CONCERNS AND PROFESSIONAL DEVELOPMENT NEEDS OF UNIVERSITY FACULTY IN ADOPTING ONLINE LEARNING

by

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B.A., Feng Chia University, Taichung, Taiwan, 1995
M.B.A., Kansas Wesleyan University, Salina, Kansas, 1998

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Curriculum and Instruction
College of Education

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Manhattan, Kansas

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Abstract

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This study utilized the Concerns Based Adoption Model (CBAM) as its theoretical framework. A mixed methods design was used to address the research questions. Both quantitative and qualitative methods were used to collect and analyze data. A non-experimental, cross-sectional survey design was used, incorporating the Stages of Concern Questionnaire (SoCQ). Quantitative measures included surveys were sent out to 253 UAF faculty. Ninety-six surveys were returned and usable, with a final response rate of 39%. MANOVA analyses were used to identify potential variables predictive of faculty member's concerns and professional development needs regarding the implementation of OL. Qualitative measures included three open-ended questions and sixteen faculty interviews, chosen through stratified sampling.

The Stages of Concern Questionnaire indicated that the majority of UAF faculty members displayed a typical SoCQ "nonuser" profile in adopting OL. Faculty's highest concerns were unrelated, self, and task concerns, with a slight tailing-up of impact-refocusing concerns, indicating resistance to OL. Individual variables found to potentially be predictive of faculty members' concerns included years of teaching experience, administrative support of technology and academic rank.

Qualitative measures revealed that overall themes were administrative support, including workload consideration and tenure recognition. Professional development needs included current technology and LMS (Blackboard) workshops. At the same time, faculty voiced their concerns about OL through the themes of instructional quality and support (technical assistance and equipment) concerns. Several faculty members also stated that they needed no support and their resistance of OL.

Recommendations for UAF included holistic approach to administrative support, proper recognition of achievements OL achievements, promotion of learner-centered methodology in the transition to OL, professional development that lead to a more collaborative community, an enhanced role for centralized support for staff engaged in OL and LMS training.

Recommendations for future studies included further qualitative studies to elucidate faculty concerns within the University of Alaska system. A national study was recommended to help faculty and administrators create better university OL policies and discover mutual expectations of how teaching and developing OL courses could be viewed as part of a new approach to workload considerations in a changing university climate, including the tenure and promotion process.

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Approved by:

Major Professor
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Chapter 1 - Introduction to the Problem

The Rise of University Online Learning

Online learning enrollment has been growing 15% annually from 2002 to 2009, while the total higher education student population has increased at an average rate of 1.5% annually during the same period. Over four million students were taking online classes in 2010 (Allen & Seaman, 2010). Moreover, a 2011 study on online learning predicted online numbers to increase up to twenty-one million in 2015, with a decline in the students attending traditional classrooms exclusively (Nagel, 2011). Many educators support online courses as one of the options of a full university curriculum and see them as critical to expanding learning options, particularly for the underserved. Also growing is the number of traditional face-to-face institutions offering online programs, with more than one in four post-secondary students now taking at least one online course (Allen & Seaman, 2010).

Online enrollment growth has been spurred by the increased time constraints on adult learners who must balance career, family, the need to further their education in an ever-changing workforce, and the desire to serve rural and distant populations without local higher education options. Online degrees and programs provide flexibility for these adults, whose schedules and responsibilities prevent them from attending a traditional program with fixed class dates, driving out of town or out of state for that purpose or for those who do not wish to commute to a physical school location due to other physical challenges. Additionally, many learners find their online classes can be more valuable to them than some traditional classroom experiences, due to increased collaboration with their teachers and peers (see Figure 1.1).

Figure 1-1 Total and Online Enrollment Postsecondary Institution 2002 to 2009

	Total Enrollment	Annual Growth Rate Total Enrollment	Student Taking at Least One Online Course	Annual Growth Rate Online Enrollment	Online Enrollment as a Percent of Total Enrollment
Fall 2002	16,611,710	NA	1,602,970	NA	9.6%
Fall 2003	16,911,481	1.8%	1,971,397	23.0%	11.7%
Fall 2004	17,272,043	2.1%	2,329,783	18.2%	13.5%
Fall 2005	17,487,481	1.2%	3,180,050	36.5%	18.2%
Fall 2006	17,758,872	1.6%	3,488,381	9.7%	19.6%
Fall 2007	18,248,133	2.8%	3,938,111	12.9%	21.6%
Fall 2008	18,698,630	2.5%	4,606,353	16.9%	24.6%
Fall 2009	19,036,860	1.2%	5,579,022	21.1%	29.3%

Source: Sloan-C 2010 Annual Report Online Learning

According to *Tomorrow's Faculty* (2009):

> Students with the advantage of youth and the capacity to embrace new technology are likely to adapt to innovations with an ease that their faculty …cannot imagine…and those who are meant to be taught end up grasping the medium of education…at a faster rate than those who are meant to teach. (Para1)

Online Learning (OL) is one element of a broader "umbrella" term--Distance Education. Distance Learning is also a synonym (Mason & Rennie, 2006). These two terms are interchangeable in the United States. Distance education dates back as early as 1728, when "an advertisement in the Boston Gazette...[named] 'Caleb Phillips as Teacher of the new method of Short Hand" (Moore & Kearsley, 2005, p.13). He was seeking students for lessons to be sent to

them weekly. Modern distance education has been practiced since Isaac Pitman taught shorthand in Great Britain via correspondence in the 1840s. The development of the postal service in the 19th century led to the growth of commercial correspondence colleges with nationwide reach (Moore & Kearsley, 2005).

Distance education, was defined by Michael Moore (2005), then director of The American Center for the Study of Distance Education, Penn State as the following:

> Distance education is planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements. (p. 34)

Distance education has many variants, which generally indicate the degree to which the internet or other technologies, such as learning management systems, e-mail, cd roms, videotapes, and other media, are used in the class. Some of these other terms include virtual education, internet-based education, web-based education, and education via computer-mediated communication.

Desmond Keegan (1988) stated the elements of online learning over twenty years ago:

1. The separation of teachers and learners which distinguishes it from face-to-face education;
2. The influence of an educational organization which distinguishes it from self-study and private tutoring;
3. The use of a computer network to present or distribute some educational content; and
4. The provision of two-way communication via a computer network so that students may benefit from communication with each other, teachers and staff. (p. 15)

Online Learning – Definitions and Background

The online learning (OL) definition adopted for this study is that of Dabbagh & Bannan-Ritland (2005): "*Online learning is an open and distributed learning environment that uses pedagogical tools, enabled by Internet and Web-based technologies, to facilitate learning and knowledge building through meaningful action and interaction*" (p.15). Online courses are those in which a minimum of 80% of the content is delivered through the internet (Allen & Seaman, 2010). Online programs, therefore, are those in which most, if not all, of the instructional elements are completed through online means in online courses. These courses differ in unique ways from traditional classroom courses that involve no online course technology use. First, online education involves computer-mediated interaction. Students communicate with their instructors and their peers via text-based messages over the internet. Second, online learning is independent of location. Students and their teachers do not need to be in the same place. Students can access their classes from any location they choose; similarly, professors are not limited by where they teach. Third, online courses are time-flexible. Students can learn according to their own schedules.

Unlike more traditional face-to-face classroom settings, in which learning is usually synchronous, online learning can be either synchronous, asynchronous, or both. However most Learning Management System (LMS) use is asynchronous (Allen & Seaman, 2010). In asynchronous learning, students and their teachers do not need to be involved in the same activity at the same time; a time delay between interactions is typical. For example, students often send e-mails and log on to discussion boards at different points in time and at their convenience. Online learning can also be synchronous. The exchange of information and ideas

in this format occurs in real time and the participants communicate directly with each other through video or audio conferencing. Additionally, online courses can have regular videoconferencing sessions as well as asynchronous assignments. Because of this flexibility of options, online learning is most useful in rural environments, in which distances between learners and colleges and universities can be a problem (Conover, 2008).

The State of Alaska – An Online Frontier

Online Learning has grown tremendously throughout the world in the last ten years, including in Alaska (Bonk & Graham, 2008), which is a largely rural state. Because of its geography, the university system faces unique opportunities and challenges. Alaska is the largest and most sparsely populated state in the nation; 698,473 Alaskans occupy 663,268 square miles (U.S. Census Bureau, 2009). Alaska is larger than the combined area of the next three largest states: Texas, California, and Montana. It is also larger than the combined area of the 22 smallest U.S. states. There is 1 person per square mile in Alaska, compared to 83 people per square mile in the entire U.S. The state extends 2,261 miles from east to west and 1420 miles from north to south, similar to the geographic span of the entire continental U.S. The following graph provides a clear comparison between Alaska to the 48 continuous states (U.S. Census Bureau, 2009).

Figure 1-2 Alaska vs. Lower 48

The vast distances, small population, and limited transportation and communications infrastructure make it a challenge for the University of Alaska to serve all Alaskans equitably. Fifty-two percent of Alaskans live in three major urban cities: Anchorage, Fairbanks and Juneau. The rest of the population is spread across massive rural areas. Some small communities consist of less than 300 residents. Yet, Alaska offers countless opportunities for discovery and innovation in education, research or creative activity, and collaboration, due to its geographic diversity.

The state's racial diversity adds to the concerns for providing appropriate education. According to the 2006–2008 American Community Survey conducted by the U.S. Census Bureau, White Americans made up 68.6% of Alaska's population. African Americans made up 3.3% of Alaska's population. American Indians and Alaska Natives made up 13.4% of Alaska's population. Hispanics or Latinos made up 5.8% of Alaska's population. Asian Americans made

up 4.5% of Alaska's population. Pacific Islander Americans made up 0.7% of the state's population. Individuals from other races made up 1.7% of Alaska's population while individuals from two or more races made up 7.8% of the state's population (U.S. Census Bureau, 2009).

The enhanced economic base for a changing education format is reflected in a recent report of the U.S. Census (2009). With a growing and diverse economy, Alaska is poised to take advantage of an increased standard of living. The 2007 gross state product was $44.9 billion, 45th in the nation. The median household income was $66,293, which was 4th in the nation, and the median family income was $77,020. Per capita personal income for 2007 was $40,352, ranking 15th in the nation (U.S. Census Bureau, 2009). The oil and gas industry dominates the Alaskan economy, with more than 80% of the state's revenues derived from petroleum extraction. Alaska's main export product (excluding oil and natural gas) is seafood, primarily salmon, cod, Pollock and crab.

Rural Student Challenges to Online Learning

The mostly rural population and need for enhanced skills are driving factors in enhancing online learning opportunities. Due to the size of Alaska, some students are located in remote villages where the only means of transportation is by airplane or snowmobile in the winter when the rivers are frozen. In 2008 an estimated 223,622 of the state’s population of 686,293 people were living in rural Alaska (USDA-ERS). The United States Department of Agriculture (USDA) Economic Research Service, in 2008, estimated a poverty rate of 12.4% in rural Alaska, compared to a 7.7% level in urban areas of the state. Though high school graduation rates were higher in Alaska than for the “lower 48”, year 2000 data reported that

15.2% of the rural population had not completed high school, versus 9.7% of the urban population lacked a high school diploma.

Rural Alaskans are increasingly taught through other technologies, which enhance the prospects of using online learning for furthering their education. Alaskan schools rely heavily on technology to provide quality education to their students because of geographic isolation, due to the difficulty in locating and retaining qualified teachers. The turnover rate of rural teachers is around 30% to 50% per year (Rural Listening Session, 2009). Northwest Star Borough School District Superintendent Dr. Eck stated: "Online learning becomes more important than ever to help high school senior to access quality university courses while staying in their hometown to help out their families." Lots of people are retooling their skills and are not in the position to come to campus. For these reasons, the Alaska legislature has made recommendations to support increased access to online learning.

Distance Learning Legislative Recommendations for the UA System

In accordance with Title 24 of the Alaska Statutes and a special request by the State of Alaska Legislative Budget and Audit Committee (2009), a performance audit was conducted on the University of Alaska's (UA) use of distance education (DE) delivery and technologies. Following are two of their conclusions:

- With limited exceptions, the University's implementation of DE delivery currently lacks a coordinated, cohesive approach, and is not student-centric.
- Generally, UA is not maximizing the use of available DE technologies.

One of the most important recommendations from the audit report that lends itself to research is as follows:

Recommendation No.3

The Vice President of Academic Affairs should ensure that faculty members receive sufficient DE technology training and technical support

UA is not providing sufficient training and technical support for faculty teaching DE courses. Various reasons contribute to inadequate resources being available, including the minimal number of training sessions and IT design staff available. (Distance Education Legislative Audit Report, 2009, p. 27)

University of Alaska System – An Overview

Alaska is an enormous land-mass, particularly for a university system: it is one-fifth the size of the continental United States; campuses thousands of miles apart; and weather that would shut down most "Lower 48" schools. This vast environment of rain forest, tundra, coastal shores and mountains is home to the University of Alaska system, established in 1917. The initial program started as the Alaska Agricultural College and School of Mines in Fairbanks, later renamed the University of Alaska. That first year, the campus was a single two-story frame building and had just six students. The school was renamed the University of Alaska in 1935 (UA publication, 2010).

The University of Alaska currently consists of the University of Alaska (UA) statewide administration and three separately accredited universities, the University of Alaska Anchorage (UAA), the University of Alaska Fairbanks (UAF), and the University of Alaska Southeast (UAS). Each of the Universities includes community campuses, and UAA incorporates the separately accredited Prince William Sound Community College (PWSCC). The University serves Alaskans through a total of 17 campuses, spanning the state from Ketchikan to Kotzebue,

and delivers services to many remote communities. The total number of students is approximately 33,000.

UAF traditionally has had the research focus and has been the doctoral granting university in the UA system. UAF is America's northernmost Land, Sea and Space Grant institution, offering 207 degrees in 126 disciplines, ranging from certificates to Ph.D's. UAF provides educational services to more than 10,000 students, primarily from Alaska, but also from other states and 42 foreign countries.

UAA was established as Anchorage Community College in 1954, and then it became the four-year University of Alaska Anchorage in 1976. UAA primarily is a teaching college offering certificate, associate and bachelor's degrees and some master's degrees. Located in the heart of Alaska's largest city, the UAA campus is nestled in the middle of a green-belt, surrounded by lakes, ponds and wildlife, and is connected to a city-wide trail system perfect for students' active lifestyles. Currently there are more than 20,000 students enrolled in more than 150 major study areas, including arts, sciences, business, education and human services.

UAS was established on July 1, 1987, with the restructuring of the former University of Alaska Juneau, Ketchikan Community College, and Islands Community College (Sitka); the University of Alaska Southeast serves the residents of southeastern Alaska with campuses in Juneau, Ketchikan, and Sitka. Currently, the total student population is around 2,800. UAS is dedicated to providing liberal arts education, educational technology, early childhood education and currently produces approximately one third of all new teachers in the state.

University of Alaska Fairbanks

The University of Alaska Fairbanks (UAF) is the flagship university in the UA system. UAF helps the state provide stewardship for its rich resources, sensitive environment,

indigenous cultures, and plays a key role in shaping Alaska's future. Since a dynamic institution must respond to the changing social, financial, and political environment, it must also cultivate new opportunities for the students, faculty, staff, and all Alaskans. Excellence requires the development of new and improved academic programs that provide educational opportunities linked to accessibility, scholarship, including creative activity, basic and applied research, and craft practice. Excellence also requires expanding extension services to bring the university's expertise to rural Alaskans throughout the state, thereby increasing outreach and engagement with rural communities, and also fostering partnerships with businesses and industries.

UAF programs have grown and gained international recognition, while fulfilling specific needs in Alaska. In fields like engineering, biology, Alaska Native studies, and ocean and earth sciences, the state is a natural laboratory and classroom. UAF includes units that focus on workforce development and the educational needs of communities through place-based and distance delivery. UAF serves Alaskan communities in a wide variety of ways, for example, providing lifelong learning opportunities, promoting economic development, and offering performances and exhibitions in the arts.

The Role of Distance Education in Alaska and the Specificity of Delivery

University of Alaska Fairbanks (UAF) faces challenges in providing excellence in distance education. The UAF Center for Distance Education's enrollment has increased more than 43% from 2008 to 2011 (UAF PAIR, 2011). One way to resolve the problem is to develop more online courses and programs accessible to meet this increased demand.

The UAF Director of Faculty Development, Joy Morrison, expressed faculty concerns about online learning. UAF faculty members are reluctant to support online learning for fear it

will reduce student enrollment in on-campus courses. The transition from traditional classroom teaching to online teaching adds to their workload in making the transition and requiring learning of the new technology in order to teach online courses. Their concerns may also include ones about the possible lack of resources to learn the new technology, lack of technical and administrative support, and inadequate incentives to make the effort (personal communication, September 13, 2010). To overcome faculty resistance and achieve a successful transition, it is imperative that faculty members have the opportunity to explore and express their biases, concerns, and expectations regarding the change to online learning, as well as the support they need for training and professional development.

The UAF Role in Online Learning and the Center for Distance Education

Distance education has played an important role in delivering education to rural communities since the 1960's when the first printed course – *Introduction to Academic Writing,* was developed by the UAF Center for Distance Education (CDE). The CDE is part of the College of Rural and Community Development (CRCD). Its primary role and focus is delivering educational opportunities to rural communities through distance learning at UAF. There are a total of six community campuses within CRCD. With the increased demands from students across the interior of Alaska, online courses and programs offerings have become an essential delivery option to provide accessible quality education.

The Center for Distance Education (CDE) was established in 1967. CDE's Independent Learning Program (IL) is the oldest distance delivery program at the University of Alaska and has offered correspondence courses for more than forty years. CDE is an Academic Service unit that provides student service and support, instructional design, and faculty professional development to all the UAF schools and colleges. There are more than 195 courses offerings

available through online asynchronous delivery and printed materials. The variety majority of courses are designed to meet the basic requirements of several degree programs. However, some courses specific to individual degree programs are also included in the online offerings. CDE currently serves more than 7,000 students across Alaska and the Lower 48, as well as internationally. All the CDE online courses have utilized Blackboard as the LMS since 2000.

UAF Online Faculty Professional Development Needs

As part of the State of Alaska's legislative audit on distance education recommendation #3, the audit suggested the following: "The Vice President of academic Affairs (VPAA) should ensure faculty receives distance education technology training and support" (2009 Alaska Legislative Audit, p. 27). In response to recommendation # 3, the UAA, UAF, and UAS Provosts are evaluating distance education training and support programs for faculty at each of their universities. They are also reviewing effective faculty training support models at other universities. Requests for support to enhance the most effective models will be made to VPAA through a statewide academic council.

Due to a lack of faculty professional development, the majority of University of Alaska Fairbanks (UAF) faculty members are not familiar with, nor are they inclined to use, instructional technology in traditional classroom teaching or to use online pedagogy. Less than 25% (UAF Office Information Technology, 2010) of current UAF courses use the Blackboard learning management system (LMS). In order to meet the educational demands of students, the training and support of faculty in integrating LMS in teaching, developing online courses and understanding online pedagogy is of greatest need.

Findings from this study will be useful in launching UAF faculty development efforts, thus pointing to strategies and approaches that can improve faculty experiences utilizing

educational technology and a fully supported LMS. The results of this study will provide recommendations for faculty leaders and university administrators involved in faculty professional development for enhancing online learning professional development opportunities for faculty and, in turn, reach more Alaskan students.

Theoretical Framework – Concerns-Based Adoption Model

Because of the rapid changes being brought about by the initiatives of the State of Alaska Legislative Distance Education audit, there is a need to view these recommendations from the perspective of UAF faculty, who are lacking professional development to utilize modern teaching technologies, in an expeditious manner. While there are potentially relevant and useful change and diffusion models, the Concerns-Based Adoption Model (CBAM) (Hall, George, & Rutherford, 1979; Hall & Hord, 2006) provides a theoretical background for examining their personal concerns in adopting these technologies. This model has had widespread acceptance in educational research because it maintains a participant-based focus in the discovery of an individual's attitudes, perceptions, thoughts and considerations toward an innovation (Petherbridge, 2007), so it is often used for technology adoption (Hall & Hord, 2006).

The Concern's-Based Adoption Model (CBAM) theory (Hall, Wallace & Dossett, 1973) grew out of the work of Frances Fuller (1969) and others as a way to assess change in education. This tool allows the individual faculty member to address changes in the educational settings in ways that include both the individual and the organization in the change process. The Stages of Concern (SOC) model provides a framework to view the "personal side of the change process" (George, Hall, & Stiegelbauer, 2006). The central assumption of CBAM is that the change process cannot progress without taking into account its impact on the people involved in the

organization. When higher education faculty are asked to adopt new technology, they can then examine their beliefs, assumptions, and values in light of these changes. Using Hall & Hord's (2006) stages of concern framework, these concerns can be identified and faculty can be supported with interventions appropriate to their level of concern (Petherbridge, 2007).

When using CBAM, individuals are categorized into one of seven stages, based on the amount of concern they have towards a change or innovation. The seven concern stages (Hall & Hord, 2006) are (1) refocusing, (2) collaboration, (3) consequence, (4) management, (5) personal, (6) informational and (7) awareness. "The Stages of Concern defines human learning and development as going through seven stages, during which a person's focus or concern shifts in rather predictable ways" (Sweeny, 2003, para. 8). Thus, the theory helps administrators to design professional development based on the types of concerns the educators have regarding a proposed change. This model helps to ease faculty concerns and reduces their resistance in order for them to be able to adopt the change.

According to Hall & Hord (2010), the CBAM model has the following ten assumptions about change:

1. *Change is learning – it's as simple and complicated as that*. Learning enables the teacher to change her practices and to use the improved and more effective program with students.
2. *Change is a process and not an event*. A one-time announcement will not affect change; rather, it is a process through which people and organizations move as they come to understand the new ways.

3. *The school is the primary unit of change*. The key organizational unit for making a change is at the level of the school staff and its leaders. Within a university, this unit may be at the departmental or college level.
4. *Organizations adopt change – individuals implement change*. A whole organization does not change until each member has changed. In another word, there is individual aspect to organizational change.
5. *Interventions are key to the success of the change process*. When individuals plan for change, they tend to concentrate on the innovation and its use, whereas they need to think about the actions that influence the process. Small interventions, such as one-to-one support for someone using the innovation, can make the difference.
6. *Appropriate interventions reduce resistance to change*. One of the big concerns regarding change has to do with managing resistance. Change can be agonizing and frustrating. Grief for the old way of doing things must be dealt with, but there are ways to facilitate change mitigating these challenges.
7. *Administrator leadership is essential to long-term change process*. Administrators have to offer support if a change effort is to be successful. In another words, the change effort will die if administrators do not engage in ongoing active support.
8. *Facilitating change is a team effort*. Collaboration is essential among all participants responsible for effecting change. Administrative leaders, support staff and teachers are all contributing factors in the success of any change.
9. *Mandates can work*. When a mandate is given and is communicated well, making the priority explicit, there can be an expectation that the innovation will be implemented.

10. *The context influences the process of learning and change*. The physical features (such as size, resources, policies) and the people factors (such as the attitudes and beliefs of the individuals) of the context affect the change process. (See Hall & Hord, 2010, p. 6 –18 for detailed explanations of each principle).

In examining the personal element of change, the CBAM model presents a way of identifying the different levels of user concerns related to the adoption of a new innovation through the "Stages of Concern" (SOC) (Hall & Hord, 2010). The SOC defines user concerns as complex representations of feelings, thoughts, considerations, and preoccupations concerning a specific issue (Hall, George, & Rutherford, 1979; Hall & Hord, 2006). Furthermore, potential users' concerns are important for the adoption process of higher education innovations and should be addressed throughout the implementation of a new innovation (George, Hall, & Stiegelbauer, 2006).

Participant-Based Approach to Change: The Stages of Concern (SOC)

According to Hall and Hord's (2006) Stages of Concern (SOC) theory, an individual's concerns change when the user becomes more experienced in the use of an innovation. User concerns (emotions, perceptions, attitudes, and feelings) related to the adoption of new instructional technologies appear to be developmental, in that earlier concerns must first be faced (lowered in intensity) before later concerns can be addressed (Petherbridge, 2007). In order to learn how to change behaviors and practices, research was conducted on Fuller's innovation (Hall & Hord, 2006). Through this work they further categorized Fuller's four levels of concerns (impact, task, self, and unrelated) into seven stages, which preserved Fuller's concerns while elucidating certain levels more fully (Table 1.1).

According to Hall and Hord (2006), "the self and impact areas have been clarified by distinguishing stages within each. Self-concerns are now divided into two stages- informational and personal and impact concerns into three- consequences, collaboration, and refocusing" (p. 139). The "task" and "unrelated" levels are clarified, respectively, as "management" and "awareness" concerns in this version of the model. With further studies and applications of the model, Hall and other researchers defined and created the seven stages of concern displayed in Table 1.1.

Table 1-1 *Stages of Concern*

	Stage of Concern	***Expression of Concern***
	6. Refocusing	I have some ideas about something that would work even better.
Impact	5. Collaboration	How can I relate what I am doing to what others are doing?
	4. Consequence	How is my use affecting learners? How can I refine it to have more impact?
Task	3. Management	I seem to be spending all my time getting materials ready.
Self	2. Personal	How will using it affect me?
	1. Informational	I would like to know more about it.
Unrelated	0. Awareness	I am not concerned about it.

Source: Hall, G. E., & Hord, S. M. (2006). *Implementing change: Patterns, principles, and potholes* (2nd ed.). Boston: Pearson/Allyn & Bacon, p. 139.

The SOC has been found useful in identifying the most intense area of concern of those involved in an innovation and has provided an understanding of some of the characteristics of potential adopters (e.g., age, amount of training, discipline, departmental support) that may influence concerns. This research has also provided some information for providing faculty professional development opportunities and other interventions that can support higher

education faculty and staff involved in the process of adopting an innovation (Adams, 2002; Petherbridge, 2007).

The Stages of Concern About an Innovation

Higher education organizations are bureaucracies that are slow to change (Petherbridge, 2007). Faculty members tend to resist change, since reforms come and go. Although the CBAM SOC model was developed in the 1970s, it has been updated to include three dimensions regarding measuring implementation in schools; i.e., the stages of concern questionnaire, levels of use, and innovation configurations. "The emergence and resolution of concerns about innovations appear to be developmental, in that those earlier concerns must first be resolved (lowered in intensity) before later concerns can emerge (increase in intensity)" (George, Hall, & Stiegelbauer, 2006, p.7). Additionally, CBAM has proven to be such a robust approach to change that it has been translated into several foreign languages, due to its wide applicability (George, Hall, & Stiegelbauer, 2006). CBAM has two uses: 1) as a tool for researchers to understand and evaluate a change process and its implementation, and 2) "as a means to develop, focus and support professional development" (George, Hall, & Stiegelbauer, 2006, p. 59). (see Table 1.2).

Table 1-2 *Stages of Concern About An Innovation*

Impact	6	Refocusing	The individual focuses on exploring ways to reap more universal benefits from the innovation, including the possibility of making major changes to it or replacing it with a more powerful alternative.
	5	Collaboration	The individual focuses on coordinating and cooperating with others regarding use of the innovation.
	4	Consequence	The individual focuses on the innovation's impact on students in his or her immediate sphere of influence. Considerations include the relevance of the innovation for students; the evaluation of student outcomes, including performance and competencies; and the changes needed to improve student outcomes.
Task	3	Management	The individual focuses on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, and scheduling dominate.
Self	2	Personal	The individual is uncertain about the demands of the innovation, his or her adequacy to meet those demands, and/or his or her role with the innovation. The individual is analyzing his or her relationship to the reward structure of the organization, determining his or her part in decision making, and considering potential conflicts with existing structure or personal commitment. Concern also might involve the financial or status implications of the program for the individual and his or her colleagues.
	1	Informational	The individual indicates a general awareness of the innovation and interest in learning more details about it. The individual does not seem to be worried about himself or herself in relation to the innovation. Any interest is in impersonal, substantive aspects of the innovation, such as its general characteristics, effects and requirements for use.
Unrelated	0	Unconcerned	The individual indicates little concern about or involvement with the innovation.

Source: George, A. A., Hall, G. E., Stiegelbauer, S. M., & Southwest Educational Development Laboratory. (2006). *Measuring implementation in schools: The stages of concern questionnaire*. Austin, TX: Southwest Educational Development Laboratory*, p. 8.*

While researchers have suggested that the involvement of faculty members is key to successful technology implementation (Ali, 2003; Morgan, 2003; Rogers, 2000; Surry & Land,

2000), a number of studies and dissertations cite faculty resistance to instructional technology as a significant obstacle to the continued growth of distance education and other distributed learning initiatives (Petherbridge, 2007; Adams, 2002; Atkins & Vasu, 2000). CBAM theory and the stages of innovation questionnaire have increasingly been used as a theoretical framework for studying faculty adoption of technology and in providing direction for professional faculty development in other countries (Yidana, 2007; Alnujaidi 2008; Al-Sarrani 2010) and in the United States (Alexandrovich, 1998; Julius, 2007; Owusu-Ansah, 2001; Petherbridge, 2007).

CBAM and Online Teaching University Faculty Development

Only three studies could be located through the ProQuest database of CBAM and faculty professional development in the higher education setting, two in the United States and one in Saudi Arabia. Owusu-Ansah (2001) studied faculty views and participation in technology-based distance education (TBDE) to determine if higher education institutional support was related to faculty concerns and their participation in TBDE in three universities in the southern part of the U.S. Petherbridge (2007) studied the influence of selected variables on faculty members concerns in a land-grant university adoption of a learning management system (LMS) and identified professional development support to help them learn to use the LMS. Al-Sarrani (2010) studied science faculty concerns and professional development needs in adopting blend learning in the three Science colleges in Taibah University, Saudi Arabia. Both the Al-Sarrani (2010) and Petherbridge (2007) studies stressed the need for faculty professional development and administrative/technical support for the change to be smooth and successful.

Owusu-Ansah (2001) found that the college or discipline, which most often comprises departments within colleges, was significant in faculty concerns about technology-based

distance education (TBDE). The colleges of nursing, science/technology and education/psychology faculty had higher task and impact concerns than faculty in the colleges of arts/sciences or business. That indicated that this group of faculty focused more on how to manage their own time most efficiently while adopting the innovation, as well as how the innovation will be received by students and colleagues, and whether it is the best alternative among existing innovations. Significant differences in concerns were identified between faculty who had taught using TBDE (prior technology used) and those who had not. Faculty who had not taught distance education courses showed less interest in TBDE than those who had. In contrast, faculty who had been involved in TBDE showed higher task and impact concerns. That identified that this group of faculty members was more likely to care about cooperating with others on adopting TBDE and exploring the additional benefits from TBDE. Owusu-Ansah (2001) found that the age of the faculty was significant in faculty concerns about TBDE. The older the faculty member was the less self and impact concerned they were about TBDE. Which revealed that this group of faculty members had very low interest in using TBDE or collaboration with their colleagues on its implementation, and were less concerned about the TBDE's impact on students. In addition, gender was a factor that influenced faculty concerns about TBDE. Owusu-Ansah (2001) discovered male faculty members had lower concerns regarding TBDE than did female faculty.

In her study on the support needed for successful LMS adoption, Petherbridge (2007) indicated the following:

> The faculty member's highest concerns were unrelated, self, and task concerns, with a slight tailing-up of impact-refocusing concerns, which may indicate some resistance to using LMSs. Faculty expressed the need for technical support, administrative support,

> time, training, evidence that LMS technologies support student learning, peer support, financial support, and improvements to the system as necessary for their use of LMSs. (p. 232)

She further stated that technology support staff members needed to ensure professional development opportunities and have administrative support in place before LSM adoption. She also recommended that university administrators facilitate a climate conducive to experimenting with technology, placing more value on teaching with technology, and making reward expectations clear for teaching in this manner. Her research issues are similar to those facing the adoption of online learning at the University of Alaska Fairbanks.

In Saudi Arabia, Al-Sarrani (2010), studied the adoption of blended learning at the University of Taibah. He found statistically significant positive relationships between science faculty technographic characteristics (attitudes toward technology integration and faculty professional development needs) and faculty use of technology in teaching by department. In addition, gender was related to higher stages of concerns in adopting blended learning. However, the other personal characteristics (age, academic rank and years of teaching experience) findings were not found to be significant. Qualitative data analysis from two open-ended questions did reveal professional development and technical support were two important themes (Al-Sarrani, 2010). He concluded that there was a great need for professional development and administrative support for science faculty to be able to adopt blended learning.

In summary, selected personal (age, gender, years of teaching experience), contextual characteristics (administrative support of technology, colleagues using technology, college, and academic rank) and technographic characteristics (prior instructional technology use, technology-related professional development, attitudes toward teaching with technology) have

been found to influence the faculty member's stage of concern in the adoption of technology innovation in higher education (Petherbridge, 2007). Faculty with little or no knowledge of online learning or other online technologies had lower level concerns than those who had adopted the technology and were using it. Lack of administrative support was a major barrier for faculty integrating technology innovation (Petherbridge, 2007; Owusu-Ansah, 2001). Both Petherbridge (2007) and Al-Sarrani (2010) found that technology adoption was significantly dependent on technical support and technology- related training to be able to make the needed changes expeditiously, as well as administrative support

CBAM's Application to Faculty at the University of Alaska Fairbanks

According to CBAM theory, faculty concerns can be anywhere between stages zero and six, based on their concerns towards offering an online learning course. As applied to UAF faculty, those who have no information technology and computer skills would be situated in the lowest concern level of awareness with a "zero.' Stage Three, Management, relates to skills that a faculty member needs in order to offer online courses. Stage Four, Consequence, would relate to faculty's concerns about OL student outcomes, because "people in this stage would be sufficiently knowledgeable that faculty would then be interested in the effect that the new method would have on learners" (Bybee, 1996, para. 9). Stage Five, Collaboration, relates faculty's concerns on working with their colleagues on implementing online learning. Faculty with the highest level of concerns, Stage Six, Refocusing, would have more change concerns than faculty situated in Stage Zero, Unrelated, since they would be knowledgeable about technology and using it, already, to a high degree, in their teaching. Thus, they would be interested in its impact and possible alternatives.

Based on these previous studies, in order to prevent University of Alaska Fairbanks faculty from a range of possible problems in adopting online learning, it would be beneficial to provide faculty with different examples of successful applications of online in higher education institutions, as well as enhanced support.

Professional development is critical for faculty to be able to make the change to online learning (Al-Sarrani, 2010; Petherbridge, 2007). Since statistically significant differences were found between Science faculty use of technology in teaching by department and their attitudes towards technology integration in the Al-Sarrani study (2010), there would likely be variations by college/department in the stages of concern toward adopting online learning at UAF. These differences could also be affected by the gender, since there was a statistically significant relationship found by Al-Sarrani (2010) between faculty gender and stages of concern in adopting blended learning. UAF College of Liberal Arts faculty were largely female. These differences could require different approaches to professional development. Additionally, adverse administrative support issues could be found at UAF that could affect adoption, based on the adverse issues (limited access to technology, technical support and lack of facilities) that were found to negatively affect faculty adoption in previous studies (Al-Sarrani, 2010; Petheridge, 2007).

Statement of the Problem

The State of Alaska legislature has determined that the University of Alaska (UA) does not provide sufficient faculty training for online learning. Title 24, recommendation #3 of the Alaska Statute (2009) requires sufficient faculty training in distance education technologies for teaching UAF distance courses. Additionally, the Alaska legislature has made recommendations to increase student access to distance learning. Therefore, there is a need to

increase faculty ability to deliver distance education courses. In order for this needed change to take place, a baseline level of faculty concerns, OL knowledge, and interest in offering distance learning courses needed to be established, as well as faculty professional development needs. UAF must respond to these state recommendations before further negative budgetary ramifications occur.

