertmer (2005) noted that while teacher beliefs have long been studied, little research has been done regarding the association of beliefs and educational technology, and posits that until this relationship is examined institutions may pursue specific technology in an inappropriate manner. Considering that teacher beliefs can define a teaching style and decisions made in the classroom often originate with beliefs, careful consideration of

pedagogical beliefs would seem important concerning the proper integration of educational technologies.

Training resources. As technology continues to permeate throughout all facets of higher education it has been noted by many that some institutions offer little or no support while at the same time expecting, and in some cases demanding, further knowledge of complicated. The dichotomy of technology expectation in the absence of technical support is problematic since faculty members expect assistance when using technology for curriculum development or they may not use it (Mars & Ginter, 2007). Unfortunately, many technologies today operate under the presumption that end-user expertise is just a click away, but the reality is that few people, even the IT experts, ever become fully competent with any one application, nor does any one application ever become fully utilized (Powel & Barry, 2005). Beller and Or (2003) posit that since most faculty do not possess the expertise required of a myriad of educational technologies, faculty will not be able to succeed with successful technology implementation without a support system for training (p. 29).

Many institutions do offer training resources allowing for training across the wide spectrum of technology, be that simple nuts-and-bolts usage to a more complicated systems approach for advanced technologies and curriculum enhancement; however, the literature shows a wide range of approaches for educational technology training with most falling under the premise of faculty professional development. Banks (2005) noted that traditionally university faculty acquired training through self-study, help from peers,

or workshops, but these forms were often not specific, random in nature, provided little opportunity for hands-on skill development and were time consuming (p. 300).

As a consequence to the rising complexities of educational technology, as well as the increasing momentum to use technology to enhance SLOs, a large number of faculty members can easily become confused regarding which educational technology may be appropriate or inappropriate, but also frustrated with the time commitment required to learn these applications in a self-taught manner. Faculty maintain a belief that productivity remains a high priority with their acceptance of educational technology, but they also place training a high priority with applications required to create complex things such as web pages and multimedia presentations (Nelson, Snider, & Gershner, 2002). For many faculty, spending time in a self-taught manner to learn computer applications can easily detract from the mandatory requirements of teaching, research, publishing and grant writing activities, and many might opt to forego various technologies altogether due to time constraints, either real or perceived.

The literature is replete calling for faculty support with educational technologies, unfortunately the major theme that seems to surface is just that – more support. Seels, Cambell and Talsma (2003) stated, after a report based on case studies, concluded that support staff should be provided to assist faculty with the use of technology for productivity, teaching and student use (p. 100). Wepner, Bowes and Serotkin (2007) reported that success of faculty for using educational technology demonstrated a need for continued effort with supplying professional development opportunities (p. 91). Studying computer self-efficacy at the University of Lebanon, Saleh (2008) concluded that to

increase faculty's use of educational technology, the university must consider the importance of providing administrative support as well as training support for using educational technologies designed for higher education. What researchers do not address with educational technology support is whether or not the support is simply another trained professional doing the actual work for faculty, or support that is designed to facilitate the faculty member's ability to become fully self-sufficient with the use and integration of educational technologies.

Technology Training in Higher Education

Many institutions have provided educational technology training throughout the years and some are moving ahead with providing large-scale faculty development programs aimed at enhancing the technical skills required to incorporate educational technology into the teaching curriculum. However, the training varies widely from institution and there appears to be no common denominator regarding specific training methodologies other than general technical training for educational technology use.

One institution tasked with rapidly transitioning professional writing courses to an online format found a high degree of success by using a triangulated training approach emphasizing administrative support, peer reassurance, and professional development opportunities, but much of the training was focused around the technical skills required to transition to an online format (Covington, et al., 2005). Wells (2007) posits that short term training and workshops fail to accomplish long-term goals aligned with educational reform models and, in a study of pre-service K-12 as well as university faculty, a shift by faculty towards more student-centered learning methods was experienced but the greatest

influence towards this result was determined to be the long duration process and span of time devoted to technical training.

A large collaboration project by six major universities titled *Roadmap to Effective Distance Education Instructional Design* concluded that changes to the training program were critical to its success after several formative evaluations were taken during the program, and one change noted was less reading and more technical activities (Telg, et al., 2005). Aside from technical training, all three of these reports listed faculty time constraints as major obstacles to educational training.

The pressure to integrate many educational technologies into the curriculum, along with the rapid rise of online and blended learning, has necessitated some institutions, either singularly or as a member of a consortium with other institutions, to develop large scale and long-term training programs designed help faculty gain the necessary technical skills required for this new teaching environment. Virginia Tech anticipated their faculty would require much training with educational technology, but also committed the institution towards long-term training through their Faculty Development Institute (FDI). With its start in 1993 as a state-mandated call to restructure higher education, Virginia Tech committed 1.5% of university operating funds to initiate a 4-year recurring program aimed at helping university faculty members integrate technology into their teaching (Moore, 2001). The FDI enveloped its training methodology around three activities: (a) redesigned learning environments, (b) new tools to assist reengineering, and (c) multiple models of productive learning environments (p. 80). In reviewing FDI a decade later, Banks (2005) concluded that while the program has

assisted many faculty members with learning educational technology, the FDI developers and initial participants had different short-term and long-term goals and the project could have benefited from an analysis of needs assessment prior to developing the program. Also, calls for an emphasis on design to begin with a needs assessment as well as a review of expectations of participants was noted. Moore notes that changes to the FDI program now occur with an annual review of faculty requests (p. 82).

One method to move forward with faculty development programs aimed toward educational technology is to join forces with outside entities that can provide grant monies as well as routine resources such as software and hardware. Bellevue Community College (BCC) of Washington State has partnered with Microsoft, the National Science Foundation (NSF), and the American Association of Community Colleges to create the NorthWest Center for Emerging Technologies (NWCET). NWCET originally began with a $5 million grant from the NSF and has received grants from Microsoft for future commitments totaling over $1.3 million ("Despite dot.com bust. Wash. College's high-tech center still booms," 2003). However, this outside support came after BCC's commitment was well under way when the college began educational technology training and support in the early 1990's with a very aggressive plan to make BCC faculty as knowledgeable about computer technology in the same manner as many students aspired to become knowledgeable with technology (Hutchison, 2001). This was no small feat considering BCC is located in the middle of Washington's high-tech corridor and between the Microsoft and Boeing companies, but what made BCC unique and successful was an organizational commitment that reached from staff to the college's

president, an assurance of at least 1.6% of the operational budget going to educational technology training, training available to all BCC employees, and vigorous fund raising activities to secure outside funding (Hutchison, 2001, p. 107).

The University of Central Florida (UCF) has a long tradition of technology as part of the institution's mission since its inception as the Florida Technological University. Created specifically to meet the high-tech demands of an emerging space industry, UCF was careful to integrate teaching with technology deep into its strategic plan with some sixty (60) specific references to technology, but perhaps more importantly senior administrators identify technology as the means to achieving the institution's goals (Hartman & Truman-Davis, 2001, p. 41). UCF has identified four vital processes for faculty use of technology and has specific orientations and development programs for faculty immediately after they join the institution: (a) access, (b) awareness, (c) mastery, and (d) application (p. 41). This support is made possible by an institutional leadership team that embraces technology and makes available the necessary tools. UCF has provided such a comprehensive support mechanism for faculty development that the institution has become recognized as a best practice for faculty development in teaching with technology. Exemplifying a commitment to information technologies, UCF has created a technology information plan included with its institutional quality enhancement plan for accreditation (Gibson, 2007). Having institutional leadership embracing technology and IT embedded into the strategic plan, UCF has developed a broad choice of faculty training programs ranging from institution-wide training centers to one-on-one "just in time" consultations (Hartman & Truman-Davis, 2001, p. 41). One internationally

recognized educational technology expert, Tony Bates, went as far as declaring UCF as one of just a few institutions to advance through five stages of development for successful e-Learning, with the fourth stage requiring planning, organization, and faculty training and skill development (Awalt, 2007).

A system-wide approach to integrating technology into higher education as well as faculty technology training has been underway since 1993 with the California State University's Center for Distributed Learning (CDL). CDL began as a comprehensive strategy to improve the future use of technology by examining the current state of technology use through an integrated technology strategy (ITS) plan focused around four desired outcomes: (a) increase personal productivity, (b) support excellence in learning and teaching, (c) assure the quality of student experience, and (d) increase administration productivity and quality (Schneebeck & Hanley, 2001, p. 116). The CDL offers a comprehensive professional development strategy and resource center along with an avenue to create and participate in collaborative learning communities throughout the university system. What CDL views critical to technology success is faculty training on how to use the software applications available and has chosen learning by doing, learning by using, and learning by listening as the three training strategies adopted throughout the program (Schneebeck & Hanley, 2001, p. 124). Assessment results of workshops using this training strategy confirms that significant faculty improvement with educational technology occurs (pp. 125-126), and testament to the success of CDL is the growing number of faculty as well as IT staff throughout university institutions participating in

several educational technology communities in face-to-face or fully online faculty learning communities.

However, best practices regarding faculty development with educational technology have remained elusive throughout the years, and at best these examples can only give a snapshot view of any one institution's training practices and programs at any given time. Looking across several "best practices" institutions regarding faculty development of educational technology, commonalities exist between types of training (i.e. workshops, online, collaborative) and technology topics (i.e., web page development, PowerPoint®, CMS), but there is little, if any, direct agreement on a singular approach to training methodologies nor any conformity of selection across the variety of technologies, be it hardware or software. The particular level of computer expertise among participants can influence training methods and there seems to be agreement in the literature that suggested novice computer users preferring shorter training sessions with personal attention, whereas experienced users prefer and can accept longer sessions that are more focused on learning high-end software (Dusick & Yildirim, 2000). Perhaps a wider consensus in the literature is an agreement that technical training is required and should be provided and attended continuously throughout a teaching career (Kantonidou & Chatzarakis, 2005), while at the same time preparing instructors to incorporate technology into the curriculum in a manner that enhances student learning (Brinkerhoff, 2006).

Regarding institutional training for faculty development of technical skills, there appears to be an absence of research regarding the value of very basic computer hardware

and software training comparable to what is known as the CompTIA A+ or Network+ certifications that focus on users understanding basic computer technologies. It would seem reasonable that if faculty continue to struggle with computer technologies training on some very important but fundamental technology would be beneficial to future educational technology use just in the same manner that educators stress the importance of gaining fundamental knowledge in a field of study as preparation for further advancement in that field.

Faculty Development in Higher Education

The concept of faculty development is not new in higher education but it has changed over the years, and the new pressures facing colleges and universities from the general public regarding the quality and value of a high-priced education are forcing institutions to become more aware of the importance of accountability for delivering a quality education and thereby forcing a reassessment of faculty development. Higher education has been known to embrace the concept of lifelong learning but is also faced with either accepting or rejecting new paradigms of education which may demand delivery via technological tools across the globe as well as computer driven student and program assessments. As increased competition, globalization, environmental issues and new technologies have forced business sectors to invest heavily in research and development for improvement, others say higher education as a whole historically has not invested as much proportionately to improve the talents of faculty (Sorcinelli, et al., 2006).

Wells (2007) posits that faculty professional development programs would need to shift from the accepted form of training that focuses on singular issues and towards a more holistic approach that aligns itself with the factors that influence educational reform. In 2001, Sweden's national Committee of Inquiry argued in a report regarding higher education that institutions support educational change specifically through educational development units created and maintained at every institution (Roxa & Martensson, 2008). Reybold, Flores and Riojas-Cortez (2006) went as far as developing a new model of faculty development in order to attempt to close the gap between teaching theory and teaching practice across many institutional issues such as diversity, ethics, and SLOs. Faculty development, in many instances, appears to be moving away from single event driven training and into one that addresses larger institutional issues and reform movements that complement the traditional paradigm of training faculty for the context of their teaching environment.

Faculty development, or academic development as it is called in some countries, has not always gained legitimacy either at the local institution or throughout a state or national level, and much of the problem with this perception cannot be found in any single issue but rather the problem co-exists in several dimensions of the complex world of academia where many believe any attempt to draw general conclusions regarding the academic development practice is futile (Brew, 2006). Wells (2007) posits that approaching faculty development with training on a singular issue fails to accomplish the broader goals of educational reform and calls for a shift of faculty development that addresses the changing educational paradigms. According to Gray and Radloff (2006),

the very nature of academic development today and at the start of the twenty-first century, remains "loosely understood and organized among both practitioners and their stakeholders" (p. 80). Even though Johns Hopkins University has offered a faculty development program for clinical teaching skills since 1987, it was not until 2002 that a research project began to attempt an understanding of the long-term impact of the program, with results not published until 2005 and with the researchers declaring that little is understood regarding the longitudinal impact of the program (Knight, et al., 2005). The researchers point out that although prior studies have examined the impact of the program, only one research study addressed the long-term impact (p. 721).