Purpose of The Study

This study investigated the concerns of full-time faculty and instructors in three colleges and schools (College of Liberal Arts, College of Natural Science and Mathematics and School of Management) and professional development needs at the University of Alaska Fairbanks in adopting online learning. This study was also in response to Title 24 of the Alaska Statute's Recommendation #3, which requires sufficient faculty training in distance education technologies for teaching UAF distance courses. The recommendation was driven by the lack of empirical data and assessment of online learning in the State of Alaska. Further, information from this study can be used to design a professional development program for faculty training in the adoption of online learning in the University of Alaska system. It was in this context that the following research study was generated.

Significance of the Study

This study took place at UAF – a Carnegie-classified doctoral/research institution in the United States. It was the first study to examine the concerns and professional development needs of faculty in using online learning at the University of Alaska Fairbanks. No other studies could be found on CBAM and the adoption of online learning at the university level in the

United States. The findings will begin a dialogue on online learning in Alaska, in particular, and add to the literature on university online learning, in general.

Research Questions and Null hypotheses

This study investigated the concerns of full-time faculty and instructors at the University of Alaska Fairbanks in adopting online learning (OL) and how these concerns related to faculty professional development needs. There were three primary research questions:

Research Question #1: Is there a significant relationship between full-time faculty personal characteristics (age, gender, and years of teaching experience) and their concerns in adopting Online Learning?

Null Hypotheses:

Ho 1.1. There are no statistically significant differences between faculty age and faculty concerns in adopting OL.

Ho 1.2. There are no statistically significant differences between faculty gender and faculty concerns in adopting OL.

Ho 1.3. There are no statistically significant differences between faculty years of teaching experience and faculty concerns in adopting OL.

Research Question #2: Is there a significant relationship between full-time faculty contextual characteristics (administrative support of technology, colleagues using technology, college, and academic rank) and their concerns in adopting Online Learning?

Ho 2.1. There are no statistically significant differences between faculty administrative support of technology and faculty concerns in adopting OL.

Ho 2.2. There are no statistically significant differences between faculty colleagues using technology and faculty concerns in adopting OL.

Ho 2.3. There are no statistically significant differences between faculty college affiliation and faculty concerns in adopting OL.

Ho 2.4. There are no statistically significant differences between faculty academic rank and faculty concerns in adopting OL.

Research Question #3: Is there a significant relationship between full-time faculty technographic characteristics (prior instructional technology use, technology-related professional development, attitudes toward teaching with technology) and faculty use of technology in teaching?

Ho 3.1. There are no statistically significant differences between faculty prior instructional technology use and faculty use of technology in teaching.

Ho 3.2. There are no statistically significant differences between faculty technology-related professional development and faculty use of technology in teaching.

Ho 3.3. There are no statistically significant differences between faculty attitudes toward teaching with technology and faculty use of technology in teaching.

Five survey instruments were combined into one in order to examine these questions. The instruments used will include the following:

1) Section one is The *Measuring implementation in schools: The stages of concern questionnaire for innovation* from the Southwest Educational Development Laboratory (SEDL) (questions 1-35). This part of the survey on technology adoption levels of faculty is to assess faculty members concerns with the using OL and technology innovation by University of Alaska Fairbanks Faculty. (See Appendix D for SEDL License Agreement.)

2) Section II: The second section of the survey will measure administrative support for teaching with technology (questions 36 - 38), which was revised from Petherbridge (2007) (See

Appendix E for Petherbridge's permission). This section will attempt to determine perceived administrative support of UAF faculty who use technology in their teaching.

3) Section III: Colleagues using technology (questions 39 - 41) involved the number and proximity of a faculty member's colleagues who were using or had used an LMS (Blackboard) to support their instructional practices. This instrument, which indicates how a faculty member's colleagues are using technology, was a revised version of Petherbridge's (2007) survey (See Appendix E for Petherbridge's permission).

4) Section IV: The fourth section measured faculty attitudes towards teaching with technology (questions 42-44), and was adapted from a dissertation survey conducted by Al-Sarrani (2010) (See Appendix F for Al-Sarranis permission). It attempted to determine UAF faculty's attitudes toward integrating technology in their instruction.

5) Section V: The professional development needs and prior instructional technology use by UAF faculty for instruction were reflected in questions 45-65. Questions 45 to 59 were adopted from Al-Sarrani (2010) (Appendix F), while questions 60 to 65 were adapted from Petherbridge (2007) (Appendix E). These questions attempted to determine the perceived professional development needs of UAF faculty in adopting OL in their teaching.

Delimitations of the Study

This study was limited to the professional development needs of the College of Liberal Arts, the College of Natural Sciences and Mathematics, and the School of Management at the University of Alaska Fairbanks. These three colleges encompass 90% of the total online courses at UAF. The majority of courses and degrees that are offered though these colleges reflect the greatest student demands and needs. There were approximately 50% faculty members from College of Natural Sciences and Mathematics, whose primary funding sources

were grants and contracts (between 50%-75%). Those faculty members either had no teaching components or taught one graduate seminar per academic year. Therefore, they either spent the majority (90%) of their time on research, with a minimum no interest in adopting OL, or they found the survey inapplicable to their particular situation.

Limitation of the Study

While data from this study might provide helpful information for use in the faculty professional development needs of on the University of Alaska Fairbanks campus, further extrapolation to other universities in Alaska and the United States have limited application, due to the different student body compositions and missions of universities.

Definition of Terms

For the purposes of this study, the following definitions will be used throughout:

Online Learning (OL): "Online learning is an open and distributed learning environment that uses pedagogical tools, enabled by internet and web-based technologies, to facilitate learning and knowledge building through meaningful action and interaction" (Dabbagh & Bannan-Ritland, 2005, p. 15).

Concerns: Concerns are a combined representation of feelings, preoccupations, reflections and contemplations concerning a particular issue (Hall, George & Rutherford, 1979; Hall & Hord, 1987; Hall & Hord, 2006).

Concerns-Based Adoption Model (CBAM): The Concern Based Adoption Model theory assigns individuals into one of its seven stages based on the amount of concern they have towards a new change. The seven concern stages are (1) refocusing, (2) collaboration, (3)

consequence, (4) management, (5) personal, (6) informational and (7) awareness (Hall & Hord, 2006).

eLive: eLive (Elluminate Live!®) is a virtual environment optimized for learning, particularly for groups to meet, present, and collaborate. Elluminate provides web, audio, video, and social networking components. Although primarily used as a synchronous or same-time tool, eLive can also be used as an online platform to support any-time (asynchronous) learners as well. It is readily available for use with all University of Alaska classes and is frequently used as a "meeting space" for international online conferences, particularly in the area of the future of education.

Faculty: The faculty in UAF consists of five categories: (1) Full Professor, (2) Associate Professor (3) Assistant Professor, (4) Instructor, and (5) Term Instructors. In this study adjunct professors are not included.

Learning Management System: The software which provides a means of administering e-learning through access system and tracking system for student progress and which also facilitates communication, assessment and content display (Mason and Rennie, 2006).

iTeach: UAF Center for Distance Education offer both a 4-day (over two weekends during regular semester) and five-day (summer) hands-on professional development workshop in online learning (e-learning) and educational technology that is suitable for those who want to enrich or supplement their face-to-face classes as well as those who are teaching at a distance, either in whole or in part.

PAIR: The UAF Office of Planning, Analysis and Institutional Research (PAIR) offers a broad array of support services to all units of the University and to external bodies as well. Its primary

purpose is to facilitate the collection, analysis and interpretation of institutional data and the provision of information to support planning and decision-making.

Abbreviations

OL: Online Learning

CBAM: Concerns-Based Adoption Model

UAF: University of Alaska Fairbanks

UAF OIT: Office of Information Technology

PAIR: UAF Planning and Analysis Institution Research

AK: Alaska

SEDL: Southwest Educational Development Laboratory

SoC: Stages of Concern

UAF CRCD: UAF College of Rural Community and Development

UAF CDE: UAF Center for Distance Education

Chapter 2 - Literature Review

Chapter Overview

The chapter begins with an overview of Fuller's Levels of Concern (1969), which establishes the basis of the Concerns Based Adoption Model (CBAM) (Hall & Hord, 2010), as well as studies of its application in higher education. The chapter then provides a general overview of online learning's foundations in distance education. Online learning in the state of Alaska is then discussed in relation to Title 24 of the Alaska Statutes recommendation #3, which requires sufficient faculty training for adopting distance education technologies in teaching UAF distance courses. The chapter then focuses on defining online learning (OL), studies of its use in higher education, its application in higher education in United States, and ends with the use of OL in delivery courses across the state of Alaska.

Fuller's Levels of Concerns – Participant-Based Change

Frances Fuller (1969) was a counseling psychologist at the University of Texas at Austin when she elaborated the founding principles for what would later be called the CBAM theory. After teaching a required psychology education course for student teachers, Fuller discovered that the final course evaluation showed 97 out of 100 student teachers rated the course "irrelevant" and "a waste of time." So, after investigating the reasons for such results, Fuller (1969) found that the three students who rated the course positively actually "were all middle-aged men and women with considerable teaching or similar experience" (p. 208). Therefore, Fuller hypothesized that the three students' concerns were different, since they already had previous background about education (Hall & Hord, 2010). As a result, Fuller started to conduct in-depth studies about the concerns of student teachers. She created a model showing

how, with increasing knowledge and experience in a teacher education program, the student teachers' concerns moved through four levels: unrelated, self, task, and impact (Hall & Hord, 2006).

1. Unrelated Concerns: most frequently found among student teachers who have not had any kind of direct contact with a school setting or school-age children. So, their concerns are not related to teaching but rather focused on their college life or about other courses outside their field of education.
2. Self concerns: Student teachers begin to develop self concerns when they begin their actual student teaching. Although they have concerns about their teaching, these concerns are still self-centered.
3. Task Concerns: Student teachers develop task concerns after a short period of teaching due to the fact that their teaching becomes their central task.
4. Impact concerns: Concerns that focus on what is happening with students and what the teacher can do to be more effective in improving students' outcomes.

At the end of her study, Fuller (1969) discovered more than two-thirds of the concerns of student teachers were in the self and task areas, with "77 percent concerned with self and 22 percent with pupil learning" (p. 215), whereas two-thirds of the concerns of the experienced teachers were in the task and impact areas. Fuller (1969) found that

> The specific concerns we have observed are concerns about the ability to understand pupils' capacities, to specify objectives for them, to assess their gain, to partial out one's own contribution to pupils' difficulties and gain and to evaluate oneself in terms of pupil gain. (p. 221)

Based on Fuller's work, Hall, George, and Rutherford (1979) expanded and identified the Stages of Concern (SoC) as one of the basic dimensions of the model. Other dimensions were later identified, such as level of use (LOU) of an innovation and the innovation configuration (IC), which identifies how stakeholders describe the innovation. The latest measure is the Change Facilitator Style Questionnaire (CFSQ), which has proven very useful in understanding critical dimensions of change leadership (Hall & Hord, 2010).

Concerns-Based Adoption Model (CBAM) Theory

Hall and Hord (2010) stated that Concerns-Based Adoption Model (CBAM) theory assigns individuals into one of the seven stages, depending on the amount of concern they have toward an innovation. The seven concern stages are (1) refocusing, (2) collaboration, (3) consequence, (4) management, (5) personal, (6) informational and (7) awareness (Hall & Hord, 2006). They point out the importance of attending to where people are on the scale and addressing questions appropriate to the level they are on at the time they are asking them. Sweeny (2010) explained the first three stages are focused on one's self. A clue might be the use of "I" and "me", as in "I am frustrated." The middle stage "management" is focused on the mastery of tasks to the point that they become routines and are thus easier to do. The last two Stages of Concern are focused on the results and impact of the activity. "The Stages of Concern is the best tool there is for planning professional development activity to address the individual needs of people" (Sweeny, 2010, para. 2).

The importance of the CBAM framework is based on the notion that facilitating change means understanding the existing attitudes and perceptions of those involved in the change process, with the key assumption of CBAM being that the single most important factor in any change process is the individual involved (Hord, Rutherford, Huling-Austin, & Hall, 1987).

Thus, the theory helps administrators to design professional development programs based on the types of concerns that the faculty members have regarding change. These programs help to decrease the instructors' concerns in order for them to be comfortable in adopting the change.

According to Hall & Hord (2010), supporting all dimensions of the CBAM model are the following ten assumptions about change:

1. *Change is learning – It's as simple and complicated as that*. Learning enables the teacher to change her practices and to use the improved and more effective program with students.
2. *Change is a process and not an event*. A one-time announcement will not affect change; rather, it is a process through which people and organizations move as they come to understand the new ways.
3. *The school is the primary unit of change*. The key organizational unit for making a change is at the level of the school staff and its leaders. Within a university, this unit may be at the departmental or college level.
4. *Organizations adopt change – individuals implement change*. A whole organization does not change until each member has changed. In another word, there is individual aspect to organizational change.
5. *Interventions are key to the success of the change process*. When individual plan for change, they tend to concentrate on the innovation and its use, whereas they need to think about the actions that influence the process. Small interventions, such as one-to-one support for someone using the innovation, can make the difference.
6. *Appropriate interventions reduce resistance to change*. One of the big concerns regarding change has to do with managing resistance. Change can be agonizing,

frustrating and grief must be dealt with, but there are ways to facilitate change mitigating these challenges.

7. *Administrator leadership is essential to long-term change process*. Administrators have to offer support if a change effort is to be successful. In other words, the change effort will die if administrators do not engage in ongoing active support.
8. *Facilitating change is a team effort*. Collaboration is essential among all participants responsible for effecting change. Administrative leaders, support staff and teachers are all contributing factors in the success of a change.
9. *Mandates can work*. When a mandate is given and is communicated well, making the priority explicit, there can be an expectation that the innovation will be implemented.
10. *The context influences the process of learning and change*. The physical features (such as size, resources, policies) and the people factors (such as the attitudes and beliefs of the individuals) of the context affect the change process (see Hall & Hord, 2010, pp. 6 –18 for detailed explanations of each principle).

Stages of Concern

In the first conception of CBAM, the term "Stages of Concern*"* (SoC) was intentionally selected to reflect the idealized, developmental approach to change that was valued (Hall, Wallace, & Dossett, 1973). Hall and Hord (2010), through further research, categorized Fuller's four levels of concerns - impact, task, self, and unrelated, into seven stages of concerns, which further delineated them, yet preserved Fuller's original concerns (Table1.1). According to the SoC model, the concerns of individuals change in a logical sequence as users become more skilled in the use of an innovation, successively from unrelated, to self, to management, to impact concerns (Fuller, 1969; Hall, George & Rutherford, 1979; Hall & Hord, 2010).

Hall and Hord (2010) stated that "the self and impact areas have been clarified by distinguishing stages within each. Self concerns are now divided into two stages- informational and personal- and impact concerns into three- consequences, collaboration, and refocusing" (p. 72). The "task" and "unrelated" levels are clarified, respectively, as "management" and "awareness" concerns, in this version of the model. With further studies and applications of the model, Hall and other researchers created definitions for each of the seven stages of concern displayed in Table (1.2). One of the greatest strengths of the SoC refinement of the CBAM model is that it acknowledges and provides a precise language for the feelings individuals have when experiencing a new program, practice, or technology (Petherbridge, 2007).

The theory, as applied to full time faculty from the College of Liberal Arts, School of Management and College of Natural Science and Mathematics in UAF, functioned in the following way: those who inquired about information and technology skills would be placed in the lowest concern stage of awareness with (stage zero). The concern would be with faculty's abilities and attitudes towards using the computer, software, LMS and the internet. The Informational stage (stage one), dealt with the beginning of the process of adoption of innovation, when the faculty members would like to know more about the new technology but hadn't quite mastered it yet. The Personal stage (stage two) presupposed that faculty members were thinking about how the adoption of innovation would affect them personally: if it would lead to status change (whether positive or negative one) or reward. Management (stage three) would relate to skills of those faculty members who needed them in order to teach online courses more effectively. Consequence (stage four) would relate to faculty concerns about online learning outcomes, because those in this stage faculty members would be interested in the impact that the new content delivery method had on students (Bybee, 1996, para. 9). In the

Collaboration stage (stage five), faculty members focus more on collaborating and coordinating with their colleagues on the innovation. Faculty with high refocusing concerns (stage six) would have far more anxiety and concerns regarding the new innovation than faculty in Stage Zero, who would be unaware. A higher level of impact concerns would reflect familiarity with the innovation to the degree that alternatives could be envisioned and applied (Al-Sarrani, 2010). According to CBAM theory, faculty concerns would be anywhere between stages zero to six, based on their level of concerns towards adopting the OL delivery method.

CBAM and Selected Personal Characteristics of Faculty Members

SoC research accounts for the role of demographic variables, such as age, gender, and years taught, in relationship to expressed concerns (Hall & Hord, 2010). In examining the concerns of innovation adopters, Hall, George & Rutherford (1979) found that traditional demographic variables had no significant relationships with concerns; however, when examining computer-related innovations, other authors found that demographic variables can indeed correlated with concerns (Petherbridge, 2007; Sarrani, 2010). Petherbridge (2007) found that demographic variables (age, gender, years of teaching experience) were predictive of unrelated and self concerns regarding computer use and technology adoption.

Age

Age is a common demographic variable used in cross-sectional studies. It was found to be unrelated to a higher level of concern in integrating technology into instruction in earlier studies cited by Hall & Hord (2010), mostly done at the K-12 level, such as a study done by Atkins & Vasu (2000) with middle school teachers, which did not find age differences. However, recent dissertations have found that age was related to a higher level of concern by most college and university faculty. Petherbridge (2007) studied the adoption of a Learning

Management Systems (LMS) in a higher educational environment. She gave the Stages of Concern questionnaire to 1,196 faculty and had a return rate of 29.5%. Age was found to be predictive of the self-informational concerns score in integrating LMS into teaching, as faculty age increased the concerns score decreased, even though the results are somewhat questionable due to the very low return rate. Age was also related to faculty member computer self-efficacy (or computer confidence) in a study of a research-intensive, land-grant institution (n=176, with a response rate of 58%) done by Kagmina and Hausafus (2000). They found that faculty who were 60 years of age or older were less confident in utilizing electronic communication in their courses. Petherbridge (2007) and Owusu-Ansah, (2001) also discovered that the older the faculty members were, the less interested they were in using technology and the higher their concerns were about integrating technology-based distance education into instruction

Adams (2002), in a study of postsecondary faculty concerns related to the integration of technology into teaching practices, compared their concerns with demographic variables (n=589, response of the rate 39%) and found that older faculty expressed lower levels of concern than younger faculty. According to Adams (2002), younger faculty, between the ages of 18-34, also had a higher level of technology integration. While the response rate was also low (under 40%), the findings were consistent with recent dissertations and studies on higher education faculty in the U.S. (Kagmina & Hausafus, 2000; Owusu-Ansah, 2001; Petherbridge, 2007).

Gender

In terms of innovation concerns, gender was not found to be a significant predictive variable by the CBAM authors (Hall, George, & Rutherford, 1979). Petherbridge (2007) found no significant relationship between gender and stage of concerns scores of adopting LMS in teaching. However, when examining technology-related as opposed to methodological innovations, other researchers have found that gender did show a relationship with the individual's level of concern (Adams, 2002; Al-Sarrani, 2010; Owusu-Ansah, 2001S). Adams (2002) found that younger female teachers with less teaching experience had higher levels of technology integration in a middle school. Owusu-Ansah (2001) found that the male faculty members were less interested and willing to adopt technology-based distance education than female faculty members. Al-Sarrani (2010) found that gender had a significant relationship with the stages of concerns (informational and collaboration) towards the adopting blended learning in Saudi Arabia. Since men and women are housed in separate colleges with different facilities in Saudi Arabia, this difference is understandable. As a result, it was important to account for gender in the study as a possible variable that might influence concerns.

Years of Teaching Experiences at the College Level

Baldwin (1998) found that the more years of teaching experience the instructor had at the college level, the more likely he or she would be accustomed to teaching via class notes sketched out on a legal pad. For some faculty members, instructing from notes on a legal pad is still a reality (Baldwin, 1998). As with age and gender variables, however, the assertion that the number of years of teaching would reflect a participant's attitude toward using computers could not be made due to the mixed results of the studies on this topic.

Teaching experience has been found related to faculty concerns (Petherbridge, 2007). Petherbridge found that years of teaching in the university were predictive of faculty self-personal concerns (for faculty who had been teaching 9 to 16 years). Adams (2002) also found that faculty with 0 to 3 years of teaching experience had the highest level of concerns and a significantly higher level of technology integration than those with 10 to 19 years of teaching experience. Owusu-Ansah (2001) had similar findings; his findings indicated that the longer the faculty taught the less interested they were in using technology-based distance education. They also displayed the least interest in integrating technology into teaching. However, in Saudi Arabia, Al-Sarrani (2010) did not find that faculty members' years of teaching experience affected faculty concerns in adopting blended learning. Still, due to these mixed results, years teaching at the college level was deemed to be relevant, due to the differences in each College/School's faculty at UAF.

Summary of Selected Personal Characteristics

Various studies have had mixed results as to whether age, gender, and years of teaching were related to attitudes toward technology use, and studies using SoC also had mixed results. Petherbridge (2007), Adams (2002) and Owusu-Ansah (2001) concluded that age and years of teaching experience were predictive of faculty SoC on technology integration. Age, gender, and years of teaching were included in the current study as demographic variables, which are typical in cross-sectional studies, due to mixed results and the possibility that these variables may have been a function of each College/School's faculty. Also, the relationship of these variables with faculty members SoC profiles regarding online learning were examined for possible relationships, since there had been mixed results.

CBAM and Selected Contextual Characteristics of Faculty Members

Privateer (1999) posited that the "opportunity for real change lies in creating new types of faculty, new uses of instructional technology, and new kinds of institutions whose continual intellectual self-capitalization continually assures their status as learning organizations" (p. 73). Researchers investigating computer attitudes and use have indicated that contextual variables, such as the subject taught, the nature of the student body, administrative policies and practices, and resource allocation and their teaching requirements can affect levels of computer usage and attitudes toward computing (Adams, 2002; Baldwin, 1998). Adams (2002) found differences between faculty in varying departments and technology adoption concerns. Additionally, Goldfield (2001) pointed out that "in the absence of significant administrative support, a strong development initiative for faculty members can quickly cause political and technological fault lines to appear" (p. 106). Contextual variables researched in this study included perceived administrative support of technology, colleagues using technology, college, and academic rank.

Administrative Support of Technology

Lack of administrative support was found to be a major barrier for faculty in technology innovation (Petherbridge, 2007). Dusick (1998) stated that this contextual factor had caused faculty to adopt technology in instruction somewhat more slowly than other workplace professionals. As Dusick (1998) noted, "Although the teacher may have control over some environmental factors (classroom setup, for example), a supportive administrative staff . . . and support staff, are critical to encouraging the adoption of IT" (p. 131). In this study, the notion of administrative support of technology was defined as the perceived supportiveness of college administrators (department chairs, deans and senior administrative positions) and administrative

processes (reappointment, promotion and tenure) for faculty in using technology in their instructional practices.

Petherbridge (2007) found that faculty expressed the need for administrative support when adopting web-based learning management systems. Administrative support was one of the most important interventions identified for respondents with high self-informational, self-personal, impact-consequence concerns ($p < .01$). Additionally, administrators also needed to facilitate a climate conducive to using LMSs, establish value for teaching with technology, and make incentive expectations clear (Powers, Anderson & Love, 2000). Powers, Anderson & Love (2000) also found that administrators were "in a position to help create conditions that promote the adoption of . . . technology by faculty" (p. 287), and recommended that administrators aim to better understand the concerns of the faculty, examine probable barriers to adoption within their contexts, explore and obtain resources, offer rewards and recognition, and use technology themselves to set a proactive example.

Petherbridge (2007) pointed out that in addition to setting a positive example and communicating well with faculty members, administrative support of technology should also include compensation in the form of stipends or release time to develop online courses. Sufficient rewards for change are important for faculty, and reforming the incentive systems is often indispensable for effective teaching with technology to be recognized and valued (Miller, Martineau, & Clark, 2000; Powers, Anderson & Love, 2000).

Reappointment, promotion, and tenure (RPT) processes that acknowledge and reward innovative technology use were of great significance to faculty members (Miller, et al., 2000). Starrett (2004) indicated that incentives, such as stipends and release time, were imperative for supporting faculty members to integrate technology. A rewards structure that provided

promotion opportunities and job security was found to be critical to faculty use of technology. Lack of recognition of teaching with technology sufficiently in the RPT process was found to be a significant obstacle to a faculty member's adoption of instructional technology (Miller et al. 2004; Starrett, 2004).

Colleagues Using Technology

When a faculty member considers the use of an innovation, the role of peers in the adoption process can be significant. Literature examining innovation use notes that the value of peer influence as a contextual variable; that is, if a colleague is using and believes in the value of the innovation, then his or her use may increase the use of the innovation of the current non-user (Baldwin, 1998; Rogers, 1995). Staff development literature also recommended that one of the best approaches to support a "non-user" instructor in using technology was to pair him or her with a "user" of technology (Hope, 1997). In this study, the concept of colleagues using technology was the number and proximity of a faculty member's colleagues who were using or had used LMSs to support their instructional practices. Petherbridge (2007) found those faculties whose colleagues had positive opinions of a LMS had significantly lower task concerns ($p < .01$). In addition, "negative colleagues may result in the derailment of an innovation implementation, and, as in this case, increase self-personal concerns related to LMS's" (Petherbridge, 2007, p. 239).

Rogers (1995) defined peer influence as opinion leadership, wherein individuals in a group are able to influence other's attitudes. Opinion leaders, who may occasionally be, but are not always, those who adopted changes the most rapidly, embraced a type of informal leadership. They were unique in their influence on their social system's communication infrastructure. To promote the use of technology among faculty, Powers, Anderson & Love

(2000) suggested that in developing professional development, one should begin with the least resistant faculty group, known as the "early adopters" (Rogers, 1995). Early adopters, while sometimes seen as being "on the fringe" by mainstream faculty, will be in a better position to influence fellow faculty members than will change facilitators, who are seen as outsiders (Powers, Anderson & Love, 2000).

The opinion leaders' interpersonal networks allow him or her to have influence over the use of innovation by the rest of their social system, and as members of the system, their belief in the value of the innovation is paramount to others in the system understanding the innovation's value (Rogers, 1995). While change facilitators also seek to have influence over a system, as outsiders, they are often mistrusted or resisted by a system. Change facilitators who seek to encourage the adoption of an innovation in a system will often seek out the system's opinion leaders, getting the opinion leaders to help sway the larger group (Petherbridge, 2007). Because faculty members frequently disagree with the curriculum re-examination that may take place when using instructional technology, their colleagues can be the best source of support and assurance during this transitional time (Miller, Martineau, & Clark, 2000). Investigating computer usage in schools, Becker (1994) found that computer-using teachers were more likely to be working in a school with many other computer-using teachers.

College/Department

When she studied faculty concerns in a university setting, Petherbridge (2007) discovered varying academic disciplines likely had diverse concerns at different times during an adoption process; e.g., Education faculty had higher task and impact-refocusing concerns than other faculty at the time of her study. Belonging to a particular discipline, in itself, can contribute to the characteristics of a faculty member (Petherbridge, 2007). "The influence of

unique disciplinary attitudes, beliefs, and behaviors is so obvious to some that they have been characterized as part of an academic tribe" (Stoecker, 1993, p. 451). Biglan (1973) studied the diversity of the academic disciplines and established a classification system that divided the disciplinary areas into three dimensions, the hard-soft dimension, the pure-applied dimension, and the life vs. non-life dimension.

Biglan (1973) subsequently utilized these dimensions to differentiate academic departments, indicating that the faculty in the hard disciplines (e.g. Chemistry, Physics, Geography, and Biology) were found to be more involved in and attracted to research, and more likely to publish journal articles, when compared to the soft disciplines (e.g. English, Psychology, and Communication). Applied scholars were described as more socially engaged, interested and involved in service activities than pure scholars - their counterparts, and life scholars were seen as more socially engaged than non-life faculty, but less interested and involved with instruction (Biglan, 1973).

Lee (2000) noted that disciplinary differences must be taken into consideration when working with faculty, as different disciplines use different strategies of approaching a variety of tasks. A study researching 401 higher education faculty members found that faculty members in various academic disciplines (Arts/Humanities, Social Sciences, Natural Sciences/Mathematics) differed in the frequency of specific classroom teaching behaviors (Murray & Renaud, 1995). In particular relating to technology, a study of 58 faculty and 296 students at 20 universities in the UK, Kemp & Jones (2007) noted that disciplinary differences did exist in the way that digital resources were being integrated into teaching and learning within the disciplines.

Adams (2002) investigated the degree to which participation in faculty technology development programs correlated to the use of technology. He studied academic task area, level

of computer integration, concern about the innovation process, and perceived obstacles to computer integration via a convenience sample of 589 full and part-time faculty members at a postsecondary teaching institution. While the response rate was low, 39%, (or 231), Adams (2002) found that faculty in academic discipline identified as "hard" (Biglan, 1973) had higher levels of concerns than those in "soft" academic disciplines.

Academic Rank

Petherbridge (2007) found that academic rank was predictive of faculty concerns in adopting technology related innovation. "Respondents who are tenured or with the rank of instructor had lower self-personal concerns than other faculty, implying tenured faculty, or those hired with a teaching focus, were not as worried about the rewards structure for using technology ($p < .01$)" (p. 269). As institutions search for promoting new technology innovations, contingent faculty (part and full-time faculty not on the tenure track) warrant special attention, as their non-tenured status may result in the marginalization of this group (Baldwin, 1998). Based on Baldwin's study (1998), nearly 24% of faculty members were not eligible for tenure, and the number of contingent faculty was expected to grow. It is likely that these issues may affect non tenure-track faculty members attitudes and concerns regarding technology adoption (Petherbridge, 2007). Those non-tenured faculty who were on a tenure track but not yet tenured, the concerns may center on technology use as a personal concern, since they may actually be discouraged from pursuing the use of technology until they have fulfilled promotion, reappointment and tenure requirements (Young, 2002). Conversely, in his study of university faculty in Saudi Arabia, Al-Sarrani (2010) found no significant relationship between science faculty's academic rank and their concerns in adopting blended learning, possibly due to their homogeneity rank advancement policies, since one advances in rank from

lecturer to Assistant Professor through higher education. Later advancement in rank differs somewhat from the U.S. version, which advances faculty solely through a combination of research, teaching and scholarship.

Summary of Selected Contextual Variables

Contextual variables, which are issues specific to a certain environment, such as membership in a particular college, may affect faculty attitudes, concerns, and behaviors (Petherbridge, 2007). Contextual variables examined in this study included perceived administrative support of technology, colleagues using technology, and academic rank. A number of studies provided evidence that the lack of administrative support was a primary barrier to faculty members effective use of technology (Petherbridge, 2007; Dusick, 1998; Miller, Martineau, & Clark, 2000; Powers, Anderson & Love, 2000), and indicated that reappointment, promotion and tenure concerns were also an issue for faculty considering the use of technology in their instruction (Miller, Martineau, & Clark, 2000; Starrett, 2004). Studies also provided support that differing academic disciplines had different ways of "knowing and doing," and thus may have had different concerns about technology use and integration (Petherbridge, 2007; Adams, 2002; Biglan, 1973; Lee, 2000). Academic rank can also factor into faculty members technology use and technology concerns (North Carolina State University, 2004; Petherbridge, 2007).

CBAM and Selected Technographic Characteristics of Faculty Members

The notion of "technographic" factors comes from Mitra & Hullet (1998), who stated that "demographics should be expanded to include attributes that deal specifically with technology use and exposure" (p. 57). Thus, the term "technographic" was coined to express the need for information about personal computer-related demographics. Petherbridge (2007)

explained “technographics” as including prior exposure to technology, categories of technology use, and a variety of factors that may address the technological characteristics of people.

It is critical for university administrators to recognize the faculty’s capability for technology integration in teaching prior to adopting a technology related innovation. According to Rakes and Casey (2002), the administration must provide faculty members with information about how to integrate technology into teaching in order for faculty to be able to integrate the new innovation. This study of technographic characteristics included prior instructional technology use, technology-related professional development, and attitudes toward teaching with technology.

Prior Instructional Technology

For the purposes of this study, prior instructional technology use was defined as any prior use of computer technology for instructional purposes. In relevant literature, there seemed to be clear, positive relationships between attitudes toward computers and the amount of experience in using computers (Petherbridge, 2007). Petherbridge (2007) found that faculty who had prior experience with using any type of LMS had significantly lower unrelated concerns scores ($p < .01$). In addition, Hall & Hord (2010) noted that Awareness, Informational, Personal, and Management (stages 0, 1, 2, 3) concerns decreased with increased technology adoption. Similarly, Todd (1993) indicated the most significant factor affecting the peak, or most intense, level of a faculty member’s concern was based on whether the faculty member had prior experience in incorporating computer assignments into his or her courses or not. Additionally, Todd (1993) found faculty who had adopted technology for instruction purposes had higher level impact concerns than faulty who did not incorporate technology into teaching. Al-Sarrani (2010) also found that faculty members with prior computer skills were

significantly more likely to integrate technology into teaching than other faculty members who did not have them ($p<.05$). Prior technology skills likely shape a faculty member's attitudes and concerns toward future technology innovations.

Technology-Related Professional Development

To accomplish successful use of technology in the classroom, Rogers (2000) stated that there was a need for a major "shift from teaching to learning which requires adequate training in technology and learning styles" (p. 19). Al-Sarrani (2010) found that 86% of faculty either agreed or strongly agreed that they needed more training on integrating technology to teaching strategies. Petherbridge (2007) found that faculty impact-consequence concerns scores increased due to their participation in technology-related professional development ($p < .01$). Additionally, Petherbridge (2007) stated that "faculty members will need a variety of professional development activities in order to move beyond intrinsic concerns associated with using a new innovation, to achieving the 'ideal' concerns area of impact-consequence and impact-collaboration" (p. 246).

Petheridge (2007) also suggested that university administrators needed to create technology-integrated professional development activities, which would encourage faculty members to improve their students' learning and collaboration. Utilizing a variation of the SoCQ, Adams (2002) found a correlation between faculty participation in technology integration professional development workshops and increased levels of technology use in teaching. Additionally, in a study of 155 middle school teachers, Atkins & Vasu (2000) found a relationship between the number of hours of technology training a teacher attended and the highest stages of concern of the teachers. Overall, most studies found that professional

development in the university setting increased faculty use of technology and faculty expressed higher order stages of concerns.

Attitudes toward using Technology in Teaching

For the purposes of this study, the concept of attitudes toward using technology in teaching was defined as an instructor's beliefs and feelings about using computer-based technologies to support their teaching practices. In examining attitudes, then, this means that one should not simply look toward attitudes toward computing as a single construct, but one needed to more specifically frame the examination of attitudes within a context of use. Petherbridge (2007) found that faculty with positive attitudes about teaching with technology had higher impact-collaboration and impact-refocusing concerns ($p < .01$). This group had lower unrelated and task concerns scores, while faculty with negative attitudes toward technology had higher unrelated concerns scores.

Koszalka (2001) noted that an attitude was an "informed predisposition to respond and is comprised of beliefs, feelings and an intent for action" (p. 2). Furthermore, Koszalka (2001) found that instructors who believed that adopting technology in instruction would benefit the educational experience were more likely to have a positive attitude toward such resources. Therefore, they would be more likely to attempt integrating technology, such as LMS's, into their instruction.

Al-Sarrani (2010) found a significant relationship between the Chemistry department faculty's attitudes toward technology integration into the Science curriculum and faculty use of technology in teaching. Faculty with pre-existing negative attitudes toward integrating technology in other departments (Biology, for example) in teaching focused on non-technological issues (Al-Sarrani, 2010).

Summary of Selected Technographic Characteristics

"Technographics" is an expansion of demographics, and is understood as various measures of attitudes toward, prior use of, and current use of technology (Mitra, 1997). Technographic characteristics examined in this study included prior instructional technology use, technology related professional development, and attitudes toward teaching with technology. Petherbridge (2007) found that technographic characteristics were predictive of impact concerns. In other studies, prior instructional technology use was related to current computer use, positive attitudes toward computers were predictive of using technology for instruction, and professional development was positively related to technology use.

Online Learning

Online learning originates from distance education. Moore & Kearsley (2005) defined distance education as "a planned learning that normally occurs in a different place from teaching, requiring special course design and instruction techniques, communication through various technologies, and special organizational and administrative arrangements"(p. 2). Holmberg (1995), in a more global approach, defined distance education as covering the various forms of study at all levels, which were not under the continuous, immediate supervision of tutors present with their students in "lecture rooms or on the same premises but which, nevertheless, benefit from the planning, guidance and teaching of a supporting organization…"(p. 2). Dabbagh & Bannan-Ritland (2005) defined online learning in the following way: "Online learning is an open and distributed learning environment that uses pedagogical tools, enables by Internet and Web-based technologies, to facilitate learning and knowledge building through meaningful action and interaction" (p. 15). While other definitions

frame the many components of online learning, this definition is the most precise and robust. It is the definition used for this study.

Students who must maintain employment have to acquire their education with more flexibility; therefore, online learning can provide such people with the chance to complete their studies while working. Online learning also provides the chance for people to gain degrees from universities nationally, or even internationally, without leaving their homes or home countries.

Online Learning and Learning Management Systems (LMS)

Online Learning is generally delivered through a Learning Management System (LMS). The typical LMS is a software package that enables the management and delivery of learning content and resources to students. Most systems are web-based to facilitate "anytime, anywhere" access to learning content and administration. At a minimum, the LMS usually allows for student registration, the delivery and tracking of e-learning courses and content, and testing, and may also allow for the management of instructor-led training classes. In the most comprehensive of LMSs, one may find tools, such as competency management, skills-gap analysis, succession planning, certifications, virtual live classes, and resource allocation (venues, rooms, textbooks, instructors, etc.). Most systems allow for learner self-service, thereby facilitating self-enrollment, and access to courses. As described in (Ellis 2009) a robust LMS should be able to do the following:

- Centralize and automate administration
- Use self-service and self-guided services
- Assemble and deliver learning content rapidly
- Consolidate training initiatives on a scalable web-based platform

- Support portability and standards
- Personalize content and enable knowledge reuse.

There are hundreds of learning management systems existing in the market today. There are two categories: (1) The LMS with an annual license fee – Blackboard, Desire 2 Learn, etc., and (2) open source LMS – Moodle, Sakai and etc. They are similar in purpose. However, they differ in function sets and expandability. For example: Blackboard is a commercial product and Moodle is open source. Blackboard could be considered a closed environment, since there is little that can be done to add functions and features. They must be paid for. These systems do have more advanced features and functions, as a rule. Open source systems, such as Moodle, are freely available and allow easy installation of functions.

Blackboard has been the most dominant LMS in U.S., with more than 1000 institutions adopting it (Blackboard Learn, 2010). However there is a growing use of Moodle and Desire2Learn by other universities, as well. Because online learning occurs on an LMS, there are certain pedagogical and technological skills required to use it, so any technology questions that take into account these features were necessary when assessing skills and professional development needs in adopting OL in teaching. Blackboard acquired Elluminate Live (eLive) in 2011 as a synchronized content delivery component, it was done primarily to provide better interaction capacity than audio conference systems. Elive, while having many features, was used by UAF for collaboration purposes in conjunction with Blackboard.

Online Learning Advantages

Online learning provides the flexibility of higher education without the boundaries of time or space. Hofmann (2002) pointed out that the ability of online education was to be able to offer asynchronous learning opportunities at the convenience of the students. The online

environment also offers the opportunity for students to explore educational opportunities at institutions that they otherwise would not have had the resources to be part of (Conover, 2008). Access is not the only benefit found in the online learning offering. In fact, a recent study displayed that "less than one-fourth of the positive aspects of online classes related either to not commuting or not having to go to campus, while three-fourths of the positive responses had to do more with the format of online learning; e.g., working at their own pace, more time to reflect, and less pressure" (Hughes & Hagie, 2005, p. 55). This is key for institutions to acknowledge that students are seeking online learning for various reasons, and assumptions should not be made as to the services they want or need. Many of these students may still prefer the personal student service from a traditional system even though they prefer the online learning environment (Conover, 2008).

The unique characteristic of the online learning environment is that it has the ability to promote learning outside the regular curriculum. Hughes (2005) indicated that students were able to take the personal time needed to reflect and develop their ideas in a way that permitted them to gain more from the course than a traditional class that was bound by a set time or location. Many students also reported better interaction with classmates through online discussions, which promoted a degree of learning greater than the traditional classroom had provided, often beyond the confines of the stated curriculum through interaction with fellow students out of class. This may be due in part to the freedom mentioned earlier that students feel they have in an online environment; but it also grows from the diverse group of students able to and who need to take an online class (Conover 2008). When a student located in China is able to share a personal perspective in a Chinese history course, the class, as a whole, may benefit.

Online learning provides many students the flexibility and venue through which they can

ask questions directly of the instructors that they might otherwise feel uncomfortable to do. Chester, A., & Gwynne, G. (1998) found that, "students commented in their journals that they were more confident and contributed more online. Two-thirds of the students rated their participation in the subject as greater than in face-to-face classes" (Lesson from experience section, para. 1). This is important, since one of the major criticisms of online learning is the lack of face-to- face interactions. The above-quoted study finding indicates that for some students, the reverse is actually the case. For various reasons, such as social awkwardness, physical challenges, language barriers, or other issues, students in the online environment are able to share more and feel more connection to their classmates and faculty than they do in traditional class settings.

Within the virtual classroom, correctly developed online education can force a greater level of interaction with the instructor and with classmates. By design, students submit questions and posts both directly to the instructor and to their fellow students, whereas a traditional classroom can often allow students who do not want to participate the chance to simply sit back and avoid any interactions (Hofmann, 2002).

Online Learning Disadvantages

There are certain disadvantages associated with online learning. Jolliffe, Ritter, & Stevens (2001) stated that the short-comings of using online learning have, for the most part, to do with the technical limitations associated with technology adoption and the internet itself. Over time these may reduce as connectivity and technology progress. However, there are learning-related problems that exist.

Some of the disadvantages in adopting online learning include (Jolliffe et al., 2001):

- The learning activities and environment are relatively expensive to establish, compared to other kinds of learning environments, since a specialist staff needs to be hired and a learning management system needs to be purchased or developed.
- The course content expert needs to have some knowledge of online learning pedagogy in order to design an effective learning environment or else an instructional designer's input or design must be utilized or paid for.
- Bandwidth issues, such as the bandwidth of the user's cable or DLS line, weather, or technical issues can create problems when downloading graphic/video intense materials or using the system.
- Professional development has to be provided for both facilitators and learners. Facilitators need to be able to develop, administer and facilitate the learning in a computer-related environment. Learners need to be 'trained' to understand fully and use the various resources provided for them.

Some weaknesses related to online learning have also been described in the literature. Delay in providing feedback was one reported weakness (Song, Singleton, Hill, & Koh, 2004). Some students reported that they felt a lack of immediacy in responses in the online setting compared to what would typically occur in a traditional classroom discussion. Petrides pointed out the lack of prompt response was especially obvious in asynchronous online discussions when students needed to wait for others to read and respond to their posts on the bulletin board or via e-mail communications (cited in Song et al., 2004).

Lack of a sense of cohort learning or isolation were other obstacles learners reported in their online learning experiences (Song et al., 2004), which can depend on the design, or lack of design, of the class. Vonderwell (2003) reported that online learning participants indicated a

lack of connection with the instructor, especially the lack of a ‘‘one-on-one’’ relationship with the instructor. As stated by one participant in that study, ‘‘I still feel like I know a little bit about my instructor, but not the same way that I would if I was in a class. I don’t know much about her personality at all’’ (p. 83). In the case of Alaska, the UAF Center for Distance Education continues the efforts to maximize online learning benefits and to find solutions to the disadvantages cited for online learning. Some of these effects can be overcome with good instructional design, professional development, and the utilization of social networking to increase interaction, provided that the technology used for remote locations is adequate.

Need for Online Learning in Alaska

The United States Department of Agriculture (USDA) Economic Research Service, in 2008, estimated the poverty rate to be 12.4% in rural Alaska, compared to a 7.7% level in urban areas of the state. Year 2008 data reported that 15.2% of the rural population had not completed high school, while only 9.7% of the urban population lacked a high school diploma. The unemployment rate in rural Alaska was at 8.3%, while in urban Alaska it was at 5.9%.

Online learning provides much-needed courses and degree programs to bridge the distance barrier and decrease poverty. OL brings higher quality and more rigorous learning outcomes to rural students. They can start their academic path to finish certificates, associate degrees or general education requirements for four-year degrees. At the same time, they can continue their subsistence living, maintain the indigenous culture and contribute to the local workforce and economy.

Today’s economic challenges have led more people to choose college/university as a viable option and also to seek to study online. “As the economy continues to stagger, universities are forced to respond to increasing number of student knocking at their virtual doors

in search of online classes" (Hayes, 2010). The University of Alaska system (UA) is looking for ways to increase access to its rural campuses for students due to the economic down turn. UA will start developing more courses/degrees online to meet the demand for lower division and foundation courses: writing and composition, basic math, calculus, statistics, biology, etc. in the next few years (McClatchy, 2010).

Alaska State Department of Education and The Alaska Virtual Learning Network

At the K-12 level, The Alaska Department of Education & Early Development (EED) seeks to provide Alaskan students and teachers with equitable and affordable access to high-quality educational opportunities through the Alaska Virtual Learning Network (AVLN). EED awarded $1.2 million for Enhancing Education through Technology (E2T2) funds to Chatham Schools in August 2010, which established a consortium of Alaskan districts to develop the AVLN. AVLN is a non-degree, non-credit granting network that offers supplemental courses to all Alaskan students (E2T2, 2010). AVLN is a valuable means to help ensure the opportunity for every student to have equitable access to high-quality instruction and rigorous courses required to meet the Alaska Performance Standards/GLEs and prepare students for post-secondary opportunities. These grants help students to develop greater comfort with technology-enhanced courses and online education through the advanced use of technologies for instruction.

The application for the funds stated that the successful grantee would be responsible for the following activities (E2T2, 2010):

- Developing and delivering synchronous, asynchronous, and online/blended courses, including dual-credit offerings, and conducting a needs assessment to determine course offerings needed.

- Providing professional development in online teaching to district personnel, and conducting a needs assessment to determine the online professional development opportunities needed through both in-service and pre-service.
- Administering AVLN, including overall management, and developing the plans necessary for AVLN's sustainability.

The funding period was tentatively set to be through June 2011, but continuation of the grant is possible, depending on success of the activities. Due to administrative change in May 2011, AKLN was reassigned to EED from Chatham Schools. The funding was extended to end of 2011. AKLN planned to purchase 12 science and math related high school online courses from outside vendors instead of developing internally. Former State Education Commissioner Larry Ledoux has indicated that $8 million will be available to support AVLN till 2015, but he did anticipate the AVLN should be self-supportive after that. The grant effort to create the AVLN is the first large-scale effort to create online learning opportunities for K-12 students in Alaska. The state's schools, however, have historically offered correspondence courses to support students working at home, and increasingly these courses are being offered online.

Alaska Charter, Correspondence, and Online K-12 Programs

There are 24 charter and correspondence programs that offer K-12 distance learning courses in Alaska, which include fully online, video, and blended learning courses; there were over 11,000 enrollments in distance learning courses across Alaska in 2009-10. Ten of those programs served students statewide; five of those programs offered online courses. Of those, one offered students statewide a full-time online option (Delta Cyber School) and a growing number of districts offer a full-time online option to their students. There are two statewide fully online, full-time correspondence schools. The Delta Cyber School operates out of the

Delta/Greely School District and is available to students aged 5-19. In 2009-10 it served 242 students, a 31% drop from 350 students in 2008-09. The Alaska Virtual Academy at Wrangell opened in fall 2009, and served students in grades K-8 under the management of K12 Inc. The Ketchikan Gateway Borough School District opened Fast Track for the 2009-10 school year, a correspondence school that served 43 students in grades K-12 with print, online, and home school courses. Fairbanks North Star Borough School District launched Building Educational Success Together (B.E.S.T.) in fall 2008, a full-time district program for students in grades 7-12 with services provided by Advanced Academics.39 Anchorage's MyHigh and the Kenai School District have also expanded their online options for students within their districts.

UAF CDE has followed the standards and methodologies that the Alaska Virtual Learning Network adopted in order to provide a bridge from virtual high school into dual credit and existing CDE courses, especially into courses that continued to build on the strong Science, Technology, Engineering, and Mathematics (STEM) focus of AVLN's start-up year. At the same time, CDE was seeking partnership with AVLN on providing the cutting edge professional development opportunities on online teaching for district teachers. In sum, the state of Alaska is developing both K-12 and college/university online education venues to serve its dispersed population.

Summary

Developing innovative teaching strategies in the educational field is not an easy task nor is its response by faculty simply a matter of acceptance or rejection. Following CBAM's theoretical framework, change is not an easy process since some instructors have concerns about adopting new technology innovation. Hord, Rutherford, Austin and Hall (1987) further clarified Fuller's insight, expanding the concerns into seven stages, which formed the first dimension of

the CBAM theory. The seven stages helped administrators in planning professional development activities that anticipated the instructors' concerns about new innovation.

Studies of CBAM and selected personal, contextual and technographic characteristics were also discussed. Age, gender, and years of teaching were included in the current study as personal variables, which are typical in cross-sectional studies, due to mixed results and the possibility that these variables might vary by College/School faculty. Contextual variables, which are issues specific to a certain environment, such as membership in a particular college, affect faculty attitudes, concerns, and behaviors (Petherbridge, 2007). Contextual variables examined in this study included perceived administrative support of technology, colleagues using technology, and academic rank. The term "technographic" was coined to express the need for information about personal computer-related demographics. It is critical for university administrators to recognize the faculty's capability for technology integration in teaching prior to adopting a technology related innovation.

Instructors who are used to face-to-face teaching may have concerns regarding integrating technology in teaching. Online learning is a new, and growing teaching responsibility, which calls for instructors to integrate technology in teaching more fully than in the past. The State legislature of Alaska has strongly requested that the University of Alaska (UA) provide sufficient faculty training for online learning. At the same time, it is important to continue enhancing online learning to increase academic access for rural Alaskans, while overcoming the disadvantages of adopting OL. Efforts by the Alaska State Department of Education and Alaska Virtual Learning Network, which have created Alaska charter, correspondence and online K-12 programs, have made significant strides. These efforts have encouraged the population to gain the necessary technological and work-related skills and

knowledge to adequately serve state needs. These strides have been made possible, in part, by the use of online educational efforts from Kindergarten through higher education.

Chapter 3 - Research Design and Methodology

Chapter Overview

This chapter is organized into several sections. The research questions are presented in terms of personal, contextual and technographic characteristics, and a series of null hypotheses. The next section, Research Design, explains how and why the mixed methods approach was used. In this approach, both quantitative (non-experimental, cross-sectional, closed Likert scale electronic survey questionnaire) and qualitative (three open-response questions included into the electronic survey, and eleven interviews) components were used to assess the impact on and efficacy of faculty development in adopting OL. Next, the research setting is described, including the mission and background of the University of Alaska Fairbanks (UAF), The Center for Distance Education (CDE) and CDE's Independent Learning Program (IL). The section Data Collection explains how a non-experimental, cross-sectional, closed and open-response electronic survey questionnaire on the KSU AXIO survey system, as well as faculty interviews were used to address research questions. It discusses the validity and reliability of this survey, as well as the selection of population. Finally, the Data Analysis Methods section explains how the analysis of data involves the use of descriptive statistics to describe the sample, the SoCQ analysis of selected variables, the testing of hypotheses through both the MANOVA and ANOVA and finally, a Strength of Association test to determine the degree of relationship between the independent and dependent variables. Validity and reliability for these measures are discussed, as well. The Qualitative Measures subsection includes the procedures of data reduction and display. Open-ended survey questions and faculty interviews were transformed into units of information through observing patterns for underlying themes. Open coding was

used to further interpret data into additional themes. The Chapter concludes with a discussion on the research trustworthiness, including issues of transferability, dependability and confirmability. Finally, ethical considerations of this study are presented.

Research Questions

This study investigated the concerns of faculty at the University of Alaska Fairbanks in adopting online learning to increase student access and how these concerns relate to faculty professional development needs. There were three primary research questions:

Research Question #1: *Is there a significant relationship between full-time faculty personal characteristics (age, gender, and years of teaching experience) and their concerns in adopting Online Learning?*

Null Hypotheses:

Ho 1.1. There are no statistically significant differences between faculty age and faculty concerns in adopting OL.

Ho 1.2. There are no statistically significant differences between faculty gender and faculty concerns in adopting OL.

Ho 1.3. There are no statistically significant differences between faculty years of teaching experience and faculty concerns in adopting OL.

Research Question #2: *Is there a significant relationship between full-time faculty contextual characteristics (administrative support of technology, colleagues using technology, college, and academic rank) and their concerns in adopting Online Learning?*

Ho 2.1. There are no statistically significant differences between faculty administrative support of technology and faculty concerns in adopting OL.

Ho 2.2. There are no statistically significant differences between faculty colleagues using technology and faculty concerns in adopting OL.

Ho 2.3. There are no statistically significant differences between faculty college affiliation and faculty concerns in adopting OL.

Ho 2.4. There are no statistically significant differences between faculty academic rank and faculty concerns in adopting OL.

Research Question #3: *Is there a significant relationship between full-time faculty technographic characteristics (prior instructional technology use, technology-related professional development, attitudes toward teaching with technology) and faculty use of technology in teaching?*

Ho 3.1. There are no statistically significant differences between faculty prior instructional technology use and faculty use of technology in teaching.

Ho 3.2. There are no statistically significant differences between faculty technology-related professional development and faculty use of technology in teaching.

Ho 3.3. There are no statistically significant differences between faculty attitudes toward teaching with technology and faculty use of technology in teaching.

Research Design

A mixed methods design was used to address the research questions. This study combined both quantitative and qualitative methods to collect and analyze data. According to Tashakkori and Teddlie (1998), mixed method studies are "those that combine the qualitative and quantitative approaches into the research methodology of a single study or multi-phased study" (p. 17-18). Creswell and Clark (2007) stated that mixed methods design was both a methodology and a method.

> The methodology involves collecting, analyzing, and mixing qualitative and quantitative approaches at many phases in the research process from the initial philosophical assumption to the drawing of a conclusion. As a method it focuses on collecting, analyzing, and mixing qualitative and quantitative data in a single study or series of studies. (p. 18)

Mixed methods research can be superior to single approach designs in the following ways (Tashakkori & Teddlie 2003):

- It can answer research questions that the other methodologies cannot.
- It can provide better (stronger) inferences.
- It can provide the opportunity to present "a greater diversity of divergent view.

This study collected quantitative data through a close-ended survey and qualitative data through open-ended questions on the survey and stratified sampling of selected faculty for interviews.

Descriptive statistics were used to analyze the quantitative data, using a series of one-way multivariate analysis of variance (MANOVA) to find values of significance. Once statistically significant differences were revealed from the MANOVA results, then Analysis of Variance (ANOVA) tests were conducted to identify values of significance. For results that were significant at the $p < .05$ level, a series of Scheffe post hoc tests were conducted. The reason for conducting MANOVAs first was that the MANOVA can test multiple dependent variables simultaneously, while keeping track of their correlations with each other. If multiple ANOVA tests were conducted for correlated variables instead, then there would be a greater likelihood of committing a type I error. That is, there would be a greater likelihood of concluding that the groups were significantly different when they were not.

In order to gain a more in-depth perspective on UAF faculty's concerns and professional development needs in adopting online learning, qualitative measures were obtained through open-ended questions on the survey and through conducting faculty interviews. According to Lindlof and Taylor (2002), interviews are particularly useful for capturing the story behind a participant's experiences. The main task in interviewing is to understand the meaning of what the interviewees say. Qualitative analysis is the "process of labeling and breaking down raw data and constructing them into patterns, themes, concepts and propositions" (Lindlof & Taylor, 2002, p. 210). In the present study, three open-end questions enabled the participants to contribute as much detailed information as they wished, which also allowed the researcher to ask probing questions as a means of follow-up. On the survey, themes derived from the open-ended survey responses were identified, coded and classified by the researcher and then reviewed by the researcher's major professor. Open coding used for this approach was consistent with that of Miles and Huberman (1994), in which patterns and themes arise through coding.

Research Setting

Alaska presents a formidable landscape for a university system: a land mass one-fifth the size of the continental United States; campuses thousands of miles apart; and weather that would shut down most Lower 48 schools. This vast expanse of rainforest, tundra, coastal shores and mountains is home to the University of Alaska system, established in 1917. The university system started as the Alaska Agricultural College and School of Mines in Fairbanks, and was later renamed the University of Alaska in 1935.

The University of Alaska Fairbanks (UAF) is the flagship university in the UA system; it is the only research focused and doctoral granting unit. UAF helps the state provide

stewardship for its rich resources, sensitive environment, and indigenous cultures, and plays a key role in shaping Alaska's future. As a dynamic institution, UAF must be able to respond to the changing social, financial, and political environment in order to cultivate new opportunities for the students, faculty, staff, and all Alaskans. Excellence requires development of new and improved academic programs that provide educational opportunities linked to accessibility and scholarship, that includes creative activity, basic and applied research, and craft practice. Excellence further requires expanding extension services to bring the university's expertise especially to rural Alaskans throughout the state, increasing outreach and engagement with rural communities, and fostering partnerships with businesses and industries (UA Academic Master Plan, 2008).

As a means of reaching these goals, UAF established The Center for Distance Education (CDE) in 1967. CDE is part of the UAF College of Rural and Community Development (CRCD). CDE's Independent Learning Program (IL) is the oldest distance delivery program at the University of Alaska and has offered correspondence courses for more than forty years. CDE is an Academic Service unit, which provides student service and support, instructional design, and faculty professional development to all the UAF schools and colleges. CDE currently serves more than 7,000 students across Alaska and lower 48. In general, it aims to accomplish the following goals:

- Spread professional development throughout the university.
- Establish a strategic plan for online learning.
- Encourage the use of educational technology and provide instructional support.
- Evaluate and develop university faculty online teaching certification.
- Work with different colleges to provide conferences and workshops.

CDE consists of three units:

1. Instructional Design Team
2. Student Services and Online Academic Advising
3. Administrative and Information Technology Support

There are more than 175 courses are available, offered both through online asynchronous delivery and printed materials. The majority of courses offered are designed to meet the basic requirements of various degree programs. However, some courses specific to particular degree programs are included in the online offerings.

There are many important goals that the CDE faces, and full time faculty of College of Liberal Arts, College of Natural Science and Mathematics and School of Management surveyed in this study were an essential demographics to address in the process of achieving these goals. One of the pressing issues for this study was the possibility of adopting a Learning management system alternative to Blackboard. All the CDE online courses have utilized Blackboard as the LMS since 2000. The license fee has increased significantly over the last couple of years, as faculty and students have demanded more add-on features.

Evaluating the possibility of switching to an open source solution is an ongoing effort. It will take at least another 3 to 5 years for UAF to decide whether to make this change. However, it was necessary to identify the experience of the faculty with LMS and with OL, in general, in order to be able to implement such significant changes. Investigating major concerns of the faculty and their attitudes toward adopting innovation aided in future implementation of new LMS technology through the assessment of professional development needs.

Protection of Human Subjects

In accordance with the guidelines of the Kansas State University's Committee for Research Involving Human Subjects (IRB), an Application for Approval Form was submitted prior to the study. Upon approval by the IRB, subjects were informed that their identities and survey responses were confidential, and that the results of the study were available to them upon request.

Quantitative Data Collection Methods

This study used a non-experimental, cross-sectional, closed and open-response electronic survey questionnaire on the KSU AXIO survey system, as well as interviews to address research questions. Fink (2006) defined the survey method as "a system for collecting information to describe, compare, or explain knowledge, attitudes, and behavior" (p. 1). Cross-sectional survey designs are particularly useful for collecting data on many variables simultaneously and for a large group of subjects. As a result, they are "the design of choice" to gather information on individual's attitudes (Creswell, 2003).

Weisberg, Krosnick and Bowen (1996) stated that, "in fact, many researchers believe that the best way to find out what people like and believe is to ask them" (p. 16). As a form of descriptive research, surveys adequately address the current state of specific issues through the use of small populations or samples of large ones, measures and the percentage distributions of variables (Creswell, 2003). In addition, a recent study of educators found a higher return rate existed among web surveys as compared to mail surveys (Kwak & Radler, 2002). The survey method was deemed appropriate for collecting data in this study in order to obtain a deeper understanding of faculty concerns about adopting OL. Use of an electronic survey eased

distribution and collection problems normally associated with such endeavors and offered a convenient mode for faculty responses.

Survey Preparation

Data was collected using a revised survey compiled from three surveys: "the *Measuring implementation in schools: The stages of concern questionnaire for innovation* (George, Hall and Stiegelbauer, 2006) from the SEDL (Southwest Educational Development Laboratory). The first part of the survey on technology adoption levels by faculty was to assess faculty members concerns with using OL and technology innovation by UAF Faculty. The second part of the survey was revised from Petherbridge (2007) on professional development needs. The third section of the survey was revised from Petherbridge (2007) for faculty perceptions and attitudes toward technology use in teaching. The researcher signed an agreement to license the survey from SEDL (Southwest Educational Development Laboratory) for the stages of concerns questionnaire (see Appendix D). The researcher received written permission from both Petherbridge and Al-Sarrani to use parts of their surveys (see Appendix E and F). The instrument in this study contains 73 questions divided among 6 sections: 1) Stages of concern, 2) Administrative support for teaching with technology, 3) Colleagues using technology, 4) Attitudes towards teaching with technology, 5) Professional development needs and prior instructional technology and 6) Demographic information. After a series of revisions, the survey included the following sections:

- Section I: The Stages of Concern (questions 1 – 35) contains the SoCQ. Presently, the copyright for the SOC questionnaire (1- 35) is maintained by the Southwest Educational Development Laboratory (SEDL) in Austin, Texas. Permission was granted from the (SEDL) to reprint and distribute the questionnaire (See Appendix D

for SEDL License Agreement). There was a fee for each test used of $4. This section was designed to obtain a broad picture of faculty concerns about adopting OL in their teaching. Question 36 is an open-end question to learn more about faculty's perception on online learning revised from Petherbridge's study (2007) (See Appendix E for Petherbridge's permission).

- Section II: The second section of the survey measured administrative support for teaching with technology (questions 37 - 38), which was revised from Petherbridge's study (2007) (See Appendix E for Petherbridge's permission). This section evaluated perceived administrative support of UAF faculty who use technology in their teaching.
- Section III: Colleagues using technology (questions 39 - 41) involved the number and proximity of a faculty member's colleagues who are using or have used LMS - Blackboard to support their instructional practices. This instrument determined how a faculty member's colleagues are using technology, and was revised from Petherbridge (2007) (See Appendix E for Petherbridge's permission).
- Section IV: The fourth section measured faculty attitudes towards teaching with technology (questions 42-44), which was revised from Al-Sarrani's study (2010). (See Appendix F for Al-Sarrani's permission) and determined UAF faculty attitudes towards integrating technology in their instruction).
- Section V: The professional development needs and prior instructional technology use by UAF faculty' for instruction are reflected in this section (questions 45-65). Questions from 45 to 59, were revised from Al-Sarrani (2010) (Appendix F), while the rest of questions (60 to 65) were revised from Petherbridge (2007) (Appendix E).

And Questions 65 and 66 are open-end questions. These questions evaluated the perceived professional development needs of UAF faculty in adopting OL in their teaching.

- Section VI: The demographic information section (questions 68 – 71) was developed by the researcher to include age, academic rank, content area, and years of teaching experience to identify demographic characteristics of the participants.

Stages of Concern Questionnaire SoCQ

The Stages of Concern Questionnaire (SoCQ) yielded Stages of Concern (SOC) profiles and provided insight into the concerns of individuals experiencing an innovation. The SOC divides concerns that people have about an innovation into four broad stages of concern (unrelated, self, task, and impact) (review Table 1.1). Examining the concerns of individuals related to introduction of specified innovation was first attempted in December 1973 by the Research and Development Center for Teacher Education (RDCTE) (George, Hall & Stiegelbaauer, 2006). The (RDCTE) members had to generate statements that indicated possible concern an individual might have regarding the innovation. They came up with 544 potential statements. The group then categorized these statements according to the 7 stages of concerns based on the original CBAM version. Hall, George, and Rutherford (1979) detailed the process of determining the internal reliability of the SoCQ as an instrument.

The SoCQ is a quantitative tool consisting of 35 questions on a 7-point Likert scale. It is used to discover how individuals think and feel about a change. It displays that how individuals feel about a change will in large part verify whether or not the change actually occurs (Hall, George, & Rutherford, 1979). The Southwest Educational Development Laboratory (SEDL) currently holds the copyright for the SoCQ.

External Validity

External validity addresses the ability to generalize a study to other people and other situations. To have strong external validity (ideally), there needs to be a probability sample of subjects or respondents drawn using "chance methods" from a clearly defined population. The UAF is a clearly defined population.

SoC Internal Validity

Internal Validity ensures that a study measures what it is actually intended to measure. To ascertain initial evidence of the validity of the SoCQ, the RDCTE staff used inter-correlation matrices and extensive interview data. During a series of validity tests on the SoCQ, the researchers displayed that the scores on the SoCQ related to each other and to other variables. According to George, Hall and Stiegelbauer (2006), a series of studies were conducted to investigate the validity of the questions through mainly testing how the scores of the seven stages relate to each other on one hand and to other variables on the other. An initial correlation matrix based on a pilot study in 1974 indicated an ordering consistent with the hypothesized SOC (see Hall, George & Rutherford, 1979, p. 13).

The most convincing demonstrations of the validity of the SoCQ took place during a two- year longitudinal study of teachers in a single school who were moving from no team teaching to using team teaching routinely during this time (Hall, George & Rutherford, 1979). Results of the study showed that their concerns shifted from being high on the lower (0,1,2) stages, to high on management concerns (3), and to low intensity on all the concerns stages (4,5,6). This study not only revealed the validity of the questions, but also validated the overall CBAM theory (George, Hall and Stiegelbauer, 2006).

SoC Reliability

To insure the reliability of the SoCQ, the creators conducted a study in 1974 on 830 teachers and faculty. The study found coefficients of internal reliability for the seven stages of concerns from the low (.64) to the high of (.83) table 3.1. Cronbach's alpha, was used to calculate the internal reliability of an instrument. A commonly accepted principle is that alphas (α) of 0.7 or greater indicate acceptable reliability and 0.8 or greater indicate good reliability in social science literature. Although the lower alphas are sometimes reported, alphas below .60 are generally considered having unacceptable reliability (Weiner, Graham, Schinka & Naglieri, 2003). While the initial reliability coefficients for the seven categories of concerns were deemed acceptable, Bailey & Palsha (1992) found lower reliability coefficients, and the study recommended that the seven original categories could be collapsed into smaller groupings.

Table 3-1 *The Reliability Coefficients of SoCQ*

Stage	Unconcerned	Informational	Personal	Management	Consequence	Collaboration	Refocusing
	0	1	2	3	4	5	6
Alpha	0.64	0.78	0.83	0.75	0.76	0.82	0.71

Source: George, A. A., Hall, G. E., Stiegelbauer, S. M., & Southwest Educational Development Laboratory. (2006). *Measuring implementation in schools: The stages of concern questionnaire*. Austin, TX: Southwest Educational Development Laboratory, p. 20.

Selecting the Population

The population for this study was UAF faculty from the following Colleges/Schools: College of Liberal Arts, College of Natural Science and Mathematics, and the School of Management. Faculty members were defined as adults serving in an instructional role at the UAF on a full-time basis (full-time instructional faculty on 9 or 12-month contracts) during a given academic year, as recognized by the national Integrated Postsecondary Education Data System (IPEDS). The researcher utilized the 2010-2011 University of Alaska Fairbanks

Directory located on the UAF's Banner system for a current list of UAF faculty (see Appendix E). An Excel spreadsheet was created to store the following information: academic rank, discipline, individual faculty phone number, first and last name of faculty members and their respective e-mail addresses. The total faculty population was 255, consisting of 80 professors, 90 associate professors, 73 assistant professors, 5 instructors and 7 term instructors (Table 3.2). The researchers called each College/School and validated the e-mail addresses of the faculty.

Table 3-2 *UAF Banner Data, 2011*

Academic Rank	College of Liberal Arts	College of Natural Science and Mathematics	School of Management	Total
Professor	28	45	7	80
Associate Professor	33	47	10	90
Assistant Professor	49	20	4	73
Instructor	5	0	7	12
Total	115	112	28	255

Source: UAF Banner Data, 2011

Survey Administration

The survey was made available to participants for a five-week period of time. The cost of the survey questionnaire was $0.50 per test, with the total cost at $150. The Center for Distance Education general fund agreed to pay for this survey, due to its importance to UAF.

Each participant's first name, last name, and e-mail address was imported into the Axio Online survey system from the Excel sheet created while contacting potential subjects to verify e-mail addresses. The e-mail option was used in lieu of an open survey because of its ability to track responses and send automatic reminders to those who have yet to complete the survey.

To incentivize the completion of the survey by May 13th, 2011, Vice President of Academic Affairs contributed $30 to the Center for Distance Education to provide scholarships

for online students for each survey finished by a faculty member the University of Alaska system. Every summer approximately 70 students submit an application for tuition remission. One hundred completed surveys generated $3,000 toward funding of these scholarships for tuition remission. The scholarship did not cover books.

Participants were sent up to 4 follow-up e-mail messages reminding them about the research study, and a phone call reminder, with the offer of a paper version of the survey for the final follow-up, in case e-mail may not have reached some of the respondents. Information in the e-mail and the phone call included assurances of confidentiality, an opportunity to opt out of the study, and a link to the survey. The e-mail and phone call informed participants that the results of this study would be available at their request from Professor Rosemary Talab of Kansas State University, and that a copy of the final dissertation would be available through K-REX, Kansas State University's electronic thesis and dissertation database.

Quantitative Data Analysis Methods

Analysis of data involved both quantitative and qualitative analysis. Quantitative analysis included the use of descriptive statistics to describe the sample, a SoCQ analysis of selected variables, testing the hypotheses through both MANOVA and ANOVA and a Strength of Association test. Qualitative analysis was applied to both open-ended responses and faculty interviews. The study posed the following research questions:

Research Question #1: *Is there a significant relationship between full-time faculty personal characteristics (age, gender, and years of teaching experience) and their concerns in adopting Online Learning?*

Research Question #2: *Is there a significant relationship between full-time faculty contextual characteristics (administrative support of technology, colleagues using*

technology, college, and academic rank) and their concerns in adopting Online Learning?