A large portion of the literature seems to declare a state of disarray across the entire spectrum of faculty development with some researchers calling for a renewal of professional development through new models of design (Howland & Wedman, 2004), challenging conventional models of faculty development to promote changes in teacher epistemologies (Brownlee, Purdie, & Boulton-Lewis, 2001), to an approach of faculty development that accepts the position that faculty are indeed motivated by financial opportunities and career advancement rather than solely the idealistic nature of a passion for learning (Harvey & Kamvounias, 2008).

Others will point to professional development organizations such as POD (The Professional and Organizational Development Network in Higher Education) founded in 1976 as exemplary in promoting training across the institution to promote improvement in the entire instructional process of higher education with an integrated approach that combines three fundamental units of academic development: (a) faculty development, (b)

organizational development, and (c) institutional development (Gillespie, L. Hilsen, & E. Wadsworth, 2002). Thinking that faculty training is self-evidently a good idea, Sweden and the UK have considered compulsory teacher training for all higher education lecturers, but remain in controversy regarding its implementation (Trowler & Bamber, 2005). Taking the position that academic development is a mature field of practice and merits its own scholarship, the Higher Education and Research Development Society of Australasia in 2005 (HERDSA) began the CAD (Challenging Academic Development) Collective and has seen this organization grow with members contributing to research and publication articles (Holmes & Grant, 2007). Sorcinelli et al (2006) put forward that the challenges of higher education are so complex and range across all major forces internally as well as externally, that the changing contexts of learning ushered in by greater accountability for higher education, the paradigm shift of student-centered learning, as well as the electronic modalities offered by technology and the Internet, demands that faculty development becomes essential to both the individual faculty member as well as the institution as a whole (p. xvii). Obviously, as the challenge for faculty development begins with a deliberate attempt of training, it can be assumed that a greater challenge looms with forming a consensus for the proper implementation in the context of institutional reform.

Faculty development is an investment in time, equipment, money and personnel, but also a commitment to a quality that often defines higher education – life-long learning. Harvey and Kamvounais (2008) posit that in an institutionalized, competitive, and global economy that has forced higher education to alter established teaching

paradigms, educators must reject the notion of "hired to teach but paid to publish" pervasive culture, and advocate the teacher-as-learner approach (p. 31). Harvey and Kamvounais' research dealt primarily with creating substantive change regarding learning policy. However, they concluded that until faculty embrace the concept of teacher-as-learner, any real change may be disguised as a surface level change of policy rather than any substantive change in student learning because the change process will fail to engage the faculty with a transformational experience associated with constructivist learning and may be seen only as a top-down directive for change. Epper and Bates (2001) noted that UFC's strategy for success was to create learning communities among faculty when in 1996 the university began offering fully online courses. In this model, experienced instructors taught other instructors from prior experience. Preceding research leads one to suggest that promoting the teacher-as-learner concept remains a fundamental construct with implementing practical and substantive faculty development.

Sorcinelli et al. (2006), in referring to faculty development en general, quoted a university director who stated that faculty development must go beyond the 'what' and the 'how' and more into the 'why' (p. 78). These researchers also posit that as with active learning skills imparted to students, these same skills of engagement that develop deeper learning rather than solely an acquisition of knowledge are what faculty developers need to incorporate into faculty development. Going back in time, Boice (1984) concluded that relevant faculty development teaches faculty how to interact their scholarly activities of publication with teaching, researching, and student interaction, and as a result students

themselves have expressed they witnessed better and more organized lectures. One manner in which to delve into the 'why' regarding faculty development with technology can be exemplified at Imperial Valley Community College, where the focus of improving faculty use of technology centered on linking faculty interests with the institution's technology training (Marx, 2005). Looking first at the 'why' faculty were interested in technology in the classroom, coupled with small peer group training sessions, allowed the trainers the means to entice faculty to explore better ways of technology integration into their teaching based on their own personal interest with technology.

Recent research on faculty development transforms the technical aspect of faculty development into a deeper and wider understanding of teaching as a developing process. Akerlind (2007) suggested one method for widening the understanding of the teaching process is to limit faculty development that aligns with current faculty beliefs while expanding faculty understandings of the often misunderstood processes involved with teaching, thereby enabling a broader range of development opportunities. Fleming, Shire, Jones, Pill and McNamee (2004) observed from a faculty development project that the observation of the teaching process became problematic with many faculty reviewing the appraisal of the observation of teaching rather than the developmental processes of the observation of teaching, and as a result recommend future faculty development programs help assist a clear distinction between the two. Sorcinelli et al. (2006) agreed that new ideas and trends in faculty development is a prioritization of the teaching and learning processes.

However, a recurring conclusion of much research regarding successful faculty development, or a common suggestion in a plethora of suggestions, is to frame faculty development around the context in which faculty work. Weimer (2007) posits that while professors today teach with an incredible amount of content knowledge, they possess little knowledge of the context of teaching and learning, and suggest that faculty development programs change this situation. Stes et al. (2007) concluded that the setting describing the faculty work environment and the contextual aspects of the learning must be taken into account when developing faculty development programs. In contrast to traditional training methods where one-shot training is delivered in a short amount of time, often in an unfamiliar territory isolated from the school setting and even using tools unfamiliar to teachers, Wells (2007) proposed that effective faculty development should be reflective of, and immersed in, the context of the organization (p. 102). Gillespie et al. (2002) stated that teaching occurs in several contexts, often enhancing the teaching experience but also allowing a distraction from the teaching experience, and the contextual manner in which teaching occurs is an important dimension in the evaluation of teaching, which provides a basis for any necessity for faculty development. Weimer (2007), an academic developer with over thirty years of experience on over 300 campuses, personally strives to have academic development sessions created in a space where learning is the center of activity, but equity, fairness, and accountability are higher order descriptors of the context of the training rather than merely counting attendance or covering a specific topic.

As the very nature of teaching has become a multi-faceted profession through important issues of diversity, accountability, student-centered learning, the demands of technology, and the move towards more and more part-time appointments, the future of the professorate will require an adaption of faculty development. Sorcinelli et al. (2006), specifically looking at future directions of faculty development, asked faculty developers what they perceived as the pressing needs regarding faculty member and institutions. Although many issues were mentioned, five broad categories emerged: (a) faculty roles, (b) student learning, (c) technology, (d) part-time faculty, and (e) departmental leadership and management (pp. 104-105). When looking for visions of the future of faculty development, Sorcinelli et al. discovered three key areas that were predominate in open-ended question responses: (a) developers should take a stronger leadership role in the institutions, (b) faculty development should work to gain more respect and credibility as a credible and valued field of study, and (c) credibility and respect of faculty development is linked to the ability to articulate a body of knowledge of the field from existing research and to contribute to that body of research (p. 142). However, the major theme from Sorcinelli et al. is that there is a future of faculty development, but that future is one that must be created and not created blindly.

Online Education Perspectives

Personal opinion gleamed from experience plus ample educational research across all spectrums of education clearly support the fact that teaching online is very much different than teaching in the traditional face-to-face environment. Also, with the well understood fact that Internet and computer technologies advance at a rapid pace, it is

understood that online faculty are put into a position where one must master various educational technologies as well as the subject matter to deliver an effective online course. The range of skills required for online teaching is vast for a myriad of reasons and computer technology is just one skill demanded of the online instructor, but it is not safe to assume that all faculty members are skilled at the art of teaching simply because they are subject matter experts. According to Harris (2005), basic online teaching skills include educational and computer technology but also an understanding of pedagogy and education theory, and most faculty do not have an understanding of the latter as much as faculty who teach in the discipline of a school of education. Harris posits that for online faculty to become effective they must engage in educational technology training and also receive training on pedagogy and education theory. Accordantly, Harris recommended that institutions insist all faculty members develop a modest set of educational technology skills while at the same time not burdening faculty members with excessive training demands.

To state that online education has revolutionized higher learning is to ignore much of the research on this complex subject. While online education clearly has revolutionized the access to higher education, Massy and Zemsky (2004) declared that prior research defines most institutions e-Learning activity as a 'bolt-on' of various technologies to supplant the face-to-face course, and not of the type of activity in which courses as well as teaching methodologies are fundamentally changed. Massy and Zemsky also declared that e-Learning will truly become pervasive only when faculty change their teaching methods away from the face-to-face practice and to rethink the

roles of faculty to learners (p. xi). Massy and Zemsky wished not to declare e-Learning a failure, but as e-Learning advocates they desired to present research that supports their position that there is still much to be learned and understood regarding the wide spectrum of online education.

In reviewing the quality of a web-based course, Shieh, Gummer and Niess (2008) concluded that the initial requirement for faculty to move to the online teaching environment is an adjustment of the role in which faculty see themselves as the classroom instructor. Shieh et al. posit that this adjustment is not easy and takes a diligent and practiced effort wherein faculty can most likely benefit from formal training. While Shieh et al. posit that not only are early adapters moving to online teaching and mainstream faculty are beginning to experience online teaching, the one course under review in their research revealed a failure of the instructor to fully appreciate the faculty role of sustaining online teaching methodologies such as participatory, social, and collaborative learning (p. 66). Shieh et al. concluded that two factors are crucial to successful online learning are instructor engagement and instructor facilitation skill (p. 66).

Others will assert that moving to online instruction after years of experience in the face-to-face environment is a radical paradigm shift of substantial consequences. In a study of nursing faculty from six university schools of nursing, Johnson (2008) noted that of the twelve faculty members who participated in the study, all agreed that in order to effectively teach online they had to thoroughly rethink the learning and teaching process. Although these twelve nursing instructors felt that the online experience enhanced their face-to-face teaching methods and that they were able to incorporate some face-to-face

teaching methods into online courses, the online teaching experience had a major impact on their teaching philosophies.

However, the rethinking of learning and teaching for online education is not limited to philosophical and pedagogical frameworks of teaching, but also other issues such as intellectual property rights for courses created for online learning, copyright laws of the material used in the online courses, and also faculty workload and communication, just to name a few (Hardy & Bower, 2004). Technology acceptance is often a radical shift for faculty with successful integration to online learning. Surprisingly, the main factor for technology acceptance among university professors lies with the accepted usefulness of technology and not with the perceived ease of use (S. G. Gibson, Harris, & Colaric, 2008). However, this radical shift in teaching modality is something that even the most ardent foes of online education can learn to appreciate and find as a useful teaching methodology in which teaching excellence is improved. Kirtman (2008) stated, "…I found new strengths as a teacher that I didn't know I had" (p. 2). Many university professors attest that teaching online has many unforeseen benefits and pleasures, but few will declare the transformation to online education as being easy.

As the nature of higher education changes with new technology that enables a truly global impact, the reach of technology also allows participation by the non-traditional student, which is seen as a business opportunity but also as an obligation from universities to deliver high-quality education to students based off campus. The prevalence of online courses offered by practically all universities attests to its success in delivering higher education across the globe, but as with all education modalities there

remain difficulties and challenges for faculty. Kooi (2008), looking at a small number of university faculty members in a new online criminal justice program, noted that the level of training for the seven faculty members was rated as either "some training…or no additional training" (p. 424). Baggaley (2008), in a speculative argument that asks where distance education went wrong, proposed the failure of utilizing web-based technologies for *synchronous* experiences at a time where everyone was lamenting the virtues of *asynchronous* communication of online education was due to a lack of training and creative technology awareness.

The appropriate use of technology is a concern of Burge (2008), who proposed that technology become just one attribute of online education. Burge suggested that the appropriate use of technology is one that has online educators avoiding technology fads and unnecessary computer applications as a result of progressive management styles that encourage group work and closes options of faculty misusing their power. Regardless of the type of challenges facing online education today, the consensus gleamed from prior research is that faculty training and support remains vital for online program success.

Student engagement has become the de facto standard method in which to create a quality online course where substantial learning takes place. However, there is no general understanding on how best to create an online course where student engagement improves student learning outcomes. Bonnel (2008) stated that feedback from faculty is a major core educational principle in which to engage students in an online classroom, but also states that online faculty express concerns regarding the techniques of making feedback effective. Bonnel posits that feedback will engage students more effectively and

thus improve SLO's if strategies are developed where feedback is integral to the course design, a function of the faculty roles, and a requirement for student participation. Student engagement in the online course often takes place with written responses to discussion threads, and according to one university professor with several years of experience in both face-to-face and online courses, written responses are actually easier for students to make quality contributions to the class and the written response technique for student engagement forces students to think more constructively and improves writing skills (Bonnel, 2008). Menchaca and Bekele (2008) found that students appreciated collaborative discussions and written reflection, but noted that student participants indicated faculty played a major role in organizing the engagement processes and providing feedback in a constant manner. Lewis and Abdul-Hamid (2006), in a study of thirty exemplary online professors, noted the common methods for promoting student engagement were an introductory conference area, an informal conference area, required discussion threads related to the topic, and collaborative work. It is clearly evident that the successful online course is one that uses many techniques and creative abilities to actively engage students for a rich learning environment, but what is also clear is that this is a learned skill and not a teaching technique that comes naturally.