Research Question #3: *Is there a significant relationship between full-time faculty technographic characteristics (prior instructional technology use, technology-related professional development, attitudes toward teaching with technology) and faculty use of technology in teaching?*

Quantitative Measures

A report of results was printed from the KSU AXIO survey system after the survey timeline expired. Results were entered by hand into the SPSS statistical software program for disaggregation, beginning in July 2011. Responses to closed-ended questions were analyzed using descriptive statistics. A series of one-way multivariate analysis of variance (MANOVA) were utilized to determine statistically significant differences in responses based on participants' personal, contextual and technographic characteristics. The ANOVA test was conducted after the MANOVA results to find where significance occurred. A test for Strength of Association was also conducted.

Independent Variables

An independent variable refers to a treatment variable that is "manipulated by the experimenter and so its value does not depend on any other variables experimenter" (Field, 2005, p. 734). The independent variables in this study were:

- Demographic variables (age, gender and years of teaching experience)
- Contextual variables (administrative support of technology, colleagues using technology, college, and academic rank)
- Faculty attitudes towards teaching with technology

- Faculty prior instructional technology use
- Faculty perceptions of technology-related professional development

Dependent Variables

A dependent, or outcome, variable is one that is "not manipulated by the experimenter and so its value depends on the variables that have been manipulated" (Field, 2005, p. 728).

Dependent variables in this study included the following:

- Stages of concerns
- Faculty use of instructional technology

A summary of independent and dependent variables investigated in this study and the data scales are listed in table below:

Table 3-3 *Summary of Independent Variables and Dependent Variables*

Independent Variables	***Data Scale***	***Dependent Variables***	***Data Scale***
Age	Interval	Stages of concern (0-6)	Interval
Gender	Nominal		
Years of teaching experience	Interval		
Administrative support of technology	Interval		
Colleagues using technology	Interval		
Academic rank	Ordinal		
College	Nominal		
Faculty attitudes towards teaching with technology	Interval	Faculty use of instructional technology in teaching and learning	Interval
Faculty prior instructional technology use	Interval		
Professional development needs	Interval		

Descriptive Statistics

Demographic data was retrieved from questions 68 – 71, which included age, academic rank, college, course size, course level, years of teaching experience, and information regarding participants' rank, and age. These data provided information about the general characteristics of the respondents. In addition to reporting frequency of responses, the researcher worked with a statistical consultant, while coding responses into SPSS in order to obtain the mean scores, mode scores and standard deviation for the measures of central tendency. Descriptive findings are reported in chapter four of this study.

Inferential Statistics

Gay, Mills and Airasian (2003) explained that inferential statistics were "data analysis techniques for determining how likely it is that results obtained from a sample or samples are the same results that would have been obtained for the entire population" (p. 337). Because the subjects in the study were an entire population, rather than a random sample, the statistically significant differences in the respondents' perceived faculty attitudes towards technology integration in the UAF faculty, faculty perceptions of the effects of OL on teaching, and faculty perceptions of technology professional development needs were reported as true indicators for differences rather than probable differences.

A series of one-way multivariate analyses of variance (MANOVA) tests was performed to determine if significant differences existed among variables. This study used MANOVA because it can examine "more than one dependent variable at once" and is performed when there are three or more dependent variables (Cronk, 2006, p. 81). For example, if ANOVA tests were to be calculated for each of the seventy-one questionnaire items of the survey, it would cause Type 1 error inflation (Cronk, 2006). According to Field (2005) "the more dependent variables that have to be measured, the more ANOVAs would be needed to be conducted and

the greater the chance of making a Type I error" i.e. rejecting a true null hypothesis (p. 572). Therefore, conducting MANOVA tests was considered more appropriate than conducting ANOVAs to avoid Type I error. If a study conducts a series of ANOVA tests instead of a MANOVA then "the relationship between dependent variables is unobserved. As such, we would fail to discover any correlations that might exist between the dependent variables" (Field, 2005). In addition, using ANOVAs too often would escalate the familywise error rate (FER). The FER is the probability that one or more of the ANOVAs would result in a Type I error, thus increasing the error rate. To avoid Type I error inflations, a series of MANOVA tests were used in the present study to analyze each question.

When statistically significant differences were identified from MANOVA results, a series of analyses of variance (ANOVA) tests were conducted to determine values of significance. Field (2005) indicated that the ANOVA was useful as a quantitative measure for interval data to gain differences among two or more measures. Moreover, ANOVA "avoids the "inflation-of-probabilities problems and keeps the Type I error at 5 percent by, in essence, making a single simultaneous test of all means" (Krathwohl, 1998, p. 490). After conducting ANOVAs, for all values of significance found at $p<.05$ a series of Scheffe post hoc contrasts were used to determine where statistical differences occurred. The Scheffe Test is considered the most conservative, since it allows for a comparison of all possible paired comparisons and complex comparisons between combined means. Haslam and McGarty (2003) consider the Scheffe test as "one of the best known" methods of performing multiple comparisons. The assumptions of MANOVA include normal distribution (dependent variable is normally distributed within groups), linearity (linear relationships exit among all dependent variables),

and homogeneity of variance (the dependent variable maintains equal levels of variance across the independent variable).

Additionally, a Strength of Association test was used. Generally, the type of variables examined affects the statistical procedures that are employed. When there are two types of variables, a Pearson's correlation coefficient (r) is used to measure the linear strength of the association between them. The statistic "eta" is designed for the case in which one of the measures is nominal and the other is interval. Lowry (1999) states that eta^2 represents the proportion of the variance accounted for by the effect and provides a measure of the strength of correlation irrespective of whether it is linear or curvilinear. Unlike r^2, however, which represents only linear relationship, eta^2 can represent any type of relationship.

Reliability

Reliability refers to the consistency of a measure. A test is considered reliable if we find the same results repeatedly (O'Sullivan, Rassel & Berner, 2003). The researcher performed reliability tests on the responses to the closed-ended questions of the study. The reliability of the survey instrument was tested using Cronbach's Alpha level. Cronbach's Alpha, a commonly accepted test, is used to calculate the internal reliability of an instrument. Findings with alphas (α) of 0.7 or greater indicate acceptable reliability and those with 0.8 or higher indicate good reliability (Weiner et al, 2003). The Cronbach's Alpha value of the survey instrument to be used in this study was $\alpha = 0.85$.

Validity

Gay, Mills and Airasian (2006) defined validity as "the degree to which a test measures what it is supposed to measure and, consequently permits appropriate interpretation of scores.

When we test, we test for a purpose" (p. 134). There were two constraints that could impact the internal validity of this study (Gay, Mills & Airasian, 2006):

- Mortality: if participants dropped out of this study, it could prevent an equal distribution in the teaching experience, age or other variables studied.
- Selection interaction. UAF faculty may have collaborated together to fill out the survey in the departments (Gay et al, 2006). Also, faculty members were aware of the importance of using technology in the university. Respondents may have been inclined to overstate their practices due to the professional pressures to actively use technology in instruction.

Qualitative Measures

Survey Open-Ended Questions

Quantitative measures, alone, cannot provide an in-depth understanding of important professional development needs and components. Therefore, qualitative measures were applied to analyze data collected from open-ended questions in order to provide a vehicle to receive a wider range of detailed data from the subjects. Patton (2002) defined a qualitative method as "a method to study of issues in-depth and detail" (p.14). Although most of the data for this study were collected through quantitative methods, data was collected through responses to open-ended questions and interviews of selected participants. In this study, the survey instrument had sufficient space for respondents to answer three open-ended questions. There was one question for part I of the survey on stages of concerns section. There were two additional questions in part V of the survey on professional development. The components of the qualitative measures in the questionnaire provided in-depth analysis to enhance the quantitative measures, because,

according to Patton, "open-ended question probes yielded in-depth responses about people's experiences, perceptions, opinions, feelings, and knowledge" (Patton, 2002, p. 4).

Faculty Interviews

The qualitative research interview seeks to explain the meanings of central themes in the experience of the subjects. The main task in interviewing is to understand the meaning of what the interviewees say (Lindlof & Taylor, 2002). In addition, Lindlof and Taylor (2002) stated that interviews were particularly useful for capturing the story behind a participant's experiences. The interviewer can pursue in-depth information around the topic. Interviews are useful as follow-up to survey respondents to further investigate their responses, as well as to clarify them. This study adopted a structured (standardized open-ended**)** interview protocol (Appendix C) for the faculty members. The intention of this approach was to ensure that each interview had exactly the same questions in the same order. This ensured that answers can be reliably aggregated and that comparisons could be made with confidence in different survey periods. Questions were worded in order to "trigger" open-ended responses (Creswell, 2003). This enabled the participants to contribute as much detailed information as they wished. It also allowed the researcher to ask probing questions as a means of follow-up. According to Gall, Gall, and Borg (2003), this approach reduces researcher bias within the study, particularly when the interviewing process involves many participants.

Data analysis included coding and recoding units into categories to develop patterns and themes. Pattern codes were developed during the interview process and those codes were "tried out" on the next subsequence interview to see if they "fit" (Miles & Huberman, 1994, p. 70). Following Miles & Huberman's (1994) methodology, the most promising codes to emerge from

this exercise were written up, then these pattern codes were checked in the next interview and so on.

Triangulation of the evidence was accomplished through multiple sources of evidence and "member checks". This a technique used by the qualitative researcher to help improve the accuracy, credibility, dependability, and transferability of the study. In this study, when an interview response was unclear, the interviewer asked for clarification. When analyzing the data, the researcher would contact the interviewee to comment or clarify further the nature of the interview comment. The interviewee clarification comments served as a check on the viability of the interpretation. The greatest advantage in a member check is that the researcher can verify the entirety and completeness of the findings, which is a measurable tool of the accuracy of the findings. However, the disadvantages related to the member check include member check exercises can make extensive demands on the participants' time or participants may tell the researcher what they believe the researcher wants to hear (Gall, Gall, and Borg (2003).

Data Collection Procedures

The researcher randomly selected interview participants from each rank (Professor, Associate Professor, Assistant Professor and Instructor) one week after the survey was completed, for a total of 16 faculty. The sample interviewees were selected from each academic rank as follows: 5 faculty members from the professor pool, 4 from the associate professor pool, 5 from the assistant professor pool, and 2 from the instructor pool. Only two faculty members were selected from instructor group because of the small total number (11) of participants in that rank.

At the time of the initial phone call, the research study was described, interview question topics were briefly outlined, and interview time and location options were discussed. Also, the participant's letter of consent was discussed at the initial phone call. For each faculty that was selected and willing to participate, the participant and researcher mutually agreed upon a time and place, with the option of a phone interview also available. The researcher verified the faculty member's email address and sent the letter of consent within 30 minutes of concluding the initial call. There were twelve signed consent forms that were received via email, and six were received via verbal consent during interview.

The researcher used the structured interview approach (Appendix C – Interview Protocol) to maintain consistency during the interview. The researcher initiated the phone interviews and called the participant at the mutually agreed-upon time. Some participants needed to reschedule, and that was allowed. Participants were reminded that participation in the study was completely voluntary, and participants had the option to withdraw at any time during the study. The interview session continued with a brief overview of the consent for participation. The researcher asked if the faculty would voluntarily participate and reiterated the topics from the initial phone call: the research study was described, the importance of faculty members input was emphasized, and a brief overview of interview question topics was provided. Participants were reminded that the researcher took reasonable precautions to maintain confidentiality and anonymity for the faculty members in the study. Thus, each participant was asked to respond honestly and thoroughly during the interview. The researcher asked if the participant had any questions, and asked the participant if the researcher was allowed to begin audio recording the interview. All sixteen-faculty participants allowed the researcher to audio record the interview.

The individual faculty interviews took place at the end of spring semester during the period of 7/18/2011 to 7/29/11. Each faculty participant was offered the option of either a face-to-face or phone interview at a time of their choosing. Eleven faculty interviews took place at the Fairbanks campus in the interviewee's office and the remaining five took place via phone. All interviews were digitally audio-recorded. During the interview, the researcher took notes, which the researcher used to expand and come back to certain topics. After the interview was completed, participants were asked if they had any questions or wanted to add anything they felt might be important for the study. The researcher thanked the participants and stopped the audio recorder. The researcher explained the remaining steps in the study, one of which allowed the participants to review their specific transcript and make changes or explanations, if needed. The average length of interview was 15 minutes. The shortest interview was 9 minutes 32 seconds and the longest one was 23 minutes 6 seconds.

Each digital audio recording was saved using a pseudonym for each participant in the study. The same pseudonym was used to name the transcribed text file. Only the initial researcher knew the actual faculty and the pseudonym used for that faculty.

Transcription

The researcher hired two staff to assist in the transcription process. Microsoft Word and Express Scribe (computerized transcription software) were used to transcribe each interview into verbatim text from the digital audio files. While the interview was transcribed word-for-word, filler words such as "uuhhmm", "ya know", "aaaaa", "well", etc., were omitted. Each statement by the interviewer was formatted in bold font and all statements from the interviewee remained unbolded and double-spaced between each statement. The transcribed text file was

then sent via email to the participant for member checks of their own interview transcripts so that each could correct and clarify their interview comments.

Member checks were used in the process to verify that the information from the interview was accurate. Feedback from the participants was incorporated into the interview transcript final document. After the interviewee had an opportunity to verify that the transcript was accurate, the transcribed text was copied, with formatting, into a Google Docs document for coding.

Coding Process

The coding process occurred in the following manner: (1) the interview was coded, based on the first research question (2), then the interview was coded, based on the second research question (3), and, finally, the interview was coded, based on the third research question. The interview was then reexamined considering all three research questions, as a whole, to ensure that the coding process did not overlook data relevant to the study. The units were developed and analyzed by the researcher to describe an organized and detailed story of the phenomena being studied. After the interview was coded, the Google Docs interview was shared with the Major Professor, who used Skype and Google Docs, which allowed distance collaboration. The researcher discussed and evaluated the coding, and suggested modifications occurred. After all faculty interviews were coded using Google docs, the coded Google Docs files were imported into Microsoft Excel for interpretation and record-keeping purposes.

Microsoft Excel was used for the remaining coding process of developing patterns and themes. The research questions were constantly reviewed in order to remain focused during the analysis stage.

Microsoft Excel was used to organize data into codes. To accomplish this, various Excel features were applied: Find & Replace, functions, data removal, and PivotTables were used. Codes were created, combined, and changed during this process, due to the changing of codes and reorganization of units. It was the goal during this phase to keep the expressed intent and meaning related to the research questions, from which patterns and themes developed. The units were analyzed and used to develop patterns and themes. The process described above was applied and reapplied throughout coding.

Data Reduction

According to Miles and Huberman (1994), data reduction is the continuous process of selecting, condensing, simplifying, abstracting, and transforming data that are in field notes or transcriptions. The early stages of the reduction process actually takes place before the data collection; the anticipatory data reduction occurs while the researcher decides which conceptual framework, cases, research questions, and data collection approaches to select. Throughout the data collection process, other data reduction processes take place: summarizing, coding, and theme clustering. The reduction of data also continues after conducting interview until completion of the final report of the study.

Open-ended comments and interview transcripts were recorded in Microsoft Office Word. Data analysis included noting patterns and themes, seeing plausibility, clustering, making contrasts and comparisons, noting relationships between variables and establishing a logical chain of evidence to develop themes. Triangulating the evidence was triangulated through multiple sources of evidence and member checks, and extreme cases were used for verifying and confirming conclusions.

Open coding was used to further interpret data. Open coding involves "breaking down, examining, comparing, conceptualizing, and categorizing data" (Strauss & Corbin, 1990, p. 61), often in terms of properties and dimensions. The open coding process, while procedurally guided, is fundamentally interpretive in nature, and grounded theory researchers "must include the perspectives and voices of the people" whom they study (Strauss & Corbin, 1994, p. 274). The constant comparative method was used by constantly comparing each piece of data with codes and notes already identified. Comparison helped identify distinct characteristics and ordinal position on any relevant scale. Theoretical saturation was achieved when no further new codes or categories were identified. Further analysis then tested and supported the identified theory.

The researcher composed an inductive classification of responses that pertained to specific aspects of faculty concerns and professional development needs. A record was maintained regarding the number of times a particular word or phrase was used from the responses to open-ended questions. This type of inductive classification scheme was followed for coding purposes in order to recognize relationships of interests (e.g., additional professional development or concern elements). Miles and Huberman (1994) explained that this process of analytic induction from qualitative data helps the researcher recognize themes not revealed through quantitative measures. Lindlof and Taylor (2002) recommended two processes for making sense of qualitative data, both through analysis and interpretation. Analysis involves labeling and breaking down (or decontextualizing) raw data, and then reconstituting this data into patterns, themes, concepts, and propositions. The second process is data display.

Data Display

According to Miles and Huberman (1994) the process of displaying the data is the second part of analysis. In this stage the researcher displays an organized, compressed, and condensed piece of information that enables conclusions to be drawn and actions taken. In this study information is displayed in charts, tables, figures, and graphs that enable immediate access and reading of the information.

Conclusion Drawing and Verification

Throughout the data collection process the researcher formulates the patterns, and creates explanations (Miles and Huberman, 1994). During data collection, the researcher begins the process of following and observing certain conclusions that are not yet finalized. In this study, the researcher went through the responses to the open-ended and interview questions and analyzed them by using a coding system to identify the major themes from the responses. Through this process, "categories are built, are named, and have attributes ascribed to them" (Lindlof and Taylor, 2002, p. 219). Additionally, the researcher checked answers to the open-ended questions against those of the closed-ended for understanding, triangulation, and conclusion-drawing purposes.

Trustworthiness of the Research

Credibility

Credibility corresponds to internal validity in quantitative research. In this study, the research took several steps to address the issue of credibility. In order to ensure honesty in participants when collecting the data, each participant was given opportunities to refuse to participate in the open-ended questions. Thus, the researcher is assured that the only those

participants who are truly willing to take part in the survey answer the questions. Guba and Lincoln (1989) considered "member checks" the single most important provision that can be made to strengthen a study's credibility. Researchers verify their findings through feedback from the participants to whom they return with the findings and interpretation of the study. Triangulation of the data sources, the use of different methods in concert, compensates for their individual limitations and exploits their respective benefits (Guba & Lincoln, 1989).

Transferability

Transferability, the alternative term for external validity and generalizability, means that the findings in one context can be transferred to similar settings or situations. Guba and Lincoln (1989) also suggested that researchers use thick description and that they describe accurately and in detail the data in context so that colleagues and readers have a clear picture of what is going on. Through stratified sampling, too, rich and specific information is collected.

Dependability

If a study is to be judged dependable in comparison to reliability in quantitative research, it must be consistent and accurate (Guba & Lincoln, 1989). It can be displayed through an "audit trail" in which the researcher provides detailed descriptions of the path of the research so that future researchers can repeat the work if not necessarily to gain a similar result (Shenton, 2004). Such in-depth coverage also enables the reader to examine the extent to which proper research practices have been followed.

Confirmability

The concept of confirmability is the qualitative researcher's concern that is comparable to objectivity. Miles and Huberman (1994) considered that a key criterion for confirmability was the extent to which the investigator admitted his or her own predispositions. Here, too, the

audit trail, used to validate dependability, should give the researcher's peers an opportunity to access the findings of the study (Shenton, 2004).

Ethical Considerations

Miles and Huberman (1994) advised novice researchers to maintain humility and to be ethically responsive to the research. To maintain humility, the researchers should not take themselves or their research so seriously that they disregard the fact that those whom they study have other and more important things in their lives. The researcher should not interfere in the subject's lives. Patton (2002) alerted researchers to the dominant issues guidelines of ethics in research: informed consent and the protection of subjects from harm. These guidelines are considered to ensure the following:

1. Subjects participate in the research projects voluntarily; understand the nature of the research and the risks and obligations that are involved.
2. Subjects are kept from exposure to risks "that are greater than gains they might derive (Patton, 2002).

In this study the researcher abided by the rules and guidelines of the Institutional Review Board (IRB) and University. The researcher had completed the required IRB training for personnel proposing to conduct research involving human subjects (see Appendix G - KSU IRB Approval).

In this study, the researcher made all reasonable efforts to ensure the ethical treatment of the participants. The primary ethical considerations in this study was to focus on establishing safeguards that will protect the rights of participants and include informed consent, protected participants from harm, and ensure confidentiality (Merriam, 1998). Additionally, the ethical standards of the Institutional Review Board (IRB) at Kansas State University were upheld

through each phase of the research study. This is explained thoroughly in the informed consent letter (See Appendix B - Letter of Consent) and verbally before the interview(s).

Participation in the study was completely voluntary, and participants had the option to withdraw at any time during the study. The researcher took reasonable precautions to maintain confidentiality and anonymity for the faculty in the study: (1) participation was strictly voluntary (2) recordings and transcripts are maintained in a locked file cabinet and will be destroyed upon completion of the successful defense of the dissertation and (3) specific statements that may identify faculty were removed or changed.

Chapter 4 - Data Analysis and Findings

Chapter Overview

The purpose of this study was to obtain an in-depth understanding about the needs of faculty in University of Alaska Fairbanks for professional development purposes in order to help them to adopt OL. Both quantitative and qualitative measures were employed in this mixed methods study. The quantitative measures included a survey with close-ended questions. The qualitative measures included survey open-ended questions and faculty interviews.

For quantitative measures, surveys were sent out to 253 faculty in the three colleges that were for which the university had high need for OL. One hundred surveys were returned, for a response rate of 41%. Four surveys were incomplete, which then brought the final response rate down to 39%, with ninety-six surveys considered usable. Several unexpected factors contributed to such a disappointing response rate, among them the comparatively high percentage of research- only faculty in the College of Natural Science and Mathematics, and who, consequently, found the survey inapplicable to their particular situation. These factors and their implications for sampling in future studies will be discussed in more detail in the Recommendations for Future Studies section of Chapter 5.

This chapter presents quantitative data in three sections. The first section provides survey closed-ended question frequencies for participants' demographic variables (age, gender, years of teaching experience), contextual characteristics (administrative support of technology, colleagues using technology, college, and academic rank) and technographic characteristics (prior instructional technology use, technology-related professional development, attitudes toward teaching with technology).

The second section presents the quantitative measures. It displays the data from MANOVAs for the three research questions in tables and charts. The ANOVA test was conducted after MANOVA results to find where the significances occurred. Research Question One tested the relationship between the stages of concern and participants' demographic characteristics to adopt OL through null hypotheses. Research Question Two examined the relationship between faculty stages of concern and contextual characteristics in adopting OL. Research Question Three examined the relationship between faculty use of technology in teaching and prior instructional technology use, technology-related professional development, and attitudes toward teaching with technology through null hypotheses.

The third section reports the qualitative measures. The qualitative data were obtained from three open-ended survey questions and 16 faculty interviews. The data were displayed in tables and charts for the major themes that emerged for both interviews and questions. The interviews primarily addressed the areas of faculty administrative support and technology related professional development. The first open-ended question addressed UAF faculty concerns toward adopting OL. The second open-ended question addressed UAF faculty professional development activity needs in order for them to be able to use OL in their teaching. The third open-ended question addressed professional development needs, such as incentives, support, etc., in order for UAF faculty to adopt OL. The sample interviewees were selected from each academic rank as follows: 5 faculty members from the professor pool, 4 from the associate professor pool, 5 from the assistant professor pool, and 2 from the instructor pool.

Research Questions and Null hypotheses

This study investigated the concerns of full-time faculty and instructors at the University of Alaska Fairbanks in adopting online learning (OL) and how those concerns related to faculty professional development needs. There were three primary research questions:

Research Question #1: *Is there a significant relationship between full-time faculty personal characteristics (age, gender, and years of teaching experience) and their concerns in adopting Online Learning?*

Null Hypotheses:

Ho 1.1. There are no statistically significant differences between faculty age and faculty concerns in adopting OL.

Ho 1.2. There are no statistically significant differences between faculty gender and faculty concerns in adopting OL.

Ho 1.3. There are no statistically significant differences between faculty years of teaching experience and faculty concerns in adopting OL.

Research Question #2: *Is there a significant relationship between full-time faculty contextual characteristics (administrative support of technology, colleagues using technology, college, and academic rank) and their concerns in adopting Online Learning?*

Ho 2.1. There are no statistically significant differences between faculty administrative support of technology and faculty concerns in adopting OL.

Ho 2.2. There are no statistically significant differences between faculty colleagues using technology and faculty concerns in adopting OL.

Ho 2.3. There are no statistically significant differences between faculty college affiliation and faculty concerns in adopting OL.

Ho 2.4. There are no statistically significant differences between faculty academic rank and faculty concerns in adopting OL.

Research Question #3: *Is there a significant relationship between full-time faculty technographic characteristics (prior instructional technology use, technology-related professional development, attitudes toward teaching with technology) and faculty use of technology in teaching?*

Ho 3.1. There are no statistically significant differences between faculty prior instructional technology use and faculty use of technology in teaching.

Ho 3.2. There are no statistically significant differences between faculty technology-related professional development and faculty use of technology in teaching.

Ho 3.3. There are no statistically significant differences between faculty attitudes toward teaching with technology and faculty use of technology in teaching.

Descriptive Statistics

Characteristics of the Respondents

Personal Characteristics

The personal characteristics of the respondents in this study were age, gender, and years of teaching experience. Each of the characteristics is displayed via tables and charts for the number and percentage of the participants.

Age Range

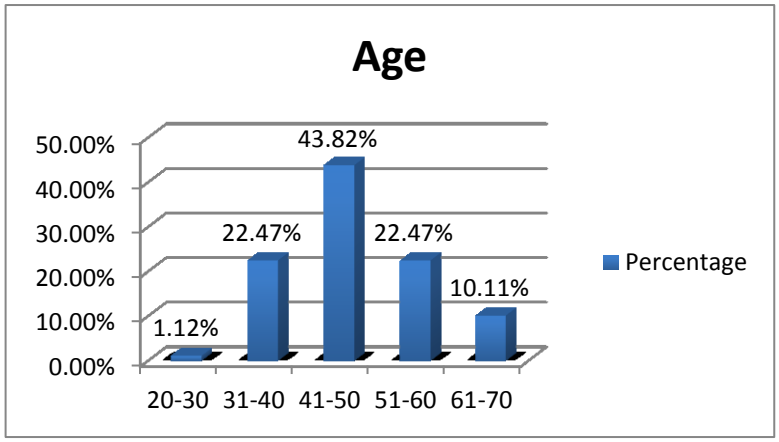
Table 4.1 and figure 4.1 show that 1.12 % of the participants were in the age range of 20-30, 22.47 % were in the age range of 31-40, 43.82 % of the participants were in the age

range of 41-50, 22.47 % of the participants were in the age range of 51-60, and 10.11 % were in the age range of 61-70.

Table 4-1 *Age Range of the Participants*

Age Range	N	Percentage
20-30	1	1.12%
31-40	20	22.47%
41-50	39	43.82%
51-60	20	22.47%
61-70	9	10.11%
Total	89	100.00%

Figure 4-1 *Age Range of the Participants*



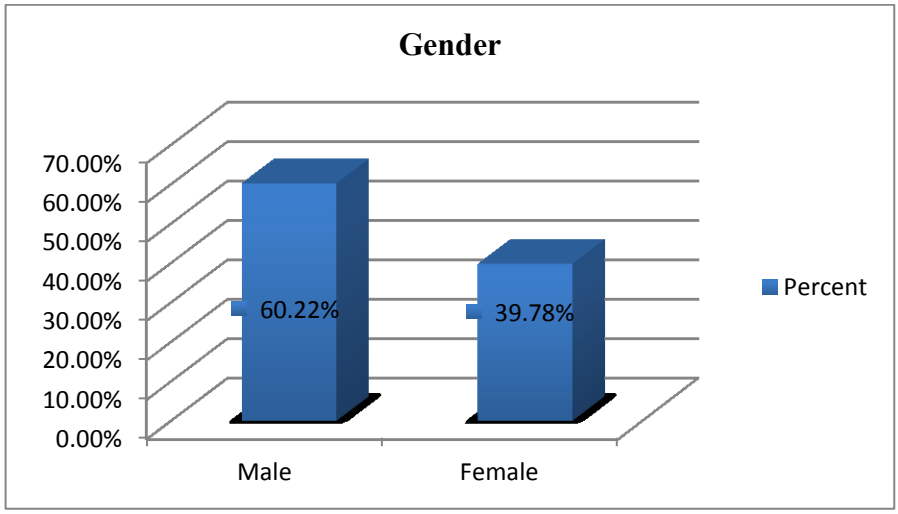
Gender

Table 4.2 and figure 4.2 show that 60.2 % of the participants were male and 39.8 % were female.

Table 4-2 *Gender of the Participants*

Independent Variables	N	Percentage
Male	56	60.2
Female	37	39.8
Total	93	100

Figure 4-2 *Gender of the Participants*



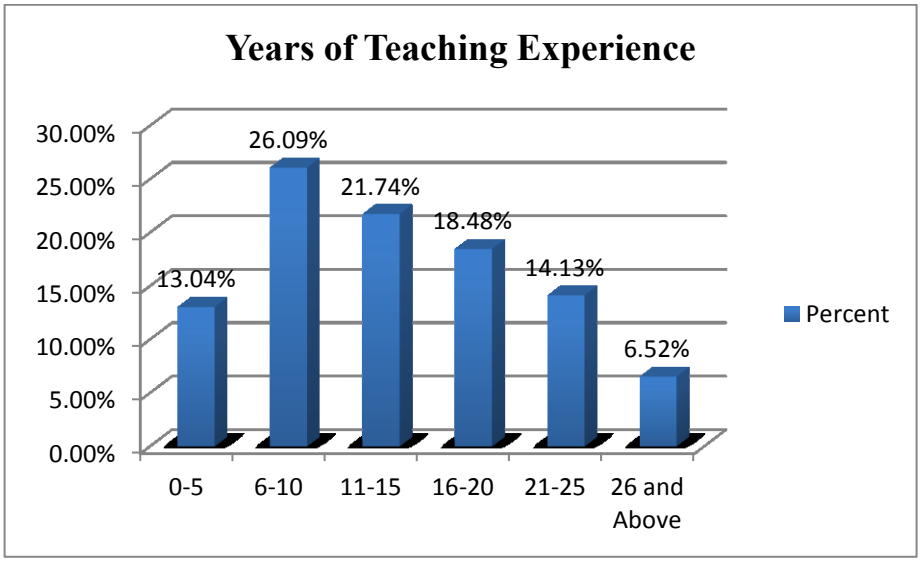
Years of Teaching Experience

Table 4.3 and figure 4.3 display the faculty years of teaching experience. Those who had taught more than 6 to 10 years of post-secondary teaching experience were the largest group in this study, with 26.07%. The second largest group in this study was the faculty who had taught from 11 to 15 years with, 21.74%. The faculty who had taught from 16 to 20 was the third largest group, with 18.48%, and the smallest group in this study was the faculty who had taught more than 26 years, with 6.52%.

Table 4-3 *Years of Teaching Experience*

Year Range	N	Percent
0-5	12	13.04%
6-10	24	26.09%
11-15	20	21.74%
16-20	17	18.48%
21-25	13	14.13%
26 and Above	6	6.52%
Total	92	100.00%

Figure 4-3 *Years of Teaching Experience*



Contextual Characteristics

The contextual characteristics of the respondents in this study were administrative support of technology, colleagues using technology, college, and academic rank. Each of the characteristics is displayed via tables and charts for the number and percentage of the participants.

College Association

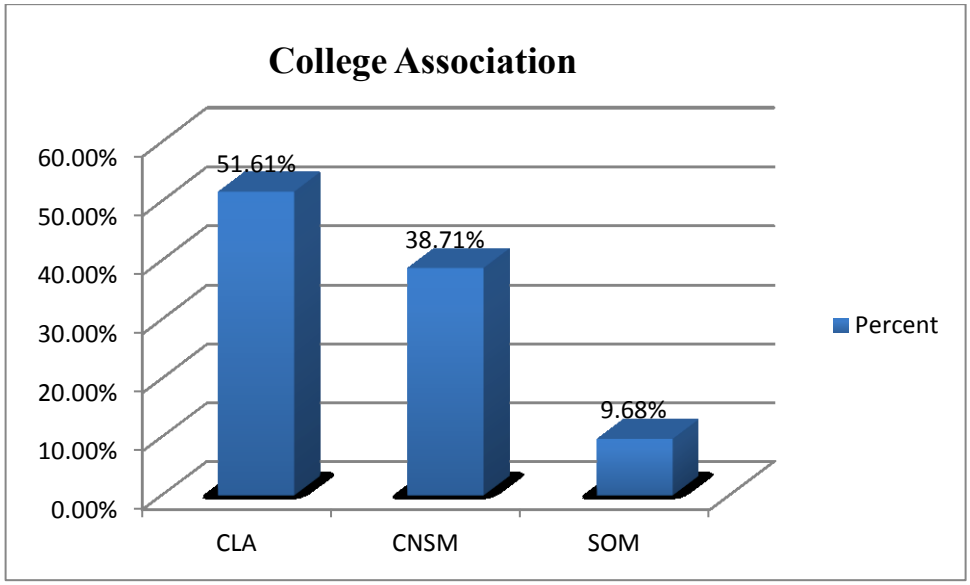
Table 4.4 and Figure 4.4 show that 51.61 % of the participants were associated with the College of Liberal Arts, and 38.71% were associated with the College of Natural Sciences and

Mathematics. Of this group 9.68 % of the participants were associated with the School of Management.

Table 4-4 *College Association*

College/School	N	Percent
CLA	48	51.61%
CNSM	36	38.71%
SOM	9	9.68%
Total	93	100.00%

Figure 4-4 *College Association*



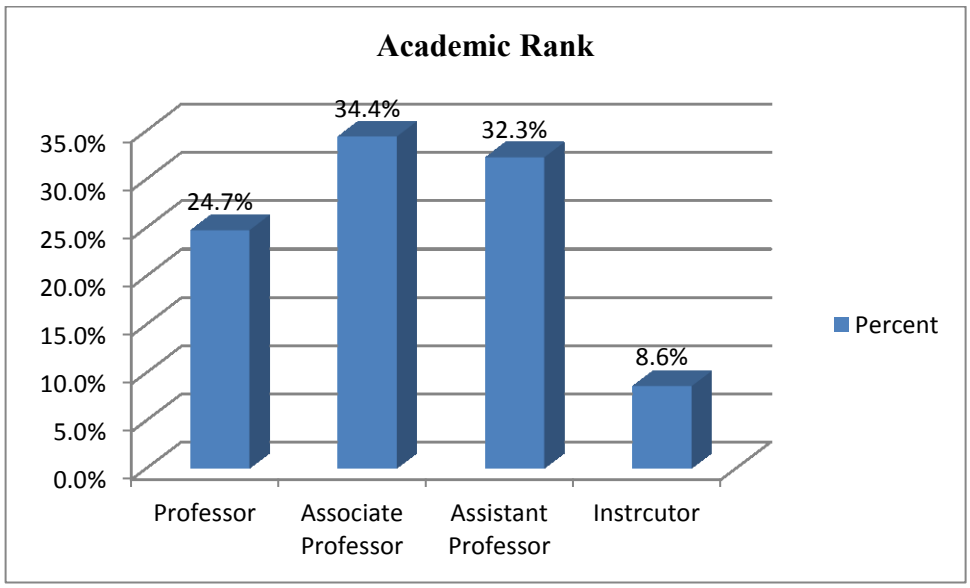
Academic Rank

Table 4.5 and figure 4.5 show that among the 93 participants who reported their academic rank, the largest number of participants, 34.4%, was the Associate Professor rank. Assistant Professors were the next largest group, with 32.3%. The Professors were 24.7%. The participants with Instructor rank were the smallest group, with 8.6%.

Table 4-5 *Academic Rank*

Academic Rank	N	Percent
Professor	23	24.7%
Associate Professor	32	34.4%
Assistant Professor	30	32.3%
Instructor	8	8.6%
Total	93	100%

Figure 4-5 *Academic Rank*



Administrative Support for Teaching with Technology

There were 21 sub-questions for question number 37. These sub-questions were grouped according to the three levels of administrators: department, college, and senior academic administrators, with 7 questions for each level. Descriptive statistics were conducted on these 3 levels of academic administrators using SPSS. Tables were developed using SPSS and charts were developed using Excel. Each question has a bar chart and a frequency table that show the faculty's assessment of administrative support.

Question #37: "Please indicate your agreement with the following statements by circling your response, with "1" indicating a strongly disagree (SD), "2" disagree (D), "3" undecided (U), "4" agree (A) and "5" indicating agree strongly (AS)."

Table 4-6 *Administrative Support Department Level*

Statement	**Frequency**				
	AS	**A**	**U**	**D**	**SD**
Q3.1: Administrators in my department are supportive of faculty members who teach with technology.	39	20	23	7	7
Q3.2: Administrators in my department use technology in their own teaching practices.	29	8	33	17	8
Q3.3: Administrators in my department recognize the additional workload required to teach with technology.	15	5	29	27	19
Q3.4: Administrators in my department communicate with faculty about the value of teaching with technology.	14	4	25	32	19
Q3.5: Administrators in my department understand how to assess the quality of teaching with technology.	6	2	34	26	27
Q3.6: Administrators in my department have positive attitudes toward teaching with technology.	27	15	35	14	4
Q3.7: Administrators in my department positively recognize the effective use of technology in reappointment, promotion and tenure decisions.	9	3	41	22	20

Figure 4-6 *Administrative Support at Department Level*

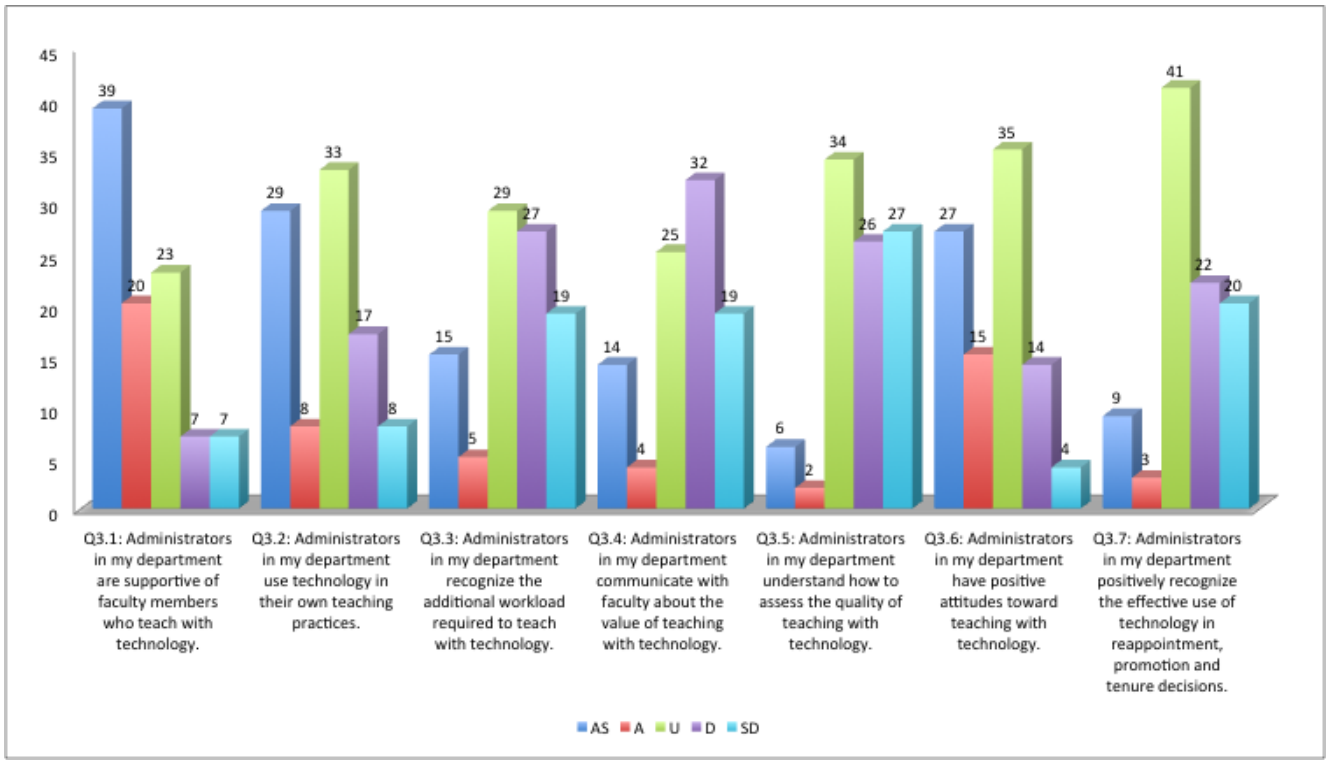


Table 4-7 *Administrative Support at College Level*

Statement	Frequency				
	AS	**A**	**U**	**D**	**SD**
Q3.8: Administrators in my college are supportive of faculty members who teach with technology.	27	14	34	13	7
Q3.9: Administrators in my college use technology in their own teaching practices.	17	6	40	19	11
Q3.10: Administrators in my college recognize the additional workload required to teach with technology.	14	3	27	27	22
Q3.11: Administrators in my college communicate with faculty about the value of teaching with technology.	19	4	18	28	24
Q3.12: Administrators in my college understand how to assess the quality of teaching with technology.	9	0	35	21	28
Q3.13: Administrators in my college have positive attitudes toward teaching with technology.	32	6	34	14	6
Q3.14: Administrators in my college positively recognize the effective use of technology in reappointment, promotion and tenure decisions.	5	1	42	23	22

Figure 4-7 *Administrative Support at College Level*

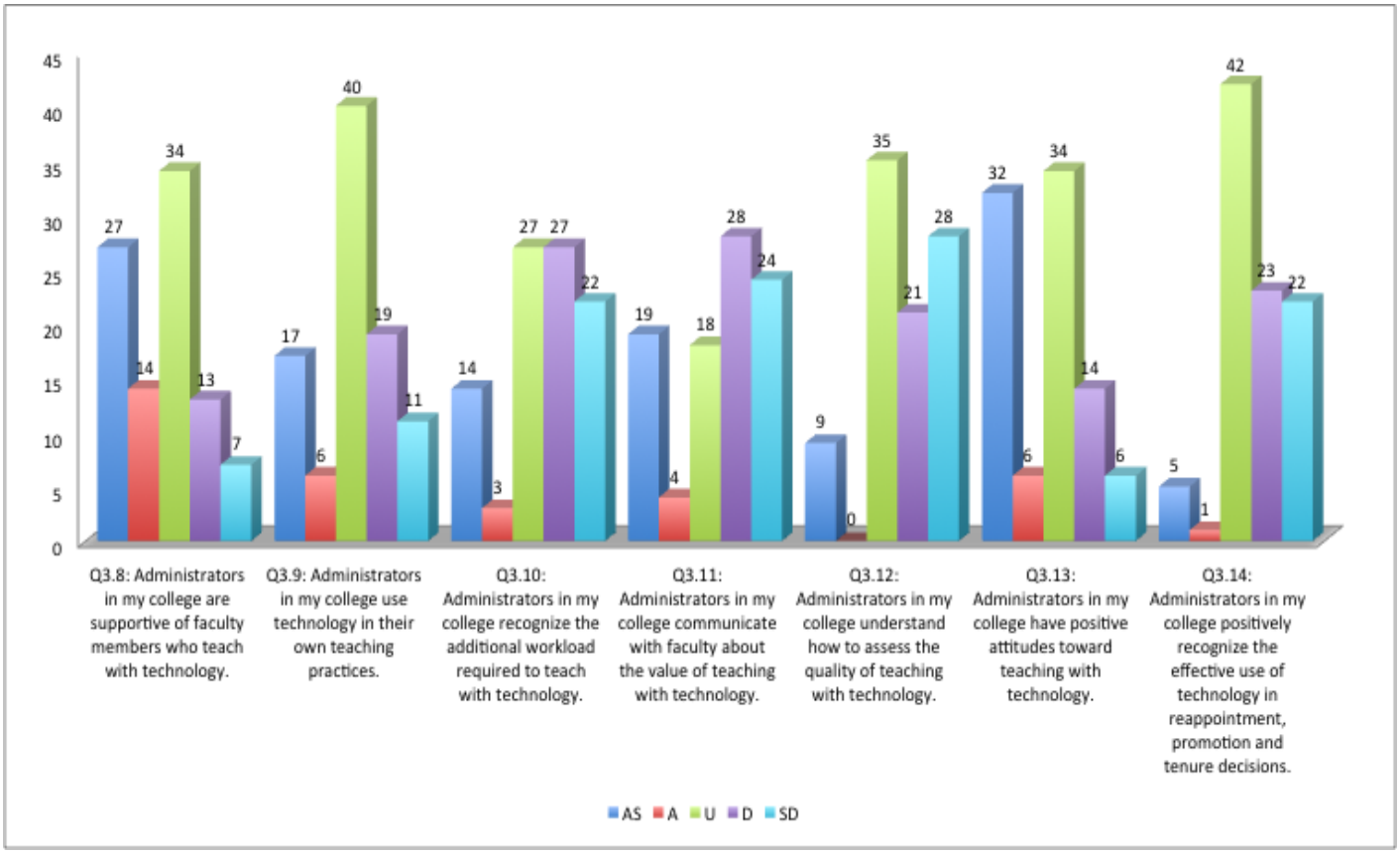
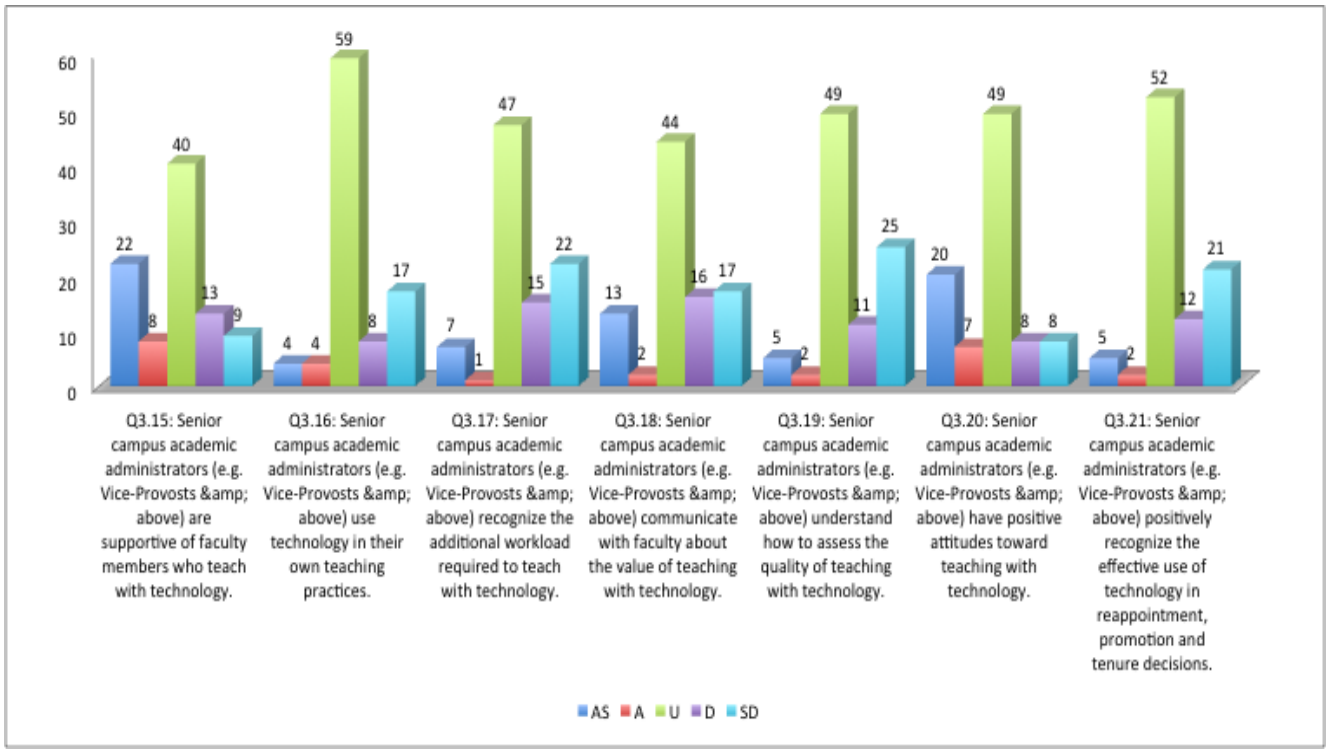


Table 4-8 *Administrative Support at Provost/Vice Chancellor Level*

Statement	Frequency				
	AS	A	U	D	SD
Q3.15: Senior campus academic administrators (e.g. Vice-Provosts & above) are supportive of faculty members who teach with technology.	22	8	40	13	9
Q3.16: Senior campus academic administrators (e.g. Vice-Provosts & above) use technology in their own teaching practices.	4	4	59	8	17
Q3.17: Senior campus academic administrators (e.g. Vice-Provosts & above) recognize the additional workload required to teach with technology.	7	1	47	15	22
Q3.18: Senior campus academic administrators (e.g. Vice-Provosts & above) communicate with faculty about the value of teaching with technology.	13	2	44	16	17
Q3.19: Senior campus academic administrators (e.g. Vice-Provosts & above) understand how to assess the quality of teaching with technology.	5	2	49	11	25
Q3.20: Senior campus academic administrators (e.g. Vice-Provosts & above) have positive attitudes toward teaching with technology.	20	7	49	8	8
Q3.21: Senior campus academic administrators (e.g. Vice-Provosts & above) positively recognize the effective use of technology in	5	2	52	12	21

reappointment, promotion and tenure decisions.						

Figure 4-8 *Administrative Support at Provost/Vice Chancellor Level*



Based on the results, more than 49% of faculty members either disagreed or disagreed strongly with the statement that UAF administrators communicated with faculty about the value of teaching with technology. Approximately 46% of faculty members did not think that UAF administrators recognized the additional workload required to teach with technology. Fifty percent of faculty did not agree that administrators at UAF understood how to assess the quality of teaching with technology. Overall, another 40% of faculty did not have enough information (selected "undecided") to answer these questions.

Colleagues Using Technology

There were 3 open-ended questions (# 38, #39, and #40) regarding faculty knowledge of colleagues' use of Learning Management Systems (Blackboard) to support instruction (whether face-to-face or distance education). Descriptive statistics were conducted on these 3 questions using SPSS. Tables were developed using SPSS and charts were developed using Excel. Each question has a bar chart and a frequency table showing faculty's attitudes towards the use of Learning Management Systems (Blackboard).

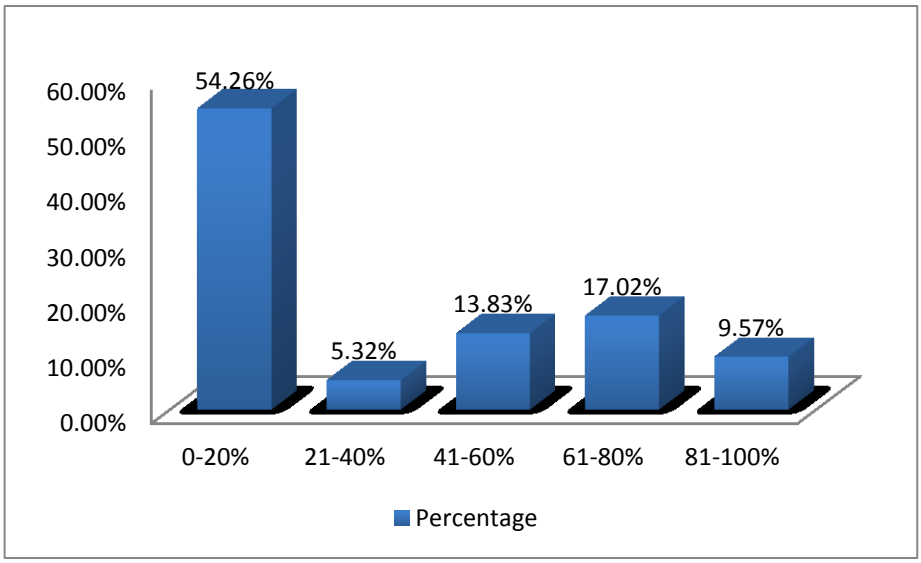
Question #38: "Estimate the percentage (i.e. 20%, 50%, etc.) of faculty in your department who are using Web-based Learning Management Systems (Blackboard)."

Over 54% of faculty members indicated that they rarely used Blackboard (less than 20%). Faculty members that used Blackboard regularly (41-60%) were in the minority (14% of the respondents). There were 27% of faculty members that used Blackboard frequently (61% of utilization). The data showed that a significant number of faculty members did not embrace LMS as a useful tool in their teaching practice. On the other hand, those who used it apparently found the LMS useful enough to rely on it significantly.

Table 4-9 *Learning Management Systems Usage*

LMS Use	N	Percentage
0-20%	51	54.26%
21-40%	5	5.32%
41-60%	13	13.83%
61-80%	16	17.02%
81-100%	9	9.57%

Figure 4-9 *Learning Management Systems Usage*



Question #39: "Overall, my faculty colleagues are (choose one):

a. Encouraging me to use Web-based Learning Management Systems

b. Encouraging me NOT to use Web-based Learning Management Systems

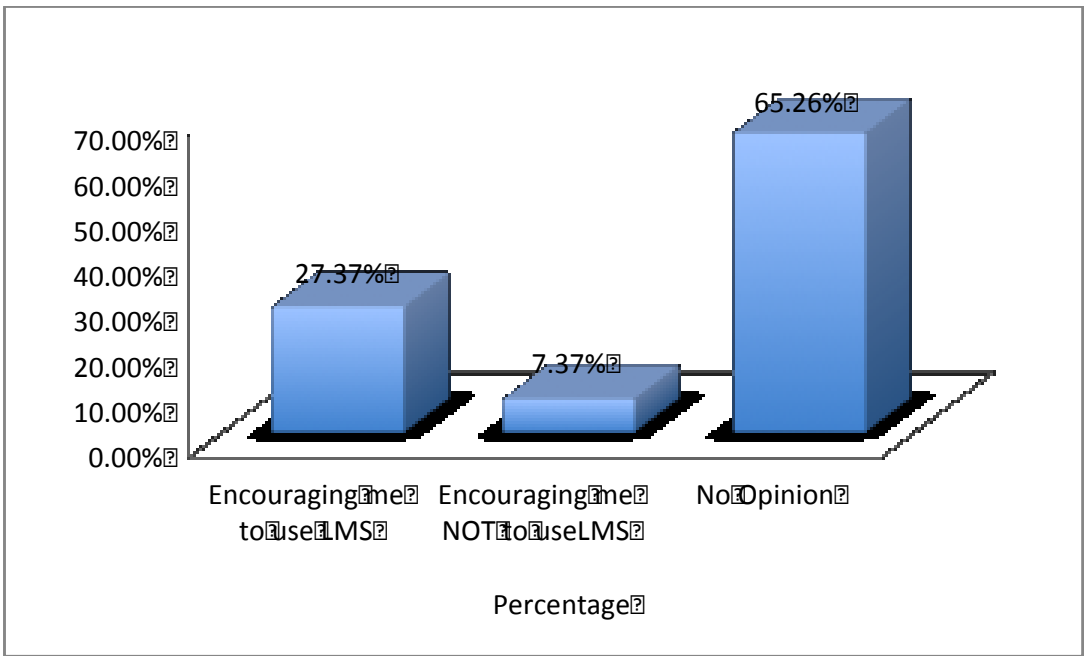
c. No opinion"

The majority of faculty (65%) had "no opinion" on their colleagues' support in adopting the use of an LMS (Blackboard). Approximately 27% faculty indicated that their colleagues encouraged the adoption of Blackboard and less than 8% of faculty colleagues discouraged the adoption of Blackboard.

Table 4-10 *Colleague Encouragement on LMS*

Colleague Encouragement	N	Percentage
Encouraging me to use LMS	26	27.37%
Encouraging me NOT to use LMS	7	7.37%
No Opinion	62	65.26%
Total	95	100.00%

Figure 4-10 *Colleague Encouragement on LMS*



Question #40: "On a scale of 1 to 5, my colleagues seem to be:

1. Very negative toward using Web-based Learning Management Systems.
2. Negative toward using Web-based Learning Management Systems.
3. Neutral/no opinion toward using Web-based Learning Management Systems.
4. Positive toward using Web-based Learning Management Systems.
5. Very positive toward using Web-based Learning Management Systems."

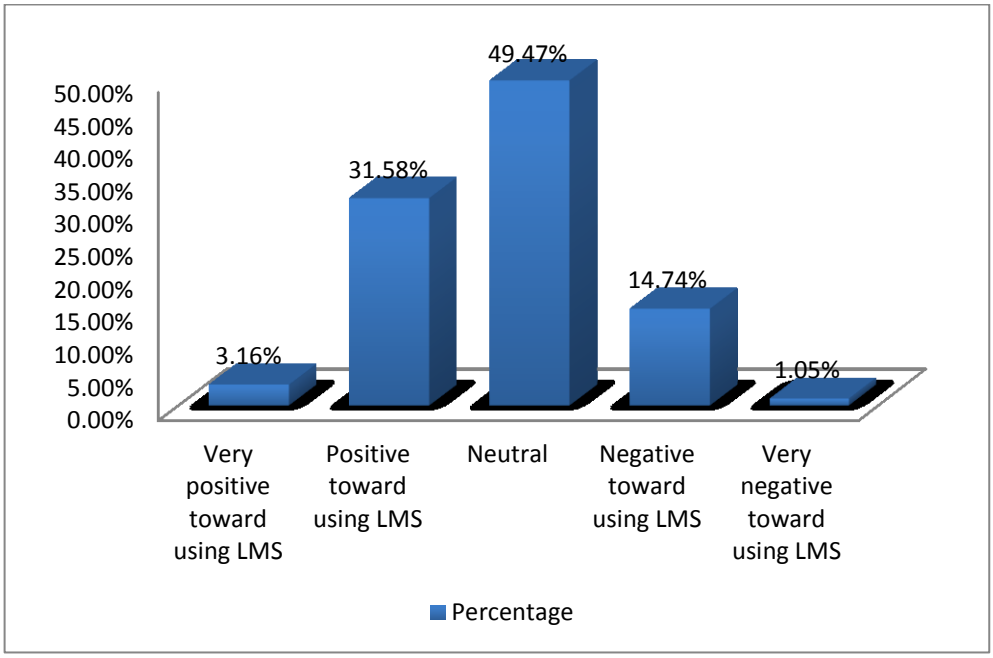
There were approximately 34% that believed that faculty colleagues had a positive or very positive attitude toward using an LMS, 49% were neutral and 16% were either negative or very negative.

Table 4-11 *Colleague Perception of LMS*

Colleague Perception of LMS	N	Percentage
Very positive toward using LMS	3	3.16%
Positive toward using LMS	30	31.58%
Neutral	47	49.47%
Negative toward using LMS	14	14.74%

Very negative toward using LMS	1	1.05%

Figure 4-11 *Colleague Perception of LMS*



Overall, UAF faculty members did not use Blackboard regularly, and their attitude toward LMS was that colleagues were more neutral on Blackboard adoption. The data also shows that among those who had an opinion, positive attitudes prevailed more than negative ones, with 31.58 % positive and 3.16% very positive, against total of 15.79% of negative or very negative attitude.

Technographic Characteristics

There was one section for faculty use of technology in teaching and three sections for technographic characteristics (prior instructional technology use, technology-related professional development, attitudes toward teaching with technology). Descriptive statistics were conducted on these questions using SPSS. Tables were developed using SPSS and charts were developed using Excel. Each question has a bar chart and a frequency table.

Faculty Technology Use in Teaching

There were 2 multi-part questions - numbers 41 (4 sub-questions) and 42 (4 sub-questions). Descriptive statistics were conducted on these 2 questions using SPSS. Tables were developed using SPSS and charts were developed using Excel. Each question has a bar chart and a frequency table showing the patterns in technology use.

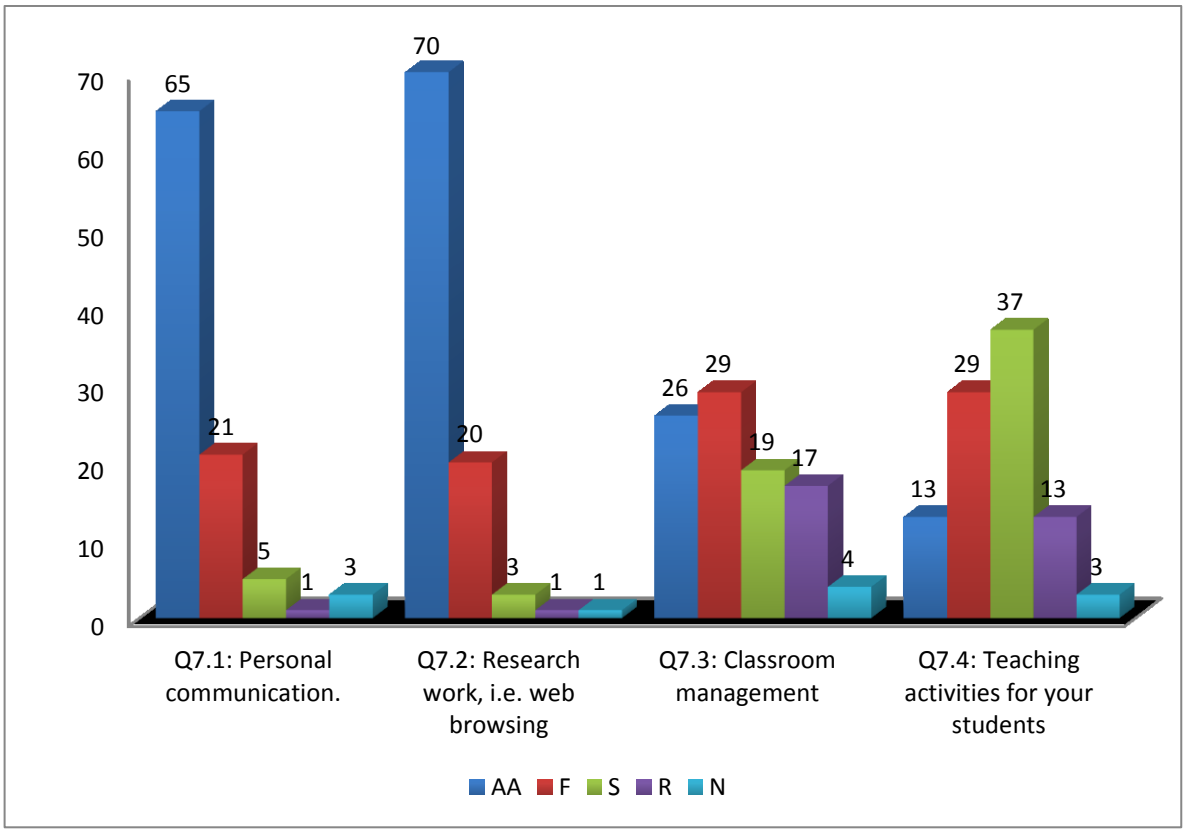
Question #41: "How often do you use computer-based technology in the following areas? Please, rate your frequency of use as follows: Almost Always (AA = 5), Frequently (F = 4), Sometimes (S = 3), Rarely (R = 2), Never (N = 1)."

Majority of faculty members (90% and above) used technology in both personal communication and research work. Approximately 58% of faculty members adopt computer-based technology for classroom management and only 44% of them use for teaching.

Table 4-12 *Faculty Technology Use in Teaching*

Statement	**Frequency**				
	AA	**F**	**S**	**R**	**N**
Q7.1: Personal communication	65	21	5	1	3
Q7.2: Research work, i.e. web browsing	70	20	3	1	1
Q7.3: Classroom management	26	29	19	17	4
Q7.4: Teaching activities for your students	13	29	37	13	3

Figure 4-12 *Faculty Technology Use in Teaching*



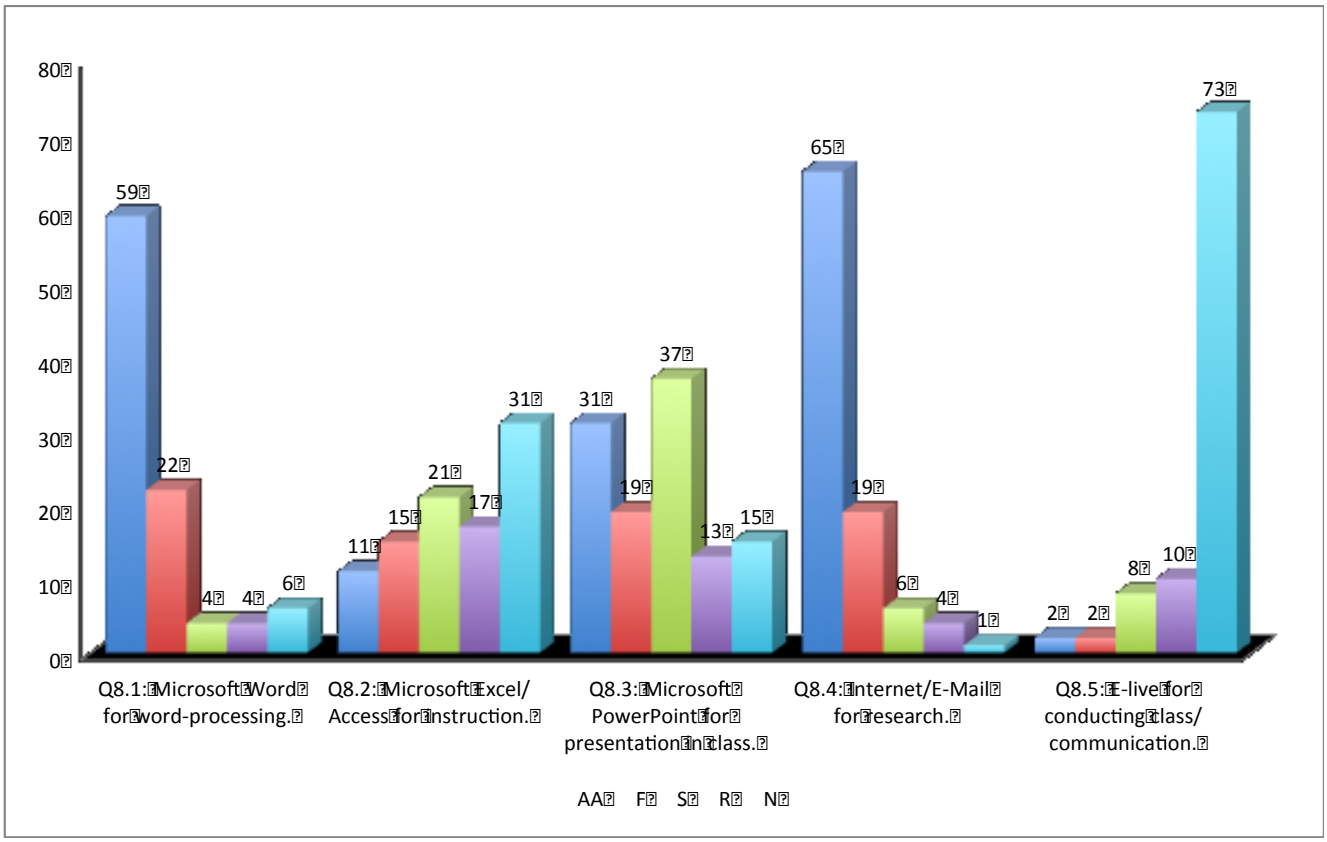
Question #42: "How often do you use the following application software for instruction? Please, rate your frequency of use as follows: Almost Always (AA = 5), Frequently (F = 4), Sometimes (S = 3), Rarely (R = 2), Never (N = 1)."

The majority of faculty (More than 85%) used Microsoft Word for working with documents and internet/email for research. Less than 5% of faculty used eLive! for conducting class or communication needs.

Table 4-13 *Software for Instruction*

Statement	Frequency				
	AA	F	S	R	N
Q8.1: Microsoft Word for word-processing.	59	22	4	4	6
Q8.2: Microsoft Excel/Access for instruction.	11	15	21	17	31
Q8.3: Microsoft PowerPoint for presentation in class.	31	19	37	13	15
Q8.4: Internet/E-Mail for research.	65	19	6	4	1
Q8.5: ELive for conducting class/communication.	2	2	8	10	73

Figure 4-13 *Software for Instruction*



The majority (90% or more) of UAF faculty members utilized computer-based technology for personal communication and research work. Some (53%) used computer-based technology for classroom management. More than 85% of faculty used Microsoft Word for

working with documents and internet/email for research. Less than 5% of faculty used ELive! for conducting class/communication.

Faculty Attitudes Toward Teaching with Technology

There was one multi-part question, number 43, with 6 sub-questions. Descriptive statistics were conducted on these sub-questions using SPSS. Tables were developed using SPSS and charts were developed using Excel. Each question has a bar chart and a frequency table. Each statement had five options; "strongly agree", "agree", "neutral", "disagree", and "strongly disagree."

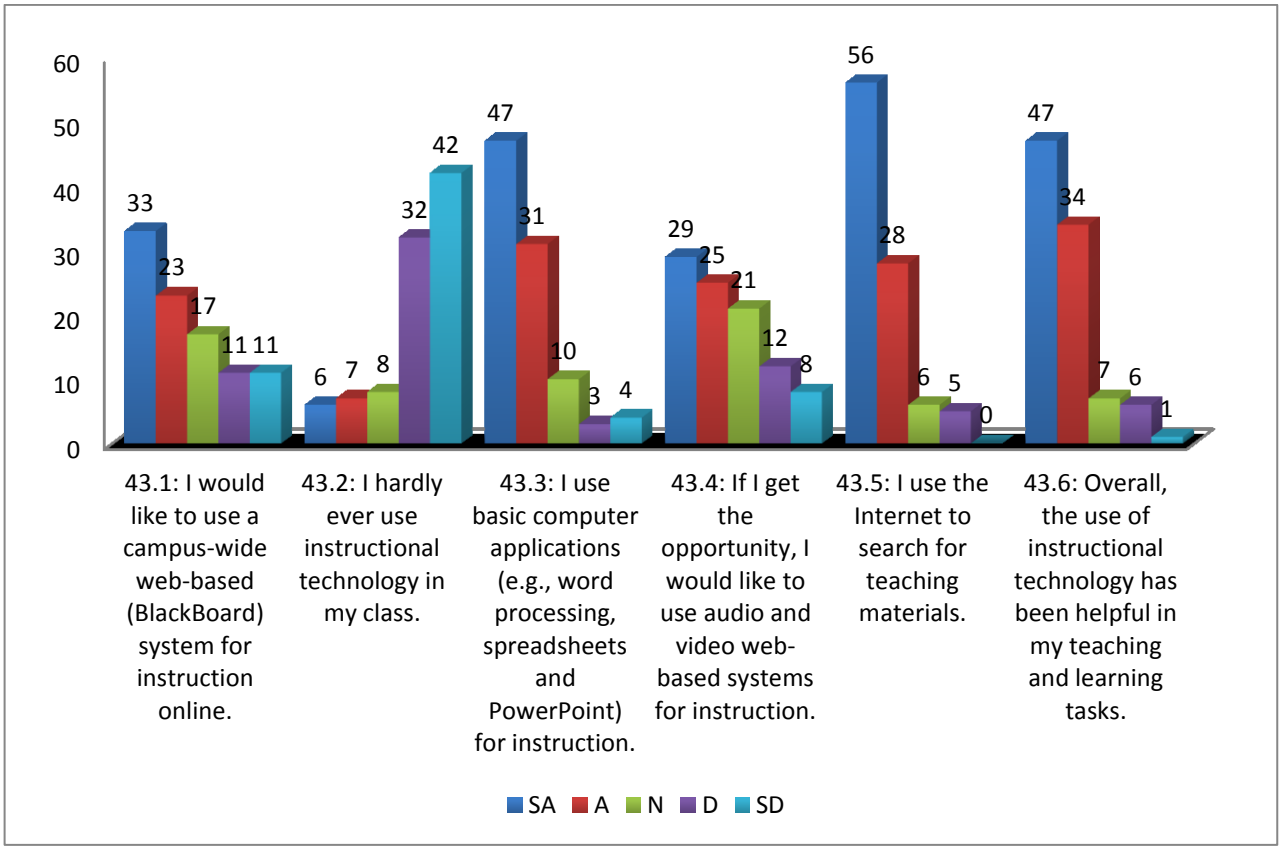
The section on integrating technology into teaching (sub-questions 9.1-9.6) revealed significant results of faculty use of instructional technology and attitudes in most cases:

- The results of question 43.1 indicated that almost 70% faculty agreed or strongly agreed using campus-wide web-based (BlackBoard) system for instruction online.
- The results of 43.2 question indicated that 78% disagreed or strongly disagreed that faculty hardly ever use instructional technology in class instruction.
- The results of question 43.3 indicated that 82% agreed or strongly agreed that all faculty members use basic computer applications (e.g., word processing, spreadsheets and PowerPoint) for instruction.
- The results of question 43.5 indicated that 90% agreed or strongly agreed that faculty members use the Internet to search for teaching material.
- The results of question 43.6 indicated that 86% agreed or strongly agreed that use of instructional technology has been helpful in their teaching and learning tasks.