While an engaging online course with the perfect pedagogical delivery that results in measurable SLO's is an elusive goal, many experienced online instructors do achieve this. Even though many online courses are haphazardly constructed and simply placed online through the posting of text documents in a CMS, the literature points to two general approaches to online course development – faculty designed and faculty

developed solo efforts, and a collaborative design approach with assistance from other faculty members or instructional designers associated with the institution (Rosenblum, 2000). While one might consider the collaborative approach as having the most favor with online instructors due to the sharing of work and influx of ideas from experienced instructional designers, some research points to a more mixed situation of online course development. Xu and Morris (2007) posits that while instructors do appreciate the collaborative process, faculty also state extra workloads and often conflicts with course developers when designers have a different background from the course subject matter. Xu and Morris explained this conflict as a dispute between subject matter expertise and not a dispute of technical knowledge. Santovec (2005) observed that faculty members wanted to become a part of a learning community of practice but that once an initial training session concluded faculty soon found themselves alone in the design process. Keramidas, Ludlow, Collins and Baird (2007) gave faith to instructors having the ability to design an online course all by themselves after reading through an easy to follow course development guideline with simple suggestions. Stes, Clement and Van Petegem (2007) suggested that positive impact on training can be achieved by bringing faculty into a peer learning process that involves coaching, but the most important thing is to not remove faculty from their teaching context by taking into account the teaching setting with small domain-specific peer groups.

Reflection

As presented in this survey of the literature, the rapid rise of various types of educational technology coupled with the increasing demands placed upon higher

education, presents challenges across the curriculum and throughout higher education with the proper integration and implementation of educational technology. While some may consider faculty development for educational technology problematic, others have exhibited great success. The purpose of this study was to reach out directly to online faculty members in an attempt to add to the current body of literature in order to provide insight and knowledge regarding what works and what does not work when educational technology is the focus of faculty development. It is safe to assume that faculty, higher education, and technology are here to stay. However, is it safe to assume that faculty development is here to stay? If the answer to this question is anything but a resounding "yes," then the continuing need to research, develop, and create effective faculty development programs for the proper use and implementation of educational technology becomes ever more paramount.

CHAPTER 3: RESEARCH METHODOLOGIES

The research design methodology originates from the basic intent of the research project and that is to discover the perspectives of information technology training from higher education faculty, and then return to the faculty for a ranking of importance of the research findings. Progress towards a greater understanding of the faculty perspectives regarding technology training began by seeking answers to a primary research question:

Primary research question:

1. What concerns and ideas do online faculty members have regarding the current and future use of faculty development for educational technology training at their institution?

After analysis two subsequent questionnaires were made available to the online faculty asking them to rate by matter of importance and then rank by order of importance the results derived from the qualitative data.

Research Design

What have become two distinct philosophies of research are known as *positivism* and *postpositivism,* respectfully, with the term positivism stemming from the idea that we are *positive* of an absolute truth of knowledge, and postpositivism rejecting the idea that knowledge can be determined with absolute truth (Creswell, 2003). The underlying assumption of positivism is that the source of knowledge is external to an individual and does not originate from any internal preconceptions or personal beliefs. Postpositivism rejects a singular understanding of any source of knowledge and appreciates and accepts internal constructs of knowledge by attempting to understand the views and experience of

each research participant (Creswell & Miller, 1997). Postpositivism fundamentally accepts knowledge as being created in a social atmosphere and constructed upon individual foundations that develop subjective meanings of people's experiences as they relate to their environments. Of the philosophical assumptions guiding research methodologies, the two main assumptions that originate from positivism and postpositivism are known, respectively, as *quantitative* and *qualitative* research methodologies. As Table 1 shows, positivism and postpositivism are two opposing philosophic views of knowledge:

Table 1. Comparison between positivism and postpositivism.

Philosophic components	*Positivism*	*Postpostivism*
Nature of knowledge	▪ One reality or truth ▪ Objective ▪ Decontextualized	▪ Multiple realities ▪ Subjective ▪ Contextualized
Methodological foundation	▪ Deductive processes ▪ Hypothesis testing ▪ Generalized findings of a population	▪ Inductive processes ▪ Interpretations of phenomena ▪ Identifies themes transferable to other contexts
Research design	Quantitative	Qualitative

Information in the table is based on the works adapted from Jack (2006) and Creswell & Miller (1997).

Appropriately, the ideological assumptions demand a different approach to the research conducted, which affects the overall processes of the research. These approaches, or *frameworks,* provide general guidance throughout the entire project, but also drive the detailed data collection and data analysis procedures (Creswell, 2003). Although the amount of frameworks has increased substantially over the years, three general frameworks broad enough to encompass most educational research projects

remain with us today: (a) quantitative, (b) qualitative, and(c) mixed methods. Creswell (1994) defines quantitative research as "an inquiry…based on testing a theory composed by variables, measured with numbers, and analyzed with statistical procedures; and qualitative research as "an inquiry…based on building a complex, holistic picture, formed with words, reporting detailed views of informants…" (pp. 1-2).

Mixed methods research does not simply combine quantitative and qualitative data, but rather accepts that neither is completely adequate to gather all necessary data, and when used together, as well as logically bound into a research project, a more complex and complete analysis can be made (Creswell, Fetters, & Ivankova, 2004). The practice of integrating concepts from qualitative and quantitative methodologies is relatively new with the origin noted in 1959, but practical use became accepted in the early 1970's (Creswell, 2003). The view that qualitative and quantitative research has no complementarities due to the differences in epistemological assumptions (Gall, Gall, Borg, 2003) has been replaced with the view that the combination of both methodologies can provide a more accurate interpretation of data if the two methods are properly linked around the same research question (Creswell, 2005). Often, the mixed methods design is used in an iterative manner in exploratory research; either qualitative or quantitative data generation is used to expose ideas or themes, and then a return to the participants for further clarification using the opposite methodology from the initial investigation (Creswell, 2005). Table 2 illustrates descriptors of quantitative, qualitative and mixed methods:

Table 2: Quantitative, qualitative, and mixed methods descriptors

Quantitative Research	*Qualitative Research*	*Mixed Methods Research*
▪ Predetermined ▪ Objective reality ▪ Instrument based ▪ Studies behavior and observable phenomena ▪ Creates social reality into measurable variables ▪ Statistical analysis ▪ Impersonal, objective reports ▪ Studies populations that represent populations	▪ Emerging methods ▪ Subjective reality ▪ Open-ended questions ▪ Studies meanings and internal phenomena ▪ Makes holistic observations within social environments ▪ Text and image analysis ▪ Interpretive reports ▪ Studies cases ▪ Small groups	▪ Predetermined and emerging ▪ Both objective and subjective realities ▪ Open and closed-ended questions ▪ Combines internal and external knowledge ▪ Multiple forms of analysis ▪ Impersonal, objective, and interpretive reports ▪ Mixes population data with case studies

Information in the table is based on the works adapted from Jack (2006) and Creswell & Miller (1997).

The Delphi technique, a research process originally developed by the Rand Corporation in the 1950's, is often employed as an iterative process to gain expert opinions, especially when the research participants are dispersed geographically. The Delphi technique is a process of generating consensus by employing a series of questionnaires centered on a single research question, then analyzing the data in order to expose themes or ideas. Once themes or ideas have been generated, a return questionnaire is sent to the target population for ranking of importance, additional data, or, most common, a development of consensus (Burns, 2003). Turoff (1970), in an outline for research objectives, called for the use of the Delphi "to seek out information which may generate a consensus on the part of the respondent group," (pp. 153). The use of the Delphi has shown a high degree of interpretation and various implementations of the

technique, with great debate centering around the definition of 'expert,' along with the number of questionnaire iterations required for quality research. For the Delphi purist, an unstructured first round question (or questions) is then followed by two or more rounds that are more specific, such as seeking quantification of earlier data (Powell, 2002).

Considering the basic theoretical foundation of this research project originates with a subjective reality from multiple participants of a particular group of university professors and then returning for a quantification of data, the research design was a mixed-methods case study using the Delphi technique. A survey research design of an open-ended question allowed for interpretation of the data in a broad panoramic view rather than a micro-analysis of one particular event or phenomenon, followed by two surveys asking for a quantification of the data. The research question asked for each respondent to identify, in a qualitative manner, any ideas and concerns regarding the current and future use of faculty development for educational technology training. A second survey returned to the target population asking for a rating by matter of importance the resulting data from the qualitative survey. A third survey followed, asking each respondent to rank by order of importance the resulting data from the qualitative survey. Thus, a structured survey design using a three-phase plan of *identify, rate, and rank* began with an open-ended question seeking qualitative data followed by the exercises of rating and ranking in order to yield quantitative data that gives value to the research. Since the underlying philosophy of this research project originated with gathering data from multiple subjective realities and further refining the meaning of this

data in a quantitative manner, a mixed-methods research design methodology using the Delphi technique with three iterations was undertaken.

Educational research generally produces four areas of knowledge from which improvements to the entire educational process are made. These areas of knowledge are: (a) description, (b) prediction, (c) improvement, and (d) explanation (Gall, et al., 2003, p. 3). While these areas of knowledge are often intertwined and dependent, research methods rarely, if ever, attempt discovery of knowledge in a single collective manner that explores these four areas simultaneously. Gall et al. declare that the explanation type of research subsumes the other three, but also imply that in order to explain a particular phenomena one must first describe it (p. 6), and hence this research project described the online faculty perspectives of educational technology training which might later help make predictions, improve upon practices, and help explain the results in a manner that will aid future faculty development processes.

The case study research design was chosen in that one of the main characteristics of qualitative research is to study specific instances of phenomenon or an explicit group of people, although many postpositivist researchers reject any preconceived formal research methodology (Gall, et al., 2003). Case studies are bound in time and usually singular in activity (Creswell, 2003) and have become widely used in education with an emphasis placed on investigation and description. This research project met the criteria of a mixed-methods case study using the Delphi technique.

Sample Selection

The general phenomenon under study with this research project was online faculty perspectives of educational technology training. The results and conclusions of this case study was meant to discover current understandings and opinions, but also to look for generalizations that might lead to changes, either minor or major, with future faculty development programs aimed specifically at educational technology. It was obvious, since the general phenomenon was online faculty perspectives of educational technology training, a fundamental criteria for selection of participants was that the researched institution must have a current faculty development program for educational technology. This requirement was fundamental to the study since the purpose was to gain knowledge of online faculty development from prior experiences with educational technology training, rather than from any faculty inventing a 'wish list' from their imaginations.

A public university comprised of four campuses throughout a southern state, as well as over sixty national teaching sites and international sites via the Internet, was selected for this research study. The researched university is considered a large university having nearly 30,000 students served by over 2,500 faculty members, 1,000 online faculty members, and five academic colleges covering a wide range of degree offerings. The university was founded in 1887 with state legislation creating an institution to train teachers, and has experienced a long relationship with the United States military. Military programs offered at various military bases in the South became extended throughout the world and evolved into a global campus business model, which operates in 17 states and

11 nations. The university online education courses are offered through 'eCampus,' the university's department of web-based courses and online programs, and is authorized for operation as a postsecondary educational institution.

The researched university has a strong commitment to the training of their faculty and staff with the technologies required for their responsibilities, but also seeks to properly integrate various technologies for the purpose of enhancing and improving the learning experience. A specific reference to educational technology training exists in the researched university's strategic plan and states "100% of the faculty and staff will be trained in the use of technology needed to execute their responsibilities." According to an ad hoc committee, the listed strengths of educational technology training at the researched university are:

1. The current technology training initiatives are congruent with the technology training needs reported by faculty and staff.
2. The implementation of technology training is focused at the local campus level yet coordinated centrally.
3. The Human Resources department coordinates training initiatives across the university.
4. The IT (information technologies) department of the researched university provides several live and online training opportunities and resources.
5. The eCampus provides Blackboard training. All faculty members who use Blackboard must demonstrate mastery of the software prior to being assigned a faculty user account.