Table 4-14 *Faculty Attitudes Toward Teaching with Technology*

Statement	Frequency				
	SA	**A**	**N**	**D**	**SD**
43.1: I would like to use a campus-wide web-based (Blackboard) system for instruction online.	33	23	17	11	11
43.2: I hardly ever use instructional technology in my class.	6	7	8	32	42
43.3: I use basic computer applications (e.g., word processing, spreadsheets and PowerPoint) for instruction.	47	31	10	3	4
43.4: If I get the opportunity, I would like to use audio and video web-based systems for instruction.	29	25	21	12	8
43.5: I use the Internet to search for teaching materials.	56	28	6	5	0
43.6: Overall, the use of instructional technology has been helpful in my teaching and learning tasks.	47	34	7	6	1

Figure 4-14 *Faculty Attitudes Toward Teaching with Technology*



Technology-Related Professional Development

There were fifteen statements for faculty technology-related professional development. The following table and chart displayed the frequency data for these statements. Each statement had five options: “strongly agree”, “agree”, “neutral”, “disagree”, and “strongly disagree.”

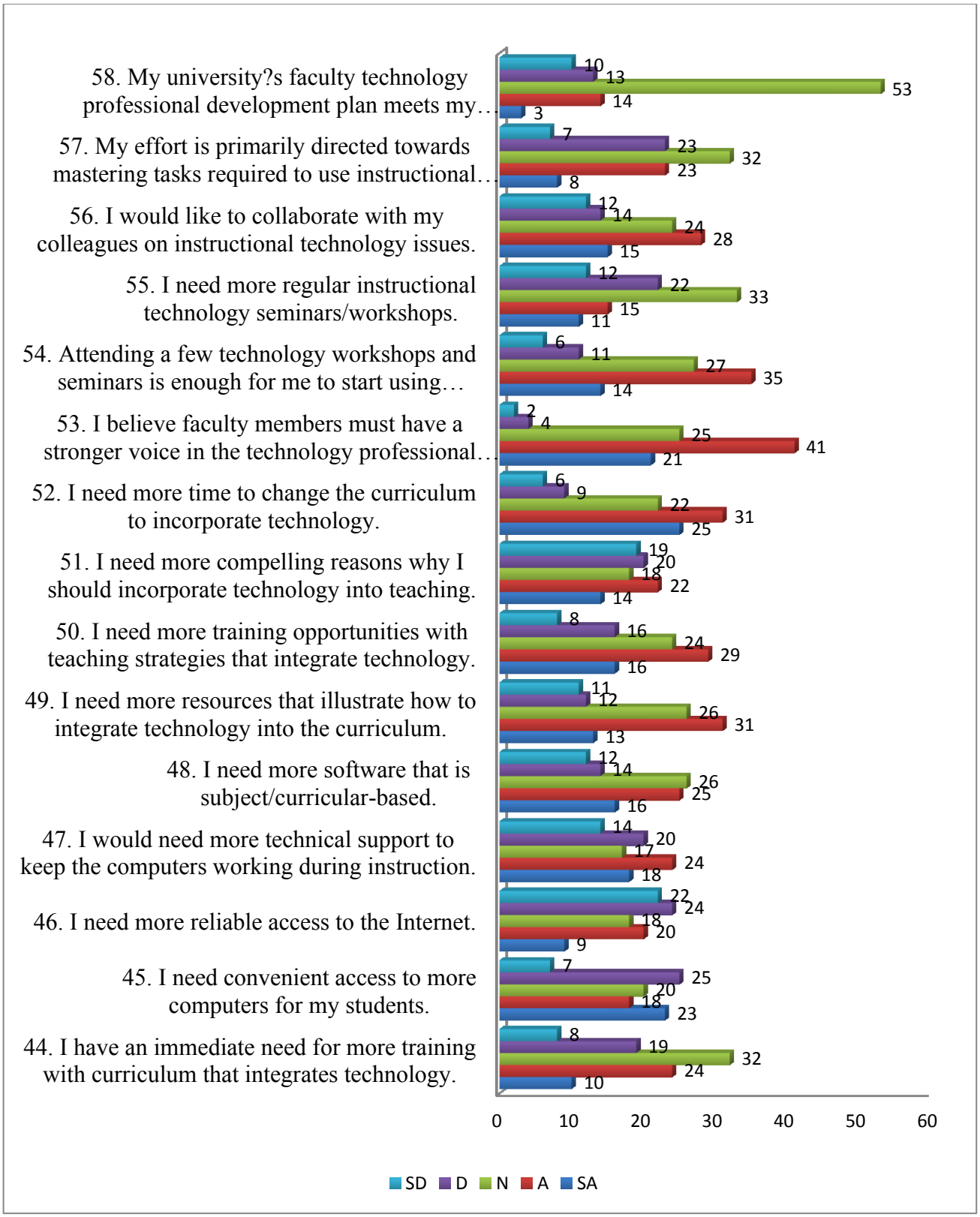
The section on faculty professional development needs on integrating technology into teaching (questions 44 - 58) revealed significant findings in faculty use of instructional technology and attitudes in most cases:

- The results of question 52 indicated that 60% agreed or strongly agreed that faculty members need more time to change the curriculum to incorporate technology.
- The results of question 53 indicated that 67% agreed or strongly agreed that faculty members must have a stronger voice in the technology professional development program.
- The results of question 54 indicated that 53% agreed or strongly agreed that attending a few technology workshops and seminars is enough for faculty to start using instructional technology.

Table 4-15 *Technology-Related Professional Development*

Statement	Frequency				
	SA	**A**	**N**	**D**	**SD**
44. I have an immediate need for more training with curriculum that integrates technology.	10	24	32	19	8
45. I need convenient access to more computers for my students.	23	18	20	25	7
46. I need more reliable access to the Internet.	9	20	18	24	22
47. I would need more technical support to keep the computers working during instruction.	18	24	17	20	14
48. I need more software that is subject/curricular-based.	16	25	26	14	12
49. I need more resources that illustrate how to integrate technology into the curriculum.	13	31	26	12	11
50. I need more training opportunities with teaching strategies that integrate technology.	16	29	24	16	8
51. I need more compelling reasons why I should incorporate technology into teaching.	14	22	18	20	19
52. I need more time to change the curriculum to incorporate technology.	25	31	22	9	6
53. I believe faculty members must have a stronger voice in the technology professional development program.	21	41	25	4	2
54. Attending a few technology workshops and seminars is enough for me to start using instructional technology.	14	35	27	11	6
55. I need more regular instructional technology seminars/workshops.	11	15	33	22	12
56. I would like to collaborate with my colleagues on instructional technology issues.	15	28	24	14	12
57. My effort is primarily directed towards mastering tasks required to use instructional technology.	8	23	32	23	7
58. My university's faculty technology professional development plan meets my technology needs.	3	14	53	13	10

Figure 4-15 *Technology-Related Professional Development*


58. My university?s faculty technology professional development plan meets my…
57. My effort is primarily directed towards mastering tasks required to use instructional…
56. I would like to collaborate with my colleagues on instructional technology issues.
55. I need more regular instructional technology seminars/workshops.
54. Attending a few technology workshops and seminars is enough for me to start using…
53. I believe faculty members must have a stronger voice in the technology professional…
52. I need more time to change the curriculum to incorporate technology.
51. I need more compelling reasons why I should incorporate technology into teaching.
50. I need more training opportunities with teaching strategies that integrate technology.
49. I need more resources that illustrate how to integrate technology into the curriculum.
48. I need more software that is subject/curricular-based.
47. I would need more technical support to keep the computers working during instruction.
46. I need more reliable access to the Internet.
45. I need convenient access to more computers for my students.
44. I have an immediate need for more training with curriculum that integrates technology.
10 13 53 14 3
7 23 32 23 8
12 14 24 28 15
12 22 33 15 11
6 11 27 35 14
2 4 25 41 21
6 9 22 31 25
19 20 18 22 14
8 16 24 29 16
11 12 26 31 13
12 14 26 25 16
14 20 17 24 18
22 24 18 20 9
7 25 20 18 23
8 19 32 24 10
0 10 20 30 40 50 60
SD D N A SA

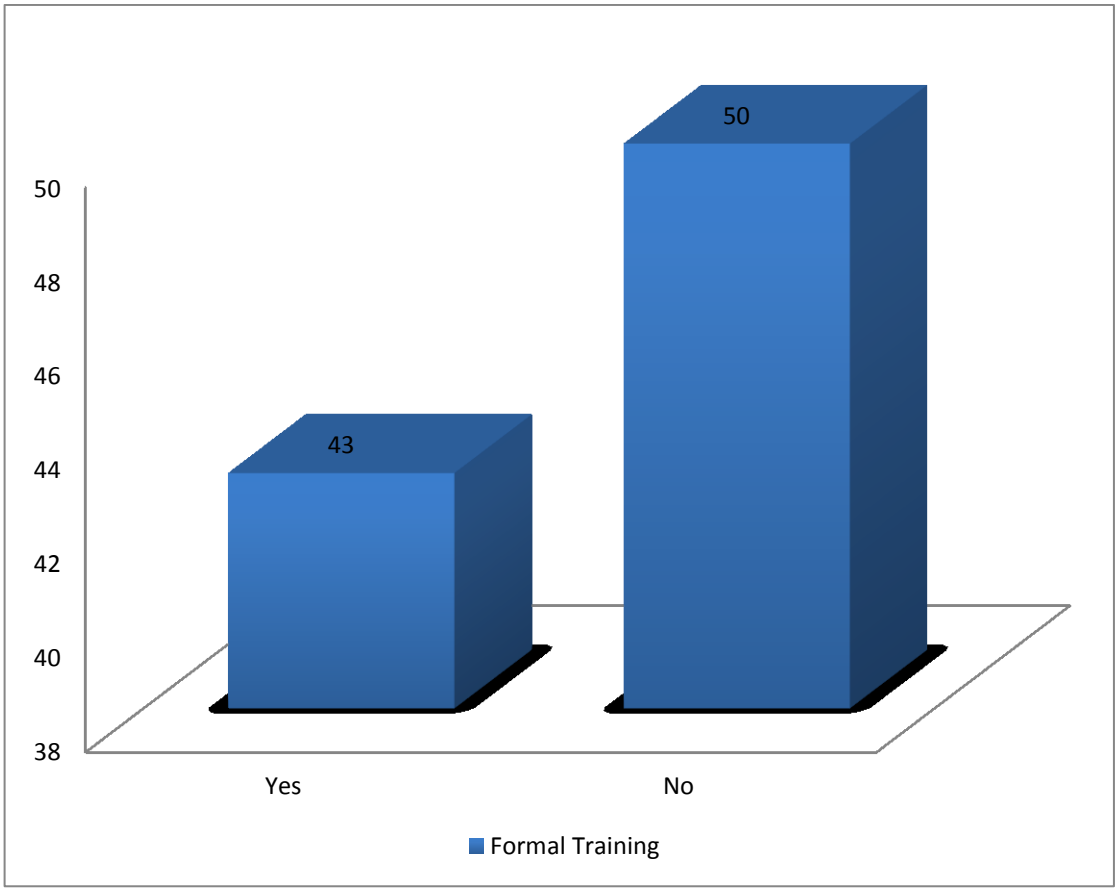
Question #62: **"**Have you received any formal training (sponsor by the university) in adopting online learning for instruction?"

A minority of 46.2% of faculty members answered that they had formal training in adopting OL, while 53.8% indicated that they did not.

Table 4-16 *Formal Training in Adopting Online Learning for Instruction*

Formal Training	Frequency	Percent
Yes	43	46.2%
No	50	53.8%
Total	93	100 %

Figure 4-16 *Formal Training in Adopting Online Learning for Instruction*



Prior Instructional Technology Use

There were 5 short response questions, numbers 59, 60, 61, 63 and 64 (4 sub-questions). Descriptive statistics were conducted on these 5 questions using SPSS. Tables were developed using SPSS and charts were developed using Excel. Each question has a bar chart and a frequency table.

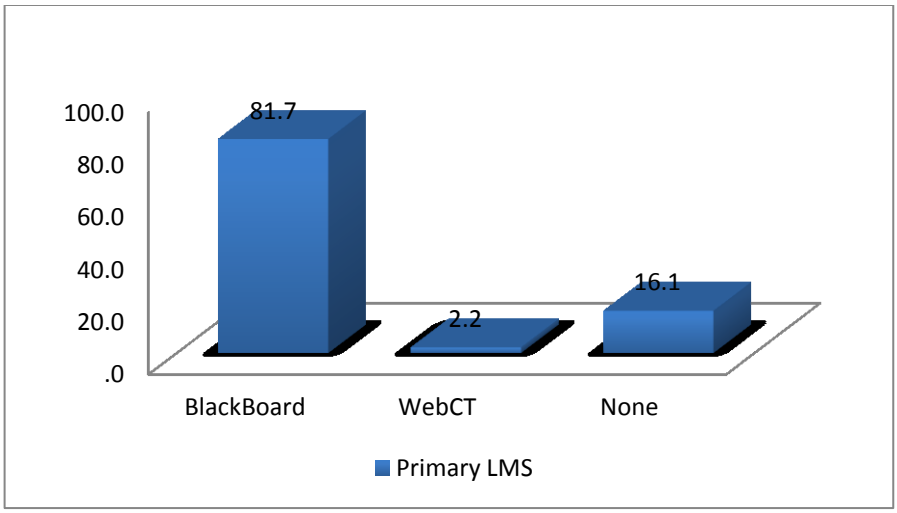
Question #59: "Please indicate your primarily Web-Based Learning Management Systems use as the entry point for students to conduct or supplement your courses."

Approximately 16% of faculty members replied "none" when asked to indicate which of two LMS they used. The overwhelming majority (81.7% of faculty members) chose Blackboard as their primary LMS, and only 2% identified WebCT as their primary LMS.

Table 4-17 *Learning Management Systems Use*

LMS	Frequency	Percent
BlackBoard	76	81.7%
WebCT	2	2.2%
None	15	16.1%
Total	93	100.0%

Figure 4-17 *Learning Management System Use*



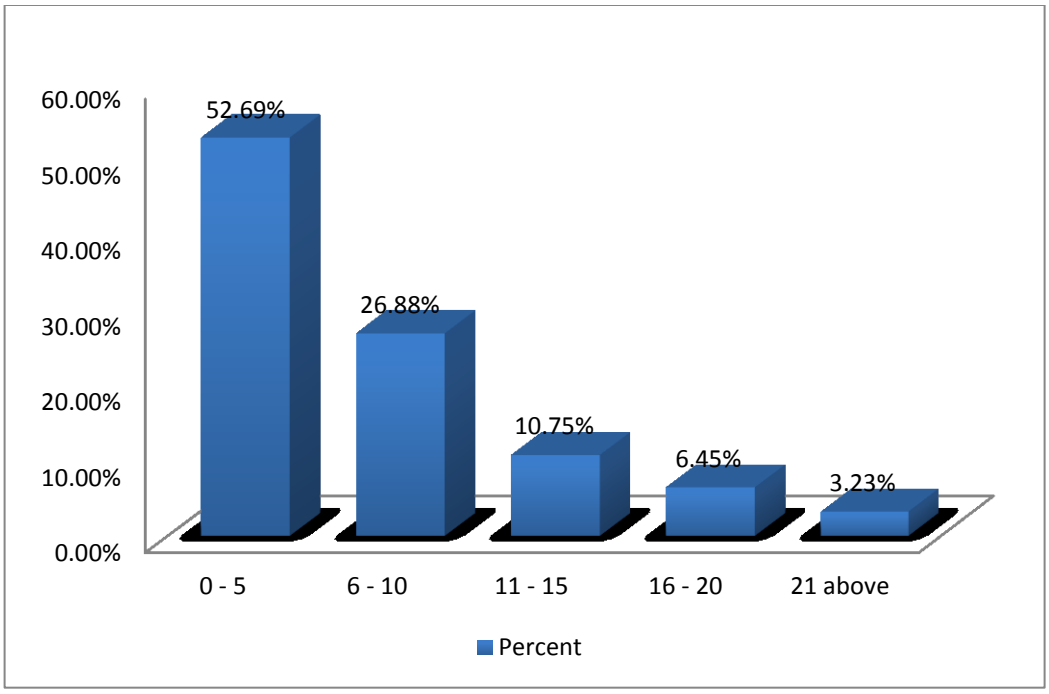
Question #60: "Please indicate the number of semesters (best estimate) you have used a particular system, which you selected on previous question (#59)."

More than 52% of faculty reported using LMS less than 5 years in teaching. Approximately 27% of faulty adopted LMS between 6 to 10 years.

Table 4-18 *Number of Semesters LMS Adopted*

Number of Semesters	N	Percent
0 - 5	49	52.69%
6 - 10	25	26.88%
11 - 15	10	10.75%
16 - 20	6	6.45%
21 above	3	3.23%

Figure 4-18 *Number of Semesters LMS Adopted*


60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
52.69%
26.88%
10.75%
6.45%
3.23%
0 - 5
6 - 10
11 - 15
16 - 20
21 above
Percent

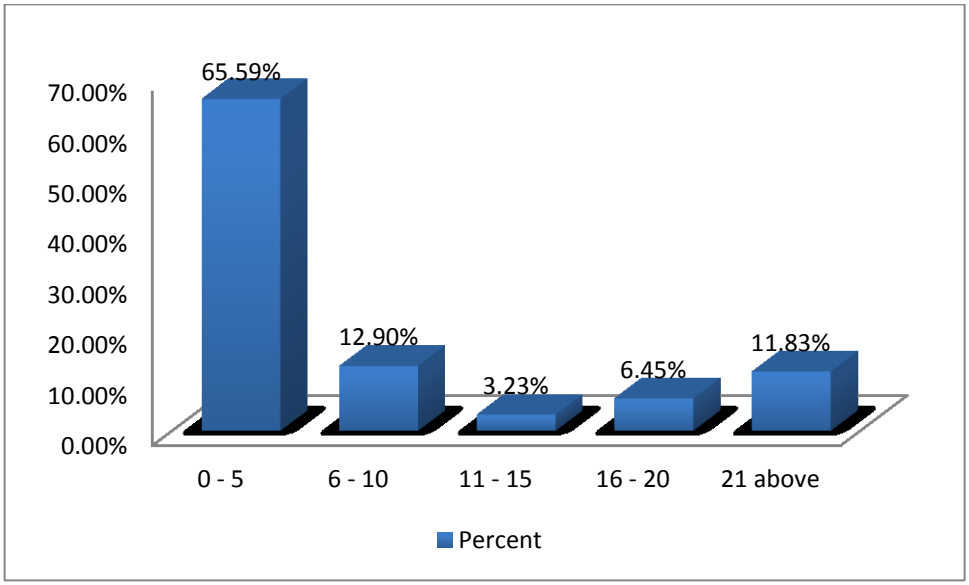
Question #61: "Approximately how many computer-technology related professional development hours have you completed/attended in the last two years? Please write your response on the line. (Note: computer-technology related professional development hours may include workshops, seminars, programs, institutes or conferences that you have attended relating to using computer and instructional technology)."

Over 65% of faculty members who participated in less than 5 hours of computer-technology related professional development in last two years. Approximately 13% of faculty had attended training of 6 to 10 hours.

Table 4-19 *Computer-Technology Related Professional Development Hours*

Number of Hours	N	Percent
0 - 5	61	65.59%
6 - 10	12	12.90%
11 - 15	3	3.23%
16 - 20	6	6.45%
21 above	11	11.83%

Figure 4-19 *Computer-Technology Related Professional Development Hours*



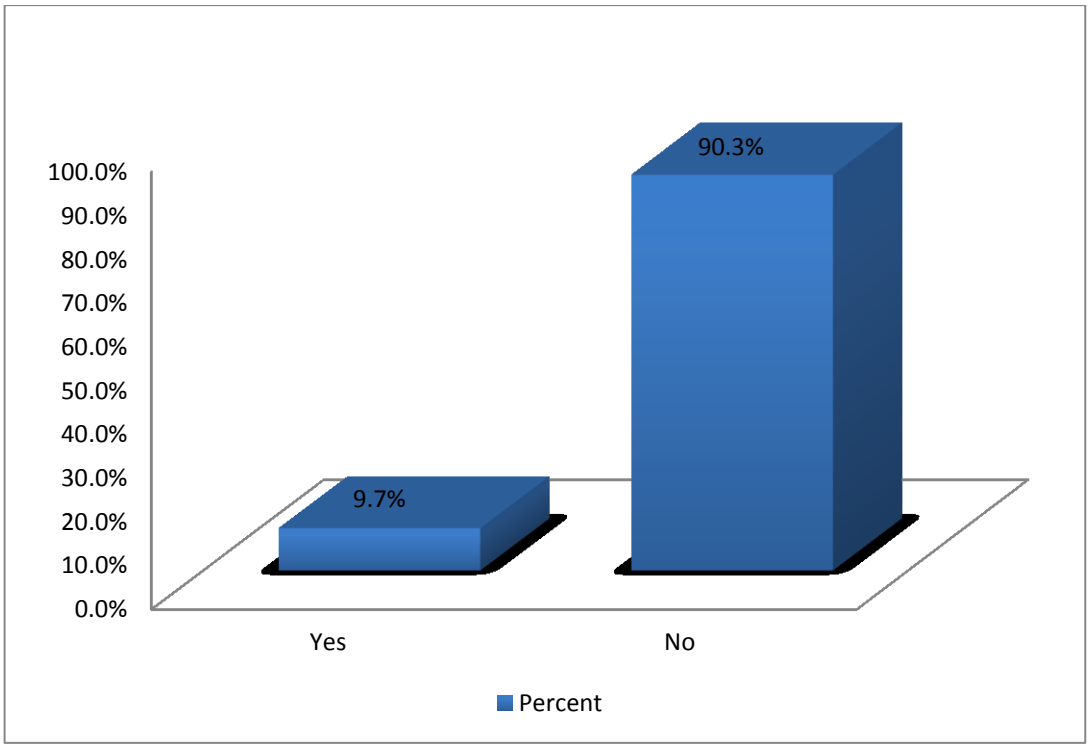
Question #63: "Have you received any grants that have supported your use of Web-Based Learning Management Systems (Blackboard)?"

Ninety percent of faculty members did not receive any grant to support the adoption of the LMS.

Table 4-20 *Grant Support for Adopting LMS*

	Frequency	Valid Percent
Yes	9	9.7%
No	84	90.3%
Total	93	100%

Figure 4-20 *Grant Support for Adopting LMS*



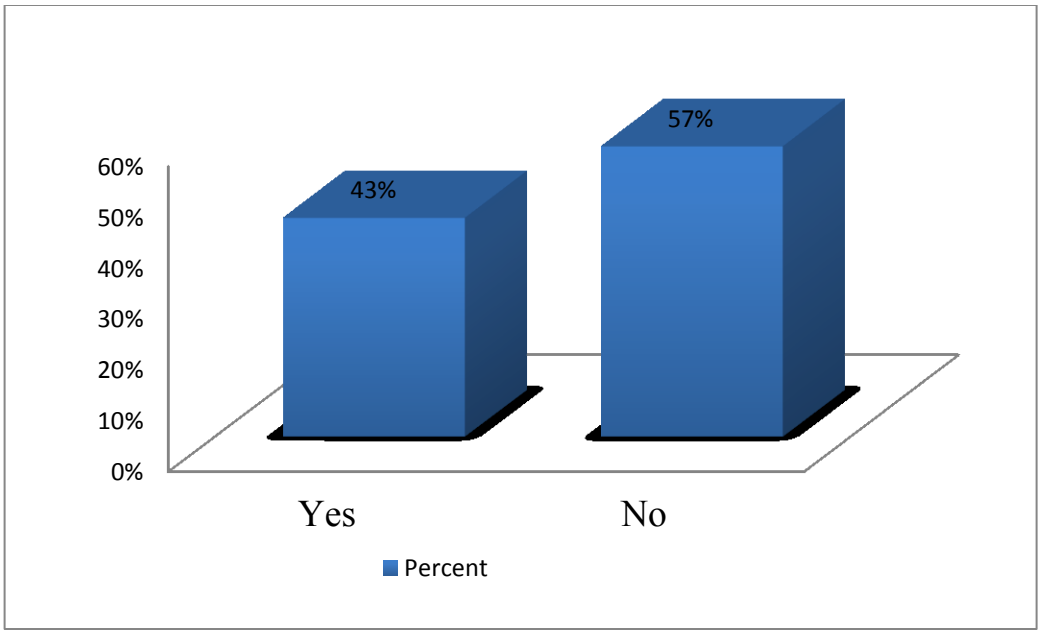
Question #64: "Do you have access to personnel (e.g. student assistants, staff) that can help you use Blackboard and eLive?"

There were 43% of faculty members who had access to personnel (e.g. student assistants, staff) that could help them use Blackboard and eLive and 57% of them had no such access. eLive (Elluminate Live!®) is a virtual, collaborative environment that allows participants, particularly groups, to meet, present, and collaborate online and is used in addition to the LMS (Blackboard). It is similar to Adobe Connect or other online collaboration tools. It is available to all University of Alaska online classes, and is frequently used as a "meeting space" for international online conferences.

Table 4-21 *Access Assistant on Blackboard and eLive*

	Frequency	Percent
Yes	40	43%
No	53	57%
Total	93	100%

Figure 4-21 *Access Assistant on Blackboard and eLive*


60%
50%
40%
30%
20%
10%
0%
43%
57%
Yes
No
Percent

Stages of Concern (SoC)

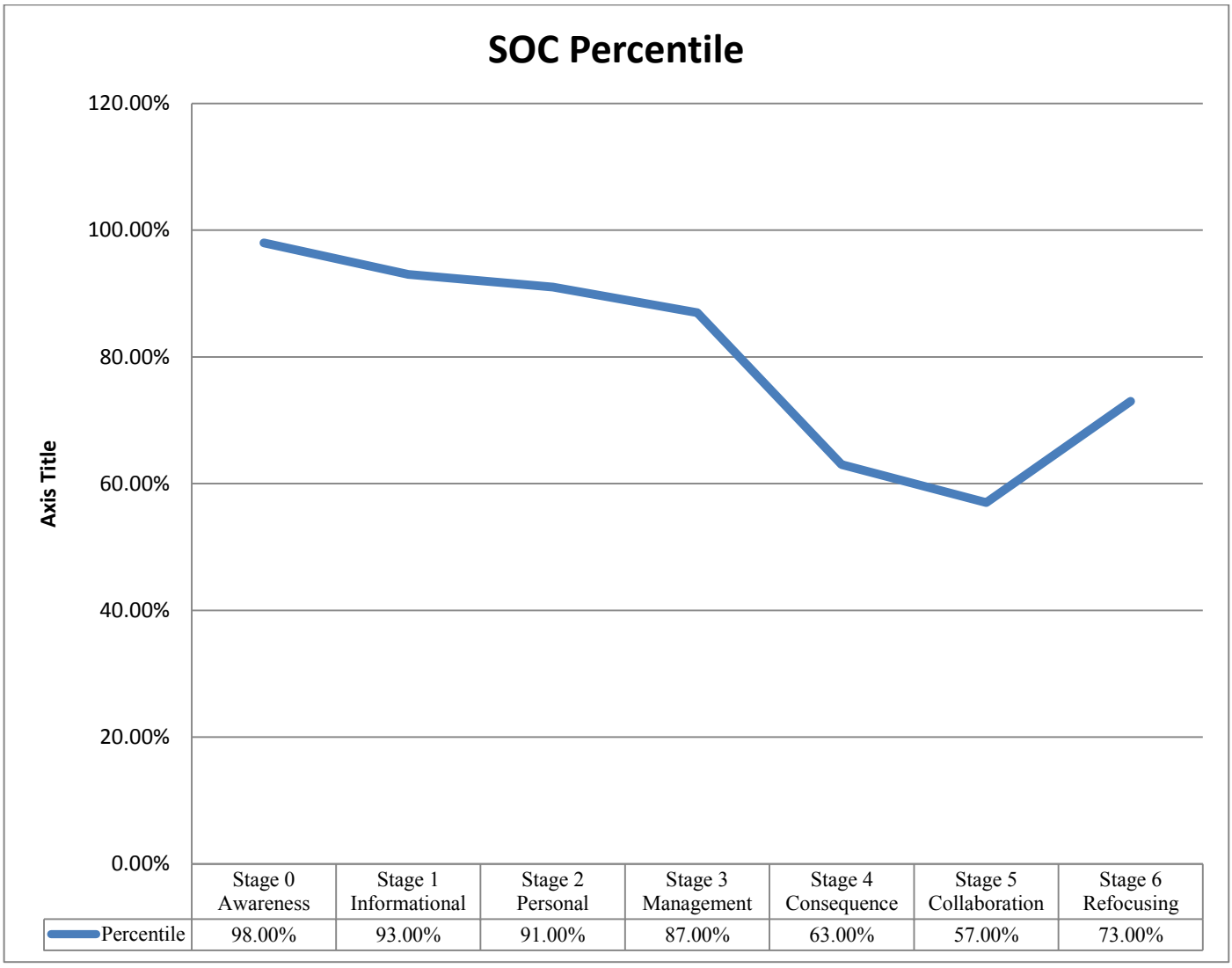
The Stages of Concern (SoC) data were the first 35 questions of the survey. This data was used to test the relationship between participants' personal characteristics and the SoC. Also, it tested if there was a relationship between participants' contextual characteristics and the SoC. George, Hall and Stiegelbauer (2006) recommended using the raw data from the questionnaire, instead of using averaging percentile scores of SoC stages to display group data, because such averaging allows the extreme values to influence the results more than might be appropriate. Therefore, the raw data were used to examine UAF faculty concerns to adopt OL. Table 4.6 showed the mean, standard deviation and mean score percentile for stages of concern from the raw data.

Table 4.6 and figure 4.6 indicate that the Awareness stage was the highest stage of concern for participants, with a mean score percentile of 98%. The Informational stage was the 2nd highest mean score percentile of 93% and Personal SoC was the third highest concern with a mean score percentile of 91%. Management had a mean score percentile of 88% and was the fourth highest SoC. The Refocusing SoC had a mean score percentile of 73% and the Consequence SoC had a mean score percentile 63%. Refocusing and Consequences were the fifth and sixth highest stages of concern. Collaboration SoC had a mean score percentile of 57% and was the lowest stage of concern.

Table 4-22 *Mean Percentile Stage Score for Participants*

Stage of Concerns	**N**	**Mean**	**Std. Deviation**	**Percentile**
Stage 0 Awareness	96	19.7	6.24	98.00%
Stage 1 Informational	96	26.9	5.83	93.00%
Stage 2 Personal	96	27.6	6.77	91.00%
Stage 3 Management	96	24.3	6.99	87.00%
Stage 4 Consequence	96	26.9	6.64	63.00%
Stage 5 Collaboration	96	22.5	7.76	57.00%
Stage 6 Refocusing	96	21.9	6.32	73.00%

Figure 4-22 *Mean Percentile Stage Score for Participants*



SoC Analysis

In order to promote online learning and ensure its quality at UAF, it is very important to understand UAF faculty member concern profile on adopting online learning. In most of the research that has been done using the Stages of Concerns Questionnaire, the nonuser profile stood out most clearly and consistently (George, Hall & Stiegelbauer, 2005). Nonuser concerns

profile are typically highest on Stages 0, 1 and 2 and lowest on Stages 4, 5 and 6 (George, Hall & Stiegelbauer, 2006).

Based on Table 4.22, UAF faculty members SoCQ profile was highest on Stages 0, 1 and 2, while the lowest Stages were 4 and 5, with a "tailing-up" at Stage 6. The faculty stages of concerns profile fit the typical nonuser SoCQ profile. The profile illustrated in Figure 4.22 shows that UAF faculty members were not fully aware of OL, and were somewhat more concerned about other things (Stage 0). Because Stages 1 and 2 were also high, however, it could be interpreted that faculty members were interested in acquiring more information about OL. Due to the medium intensity on Stage 3, the research indicates that faculty did not have significant management concerns. Faculty members were not intensely concerned about the OL's consequences for students or collaborating with colleagues (low intensity on Stages 4 and 5).

Importantly, according to George, Hall & Stiegelbauer (2006), when stage 6 concerns tail up, as in Figure 4.22, it can be assumed that the respondents have their own ideas competing with the proposed innovation. George, Hall & Stiegelbauer (2006) also stated that the Stage 6 tailing-up needed to be only 7 to 10 percentile points to be detectable in terms of the overall concerns of the group. Therefore, the tailing-up of Stage 6 concerns on UAF faculty members profile was a warning that faculty might be resistant to OL or had a negative attitude toward OL.

Quantitative Measures

One-Way Multivariate Analysis of Variance (MANOVA) Tests

A series of one-way multivariate analyses of variance (MANOVA) tests were performed to determine if significant differences existed between UAF faculty concerns, technology use in teaching, personal characteristics (age, gender, and years of teaching experience), contextual

characteristics (administrative support of technology, colleagues using technology, college, and academic rank) and technographic characteristics (prior instructional technology use, technology-related professional development, attitudes toward teaching with technology). This study used MANOVA because it can examine "more than one dependent variable at once" and is performed when there are three or more dependent variables (Cronk, 2006, p. 81). For example, if ANOVA tests were to be calculated for each of the seventy-one questionnaire items of the survey, it would cause Type 1 error inflation (Cronk, 2006). Therefore, conducting MANOVA tests was considered more appropriate than conducting ANOVAs in order to avoid Type I error. After that, the Wilks' Lambda test results are provided in tables for the three main research questions. When statistically significant differences were found from MANOVA results, a series of analysis of variance (ANOVA) tests were conducted to identify values of significance. For gender, which had only one degree of freedom, the mean was used to determine significance.

Research Question 1

One-way Multivariate Analysis of Variance (MANOVA) Tests were conducted for research question one:

Is there a significant relationship between full-time faculty personal characteristics (age, gender, and years of teaching experience) and their concerns in adopting Online Learning?

In order to determine if there were statistically significant differences in the stages of concerns on the personal characteristics (age, gender, and years of teaching experience), a series of the MANOVA tests were conducted. Table 4.23 provides a summary of the Wilks' Lambda test results of the MANOVA on science faculty personal characteristics (age, gender, and years of teaching experience) and their concerns in adopting OL. When statistically significant

differences were found in any of the personal characteristics, a series of analysis of variance (ANOVA) tests were conducted to identify values of significance.

Table 4-23 *Lambda Test Results of MANOVA on Stages of Concerns*

Independent Variables	Value	F	df	Error df	Sig.	Partial Eta Square
Age	0.880	1.347	7	69.00	0.242	
Gender	0.904	1.048	7	69.00	0.406	
Teaching Experience	0.569	7.481	7	69.00	0.000	0.096

Test Results of Null Hypotheses*:*

Ho 1.1. There are no statistically significant differences between faculty age and faculty concerns in adopting OL.

Finding

One-way MANOVA on the Lambda test results (Lambda (7, 69) = .880, $p > .05$) did not show a statistically significant difference. Thus, the participants' concerns in adopting OL were not influenced by their age. The null hypothesis *Ho 1.1* was accepted.

Ho 1.2. There are no statistically significant differences between faculty gender and faculty concerns in adopting OL.

Finding

One-way MANOVA on the Lambda test results (Lambda (7, 69) = .904, p > .05) did not show a statistically significant difference. Thus, the participants' concerns in adopting OL were not influenced by their gender. The null hypothesis *Ho 1.2* was accepted.

Ho 1.3. There are no statistically significant differences between faculty years of teaching experience and faculty concerns in adopting OL.

Finding

One-way MANOVA on the Lambda test results on Table 4.23 were statistically significant at the <.05 level (7.69) = 0.569) and showed a statistically significant difference. Thus, the participants' concerns in adopting OL were influenced by their years of teaching experience. The significant value of the Lambda MANOVA test was .000 at the alpha = .05 level in Table 4.23. Therefore, the null hypothesis *Ho 1.3* was rejected. Table 4.24 gives the significance values for concerns in adopting OL based on years of teaching experience.

Table 4-24 *ANOVA for Concerns in Adopting Online Learning by Years of Teaching Experience*

DV (Stage)	DF	Type III SS	Mean Square	F	Sig	r
Stage 6 Refocusing	29	1068.2	36.83	.856	0.671	
Stage 5 Collaboration	29	1751.6	60.40	.957	0.540	
Stage 4 Consequence	29	1223.5	42.91	.865	0.659	
Stage 3 Management	29	1411.5	48.67	.955	0.542	
Stage 2 Personal	29	1335.2	46.04	1.02	0.458	
Stage 1 Informational	29	1037.6	35.78	1.10	0.366	
Stage 0 Awareness	27	2088.2	77.34	4.94	0.000	-.702

According to the ANOVA results, years of teaching experience had statistically significant differences in stage zero (sig 0.000), which suggested experience has some kind of impact on how little UAF faculty are concerned about, or involved with OL.

Research Question 2

Is there a significant relationship between full-time faculty contextual characteristics (administrative support of technology, colleagues using technology, college, and academic rank) and their concerns in adopting Online Learning?

Ho 2.1. There are no statistically significant differences between faculty administrative support of technology and faculty concerns in adopting OL.

Ho 2.2. There are no statistically significant differences between faculty colleagues using technology and faculty concerns in adopting OL.

Ho 2.3. There are no statistically significant differences between faculty college affiliation and faculty concerns in adopting OL.

Ho 2.4. There are no statistically significant differences between faculty academic rank and faculty concerns in adopting OL.

In order to determine if there were statistically significant differences in UAF faculty's contextual characteristics (administrative support of technology, colleagues using technology, college, and academic rank) and their concerns in adopting Online Learning, a series of MANOVA tests were conducted. When statistically significant differences were found in any of the contextual characteristics, a series of analysis of variance (ANOVA) tests were conducted to identify values of significance.

Test Results of Null Hypotheses

Ho 2.1. There are no statistically significant differences between faculty administrative support of technology and faculty concerns in adopting OL.

Finding:

Table 4.25 provides a summary of the Wilks' Lambda test results of MANOVA on administrative support of technology. One-way MANOVA on the question 37.2, 37.15 and 37.17 Lambda test results Lambda were statistically significant at the <.05 level (7,52) = .764, .704 and .767) showed a statistically significant difference. Thus, the participants' concerns in adopting OL were influenced by their administrative support of technology. The significant value of the Lambda MANOVA test were .041, .008 and .044 at the alpha = .05 level in Table 4.25. The null hypothesis *Ho 2.1* was rejected. Table 4.26, 4.27 and 4.28 provide the significance values of faculty concerns in adopting OL on faculty administrative support of technology.

Table 4-25 *Administrative Support of Technology Lambda Test Results of MANOVA*

Independent Variables	Value	F	df	Error df	Sig.	Partial Eta Square
37.1 Administrators in my department are supportive of faculty members who teach with technology.	.846	1.351	7.000	52.00	.246	
37.2 Administrators in my department use technology in their own teaching practices.	.764	2.294	7.000	52.00	.041	.236
37.3 Administrators in my department recognize the additional workload required to teach with technology.	.886	1.15	7.000	52.00	.347	
37.4 Administrators in my department communicate with faculty about the value of teaching with technology.	.853	1.28	7.000	52.00	.278	
37.5 Administrators in my department communicate with faculty about the value of teaching with technology.	.814	1.69	7.000	52.00	.131	
37.6 Administrators in my department have positive attitudes toward teaching with technology.	.821	1.62	7.000	52.00	.152	
37.7 Administrators in my department positively recognize the effective use of technology in reappointment, promotion and tenure decisions.	.865	1.16	7.000	52.00	.343	
37.8 Administrators in my college are supportive of faculty members who teach with technology.	.874	1.01	7.000	52.00	.392	
37.9 Administrators in my college use technology in their own teaching practices.	.883	.987	7.000	52.00	.451	
37.10 Administrators in my college recognize the additional workload required to teach with technology	.929	.571	7.000	52.00	.776	
37.11 Administrators in my college communicate with faculty about the value of teaching with technology.	.944	.443	7.000	52.00	.870	
37.12 Administrators in my college understand how to assess the quality of teaching with technology.	.865	1.25	7.000	52.00	.294	
37.13 Administrators in my college have positive attitudes toward teaching with technology.	.893	.891	7.000	52.00	.520	
37.14 Administrators in my college positively recognize the effective use of technology in reappointment, promotion and tenure decisions.	.830	1.52	7.000	52.00	.180	
37.15 Senior campus academic administrators (e.g. Vice-Provosts & above) are supportive of faculty members who teach with technology.	.704	3.20	7.000	52.00	.008	.296

37.16 Senior campus academic administrators use technology in their own teaching practices.	.872	1.1	7.000	52.00	.380	
37.17 Senior campus academic administrators recognize the additional workload required to teach with technology.	.767	2.26	7.000	52.00	.044	.233
37.18 Senior campus academic administrators communicate with faculty about the value of teaching with technology.	.916	.682	7.000	52.00	.686	
37.19 Senior campus academic administrators understand how to assess the quality of teaching with technology.	.951	.384	7.000	52.00	.908	
37.20 Senior campus academic administrators have positive attitudes toward teaching with technology.	.939	.483	7.000	52.00	.843	
37.21 Senior campus academic administrators positively recognize the effective use of technology in reappointment, promotion and tenure decisions.	.891	.905	7.000	52.00	.510	

Table 4-26 *ANOVA in Adopting Online Learning by Department Administrator Use of Technology.*

DV (Stage)	Type III SS	DF	Mean Square	F	Sig	Eta
Stage_0	72.069	1	72.069	1.951	.168	
Stage_1	56.059	1	56.059	1.623	.208	
Stage_2	1.739	1	1.739	.039	.845	
Stage_3	64.701	1	64.701	1.444	.234	
Stage_4	.333	1	.333	.008	.931	
Stage_5	211.373	1	211.373	3.387	.071	
Stage_6	149.041	1	149.041	4.557	.037	.073

According to the table 4.26 ANOVA results, faculty members Refocusing concerns (Stage 6) were influenced (sig 0.037) by department administrator use of technology in their own teaching practices. This means that faculty who were exploring ways to acquire more universal benefits from OL, including the possibility of making major changes to it or replacing it with a more powerful alternative, were influenced by technology savvy administrators.

Table 4-27 *ANOVA in Adopting Online Learning by Senior Administrators Support of Teaching With Technology*

DV (Stage)	Type III SS	DF	Mean Square	F	Sig	Eta
Stage_0	140.668	1	140.668	3.808	.056	
Stage_1	1.517	1	1.517	.044	.835	
Stage_2	7.032	1	7.032	.156	.694	
Stage_3	120.309	1	120.309	2.685	.107	
Stage_4	1.381	1	1.381	.031	.860	
Stage_5	4.245	1	4.245	.068	.795	
Stage_6	196.059	1	196.059	5.995	.017	.094

According to the table 4.27 ANOVA results, faculty member Refocusing concerns (Stage 6) were influenced (sig 0.017) by senior campus academic administrative supportive of faculty members who taught with technology. It means that faculty who were exploring ways to acquire more universal benefits from OL, including the possibility of making major changes to it or replacing it with a more powerful alternative, were influenced by senior administrators who support teaching with technology.

Table 4-28 *ANOVA in Adopting OL by Senior Administrator Recognition of Workload*

DV (Stage)	Type III SS	DF	Mean Square	F	Sig	Eta
Stage_0	78.490	1	78.490	2.125	.150	
Stage_1	5.916	1	5.916	.171	.680	
Stage_2	89.774	1	89.774	1.991	.164	
Stage_3	34.915	1	34.915	.779	.381	
Stage_4	212.191	1	212.191	4.824	.032	.077
Stage_5	33.174	1	33.174	.532	.469	
Stage_6	320.046	1	320.046	9.786	.003	.144

According to the table 4.28 ANOVA results, faculty Consequence (Stage 4) and Refocusing (Stage 6) concerns were influenced (sig 0.032 & 0.003) by senior campus academic administrators' recognition of the additional workload required to teach with technology. It means that faculty were exploring ways to acquire additional benefits from OL, focused on the potential impact on students learning outcomes, the possibility of making major changes to it or replacing OL with a more powerful alternative technology were influenced by senior administrators' recognition of workload adjustment.

Table 4.29 provides a summary of the Wilks' Lambda test results of the MANOVA on colleagues using technology, college, and academic rank. A one-way MANOVA on faculty academic rank Lambda test found that the results were statistically significant at the <.05 level (21,144) = .462) and showed statistically significant difference. Thus, the participants' concerns in adopting OL were influenced by their academic rank. The significant value of the Lambda MANOVA test was .005 at the alpha = .05 level in Table 4.29. The null hypothesis *Ho 2.4* was rejected.

Table 4-29 *Colleagues Using Technology, College, and Academic Rank of MANOVA*

Independent Variables	Value	F	DF	Error df	Sig	Eta
Q38. Estimate the percentage of faculty in your department who are using LMS	.922	.607	7.000	50	.747	
Q39. Overall, my faculty colleagues are encouraging/discouraging of technology use	.753	1.088	14.00	100	.378	
Q.40 On a scale of 1 to 5, my colleagues seem to be	.841	1.346	7.000	50	.249	
College	.772	.985	14.00	100	.474	
Academic Rank	.462	2.120	21.00	144	.005	.227

Ho 2.2. There are no statistically significant differences between faculty colleagues using technology and faculty concerns in adopting OL.

Finding:

One-way MANOVA on the Lambda test results for questions 38, 39 and 40 (Lambda (7, 50) = .922, 753 and .841 $p > .05$) did not show statistically significant difference. Thus, the participants' concerns in adopting OL were not influenced by their colleagues using technology. The null hypothesis Ho 2.2 was accepted.

Ho 2.3. There are no statistically significant differences between faculty college affiliation and faculty concerns in adopting OL.

Finding:

One-way MANOVA on the Lambda test results (Lambda (14, 100) = .772 $p > .05$) did not show statistically significant difference. Thus, the faculty members concerns in adopting OL were not influenced by their college affiliation. The null hypothesis Ho 2.2 was accepted.

Ho 2.4. There are no statistically significant differences between faculty academic rank and faculty concerns in adopting OL.

Finding:

One-way MANOVA on the Lambda test results Lambda were statistically significant at the <.05 level (21,144) = .462). Thus, the faculty members concerns in adopting OL were influenced by their academic rank. The significance value of the Lambda MANOVA test was .005 at the alpha = .05 level in Table 4.29. The null hypothesis *Ho 2.4* was rejected. Table 4.30 gives the significance values for faculty members concerns in adopting OL on their academic rank.

Table 4-30 *ANOVA for Concerns in Adopting OL by Academic Rank*

DV (Stage)	Type III SS	DF	Mean Square	F	Sig	Eta
Stage_0	441.292	3	147.097	5.526	.002	.228
Stage_1	258.618	3	86.206	2.490	.070	
Stage_2	193.897	3	64.632	1.559	.209	
Stage_3	533.774	3	177.925	3.952	.013	.175
Stage_4	306.895	3	102.298	2.664	.057	
Stage_5	389.368	3	129.789	2.172	.101	
Stage_6	189.771	3	63.257	1.729	.172	

According to the table 4.30 ANOVA results, faculty Awareness (Stage 0) and Management (Stage 3) concerns were influenced (sig 0.002 & 0.013) by faculty academic rank. It means that faculty academic rank was related to how little concern about or involvement with OL faculty had (stage 0). At the same time, faculty focused on the processes and tasks of using the OL and the best use of information and resources were also influenced by their academic rank.

Research Question 3

Is there a significant relationship between full-time faculty technographic characteristics (prior instructional technology use, technology-related professional development, attitudes toward teaching with technology) and faculty use of technology in teaching?

Ho 3.1. There are no statistically significant differences between faculty prior instructional technology use and faculty use of technology in teaching.

Ho 3.2. There are no statistically significant differences between faculty technology-related professional development and faculty use of technology in teaching.

Ho 3.3. There are no statistically significant differences between faculty attitudes toward teaching with technology and faculty use of technology in teaching.

In order to determine if there were statistically significant differences in UAF faculty technographic characteristics (prior instructional technology use, technology-related professional development, attitudes toward teaching with technology) and faculty use of technology in teaching, a series of MANOVA tests were conducted. When statistically significant differences were found in any of the technographic characteristics, a series of analysis of variance (ANOVA) tests were conducted to identify values of significance.

Test Results of the Null Hypotheses

Ho 3.1. There are no statistically significant differences between faculty prior instructional technology use and faculty use of technology in teaching.

Table 4-31 *Prior Instructional Technology Use of MANOVA*

Independent Variables	Value	F	DF	Error df	Sig	Eta
Q59.Please indicate your primarily Web-Based Learning Management System	.852	1.583	9.00	82.00	.134	
Q60.Please indicate the number of semesters best estimate you have used a particular system, which you selected on Q59.	.851	1.595	9.00	82.000	.130	

Finding:

One-way MANOVA on the Lambda test results for questions 59 and 60 (Lambda (9, 82) = .852, 851 $p > .05$) did not show a statistically significant difference. Thus, the faculty members use of technology in teaching was not influenced by their prior instructional technology use. The null hypothesis Ho 3.1 was accepted.

Ho 3.2. There are no statistically significant differences between faculty technology-related professional development and faculty use of technology in teaching.

Table 4-32 *MANOVA for Faculty Technology-Related Professional Development*

Independent Variables	Value	F	DF	Error df	Sig	Eta
Q45. I have an immediate need for more training with curriculum that integrates technology.	.878	1.066	9.00	69.00	.399	
Q46. I need convenient access to more computers for my students.	.798	1.942[a]	9.00	69.00	.060	
Q47. I need more reliable access to the Internet.	.871	1.132	9.00	69.00	.352	
Q48. I would need more technical support to keep the computers working during instruction.	.936	.529	9.00	69.00	.849	
Q49. I need more software that is subject/curricular-based.	.762	2.392	9.00	69.00	.020	.238
Q50. I need more resources that illustrate how to integrate technology into the curriculum.	.795	1.980	9.00	69.00	.055	
Q51. I need more training opportunities with teaching strategies that integrate technology.	.901	.842	9.00	69.00	.580	
Q52. I need more compelling reasons why I should incorporate technology into teaching.	.835	1.513	9.00	69.00	.161	
Q53. I need more time to change the curriculum to incorporate technology.	.946	.440	9.00	69.00	.908	
Q54. I believe faculty members must have a stronger voice in the technology professional development program.	.847	1.382	9.00	69.00	.213	
Q55. Attending a few technology workshops and seminars is enough for me to start using instructional technology.	.840	1.464	9.00	69.00	.179	
Q56. I need more regular instructional technology seminars/workshops.	.954	.366	9.00	69.00	.947	
Q57. I would like to collaborate with my colleagues on instructional technology issues.	.928	.597	9.00	69.00	.796	
Q58. My effort is primarily directed towards mastering tasks required to use instructional technology.	.854	1.315	9.00	69.00	.245	
Q59. My university's faculty technology professional development plan meets my technology needs.	.879	1.058	9.00 0	69.00	.405	

Findings:

Table 4.32 provides a summary of the Wilks' Lambda test results of MANOVA on faculty technology-related professional development. One-way MANOVA of question 49 on the

Lambda test results Lambda was statistically significant at the <.05 level (9,69) = .762) showed a statistically significant difference. Thus, faculty member use of technology in teaching was influenced by their technology-related professional development. The significance value of the Lambda MANOVA test was .02 at the alpha = .05 level in Table 4.32. The null hypothesis Ho 3.2 was rejected. Table 4.33 gives the significance values for faculty members use of technology in teaching on their technology-related professional development.

Table 4-33 *ANOVA for Use Technology in Teaching with Curriculum-Based Software*

Use of Technology in Teaching (Dependent Variables)	Type III SS	DF	Mean Square	F	Sig	Eta
Q7.1: Personal communication.	2.735	1	2.735	3.404	.069	
Q7.2: Research work, i.e. web browsing	1.230	1	1.230	2.530	.116	
Q7.3: Classroom management	2.293	1	2.293	1.680	.199	
Q7.4: Teaching activities for your students	.010	1	.010	.012	.914	
Q8.1: Microsoft Word for word-processing.	.811	1	.811	.600	.441	
Q8.2: Microsoft Excel/Access for instruction.	10.615	1	10.615	5.373	.023	.065
Q8.3: Microsoft PowerPoint for presentation in class.	4.984	1	4.984	2.431	.123	
Q8.4: Internet/E-Mail for research.	.064	1	.064	.085	.771	
Q8.5: ELive for conducting class or communication.	.065	1	.065	.074	.786	

The table 4.33 ANOVA results indicated that faculty members who needed more software that was subject/curricular-based had statistically significant differences in how often faculty used Microsoft Excel/Access for instruction (sig 0.023).

Ho 3.3. There are no statistically significant differences between faculty attitudes toward teaching with technology and faculty use of technology in teaching.

Table 4-34 *MANOVA of Faculty Attitudes Toward Teaching with Technology*

Independent Variables	Value	F	DF	Error df	Sig	Eta
Q43.1 I would use instructional technology tools more often, if they were available in my classroom.	.912	.862	9.00	80.00	.562	
Q43.2 I hardly ever use instructional technology in my class.	.878	1.232	9.00	80.00	.288	
Q43.3 I use basic computer applications (e.g., word processing, spreadsheets and PowerPoint) for instruction.	.599	5.954	9.00	80.00	.000	.401
Q43.4 If I get the opportunity, I would like to use audio and video web-based systems for instruction.	.821	1.943	9.00	80.00	.057	
Q43.5 I use the Internet to search for teaching materials.	.808	2.112	9.00	80.00	.038	.192
Q43.6 Overall, the use of instructional technology has been helpful in my teaching and learning tasks.	.874	1.284	9.00	80.00	.259	

Findings:

Table 4.34 provides a summary of the Wilks' Lambda test results of the MANOVA conducted on faculty attitudes toward teaching with technology. One-way MANOVA on the question 43.3 and 43.5 Lambda test results Lambda were statistically significant at the <.05 level (9,80) = .599 and .808) showed statistically significant difference. Thus, the participants' use of technology in teaching was influenced by their attitudes toward teaching with technology. The significance values of the Lambda MANOVA test were .000 and .038 at the alpha = .05 level in Table 4.34. The null hypothesis *Ho 3.3* was rejected. Tables 4.35 and 4.36 provide the significance values of faculty use of technology in teaching and faculty attitudes toward teaching with technology.

Table 4-35 *ANOVA for Use of Technology in Teaching With Basic Computer Applications*

Use of Technology in Teaching (Dependent Variables)	Type III SS	DF	Mean Square	F	Sig	Eta
Q7.1: Personal communication.	.232	1	.232	.340	.562	
Q7.2: Research work, i.e. web browsing	.073	1	.073	.161	.689	
Q7.3: Classroom management	7.799	1	7.799	7.463	.008	.078
Q7.4: Teaching activities for your students	6.370	1	6.370	8.889	.004	.092
Q8.1: Microsoft Word for word-processing.	22.526	1	22.526	20.814	.000	.191
Q8.2: Microsoft Excel/Access for instruction.	6.240	1	6.240	3.235	.076	
Q8.3: Microsoft PowerPoint for presentation in class.	44.719	1	44.719	31.942	.000	.266
Q8.4: Internet/E-Mail for research.	2.558	1	2.558	3.905	.051	
Q8.5: ELive for conducting class or communication.	.084	1	.084	.108	.743	

The table 4.35 ANOVA results indicated that faculty member attitudes on the use of basic computer applications had statistically significant differences in how often faculty use computer-based technology in classroom management (sig 0.008) and teaching activities for students (sig 0.004). The result also indicated that faculty members attitudes on use of basic computer applications had statistically significant differences in how often faculty use Microsoft Word for word processing (sig. 0.00) and Microsoft PowerPoint for presentations in classes (sig. 0.00).

Table 4-36 *ANOVA for Use of The Internet to Search for Teaching Materials*

Use of Technology in Teaching (Dependent Variables)	Type III SS	DF	Mean Square	F	Sig	Eta
Q7.1: Personal communication.	5.070	1	5.070	7.405	.008	.078
Q7.2: Research work, i.e. web browsing	1.348	1	1.348	2.973	.088	
Q7.3: Classroom management	1.359	1	1.359	1.301	.257	
Q7.4: Teaching activities for your students	.235	1	.235	.328	.568	
Q8.1: Microsoft Word for word-processing.	2.209	1	2.209	2.041	.157	
Q8.2: Microsoft Excel/Access for instruction.	.172	1	.172	.089	.766	
Q8.3: Microsoft PowerPoint for presentation in class.	.017	1	.017	.012	.913	
Q8.4: Internet/E-Mail for research.	4.529	1	4.529	6.914	.010	.073
Q8.5: ELive for conducting class or communication.	.223	1	.223	.287	.594	

The table 4.36 ANOVA results showed that faculty member attitudes on the use of internet to search teaching materials had statistically significant differences in how often faculty used computer-based technology in personal communication (sig 0.008) and how often faculty used the Internet/Email for research (sig 0.01).

Qualitative Measures

The qualitative data in this study was obtained from the three open-ended survey questions and 16 faculty interviews. The total number of units for the open-ended survey questions and faculty interviews was 384. For the three open-ended survey questions, there was a total of 287 units, 78 categories and 14 themes discovered.

Qualitative themes, categories and units in the three questions are displayed in tables (4.36, 4.37, and 4.38) and figures (4.23, 4.24 and 4.25). The first open-ended question provided input by UAF faculty on concerns towards adopting OL, with 98 units, 20 categories and 5 themes. The second open-ended question was on professional development activities, incentives, and support that UAF faculty needed in order for them to use OL, with 100 units, 22 categories and 5 themes. The third open-ended question collected data regarding faculty most needed professional development activity, incentives, and support needed for them to be able to use OL to support their instruction. It provided 37 units, with 15 categories and 3 themes.

Faculty interviews were conducted one week after the survey was concluded through stratified sampling of faculty by rank. The sample interviewees were selected from each academic rank as follows: 5 faculty members from the professor pool, 4 from the associate professor pool, 5 from the assistant professor pool, and 2 from the instructor pool. The interview transcriptions and questions were analyzed and placed into units, then categories and finally, patterns/themes. The interview transcriptions generated 97 units, with 32 categories and 9 themes. The themes for the three questions are displayed in tables (4.39, 40, and 41) and figures (4.26, 4.27 and 4.28).

Note: In some cases, the respondents made distinctions between "Professional Development" and "Workshops" and in others stated that they wanted combined "Professional development and Workshops". The term "professional development" in this study included presentations, conferences, face-to-face training, online training, tutorials, and a wide range of activities. A workshop is a specific sub-category of professional development activities. It usually refers to a face-to-face meeting held for training purposes. While some professors may not have understood the difference, the researcher concluded that, because these distinctions were made by the faculty themselves, these should be separate categories.

Survey Questions

Question Number Thirty-Six

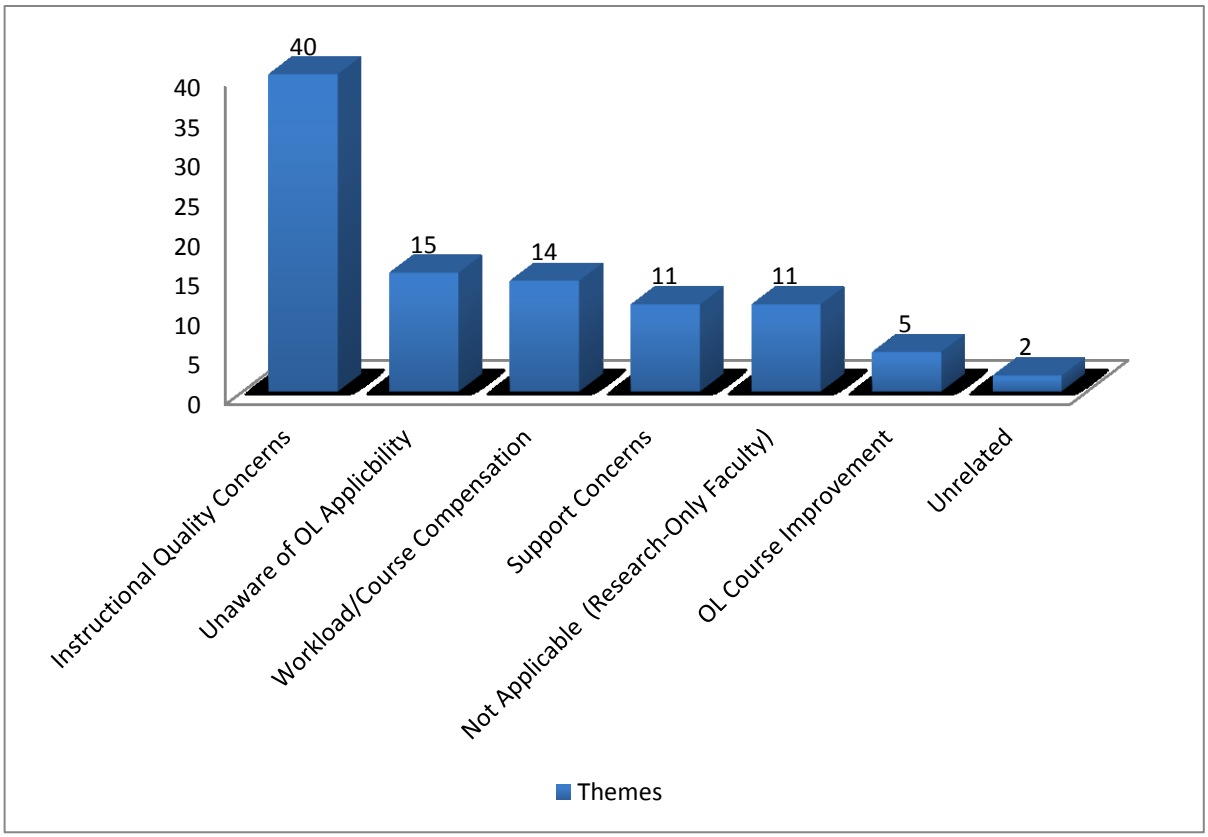
Provide your comments and/or concerns about Online Learning in the space below.

There were 93 respondents to this question. The respondents offered 98 units of information on this question, from which 21 categories and 7 themes emerged. Table 4.37 and figure 4.23 provides the summary of themes, categories and units.

Table 4-37 *Online Learning Faculty Concerns Themes*

Themes/Categories	Units
Instructional Quality Concerns	**40**
Learning Outcome Concerns	18
Interaction	12
Hands on Learning	5
Passiveness of OL	2
Pedagogical Concerns	1
Course Quality	1
Self Discipline	1
Unaware of OL Applicability	**15**
Need more Information (on OL)	8
Survey Purpose Unclear (on OL)	7
Workload/Course Compensation	**14**
Course Development Issues	8
Extra Teaching Time	3
Compensation	2
Academic Freedom	1
Support Concerns	**11**
Technical Assistance	4
Training Support	4
LMS Course Management	3
Not Applicable (Research-Only Faculty)	**11**
OL Course Improvement	**5**
Efficiency	3
Effectiveness	2
Unrelated	**2**
Bookstore	1
OL Unit Location	1
Grand Total	**98**

Figure 4-23 *Online Learning Faculty Concerns Themes*



There were 40 total units and seven categories on the first theme, "Instructional Quality Concerns", with the largest category of eighteen units on "Learning Outcome Concerns". Faculty worried about the ability of OL ability to achieve the same learning outcomes as the traditional class, especially for science lab courses. One respondent wrote:

> *I am very concerned about delivery of lab science courses via distance delivery. Although I am in favor of making science courses available in this way, I want to be sure that the quality of the laboratory exercises remains high.*

Another respondent wrote: "*I would like to know whether students can have similar or better learning outcomes in online learning.*" Additionally, faculty members worried that OL would

"*reduce standards*" or "*dumb down*" student assessments. "Interaction" was the second largest category, with 12 units. One respondent stated the importance of in-class discussion: "*A large part of my teaching deals with class discussion and writing workshop. I'm not convinced the group interaction is as effective online.*" Another respondent indicated, "*Problems and concerns: lack of direct contact with students; no face-to-face, real time interaction among students*." Additionally, a faculty member wrote: "*My main concerns relate to students not being served as well without direct contact with professors and other students.*" A faculty member voiced this concern: "*...online learning is passive and isolating. I believe that learning takes place through empathic understanding and conversation with other (real) people.*" There were 5 units on "Hands on Learning", which was the third category. This respondent voiced explicit doubt in OL's ability to deliver quality learning experience: "*I am also concerned that courses which have hands-on components in normal delivery are now being delivered online - They just lack the quality of experience.*" Another faculty suggested: "*As a professor in geology I'm most concerned about conveying visual information and hands-on learning. I looked into setting up a distance delivery geoscience course several years ago and eventually gave up on it due to the logistical difficulties*." "Passiveness of OL" was the fourth category, with 2 units. One faculty member indicated: "*I still retain some of the concern, especially with online courses that are not well-organized, or when instructed by teachers who allow students to do nothing for several weeks then complete the course in a rush near the end of the semester.*" The three other categories, with one unit each, were "Pedagogical Concerns," "Course Quality" and "Self Discipline."

There were 15 total units and two categories on the second theme, "Unaware of OL Applicability"; eight units on the category "Need More Information." This was the largest

category for the respondents. A faculty member stated: "*I am often asked to see if I could make online courses for the Inupiaq language and I have requests from UAA students for the online language program. Is there help available to see what is feasible in this area?*" Another faculty member stated that: "*I have no experience with on-line learning, but think it is important. I am interested in learning more about this.*" "Survey Purpose Unclear" was another category with a high number of responses from faculty members. One faculty member wrote: "*I don't really understand this survey. None of this makes sense to me. Are they going to 'require' online learning*?" Another participant stated: "*The questionnaire above is very difficult to interpret with very little context. Are you asking about faculty development or online learning?*"

The third theme was that of "Workload/Course Compensation," with 14 units and 4 categories. The first category was "Course Development Issues," with 8 units. One respondent wrote: "*I have not conducted any online courses because I do not have the time to develop the necessary resources.*" There were 3 units in the category "Extra Teaching Time." One faculty member voiced a concern about the amount of time needed to teach online using Blackboard (the university LMS): "*Although I have been teaching for CDE since 1990, I have deliberately cut back on the amount of distance education I do using Blackboard because of the excessive amount of time I was spending managing the course shell.*" The third category was "Compensation," with 3 units. A faculty member implied: "*I am concerned that faculty members teaching online courses are not paid appropriately. In particular, faculty should be paid for teaching a course, not for grading a certain number of papers.*" "Academic Freedom" was the last category with one unit.

The fourth theme was "Support Concerns," with 11 units and 3 categories. The first category was "Technical Assistance," with 4 units. A faculty member voiced: "*What is the level*

of tech support; is this instantaneous or could it take days to resolve problems?" There were 4 units in the second category "Training Support." One respondent specified: "*I am a faculty member who does regularly use Blackboard. However, I have never been fully trained on all the different possibilities. I would like to attend a training to enhance my course asynchronous offerings.*" The last category was "LMS Course Management," with 2 units. One faculty worried: "*My main concern is that it is very hard to stop cheating*."

The fifth theme was "Not Applicable (Research-Only Faculty)," with 11 units. Eleven faculty members, their primary duty being research, indicated no comments about their OL concerns. One faculty member noted: "*I do not have much of a teaching load, and the teaching I do is at the graduate student level. Thus, I do not feel that online learning is very applicable to what I do.*"

The sixth theme was "OL Course Improvement," with 5 units and two categories. There were 3 units in the first category "Efficiency." A participant claimed: "*There is no question that online learning is going to continue to become a larger portion of the overall instructional environment, and that there will continue to be increasing efficiency in the modes of delivery.*" The last category was "Effectiveness," with 2 units. One respondent stated: "*Online is very effective, overall, but particularly for those students who are highly disciplined and that have exercised maintaining their tasks on time.*"

The last theme, "Unrelated", had two units, since the answers were unrelated to the questions asked. The faculty members took the opportunity to ask about bookstore facilities and whether or not the UAF distance learning services would be de-centralized.

The majority of participants expressed a variety of concerns related to OL. The largest group of faculty members identified the concerns of "Instructional Quality Concerns," which

included student "Learning Outcome Concerns," "Hands on Learning," "Interaction," "Pedagogical Concerns" and "Course Quality." The second major concern was "Workload/Course Compensation," including "Course Development Issues," "Extra Teaching Time" and "Compensation." Additionally, faculty members worried general "Support Concerns," contained "Technical Assistance," "Training Support" and "LMS Course Management" concerns.

For question #36, eleven faculty members indicated no comments about their OL concerns. Eight faculty members said that they would like to learn more about OL. These numbers indicate that there was a significant portion of faculty who did not embrace OL enough to express concerns or have very little knowledge about OL. This somewhat negative assessment was made based on small likelihood that all faculty members concerns related to OL could be met.