The participants for this study came directly from the researched university's approximately 1,000 online faculty. There was no distinction made differentiating the terms of service among online faculty members as a requirement for participation; all full-time and adjunct online faculty were encouraged to participate. The sampling logic for this study was to achieve simple randomization by making the research questionnaires available equally and simultaneously to all online faculty members through the Internet survey application Zoomerang®. Bulk email notifications to all the researched university faculty members coupled with an access time of four weeks assured a reasonable simple randomization. Care was taken to guarantee equal notification to all faculty members and that no particular faculty member or group of faculty had any extra encouragement or incentive in which to participate. To encourage any participation at all, a random gift drawing of three (3) $100 gift cards was presented to the participants through a second anonymous website. Great care was taken to avoid identification of the researched university by excluding the name as well as any identifiable characteristics or demographics. Any reference to the researched university in the data was removed prior to publication of data.

Instrumentation

A survey research design was chosen for this study, with a particular emphasis upon creating an initial open form (essay response) web-based questionnaire in which each respondent had ample opportunity in which to reply, followed by an additional questionnaire asking the respondents to rate by matter of importance the themes and ideas generated from the first questionnaire. A third follow-up survey asked the respondents to

rank by order of importance the themes and ideas generated from the first questionnaire. Anonymity was considered paramount to the development of the questionnaire, and it was noted at the beginning of the questionnaire for respondents to avoid any personal or departmental identification in any response. The questionnaires were secured for access by using the online survey application Zoomerang®, which allows for only authorized users to log into the web application for access. Zoomerang® has the ability to assure complete anonymity for surveys administered through its secure online password protected system and can guarantee no linking of any individual's identification to any submitted questionnaire. An accompanying letter of explanation was placed online with the survey introducing myself, the purpose of the survey and general directions (Appendix A).

To avoid a poorly designed and confusing questionnaires, a published guideline for designing a questionnaire from Gall et al., (2003) was employed at the onset of the design phase, as was information from the online survey company surveymonkey.com. Guidelines for developing a questionnaire that avoids haphazard, confusing and irresponsible designs were:

1. Keep the questionnaire as short as possible. Be brief, concise, simple, and specific.
2. Do not use technical terms, jargon, or complex terms that respondents may not understand.
3. Avoid using the words *questionnaire* or *survey* on the form.
4. Inform the respondents what the purpose of the questionnaire.
5. Include brief, clear instructions.
6. Provide a general expected time for completing the survey.
7. Number the questionnaire items.
8. Avoid terms that have no precise meaning, such as *several, most, usually.*
9. Avoid negatively stated questions.
10. Avoid bias or leading influences in questions.

11. State each question as briefly as possible.
12. Avoid built-in assumptions on the part of the respondent.
13. Take care to meet only the objectives of the current project.
14. Include an end of survey or thank you announcement.
Adapted from and Gall et al., (2003) and http://s3.amazonaws.com/SurveyMonkeyFiles/SmartSurvey.pdf.

Questionnaire Development

An extensive search for existing questionnaires regarding educational technology training was fruitless and it therefore was necessary to create one specifically for this project. While a qualitative descriptive case study can afford the researcher with latitude for creating a broad-based or a narrowly focused questionnaire, it is generally a mistake to quickly assemble and then deliver a questionnaire without a formal design process and validation procedures (Gall, et al., 2003). Consequently, the questionnaire used for this research project underwent a formal design process that included members from the eLearning support team from the researched university, and then a formal process to validate the perceived accuracy of the question through a review process with five university faculty members known by the researcher.

The research project has one major over-reaching question, and the research data was obtained by incorporating this exact question into the survey. The only addition to this research question presented to the online faculty was instructions to answer the question in a manner that would generate and identify useful qualitative data and that two other quick and simple surveys would follow. A second questionnaire asked each respondent to rate by matter of importance the themes and ideas generated from the data of the first questionnaire. Finally, a third questionnaire followed with the survey asking

each respondent to rank by order of importance of what has emerged from the data of the first questionnaire. The third survey consisted of a five-point Likert scale asking the respondents to indicate the degree to which the concern is an issue for them.

Pilot testing of the first questionnaire was conducted prior to the actual deployment to the participating online faculty by eliciting responses from five university faculty members known to the researcher and with no affiliation with the researched institution. In consideration not to overly burden the online faculty members at the researched institution with pilot testing the questionnaire, five university faculty members known to the researcher were given a Word document with the tentative question and were asked to reply with revised suggestions or confirmation of understanding. With the process of pilot testing the questionnaire, there were suggestions made regarding the instructions. The research questionnaire was considered ready for deployment upon commencement of this procedure and consultation with the eLearning team of the researched university. The second and third questionnaires were so straight-forward in design as to not require pilot testing.

Data Analysis

The analysis of qualitative data returned from written documentation or visual observations is very much different than the analysis of quantitative data which is usually interpreted through mathematical analysis of response frequencies. Where qualitative data requires an interpretation of opinions and behaviors often through an analysis of written words (Gall, et al., 2003), quantitative data is assumed to be invariant across researchers and is analyzed through content analysis of variables that have a singular

interpretation. Mathematical analysis is often applied to the frequencies of responses of the quantitative variables for an understanding of meaning and relationships. However, qualitative data appreciates that the meaning of text and observations resides in the researchers minds and can or will vary depending upon interpretation from person to person or over time (Gall, et al., 2003).

The process of interpretation does not invalidate qualitative data. However, it must be understood that the data returned for this study was analyzed through an interpretive manner that is understood through this researcher's point of view and from generalizations gleaned from personal knowledge and experience. Many qualitative research projects are analyzed by a team of multiple researchers or a team of analysts adept at content analysis of qualitative data which can greatly aid with accurate interpretation of data. However, a single researcher can accurately comprehend the raw data from a qualitative research project. Any interpretation of qualitative data presents the issue of bias into the research project, and this is not necessarily a problem if proper analytic tools are used and biases are understood an acknowledged during the analysis process (Corbin & Strauss, 2008). It was understood that the data analysis of this research project was a singular effort on the part of the researcher.

From the qualitative data generated returned from the first questionnaire, the data was analyzed according to standard procedures for qualitative research. The process of analysis began with first reading through the entire data collection in order to create a general understanding of what the participants are saying, but resisting the temptation to make notes or single out any terms or concepts, and rather capture a broad understanding

of the participant's experience with the questionnaire. Computer software, such as SPSS, SAS, or MAXQDA can be of assistance with qualitative data; however, it was opted not to use software and to analyze the data by manually. This option was chosen to explicitly avoid pitfalls of incorrect interpretation of data that often arises from computer application of artificial intelligence, or machine interpretation, and to provide a reflective analysis of what was being said (Corbin & Strauss, 2008). The analysis of these data was undertaken, and must be understood, with having no simple explanation of results, but rather an appreciation for the complexity of the world we live in combined with an attempt to follow standard qualitative analysis procedures.

The process of analysis began with *open coding*, which began by reading all the data looking for various concepts of information submitted by the respondents. Following the Corbin and Strauss (2008) analysis process, the coding process began by determining various concepts from that data and then determining the abstract level of each. The abstraction level of each concept was grouped into high-order and low-order ideas, with the high-order concepts denoting the major categories or themes of responses from which to proceed with further analysis. The high-order concepts were noted as the named categories of the preliminary analysis, with each category developed per question rather than any overall category stemming from the questionnaire analysis.

The second process of analysis was to examine the properties of each category, looking for the characteristics that define and describe each category in a manner that gives meaning to the results of the respondents. The examination of the properties of each category aided with the separation of bits of data, as well as the association of bits of

data, in an effort to further characterize each category into separate units of data. This second process of data analysis also allowed for sub-dividing the broad interpretation of each category into more themes important to begin the process of defining the true nature of each category. Sub-dividing each category also provided the ability to break apart and delineate the concepts of each category for further review (Corbin & Strauss, 2008).

The third process of analysis was to examine the properties and dimensions of each category and sub-category in a manner that discovered the variances and characteristics of each property. This process allowed for the development of explanatory reasoning in which to later associate and link concepts from other categories. The association of concepts avoided the possibility of having a lot of data without any substantive overall depiction of the respondent's true thoughts regarding educational technology training (Corbin & Strauss, 2008).

The analysis of the qualitative data yielded several concerns and ideas which were identified. These data allowed for a generalization sufficient enough in which to create a list of concerns and ideas that became the basis for the second questionnaire. In an effort to generate quantitative data of value, the resulting concerns and ideas were listed into a questionnaire which asked the research participants to rate from most important to least important, with a third survey asking the participants to rank the importance of each concern and idea.

Institutional Review Board

Since the research project obtained data from human participants, the project was reviewed through an institutional review board (IRB). The IRB was necessary to ensure

the confidentiality of each participant, but also to make certain no harm or significant risks were associated with the participation with this research project (Gall, et al., 2003). Upon the IRB approval, a copy was made available to the participant's university, where there it underwent an evaluation. Upon completion of both IRB processes, the data collection phase began.

CHAPTER 4: DATA ANALYSIS AND RESULTS

Introduction

This research project was conducted in order to gain understanding and knowledge of what online university faculty members consider to be effective methods of faculty development for educational technology training – what methods of training works for online faculty, and what methods do not. An attempt was made to discover exactly what faculty development practices are needed and useful for online university faculty members concerning educational technology. The main emphasis of this research project was to investigate what aspects of educational technology training online university faculty members found attractive and useful in an attempt to reduce the numbers of faculty who remain unskilled with the use of educational technology.

Much research has been published that examines how colleges and universities are responding to the necessity and urgency of training faculty in the use of instructional technologies in a manner that improves basic, intermediate, and advanced computer skills, as well as instructional course design strategies and distance communication techniques (Harris, 2005; Hutchison, 2001; Johnson, 2008). The majority of the research found was focused around the reflection of "best practices" for designing various technology training sessions, or steps for successful program implementation as seen by instructional designers, technical trainers, or administrators (Epper & Bates, 2001; Doutrich, Hoeksel, Wykoff, & Thiele, 2005). However, little research had been discovered that explores successful technology training exclusively from the perspective of a university professor who specializes in online teaching.

This research project was conducted in order to gain understanding and knowledge of what online university faculty members consider to be effective methods of faculty development for educational technology training – what methods of training works for online faculty, and what methods do not. An attempt was made to discover exactly what faculty development practices are needed and useful for online university faculty members concerning educational technology. The main emphasis of this research project was to investigate what aspects of educational technology training online university faculty members found attractive and useful in an attempt to reduce the numbers of faculty who remain unskilled with the use of educational technology.

This research project was a broad-based mixed methods case-study, utilizing a single survey question that instructed the participants to respond in prose with personal answers, followed by two additional surveys asking the participants to rate and then rank the important findings, or major themes, that surfaced from the initial survey question. The single survey question was developed with instructions in a manner as to not lead the participants into any particular direction, but rather asked for any and all concerns and ideas regarding faculty development for educational technology. Below is the text of the instructions for the first survey:

> Instructions: In your own words, tell us what concerns and ideas do you as an online faculty member have regarding the current and future use of faculty development for educational technology training at your institution.
> Please, do not simply create a list of concerns and ideas, but rather for this qualitative portion of the research project feel free to give any and all information possible. For instance, is technology hardware the greatest issue, or is it mostly software? Is technical training with educational

technology for pedagogy and student learning outcomes of most importance, or is computer application training of any concern to you? Training for Blackboard, or any course management application, video use, Mac vs. PC…or, if you so desire, is faculty development for educational technology a waste of your time or something of value? How can faculty development for educational technology be done better? Any concerns or ideas regarding faculty development for the use of educational technology are most welcome!

Data analysis from the 145 participants from the first survey, Survey A, yielded the following qualitative results categories which are listed here in no particular order of importance, nor are they listed with any significance in regards to any perceived value of order:

Onsite face-to-face training as well as well produced online videos
Mandatory, but credited for certifications, reviews, and tenure
Training to learn how to create a sense of online community
Tiered training appropriate with level of computer expertise
Face-to-face, just-in-time training
Flexible scheduling
Support from administration for quality training

The second survey, Survey B, asked the respondents to rate by order of personal preference the results categories from Survey A. Below is the text of the instructions for the second survey:

Rate the following by order of personal preference using the provided Likert scale:

Onsite face-to-face training as well as well produced online videos
Mandatory, but credited for certifications, reviews, and tenure
Training to learn how to create a sense of online community
Tiered training appropriate with level of computer expertise
Face-to-face, just-in-time training
Flexible scheduling

Support from administration for quality training

The third survey, Survey C, asked the respondents to rank by order of personal preference the significant results from the qualitative survey, Survey A. Below is the text of the instructions from the qualitative survey, Survey C:

> Rate the following by order of personal preference using the provided Likert scale:
>
> Onsite face-to-face training as well as well produced online videos
> Mandatory, but credited for certifications, reviews, and tenure
> Training to learn how to create a sense of online community
> Tiered training appropriate with level of computer expertise
> Face-to-face, just-in-time training
> Flexible scheduling
> Support from administration for quality training

Email notifications of the surveys went to the researched university's total 872 online faculty, with responses from 155, resulting in a 17.7% response rate. Ten responses consisted of information of no use for the data analysis, such as statements of "None at this time," "No concerns," and "I think they do a good job," and were eliminated. Consequently, 145 responses were analyzed, making the valued response rate 16.6%. Anonymity was assured by using the online email survey application Zoomerang®, and was administered by the research institution's online support staff.

Qualitative Analysis

The data generated from the qualitative question, Survey A, while plentiful, had responses that were very short, often single sentences, and thus made the discovery of generalized concepts and themes easy, but deeper examination of concept and theme dimensions and properties difficult. However, as the data analyzed yielded what might

seem as superficial descriptions, the concepts and themes discovered are in line with a broad-based study where initial high-level concept and theme discovery is paramount for further research. The analytic strategy employed was thorough and reached a point of saturation with the response data. After analyzing the data thoroughly over a time span of two weeks, several concepts and themes emerged. The dimensions and properties of the qualitative data helped delineate the concerns and ideas from online faculty regarding training for educational technology.

Concepts and Themes

Listed below, in no order of importance or discovery, are the concepts and themes derived from the data:

Onsite face-to-face training as well as well produced online videos
Mandatory, but credited for certifications, reviews, and tenure
Training to learn how to create a sense of online community
Tiered training appropriate with level of computer expertise
Face-to-face, just-in-time training
Flexible scheduling
Support from administration for quality training

Supporting comments gave insight on the range of properties and dimensions that helped formulate and validate each concept and theme. Several supporting comments are listed below:

Onsite face-to-face training as well as well produced online videos

1. I believe more in-person training would be beneficial for many instructors.
2. Often, there needs to be availability to get live one-on-one help which is hard in the online educational arena.

3. I would like more brick and mortar training session. I understand that we are online instructors but too often the system is terribly slow while training. If we were together on campus or at a designated site, we could interact and learn exponentially.
4. I could always use more training, especially when it is packaged in a user-friendly format. I'd much rather watch a 5-minute training video on my own time than sit through some 2-3 hour training workshop; my life just doesn't allow for that kind of time commitment.
5. I would like to see initial training done in small groups "live", followed by several types of reinforcement training (live; on-line; webinars; archived materials, etc. etc.).

Mandatory, but credited for certifications, reviews, and tenure

1. I would only take advantage of ed-tech training for faculty development it [sic] it (a) is required, (b) it is relevant to my work and a skill I want or need to perform my job, and/or (c) it would count toward my recertification hours in my profession. Otherwise, I would not take the time.
2. Certification is based on your result on an arcane and not terribly useful test of 50 multiple choice questions. Rather than to be legalistic in methods for certification, why not require a certain number of classroom or online professional development hours for continuing certification? This would be a lot more helpful and meaningful, I think.

3. There needs to be a greater link to tenure and promotion. Participation in these trainings should be made explicit in annual evaluation expectations.
4. I spend a lot of time learning new stuff on my own, showing up to some campus training. I feel I have good DL classes. However I know this not to be the case with many. Can we make this mandatory for all on tenure and reviews?
5. Instructors are not penalized for not meeting requirements and deadlines so are not encouraged to do so.

Training to learn how to create a sense of online community

1. While online training seems to be adequate, the lack of community acquired through personal contact is wanting. This, of course, is the down-side of online learning.
2. My biggest concern is around student involvement.
3. Many students have successfully completed the wide variety of courses, however many need the direction and guidance of advisors to ensure that they do not get "lost" while on this path. Students need to remain in contact with these advisors, understand that these are not self-paced courses, and are aware of the time needed to devote to the class.
4. Learning what requires 'true' interaction.
5. Interacting with students to better understand their educational needs.

Tiered training appropriate with level of computer expertise

1. Faculty who attend have a mix of computer and technological abilities, so the training pace is usually too slow or too fast for the individuals.

2. My concern is that technology training is usually aimed at the more advanced features of technology we have available. Often faculty need more fundamental training with new technology.
3. While I think training is adequate for those where are techno-savvy, I do not believe we have enough organized training for those who are not.
4. The on-site trainings are very generic and are usually paced for people who do not have any computer knowledge whatsoever.

Face-to-face, just-in-time training

1. I would like to have more opportunities for ands-on training when I need it.
2. Often, there needs to be availability to get live one-on-one help which is hard in the online educational arena.
3. A solution to this would be having technology experts that are readily accessible that instructors can easily contact whether they have a specific question or whether they need someone to come and sit beside them and guide them through a program or issue step-by-step.
4. In person on things I can't do myself and at a time I can manage.
5. I wish I could drive to a local Troy campus and see a demo in addition to the online help.

Flexible scheduling

1. It seems that most faculty development is offered at the main Troy site and not at the regional sites.

2. Need to be available for flexible scheduling. Archived Wimba presentations or self-paced modules are good.
3. Live (in person or web-based) training seminars, at times that adjunct faculty with day jobs can actually attend.
4. Often I cannot attend the training because of other commitments, and then there is not another session.
5. Training is often provided at times that are convenient for administrators or eCampus offices and not really at times that work well for faculty responsibilities.

Support from administration for quality training

1. The training is minimal and so is technical support.
2. Most faculty technology training feels like a waste of time.
3. We have to lead the way with integrating the live-lecture content students desire, or they will use another university.
4. We want eCampus instruction to be of a quality equal to that of classroom teaching but do we have the same training resources?
5. My concern is that the frequency of development is not in pace with the speed at which new technologies become available.

Quantitative Analysis

Survey B

Table 3 Onsite face-to-face training as well as well produced online videos

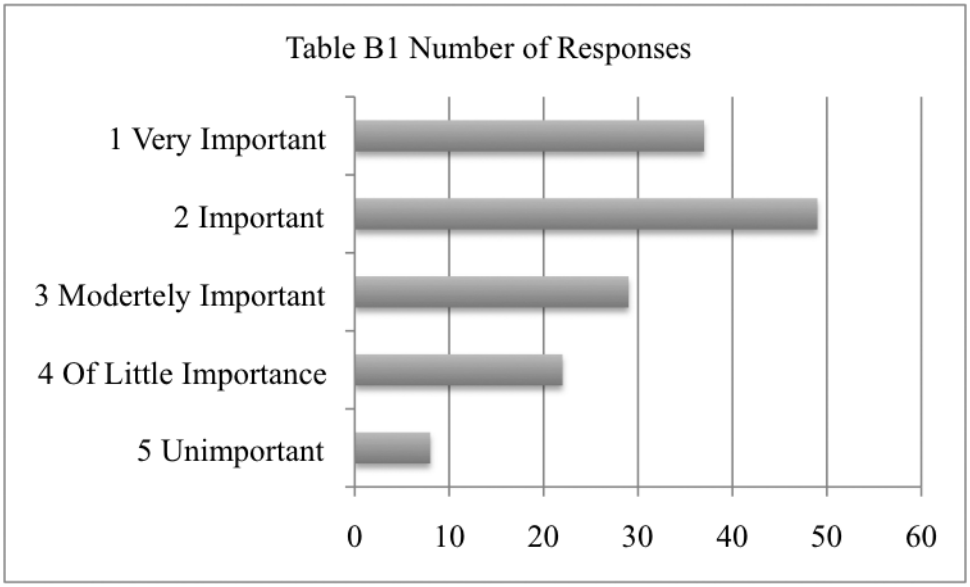


Table 4 Mandatory, but credited for certifications, reviews, and tenure

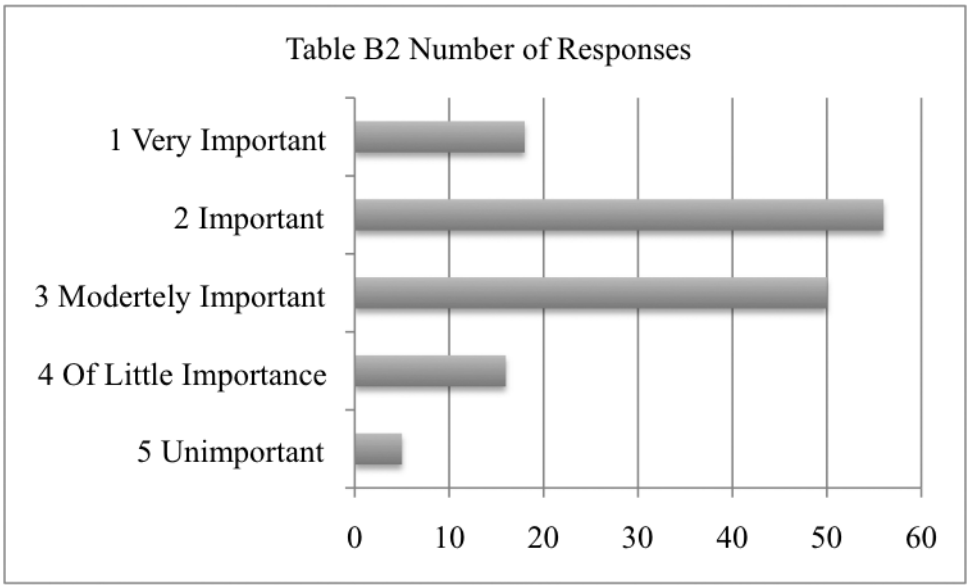


Table 5 Training to learn how to create a sense of online community

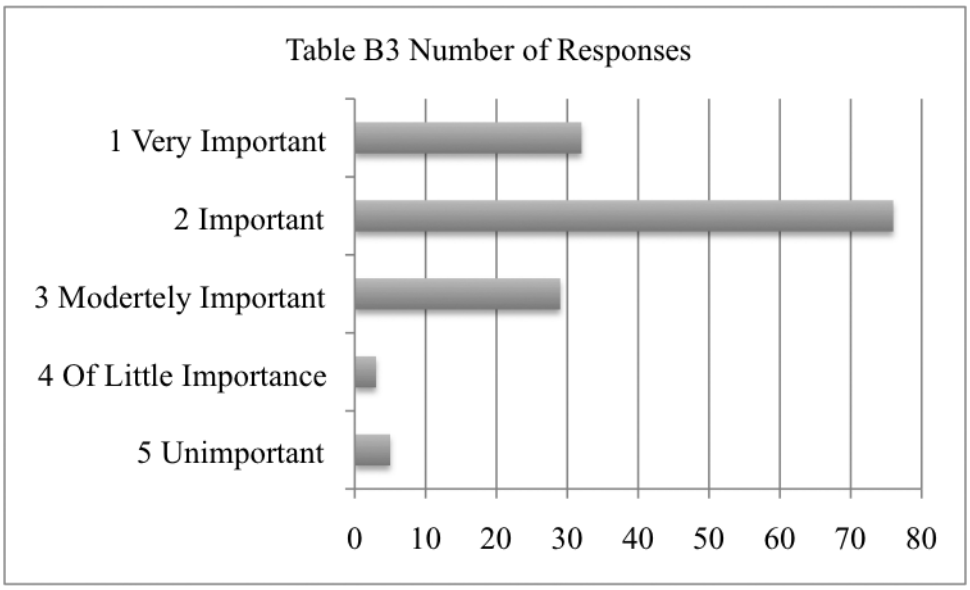


Table 6 Tiered training appropriate with level of computer expertise

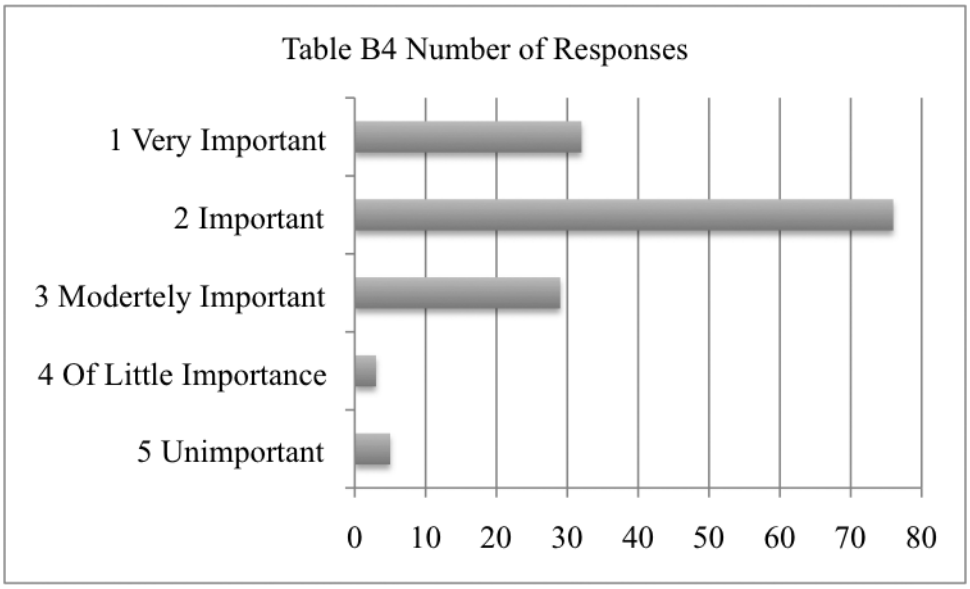


Table 7 Face-to-face, just-in-time training

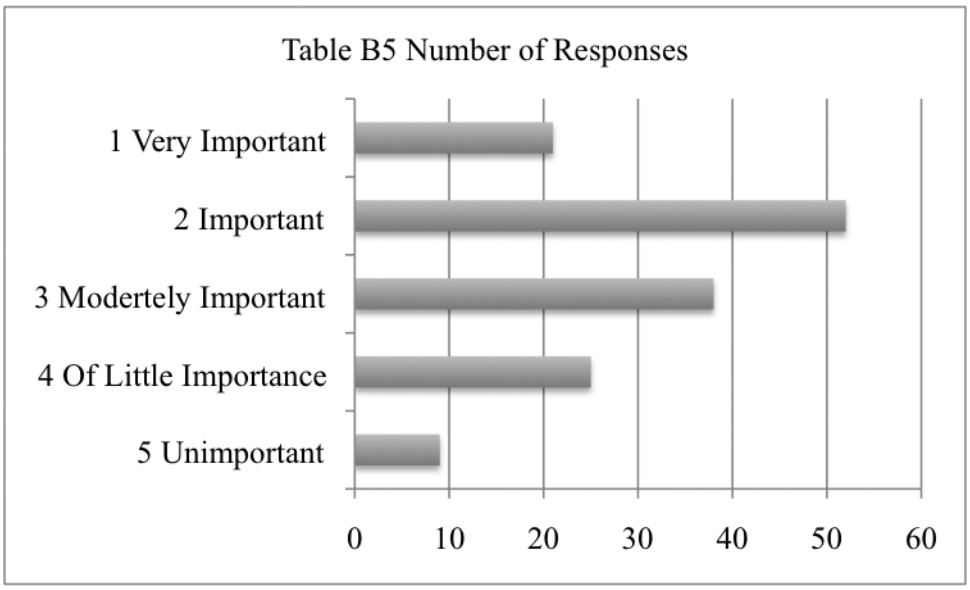


Table 8 Flexible scheduling

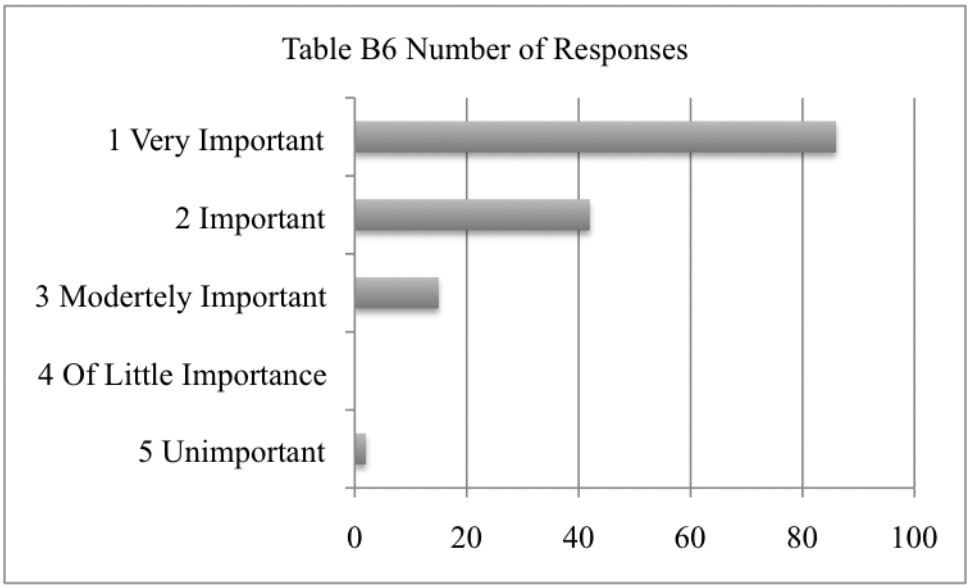
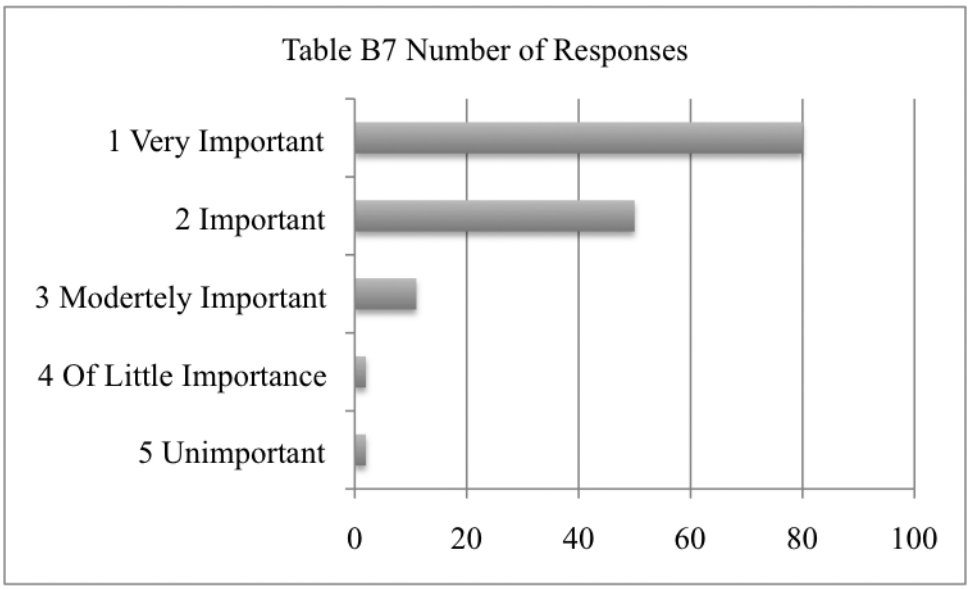


Table 9 Support from administration for quality training



Survey C

Table 10 Onsite face-to-face training as well as well produced online videos

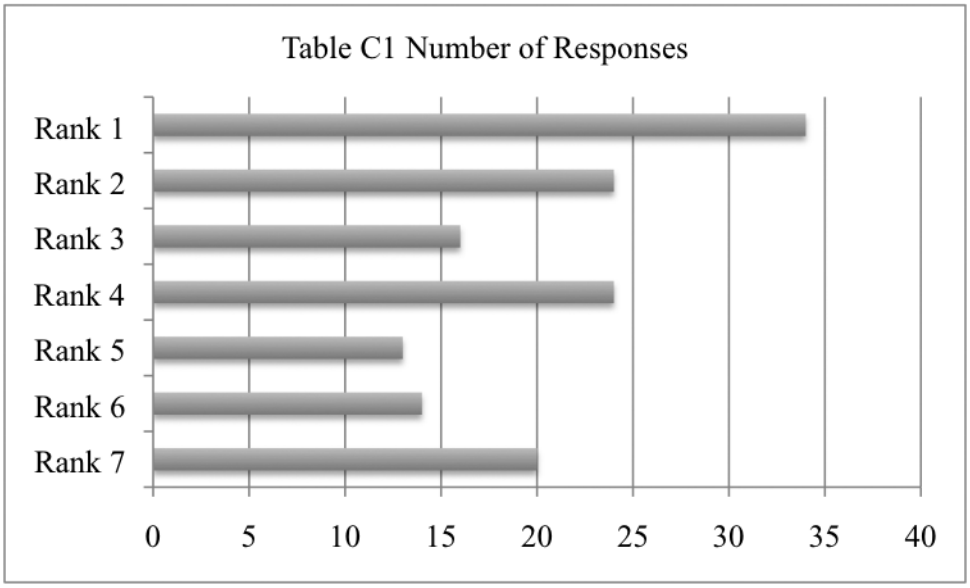


Table 11 Mandatory, but credited for certifications, reviews, and tenure

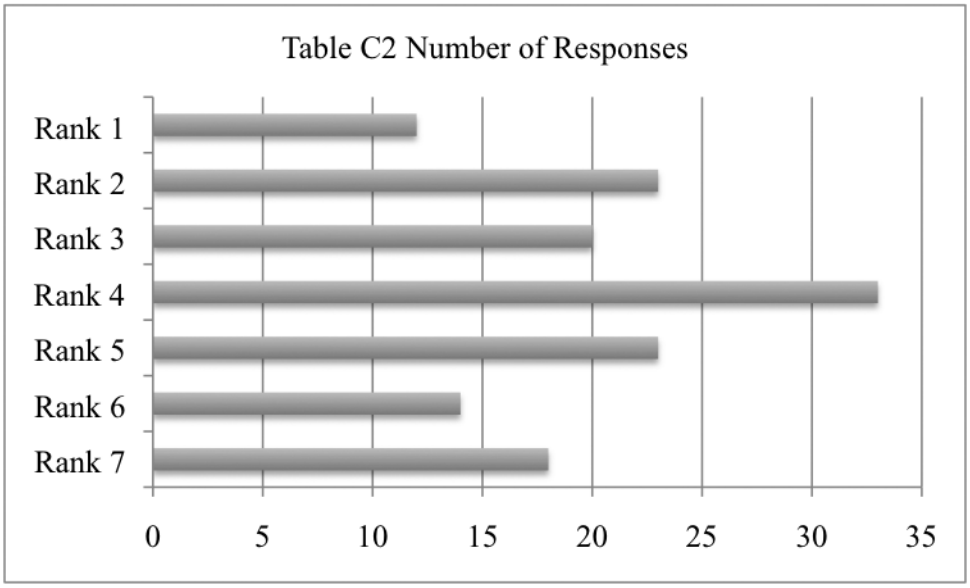


Table 12 Training to learn how to create a sense of online community

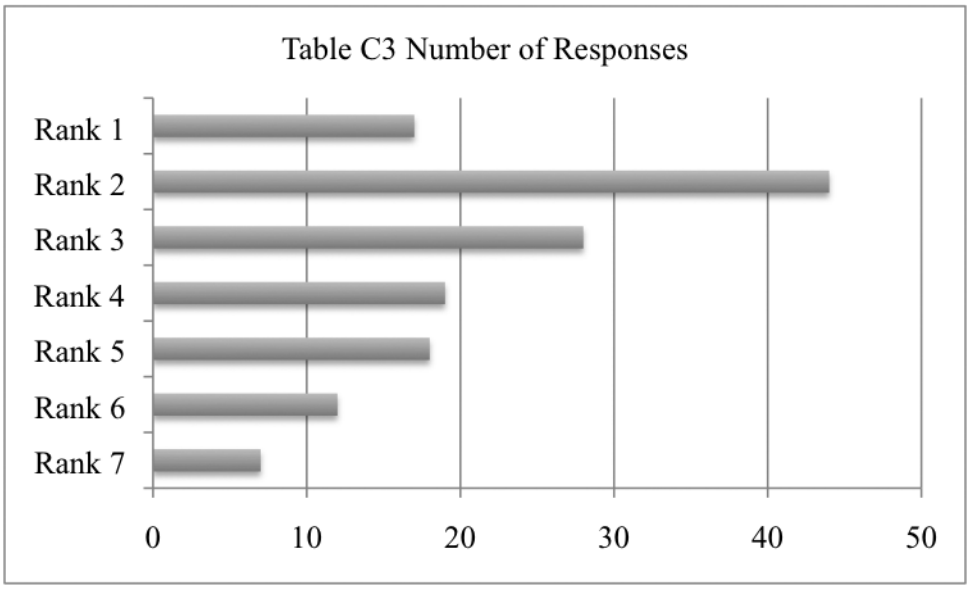


Table 13 Tiered training appropriate with level of computer expertise

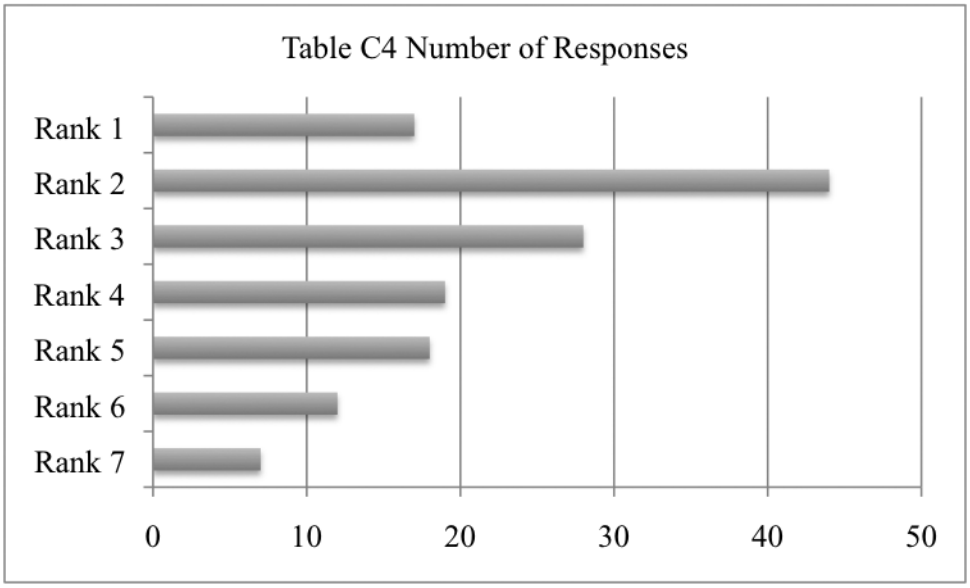


Table 14 Face-to-face, just-in-time training

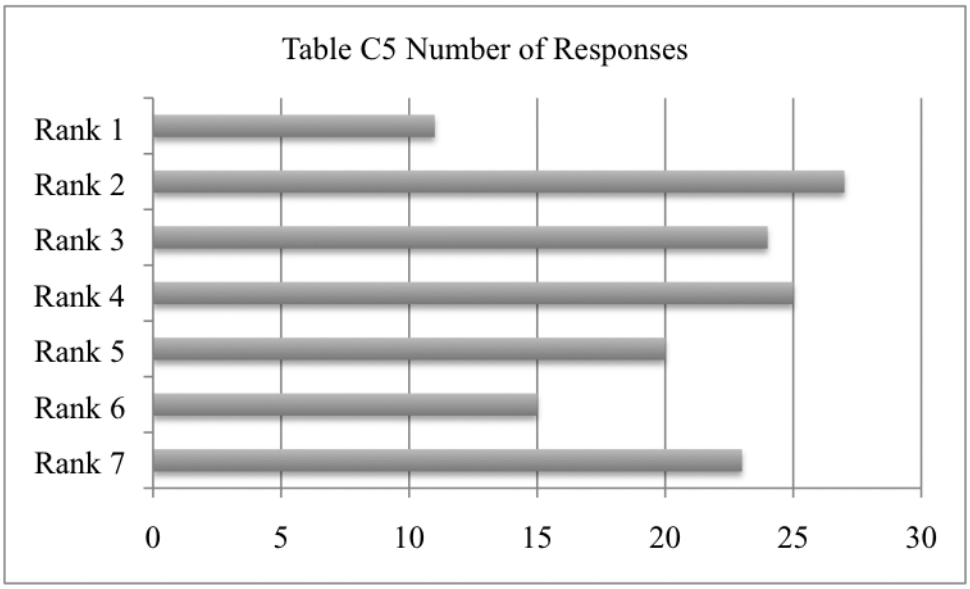


Table 15 Flexible scheduling

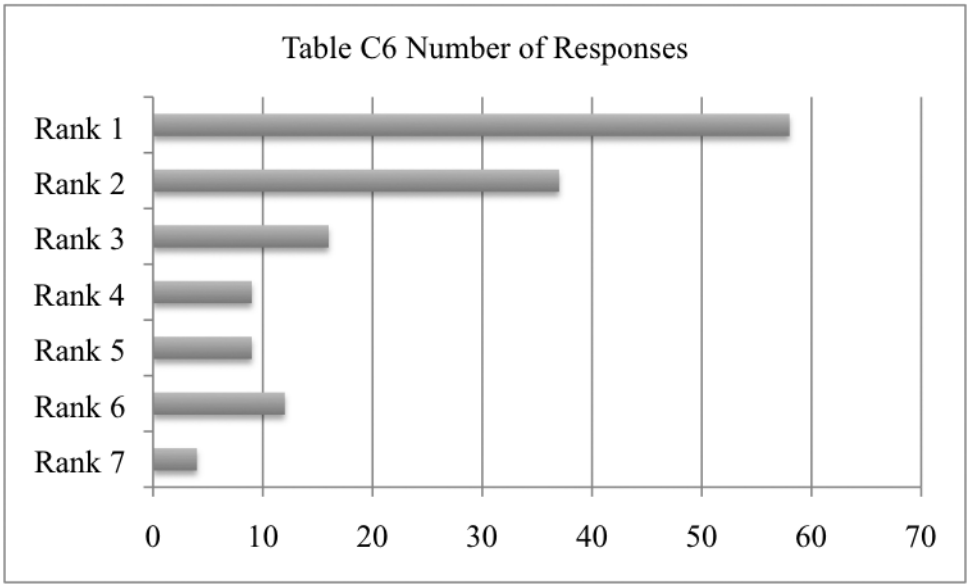
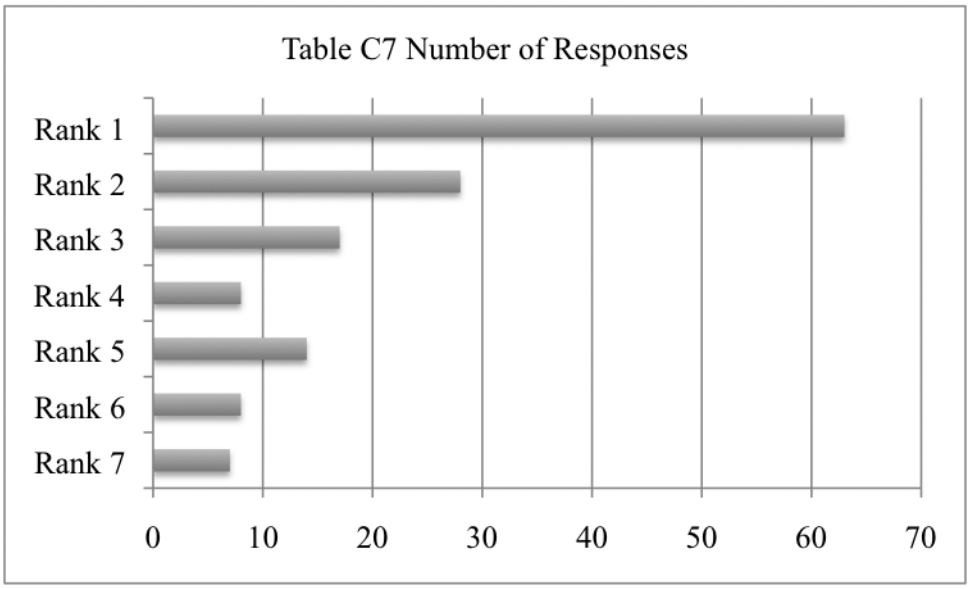


Table 16 Support from administration for quality training



Summary

The data analysis presented in this chapter came from first a thorough analysis of the qualitative data, followed by a Delphi technique of returning to the participating faculty for a rating and ranking of the concerns and ideas. The data presented was complimentary to the premise of this research project in yielding a broad-based perspective of the concerns and ideas of online faculty regarding training for the use of educational technology. There was confidence in a thorough analysis of the qualitative data to the point where no additional information can be gleamed as the qualitative data underwent multiple readings over a period of several weeks in order to reach a point where further analysis did not produce any additional information. The quantitative data is straight-forward and was crucial to the summary, discussion and recommendations presented in chapter five.

CHAPTER 5: SUMMARY, DISCUSSION AND RECOMMENDATIONS

Summary

As a broad-based study, this research project was conducted in order to gain understanding and knowledge of what online university faculty members consider to be effective methods of faculty development for educational technology training – what methods of training works for online faculty and what methods do not. An attempt was made to discover what faculty development practices are needed and useful for online university faculty members concerning educational technology. The main emphasis of this research project was to add to the body of knowledge regarding what aspects of educational technology training online university faculty members found attractive and useful in an attempt to reduce the numbers of faculty who remain unskilled with the use of educational technology.

A broad-based research approach was chosen due to the lack of prior research found regarding specific concerns and ideas directly from online faculty for training with educational technology. This research study addressed the lack of prior research by employing a very broad question, allowing participants an opportunity to express any concern or idea regarding faculty development for educational technology without any preconceived impression of what is of value and what is not of value. This broad-based research study addressed the problem of the lack of prior research on this particular topic, and provides a rich foundation for further research by discovery of interesting concerns and ideas from online faculty.

The research design for this study was a broad-based case study using mixed-methods research methodology incorporating the Delphi technique of iterative questionnaires. The study relied upon a single exploratory survey question to gather qualitative information directly from online faculty in an effort to understand educational technology training perspectives. The study then returned with an additional questionnaire asking the online faculty to *rate* by importance the data findings, and later a third questionnaire asking the online faculty to *rank* the importance of the data findings.

Research Question: What concerns and ideas do you have as an online faculty member regarding the current and future use of faculty development for educational technology training at your institution?

Research survey A. The qualitative analysis of the research question yielded seven concepts and themes deemed important and of value to the research project. These concepts and themes were determined to be of value by the frequency of appearance in the response data supplied by the respondents. Listed below, by no order of importance, are the results from the qualitative analysis:

1. Onsite face-to-face training as well as well produced online videos
2. Mandatory, but credited for certifications, reviews, and tenure
3. Training to learn how to create a sense of online community
4. Tiered training appropriate with level of computer expertise
5. Face-to-face, just-in-time training
6. Flexible scheduling
7. Support from administration for quality training

The concepts and themes interpreted from the qualitative data is significant in understanding the concerns and ideas from online faculty regarding faculty development for educational technology due to the broad range of suggestions that can be categorized into these seven concepts and themes, but remains elusive because of its inherent broadness. Typical of any broad-based study is the range of data information can seem to widen the issue rather than focus it. The concepts and themes are appropriate in that they contained sufficient frequency in response from the online faculty, are directly related to the subject of faculty development for educational technology, and are not vague or confusing when taken singularly.

However, without the additional information received through the two quantifying surveys the data exposed through qualitative analysis does yield important information, but remains incomplete. On the surface, the preliminary analysis of the qualitative data yields no surprises or unreasonable demands, nor does the data have any relational contradictory assertions within itself. It is not speculation to imply that anyone experienced with tech-support in the educational arena would be sure to encounter suggestions such as these from faculty, making the qualitative data seem reasonable and plausible. Returning with two additional quantitative surveys was necessary for developing a sense of importance and order to the online faculty of the determined concerns and ideas from the qualitative data and gave a greater insight with developing a core theme.

Research survey B. The second survey, Survey B, asked the respondents to rate by order of personal preference the significant results from the qualitative survey.

As a single-item Likert score rating, two concepts and themes far outranked the others in the *Very Important* category: 'flexible scheduling,' and 'support from administration for quality training.' The concept and theme 'mandatory, but credited for certifications, reviews, and tenure' was at the bottom, receiving low numbers among faculty for this concept and theme to be deemed *Very Important*. The results below are the percentages of faculty who, when considering each concept and theme individually, gave a *Very Important* rating on that concept and theme:

1. Support from administration for quality training (59.3%)
2. Flexible scheduling (55.2%)
3. Onsite face-to-face training as well as well produced online videos (25.5%)
4. Tiered training appropriate with level of computer expertise (22.1%)
5. Training to learn how to create a sense of online community (22.1%)
6. Face-to-face, just-in-time training (14.5%)
7. Mandatory, but credited for certifications, reviews, and tenure (12.4%)

Perhaps a better analysis of the quantitative data from Survey B comes by combining the single-item Likert score ratings of *Very Important* and *Important*, giving a better understanding of what online faculty deem as valuable. With this technique, the top two concepts and themes remain to far outrank the others. However, support from administration for quality training takes the top position with 89.6% and flexible scheduling drops to second with 88.2%. Low on this list remains face-to-face, just-in-time training with 49%. The concepts and themes in the middle remain unchanged. Using

the combined Likert score ratings of *Very Important* and *Important*, the results of Survey B are:

8. Support from administration for quality training (89.6%)
9. Flexible scheduling (88.2%)
10. Tiered training appropriate with level of computer expertise (75.5%)
11. Onsite face-to-face training as well as well produced online videos (59.3%)
12. Mandatory, but credited for certifications, reviews, and tenure (57.9%)
13. Training to learn how to create a sense of online community (55.2%)
14. Face-to-face, just-in-time training (49%)

Research survey C. The results of Survey C was a simple ranking by order of importance, and is similar in results from Survey B. Support from administration for quality training was ranked first and flexible scheduling ranked second. And, again, face-to-face, just-in-time training was ranked last. However, each concept and theme, regardless of ranking, has value due to the fact that multiple online faculty created each through various comments. The final ranking order by highest ranking votes is:

1. Support from administration for quality training (42.8%)
2. Flexible scheduling (39.3%)
3. Onsite face-to-face training as well as well produced online videos (23.4%)
4. Training to learn how to create a sense of online community (20.7%)
5. Tiered training appropriate with level of computer expertise (11.7%)
6. Mandatory, but credited for certifications, reviews, and tenure (9.0%)

7. Face-to-face, just-in-time training (7.6%)

Discussion

Support from administration for quality training. Prior research of Eble, McKeachie, Green, Sorcinelli and Aitken (as cited in Gillespie et al, 2002) suggest that faculty development programs are most effective and are crucial to success when strong support by administration exists. Not only is budgetary support vital, but administrators need to participate and give voice to the significance of faculty development programs as an institutional value (Gillespie et al, 2002). As faculty development programs primarily focus on enhancing teaching skills, faculty development that is strategically planned across the institution is most likely to succeed with participation and be most effective (Sorcinelli, et al., 2006). This research report did not review whether or not sufficient administrator support mechanisms, administrator participation, or institutional values for faculty development currently exist, but gives weight to the value that online faculty place for administrative support.

Flexible scheduling. With the result of much research determining that online education requires more time from faculty (Lofstrom & Nevgi, 2007; Restauri, 2004; West, et al., 2007), it is safe to declare that online faculty have a busy and full work schedule. Couple this issue with online faculty working in various geographical locations, flexible scheduling should be a prime consideration of any faculty development program with participation from online faculty, as this study suggested.

Onsite face-to-face training as well as well produced online videos. Regarding what actual faculty development techniques are of value to online instructors, this study

concludes that both face-to-face as well as online resources are desired. Prior research shows that there is no best method or any singular approach to faculty development methodologies across various educational institutions (Bates, 2000; Dusick & Yildirim, 2000; Schneebeck & Hanley, 2001), but the results of this study determined that online faculty desire face-to-face training sessions in addition to online video training.

Training to learn how to create a sense of online community. While much prior research declares that moving to online instruction for faculty experienced in face-to-face instruction is a radical paradigm shift (Hardy & Bower, 2004; Johnson, 2008; Kirtman, 2008), it might seem surprising to see this concept and theme ranked fourth on the list. The formation of learning communities is to promote student participation, and thus student learning, and there are many techniques developed for creating online learning communities. In an in-depth review of a single online course, Shieh et al. revealed a failure of the instructor to fully develop online teaching methodologies such as participatory, social, and collaborative learning (p. 66), which is the heart of an online learning community. Massy and Zemsky (2004) posit that there remains much to be learned and understood regarding online education, and it would seem plausible that the methods to effectively create online communities is still at its infancy and needs further development.

Tiered training appropriate with level of computer expertise. Common comments regarding tiered training appropriate with level of computer expertise was either the first training session in a particular training series was worth the time and effort but the trainers themselves were not high-end experts on the subject and could not provide real

expertise; or, the training sessions always obliged the lowest skilled faculty by slowing training and keeping the training from moving into more difficult areas. As a training resource, internal talent can provide motivation for learning and coupling experienced faculty with novice faculty can offer encouragement for participation (Panda & Mishra, 2007), but placing novice technology users with advanced technology users can frustrate both levels of learners. Careful design of educational technology training must ensure that the training does not remain at an introductory level or that advanced training is designed for advanced users only.

Mandatory, but credited for certifications, reviews, and tenure. Mandatory participation remains important enough for faculty to declare this as many participants in the research project expressed frustration with fellow faculty who were continually technology challenged or had little understanding of the possibilities of various educational technologies already in place. Providing various forms of recognition and rewards for the time and effort of faculty participation does have value. However, the forms of recognition were deemed vague by Eble & McKeachie (1985) and Sorcinelli (1985). Gillespie et al. (2002) posit that rewards range from formal to informal, noting such recognition as class-free time, release time, luncheons, gift certificates, or a designation as an experienced mentor to aid other faculty. This study shows recognition rewards would be more valuable when applied towards tenure and job security. Crowley (1995) suggested faculty development that expanded employment options or created new roles for faculty were of the most limited in design and practice. Recognition that faculty could declare that the time spent with faculty development for educational technology

aided their professional standing and promotion possibilities leading to greater job security would be of most value.

Face-to-face, just-in-time training. As a priority, face-to-face, just-in-time training ranks at the very bottom and is clearly not a primary goal of faculty development for educational technology. This finding suggested that faculty prefer a more formal and structural institutional approach rather than dependence upon last minute assistance.

Core theme: There is a dependency for all concepts and themes to require existing training already in place, or in other words, provided by administration. Although prior research that tells us faculty desires direct input on the creation and design of faculty development (Fleming, et al 2004; Kort, 1992; Wells, 2007), this research did not produce a single comment from the 145 participants supporting this. The data tells a story of participation in, or ideas to change, existing faculty development programs. Absent from the data is any claim for increasing ownership or participation in the design of faculty development for educational technology. Through implied dependency, the data shows faculty expressing each concept and theme in a manner that requires existing programs and contexts of faculty development for educational technology by making reference to the determined concepts and themes through content changes and administrative support. Any desire for faculty ownership or participation in the design process of faculty development for educational technology was absent in the data. Gillespie, et al. (2002) declaration that programs perceived as dictated from the top down will not work is in contrast to the findings of this research.

Recommendations

Administrators. It is recommended that administrators become familiar with the rating and ranking of the concepts and themes derived from the data of this research project, as well as giving consideration that faculty seem comfortable when these programs are directed and developed by administrators and staff. Understanding that faculty development programs are rarely successful without administrator support and involvement is vital to further training programs. At the top of the rating and ranking list are support from administration as well as flexible scheduling, and it is recommended that these desires become the cornerstone for any future development. With just-in-time training having such a low priority on the rating and ranking scales, it is recommended that formal structured faculty development programs for educational technology be the standard design.

With the recommendation that administrators become familiar with the rating and ranking of the concepts and themes of this research, is a recommendation for administrators to understand and respect that sufficient data existed to create each single concept and theme, thus giving value to each. While is it fair and understandable to give importance to the highest ranking concepts and themes, it is also important to view and respect the results of this research project in its entirety, including the core theme.

It is recommended that administrators welcome and make available further research activity in order to help define and clarify this broad-based research project. As six of the seven concepts and themes can be understood in a straight-forward manner, the top theme is ambiguous and needs further study to determine exactly the perceptions of

how online faculty define support by administrators regarding faculty development for educational technology. The researched institution provided a real-world experience in which to discover and engage data from online professors, and with the numbers of doctoral students looking for research opportunities there exists ample prospects to conduct cost-effective research to further understand online faculty concerns.

Faculty. Faculty has an equal responsibility with the creation and improvement of faculty development programs for educational technology. It is recommended that faculty become familiar with the rating and ranking of the concepts and themes derived from the data of this research project, as well as understanding that they themselves are one of the most driving factors of effective and valuable faculty development programs, and thus need to become active its development. Eble and McKeachie (1985) and Lindquist (1978) indicate that faculty development programs are most effective with faculty ownership and participation, but it was interesting to note that of the 145 respondents in this research project, not a single comment regarded this concern.

It is recommended that faculty become aware of the core theme of this research project as the core theme surfaced from the qualitative data indicate that there is a dependency for all concepts and themes to require existing training already in place, or in other words, provided by administration. Ownership and participation requires organization and design activity from faculty and, as this research project concludes, faculty need to step forward with leadership for developing the highest quality of educational technology training most effective for online faculty.

It is recommended that faculty define what 'support' from administrators actually means. A broad and nebulous term such as 'support' offers little, if any, actual advice or need from faculty regarding training for educational technology. The term 'support' can mean a variety of options in an institution of higher education and this aspect of faculty concerns and ideas is very broad to offer any ideas for substantive change and new development of educational technology training.

It is recommended that faculty participate when faculty development for educational technology is offered. Personal experience over a dozen years as a computer professional in various supporting roles for higher education faculty, this researcher has seen numerous educational technology training sessions with low faculty attendance, or cancelled outright due to lack of enrollment. This was peculiarly true when the training sessions were developed for more advanced users. Addressing one core theme and concept, tiered training appropriate with level of computer expertise, it is recommended that faculty participate in the design and creation as well as attendance of more advanced training.

It is recommended that faculty place more of an emphasis with educational technology training for the improvement of student learning outcomes (SLO's) in the online learning community. Since the beginning of online learning, online learning communities became the major effort in creating successful learning environments for the online student. Unfortunately, there remain ample disagreements on the best methods for creating online learning communities that improve SLO's, (Bonnel, 2008). Considering the movement by the regional accrediting bodies towards greater accountability for

learning through SLO's, coupled with the sharp rise in online education, online faculty need to be far more active in creating effective methods for SLO's in the online learning community.

Recommendations for Further Research

This broad-based exploratory research project was initiated due to little prior research found regarding concerns and ideas for educational technology training from the perspective of online faculty. The discovery through the data of seven (7) concepts and themes as well as the core theme that there is a dependency for all concepts and themes to require existing faculty development already in place, or in other words, provided by administration, ample ideas abound for further research. It is the hope of this researcher that further research continues in an effort at adding to the body of knowledge that aids both administrators and online faculty when designing faculty development programs for online faculty.

It is recommended that further research is conducted that clarifies and quantifies what online faculty members regard as 'support' from administrators. The term 'support' offers few clues in a substantial and quantifiable manner in a higher educational institution, as the range of support can be extremely broad, valuable to few or many faculty, and contain numerous variables. Considering the high importance regarding administrative support from the participating faculty in this project, defining and clarifying what 'support' actually entails would most likely benefit a large audience.

It is recommended that further research is conducted to discover why online faculty prefer onsite face-to-face training as was discovered with the concept and theme

onsite face-to-face training as well as well produced online videos. Research should attempt to determine whether or not online faculty view online training as offering less of a learning experience than face-to-face training. At the heart of online education is a belief that quality education can be delivered online (Rosie, 2000; Kendall, 2001; Woon, 2003), and online education offers valuable social interactions, as well as educational equivalency (King, 2001; Caronia, 2002; Kirkpatrick, 2005). Discovery of why online faculty see as more valuable face-to-face learning experiences is imperative to online education.

It is recommended that further research is conducted that discovers what incentive programs are preferred and valuable for faculty when attending educational technology training. Schneckenberg (2010) posits that rewards and career opportunities increase the motivation of faculty to develop the use of technology for learning, and further research is needed that would help determine the specifics of incentive programs, especially for online faculty. Mupinga and Maughan (2008) determined that incentives for online faculty, regarding workload compensation, vary considerably between institutions, and that faculty spend more hours teaching an online course compared to an equivalent face-to-face course, it is reasonable to expect faculty's demand for compensation when taking the time for faculty development programs. The determination of the best incentive practices for attendance of educational technology training could give more value to the entire development process from the standpoint of administrators and faculty.

It is recommended that further research be conducted that explains the low preference of just-in-time, face-to-face training, as determined in this project. Personal

experience with educational technology support is that faculty continually request personal help at the very last minute rather than attending formal training sessions. A disparity exists here between the actual practice of faculty and the results of this research project.

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Appendix

LETTER OF INTRODUCTION

Dear survey participants and fellow colleagues of higher education;

I am a doctoral student at Capella University working on my dissertation, and your institution, Troy University, has ***graciously*** accepted my research project for participation among their online faculty members. The title of my research project is "Online faculty and technology – the digital divide. Online faculty perspectives on the best practices in training university professors for the use of educational technology." Information generated from this research project will be added to the body of knowledge important to the higher education professorate, but also Troy University is interested in the results. The research project is a mixed-methods case study using the Delphi technique. The primary research question is: ***What concerns and ideas do online faculty members have regarding the current and future use of educational technology training in their institution?*** Two simple and quick surveys will follow asking only that you rank and then rate information gleaned from the qualitative data.

Throughout the process I have been in consultation with Troy University's eLearning team. Complete anonymity is assured through consultation with the eLearning team and the online survey tool Zoomerang®. The dissertation proposal has successfully passed IRB reviews with Capella.

The instructions are simple; answer the research question honestly and fully. *I only ask one thing, and that is to take some time in answering with much information, as short replies may not provide sufficient data for qualitative research.* Once the qualitative data is analyzed for themes and ideas. A copy of the results and conclusions will be made available upon request.

I thank you very much for your participation as you might understand that one of the most difficult processes with a dissertation is finding willing research participants.

It has been suggested by my mentors and advisors to reward participating faculty, and I have chosen to do so. Three (3) $100 Best Buy gift cards will be dispensed. Participation is done by selecting the link on the confirmation page after you finish the survey. The link will take you to an another site asking for drawing registration information. These two sites are not linked together, and survey information remains anonymous.

Thank you very much!

Steve Vodhanel
PhD Candidate
Capella University