Question Number Sixty-Five

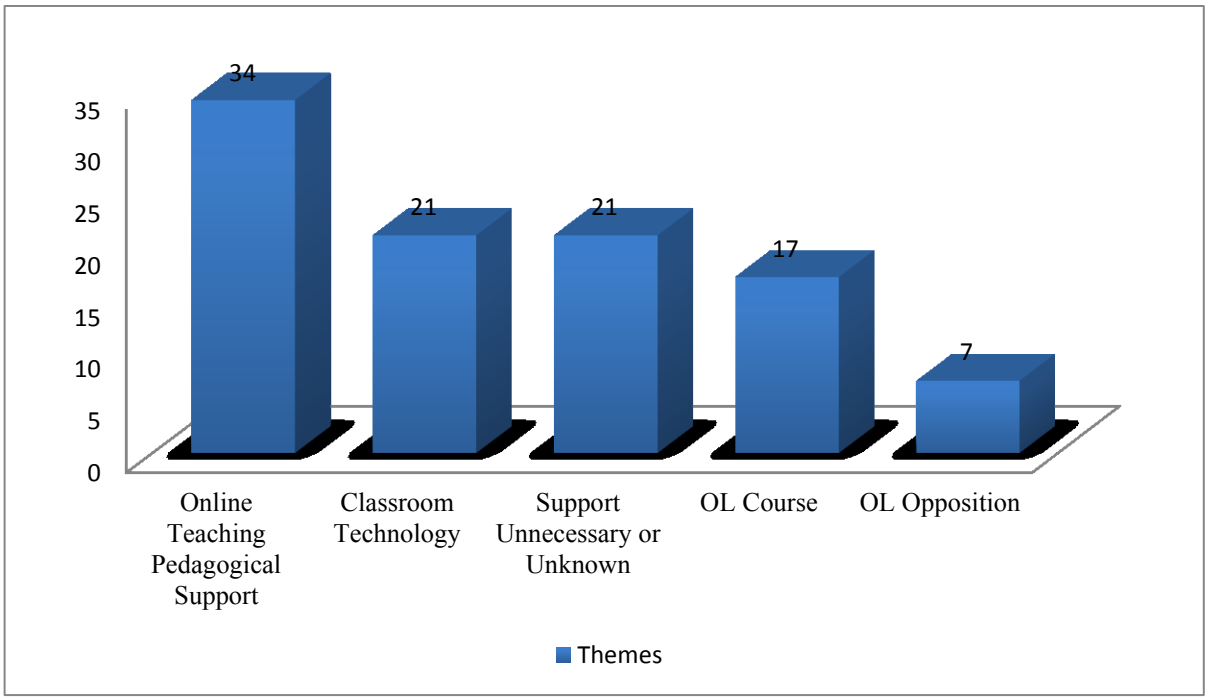
What professional development activities, incentives, support, etc., you need in order to teach online and/or apply online learning tools for your instruction needs? List them using the space below.

There were 95 responses to this question. The respondents offered 100 total units of information on this question, with 20 categories and five themes. Table 4.38 and figure 4.24 provides the summary of themes, categories and units.

Table 4-38 *Professional Development Needs*

Themes/Categories	Units
Online Teaching Pedagogical Support	**34**
LMS Training	20
Instructional Design	6
Training for off-campus	3
Effectiveness of OL	3
Flexible Training Schedule	1
Interaction	1
Classroom Technology	**21**
Technical Assistance	8
Equipment	7
Software	2
LMS Improvement	2
Internet Connection	1
Administrative Pedagogical Support	1
Support Unnecessary or Unknown	**21**
No support Needed	17
Don't Know	4
OL Course	**17**
Course Development Time	8
Workload Release	6
Remuneration	2
“Floating” Teaching Assistant	1
OL Opposition	**7**
No Interest	6
Colleagues' Discourage OL	1
Grand Total	**100**

Figure 4-24 *Professional Development Needs*



The first theme was "Online Teaching Pedagogical Support," with 34 units and six categories. Twenty units were on the category of "LMS Training". This was the largest category for the respondents. One faculty gave suggestions for what was needed:

> *On-going training on new technologies and best practices. The 2-day iTeach seminar was great! But you can only absorb and incorporate so much at a time. I think it would be valuable to be able to attend again (or other similar training beyond the initial course) to learn about new technologies that can be incorporated into the virtual classroom. A series of on-going seminars would also be great to remind of technologies that, perhaps, were previously presented but you were too overwhelmed to be able to fully appreciate their value the 1st time they were presented.*

Another faculty member requested: "*Structured online teaching workshops, help integrating course material to support online courses.*" Another faculty member stated: "*I don't need the incentives to teach online as much as I could use online training tools or examples of 'how' to migrate instruction from the class to an online Bb format.*" There were 6 units on the category "Instructional Design." One respondent wrote: "…*organized instructional materials, scheduled quizzes and exams training on available equipment, and applications support for scheduled courses.*" Overall, faculty needed accessible technical support, better equipment in classrooms, and instructional design assistance in order to adopt OL. "Training for off-Campus" was the third category to participants. A faculty member requested: "*ongoing training opportunities for off-campus faculty members. Need ready access to assistance when issues or problems come up during a semester.*" "Effectiveness of OL" was another category with three responses from faculty members. Faculty wanted to know what are the effective teaching approaches in OL. One faculty member stated: "*Besides I need time to develop courses. I would also need to be convinced that these are effective teaching approaches*. The last two categories were one unit each for "Flexible Training Schedule" and "Interaction."

The Second theme was "Classroom Technology," with 21 units and six categories. Eight units were on the category "Technical Assistance." This was the largest category for the respondents. One faculty member wrote: "*I would need on- call tech support.*" There were 7 units on "Equipment", which was the second category. A faculty member stated: "*The number one need I have to integrate on-line materials better in class is better technology in the classrooms! Too many classrooms lack adequate technology, creating problems in using technology."* "Software" was third category with two units. One faculty needed: "*I need computers with mathematical software installed on them (e.g., Maple, Mathematica) sufficient*

for a class of my students to use. Other than that, I'm cool." "LMS Improvement" was another category with two units. One participant suggested: "*More intuitive/user friendly interface to Blackboard.*" "Internet Connection" and "Administrative Pedagogical Support" both contained one unit each.

The third theme was "Support Unnecessary/Unknown," with 21 units and two categories. Seventeen units were on the category "No Support Needed". One faculty wrote: "*I cannot think of any particular needs right now.*" Ten faculty members responded either "None" or "Nothing." There were 4 units on the second category "Don't Know." A faculty member stated: "*I don't know; it depends on the level of commitment of UAF to online learning."* The rest of the faculty members responded "Not sure."

The fourth theme was "OL Course," with 17 units and 4 categories for question sixty-five. Eight units were on the category "Course Development Time." This was the largest category for the respondents, one faculty member wrote: "*I would need a lot of time to develop quality materials. However, my department is strapped enough for professors who can teach my specialty that I cannot take a semester off to prepare an online course.*" There were six units in the second category, "Workload Release." One respondent stated: "*I definitely would require that an online courses would count the same towards my workload as an in-person course.*" "Remuneration" was the third category with 2 units. A faculty member mentioned: "*Adequate compensation for the additional work involved.*" The last category was ""Floating" Teaching Assistant", with one unit.

The last theme was "Opposition to OL," with 7 units and 2 categories for question sixty-five. Six units were on the category "No Interest". This was the largest category for the respondents, one faculty wrote: "*None, I don't have much interest in online education.*" Another

faculty member stated: "*None. As stated in my comment earlier, I believe learning takes place in active contact between people (instructor/student) and is supported by passive activities like reading in the library or online.*" There was one unit with category "Colleagues' Discourage OL."

The majority of participants expressed a variety of needs related to OL. The largest group of faculty members identified the needs for "Online Teaching Pedagogy Support," which included "LMS Training," "Instructional Design," "Training Off-Campus" and "Effectiveness of OL." The second largest group needed "Classroom Technology," including "Technical Assistance," "Equipment" and "Software." Additionally, faculty members wanted "OL Course," support contained "Course Development Time," "Workload Release" and better "Remuneration" concerns. The result shows that professional development in OL pedagogy and classroom technology support come prior to compensation and workload concerns.

For question #65, seven faculty members had no intension in adopting OL. Twenty-one faculty members said that they either did not need the support or did not know what kind of support could benefit them. These numbers indicate that there was a significant portion of faculty who did not embrace OL enough to express need or even have any opinion about possible support needs.

Question Number Sixty-Six

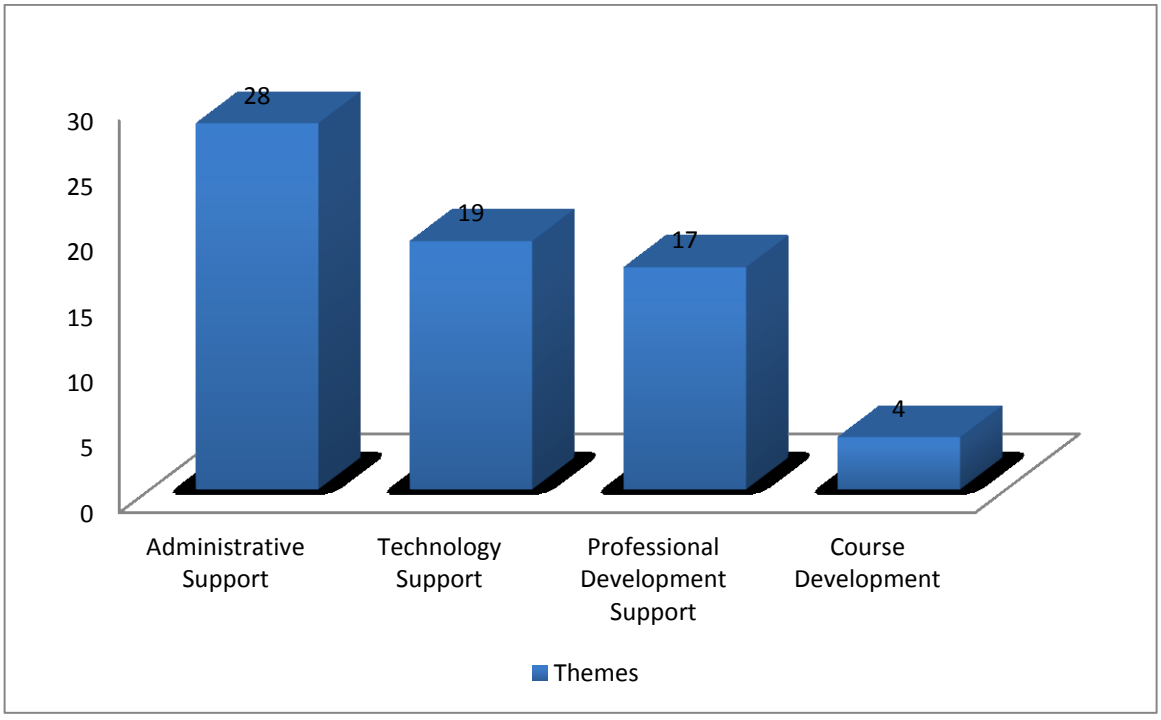
From the response you gave above (Q65), what is the most important professional development activity, incentive, support, etc. you need in order to teach online and/or apply online learning tools for your instruction needs? List them using the space below.

There were 89 responses to this question. The respondents offered 68 total valid units of information on this question, from which 12 categories and four themes emerged. Table 4.39 and Figure 4.25 provide the summary of themes.

Table 4-39 *Most Important Faculty Online Learning Need*

Themes	Units
Administrative Support	**28**
Workload	10
Monetary Compensation	9
Recognition	5
Time	4
Technology Support	**19**
Instructional Design Support	8
Better Equipment	6
Technical Support	4
Better Integration	1
Professional Development	**17**
More Training Opportunities	14
Ongoing Training	3
Course Development	**4**
Outcome Assessment	2
Online Course Examples	2
Grand Total	**68**

Figure 4-25 *Most Important Faculty Online Learning Need*



There were 28 units on the first theme, "Administrative Support"; these units focused on the various aspects of faculty needs on workload, stipends, and tenure recognition in order to teach online courses. Ten units were on the category "Workload". This was the largest category for the respondents. One faculty stated that what was needed was: "*A faculty member to teach a course for me while I prepare an online course."* Another faculty member stated: "*I definitely would require that an online courses would count the same towards my workload as an in-person course.*"

There were 9 units on the "Monetary Compensation," which is the second largest category for participants. A faculty member wanted:

> *Stipends for attending technology workshops, where specific projects need to be created/implemented (e.g., design of an online course, integrating blackboard into a course) are required for completion of the workshops to receive the stipend.*

"Recognition" was another category with significant number of responses from faculty members. A faculty member specified: "*To be sure that my time commitment would be recognized and rewarded and that the steep learning curve would not result in negative performance reviews.*"

The second theme was "Technology Support," with 4 categories and 19 units. Eight units were on the category of "Instructional Design Support." This was the largest category for the respondents. One faculty member wrote: "*I would need to be taken through step-by-step on the process"*. There were 6 units on the "Better Equipment," which was the second largest category for participants. A faculty member expressed the need for *"better internet availability"*. Another requested *"new laptops"*. Four faculty members stated they needed more support in using "Technical Support," which was the third category for this theme. A

faculty member specified this need: "*more IT support staff to help keep everything running."* Another requested *"more smart classrooms"*.

The third theme was "Professional Development Support," with 17 units and two categories. Fourteen units were on the category of "More Training Opportunities." One faculty member wrote: "*The opportunity to attend a hands-on training on how to use options such as E-live.*" Another faculty member suggested the need for training: "*Training opportunities for off-campus faculty members and easy access to someone to help when problems or questions arise.*" Yet another requested "*tech help available during the actual online classes.*" There were 3 units with category of "Ongoing Training." One faculty member wanted:

> *On-going training on new technologies and best practices. The 2-day iTeach seminar was great! But you can only absorb and incorporate so much at a time. I think it would be valuable to be able to attend again (or other similar training beyond the initial course) to learn about new technologies that can be incorporated into the virtual classroom. A series of ongoing seminars would also be great to remind of technologies that, perhaps, were previously presented but you were too overwhelmed to be able to fully appreciate their value the 1st time they were presented.*

Another requested *" follow-up help with my online course."*

The last theme was "Course Development," with 2 categories and 4 units. Two units were on the category of "Outcome Assessment." One faculty member wrote: "*First, I need to see the purpose, and have to be convinced that the quality of teaching matches what is done in a traditional classroom.*" The "Online Course Examples" category had two units. One respondent stated the need to see "*an example online course"*. Another requested the chance to learn how to *"construct online course assessments."*

For question #66, a majority of faculty members identified the most needed support was "Administrative Support," including "Workload," "Monetary Compensation," "Recognition" and "Time." They also recognized the needs of "Technology Support," which included "ID Support," "Technical Support" and "Better Equipment." There were 17 faculty members specified the needs of "Professional Development Support." Here administrative support acquires most significance as compared with the previous question, which triggered technology-related support as most frequent answer. Additionally, faculty members implied that they concerned about OL "Outcome Assessment" and would like to have good "Online Course Examples."

There was a total of 266 units, 53 categories and 16 themes for three open-end questions. Question #36 had 98 units, 21 categories and 7 themes emerged. The respondents offered 100 total units of information on question #65, with 20 categories and five themes. There were 68 units of information for question #66, from which 13 categories and four themes emerged.

Faculty Interviews

Sixteen faculty participants were randomly selected by the researcher from School of Management (SOM), College of Liberal Arts (CLA) and College of Natural Science and Mathematics (CNSM). Among the interviewees were 5 professors, 4 associate professors, 5 assistant professors and 2 instructors. These sixteen faculty members were interviewed; interviews were started on July 18th, 2011 and were completed on August 2nd, 2011. These interviews were completed after the summer 2011 semester had ended prior to the start of the Fall 2011 semester. Twelve of the faculty interviews were conducted in person and six by phone.

Professor 1 was in the English department of CLA. He was the department chair and currently serves as interim dean of College of Liberal Arts. He taught English literature. He was in his late 50s. He had never taught any online course before but did take two online courses. He had not participated in any UAF professional development related to OL.

Professor 2 was in Space Physics and Astronomy in NSM. He was a research-focused professor with more than 75% his salary coming from grants and contracts. He taught only one course per semester, at most, but usually taught one course per year. He was in his early 60s. He had never taught any online course before and had not participated any UAF professional development related to OL.

Professor 3 was in the Journalism department at CLA. She was also serving as Director for the Office of Faculty Development at UAF. She had taught for CDE for more than 10 years. It was a pay-per lesson model class. She had been at UAF for more than 25 years and was in her

late 50s. She had tremendous interest on providing more online technology related training opportunities for faculty.

Professor 4 was in Linguistics and served as Director of the Alaska Native Language Center. He taught courses in Linguistics, specializing in Inupiaq Eskimo language. He had served UAF for more than 20 years and was in his 60s. He had never taught any online course and preferred F2F classroom instruction to OL. He had not participated any UAF professional development related to OL.

Professor 5 was both the Chemistry professor in the College of Natural Science and Mathematics and Interim Dean of the Graduate School. He had taught one online course and enjoyed the flexibility of OL. Currently, he was developing online CHEM100 course. He had been at UAF for more than 30 years and he was in his early 60s. He was planning to participate in iTeach in summer 2012.

Associate Professor 1 was a Biology & Wildlife research Associate Professor (non-tenure). Since he was a research-only faculty, he taught one research-related seminar per academic year. He needed to bring 7 or more months worth research funding to pay for his salary, UAF was covering only two months of his salary. He had been with UAF for about 8 years and is in his late 40s. He had never taught any online course and had not participated any UAF professional development related to OL.

Associate Professor 2 was in Alaska Native Studies. He had taught for UAF for more than 25 years in the field of Alaska Native Land Settlement. He was a well-known native scholar in Alaska. He taught and developed one online course in 2010. He needed more faculty professional development in OL. He was in his 60s.

Associate Professor 3 was in the Biology and Chemistry Department and she was part of CNSM faculty. She was also the current UAF faculty senate president for the next two years. She taught both undergraduate physical chemistry and graduate seminars. She was in her late 40s. She had never taught any online course before and had not participated any UAF professional development related to OL.

Associate Professor 4 taught Accounting in the UAF School of Management and served as Associate Dean. He had worked with CDE to hire term faculty and adjunct to develop more business courses online to maximum the enrollment. He taught accounting. He was in his early 50s. He had never taught any online course before and had not participated any UAF professional development related to OL.

Assistant Professor 1 was in the School of Management. She jointed UAF back in 2010. She also served as director of Northern Leadership Center, in charge of leadership seminar, lectures and activities. She was in her early 40s. She had never taught any online course before and had not participated any UAF professional development related to OL.

Assistant Professor 2 was in the Department of Communication at CLA. She jointed UAF since 2010 from UAS. She had extensive experiences on instructing hybrid courses and had participated some OL training but did need additional BB training. She was teaching her first online course in Fall 2011. She taught core communication course and she is in her late 40s.

Assistant Professor 3 was in the Department of Communication; it was part of College of Liberal Arts. She had been in UAF since 2008. Her academic interests were primarily in organizational communication. She did not believe OL can be as good as F2F class and has not participated in any UAF professional development related to OL. She was in her late 40s.

Assistant Professor 4 was in Psychology in CLA. Her focus was on Alaska Native Health and public health. She had little experience and knowledge about OL. She had never taught any online course before and had not participated any UAF professional development related to OL. She was in her late 40s.

Assistant Professor 5 was in the English department. She started her faculty role at UAF in 2010 and was also the director of student writing center. She had participated in iTeach in spring 2011 and had no online teaching experience. She was primary teaching English writing and publication courses. She was in her mid to late 30s.

Instructor 1 was an Economics term instructor in the School of Management. She was currently teaching both Accounting lower division courses online and Economics 200 F2F. She enjoyed online instruction and interaction with students. She had participated in iTeach in summer 2011. She was in her late 40s.

Instructor 2 was a term Economics instructor in the School of Management. She taught both F2f and online Econ 100 and 200. She had some serious concerns for administrative support of this teaching preference and recognition for good instruction in this delivery mode.

Administrative Support of Technology

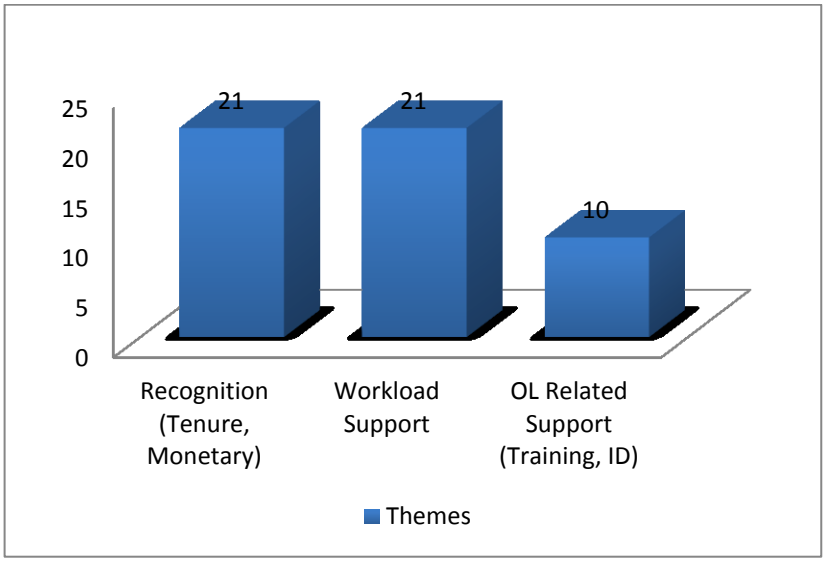
A total of 52 individual units were found on *Administrative Support of Technology* from the faculty interviews. There were 10 categories and 3 themes. The first theme was "Recognition" with five categories, including "OL Tenure Consideration," "Respect for OL," "Monetary Incentives," "Better Adjunct Compensation" and "Increased Travel Support." The second theme was "Workload Support" with the categories of "Course Development Time" and "Workload Release." The last theme was "OL Related Support" with three categories - "Better

Department Chair Support," "Training," and "Online Teaching Support Group." Table 4.40 and Figure 4.26 provide the summary of themes.

Table 4-40 *Administrative Support of Technology Themes*

Themes/Categories	Units
Recognition	**21**
OL Tenure Consideration	8
Respect for OL	5
Monetary Incentives	4
Better Adjunct Compensation	3
Increased Travel Support	1
Workload Support	**21**
Course Development Time	11
Workload Release	10
OL Related Support (Training, ID)	**10**
Better Department Chair Support	5
Training	3
Online Teaching Support Group	2
Grand Total	**52**

Figure 4-26 *Administrative Support of Technology Themes*



Recognition

The first theme was "Recognition," with 21 units and 5 categories. Eight units were on the category "OL Tenure Recognition." Recognition of OL teaching in the tenure process

would be a significant incentive for faculty engaging in OL related activities. This was the largest category for the respondents, Associate Professor 3 wrote: "*Encouraging them on that front would be good and getting the provost to basically say this is something in your unit criteria that can be used for tenure and we encourage you to do it.*" Professor 3 stated: "*I still think that an incentive to get more of them to do it would be official recognition in a tenure file. If I were provost, I would offer that. Not a huge part of their portfolio but definitely some of it.*"

There were 5 units on the category "Respect of OL," which is the second largest category to participants. Instructor 2 stated: "*I'm thinking if there would be a way for me to feel I'm really making an educational impact so that I really know the students are learning and I really know that the CDE people who are in charge feel like I'm helping students. I think that would be really big.*" "Monetary Incentives" is another category with significant number of responses from faculty members. Instructor 2 specified: "*…the monetary incentive is pretty strong.*" Another faculty member wanted *"incentives from the College to do OL."* The two remaining categories were "Better Adjunct Compensation" with 3 units and "Increased Travel Support" with one unit. One faculty member suggested: "*I care very much about adjuncts' labor and it would be great to see with this push towards more online learning or better online learning at UAF to see that it take on the needs of adjunct faculty or better labor conditions and compensation.*"

Workload Support

The second theme was "Workload Support," with 21 units and 2 categories. Eleven units were on the category "Course Development Time." This was the largest category to the respondents. Assistant Professor 1 wrote: "*If I had an online course, I'd probably need a semester to develop it, which means I would need out of one course to develop and I would have to switch an online course for an in class course.*" Associate Professor 1 stated: "*One class of online is considered to teaching one in teaching load. If there is something like that there is more motivation to do online.*" There were 10 units on "Workload Release," which was the second largest category to faculty members. Associate Professor 3 identified this need: "*In order to have me do this, we need to have someone who can cover one of my courses….*" Assistant Professor 2 suggested: "*…obviously, a release in class load (workload), because I wouldn't be able to take on any more courses.*"

OL Related Support

The Third theme was "OL Related Support," with 4 categories and 10 units. Five units were on the category of "Better Department Chair Support." This was the largest category for the respondents, Instructor 1 wrote:

> *I like that I know how to do it [OL] in a department that is supportive, because they give me the time to do it. I don't know really know how other departments would behave. I am fortunate because mine is supportive.*

There were 3 units on "Training," which was the second largest category for faculty members. Professor 4 stated: "*I would need just the training in the most effective ways of teaching online, how to handle the technology and what sorts of things teachers do online that would be different from teaching in a classroom.*" The last category was "Online Teaching Support Group."

Assistant Professor 3 stated: "*Support groups among faculty members are probably the single biggest key.*"

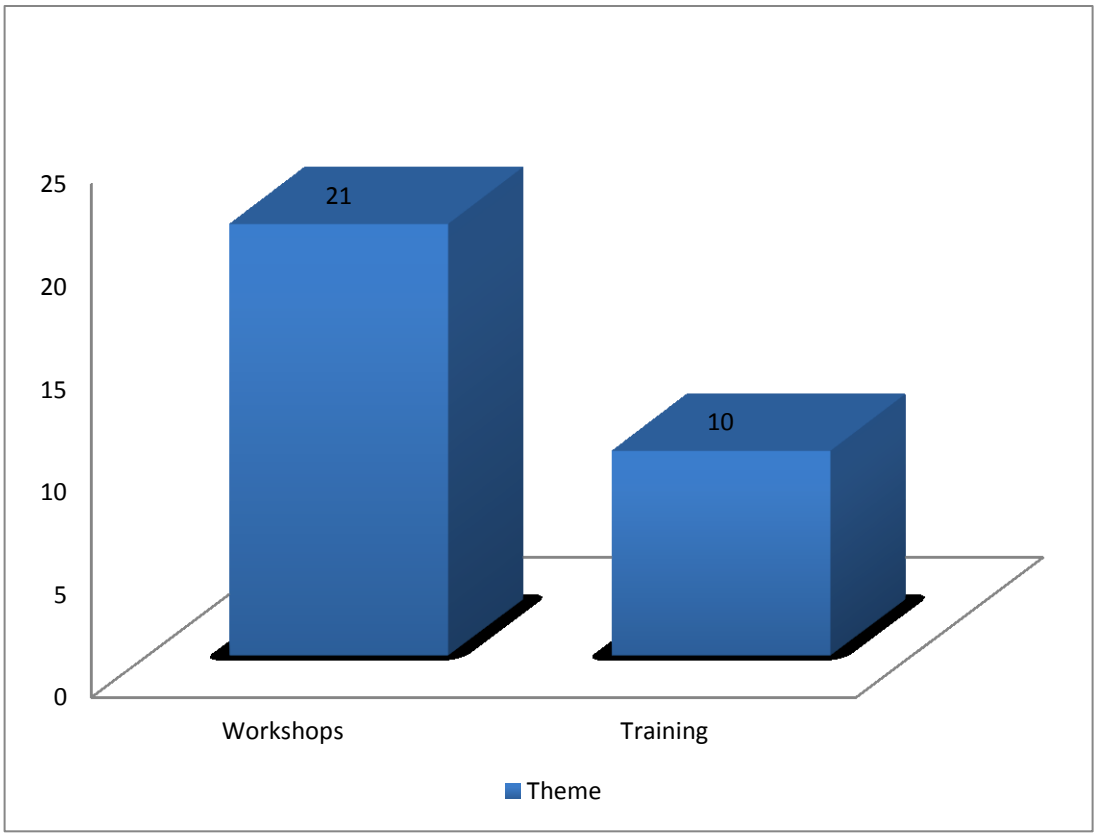
Technology-Related Professional Development

A total of 31 individual units were found on *Technology-Related Professional Development* from faculty member interviews. There were 6 categories and two themes. The first theme was "Workshops," with 3 categories, including "Current Technology Workshop," "Online Teaching Pedagogy Workshop" and "Request iTeach Workshop Format." The second theme was "Training," with 10 units and three categories, including "Blackboard Training," "More Accessibility on Training" and "Demonstration of Online Teaching." Table 4.41 and Figure 4.27 provide the summary of themes.

Table 4-41 *Technology-Related Professional Development Themes*

Themes/Categories	Units
Workshops	**21**
Current Technology Workshop	11
Online Teaching Pedagogy Workshop	7
Request iTeach Workshop Format (Again)	3
Training	**10**
Blackboard Training	7
More Accessibility in Training (Days/Times/Formats)	2
Demonstration of Online Teaching	1
Grand Total	**31**

Figure 4-27 *Technology-Related Professional Development Themes*



Workshops

The first theme was "Workshops," with 21 units and 3 categories. Eleven units were on the category of "Current Technology (Workshop)." Faculty members would like to have learned more about what technology could assist them in adopting OL. This was the largest category for the respondents. Professor 4 wrote: "*I think I would need to attend workshops on teaching online.*" Assistant Professor 3 stated: "*I need to learn the technical aspects but also the social aspects of the class in a workshop.*" There were 7 units on "Online Teaching Pedagogy Workshop," which was the second largest category to participants. Assistant Professor 5 wrote that what was needed was a workshop that: "*focused more on the pedagogy, then the variety of choice that I would have in doing that pedagogy online.*" Assistant Professor 4 stated: "*I need a*

lot of training on how to develop the course, how to put materials on the website that are useful, and how to create lectures."

There were 3 units on the "Request iTeach Workshop Format," which was the third largest category for participants. Instructor 1 affirmed: "*I really, really benefited a lot from the iTeach seminar. It's just opening up the possibilities of what could be done. Then, when I actually start developing [an OL course], I would never feel like I was in it alone."*

Training

The second theme was "LMS Training," with 10 units and 3 categories. Seven units were on the category of "Blackboard Training." Professor 3 wrote: "*I would like to see different kinds of Blackboard lessons offered regularly at a regular time and a regular place by a good instructor, because there are a lot of complaints about the teaching on Blackboard.*" Assistant Professor 2 stated: "*I would need some intense Blackboard training. I've never been trained and it has always been 'hit or miss'.*" "More Accessibility on Training" was another category with couple responses from faculty members. Assistant Professor 1 implied: "*I always have issues with that. For some reason, it's during a time that I can't commit to….*" "Demonstration of Online Teaching" had one unit.

Attitudes Toward Teaching with Technology

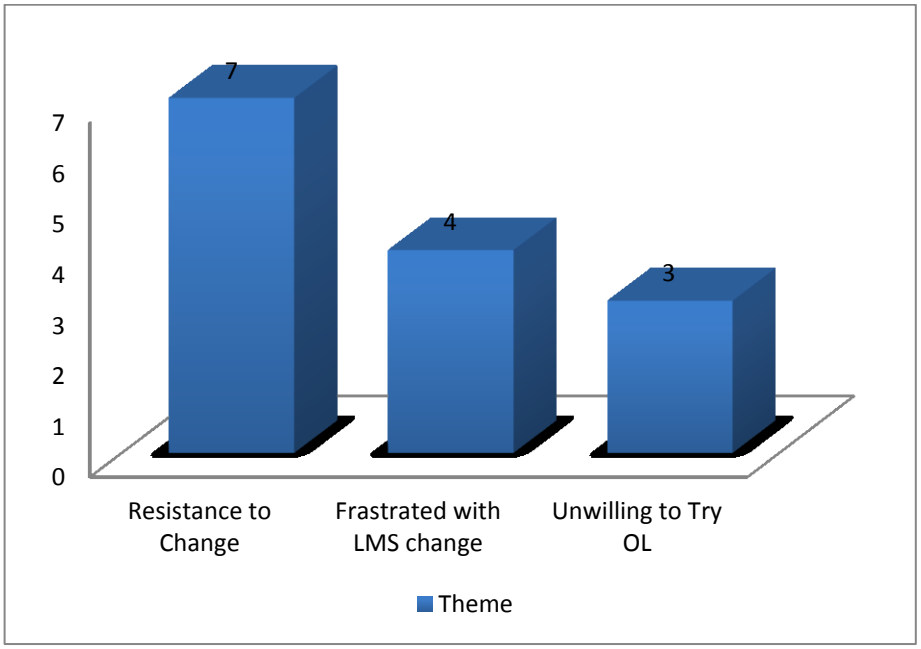
A total of 14 individual units were found related to *Attitudes Toward Teaching with Technology* from the faculty interviews. There were 6 categories and 3 themes. The first theme was "Resistance to Change," with two categories, including "Frustrated with LMS Change" and "Unwilling to Try OL." The second theme was "Advantages of OL Through LMS," with categories of "Appreciate Blackboard Teaching Options" and "Enjoy OL Interaction." The third theme was "Student OL Advantages," with categories of "Degree Obtained Earlier with

OL" and "Utilizes Student Technologies." Table 4.42 and Figure 4.28 provide the summary of themes.

Table 4-42 *Attitudes Toward Teaching with Technology Themes*

Themes/Categories	Units
Resistance to Change	**7**
Frustrated with LMS change	4
Unwilling to Try OL	3
Advantages of OL Through an LMS	**5**
Appreciate Blackboard Teaching Options	3
Enjoy the OL interaction	2
Student OL Advantages	**2**
Degree Obtained Earlier with OL	1
Utilizes Student Technologies	1
Grand Total	**14**

Figure 4-28 *Attitudes Toward Teaching with Technology Themes*



Resistance to Change

The first theme was "Resistance to Change." with 2 categories and 7 units. Four units were on the category "Frustrated with LMS Change." This was the largest category for the respondents. Assistant Professor 1 wrote: "*It is frustrating as a faculty member to put that much time and effort into learning programs and then having to go back and do it again.*" Assistant Professor 2 stated that: "*When Blackboard changed, it threw me for a loop and pissed me off. It required a lot of time to relearn and I'm very busy with multiple classes and time consuming grad classes.*" There were 3 units on the "Unwilling to Try OL," which is the second largest category to participants. Instructor 1 explained the unwillingness to try OL: "*The negative would be from the instructor perspective it's just not as much fun because I don't get the interaction with the students."* Assistant Professor 3 was more succinct in the response, though with no reasons given: "*I think it's a dreadful idea.*"

Advantages of OL Through LMS

The second theme was "Advantages of OL Through LMS," with 5 units and 2 categories. Three units were on the category of "Appreciate Blackboard Teaching Options." This was the largest category for the respondents. Professor 3 wrote: "*I like the connection, so I enjoy the efficiency of the Blackboard system more than the old way of sending me email lessons or typing and sending lessons. It's efficient and it's quick to do online.*" There were 2 units on "Enjoy OL interaction," Professor 5 stated: "*The positive experience is that the students are great. You can communicate and network with them. It's a nice way [of teaching] and also frees you up and allows you more access to students, which is great, too.*"

Student OL Advantages

The last theme was "Student OL Advantages," with 2 units and 2 categories. Both "Utilizes Student Technologies" and "Degree Obtained Earlier with OL" category contained one unit. Instructor 2 stated: "*The positive [aspect] would be that it is a nice venue for the students to complete their degrees earlier, though I am not sure that they are learning quite as much as the face-to-face class.*"

There were 97 units, 22 categories, and 8 themes generated from sixteen faculty member interviews of the study. There were 52 units, 10 categories and three themes related to "Administrative Support of Technology." There were 31 units, six categories and 2 themes related to "Technology-related Professional Development." "*Attitudes Toward Teaching with Technology,"* generated 14 units, 6 categories, and 3 themes.

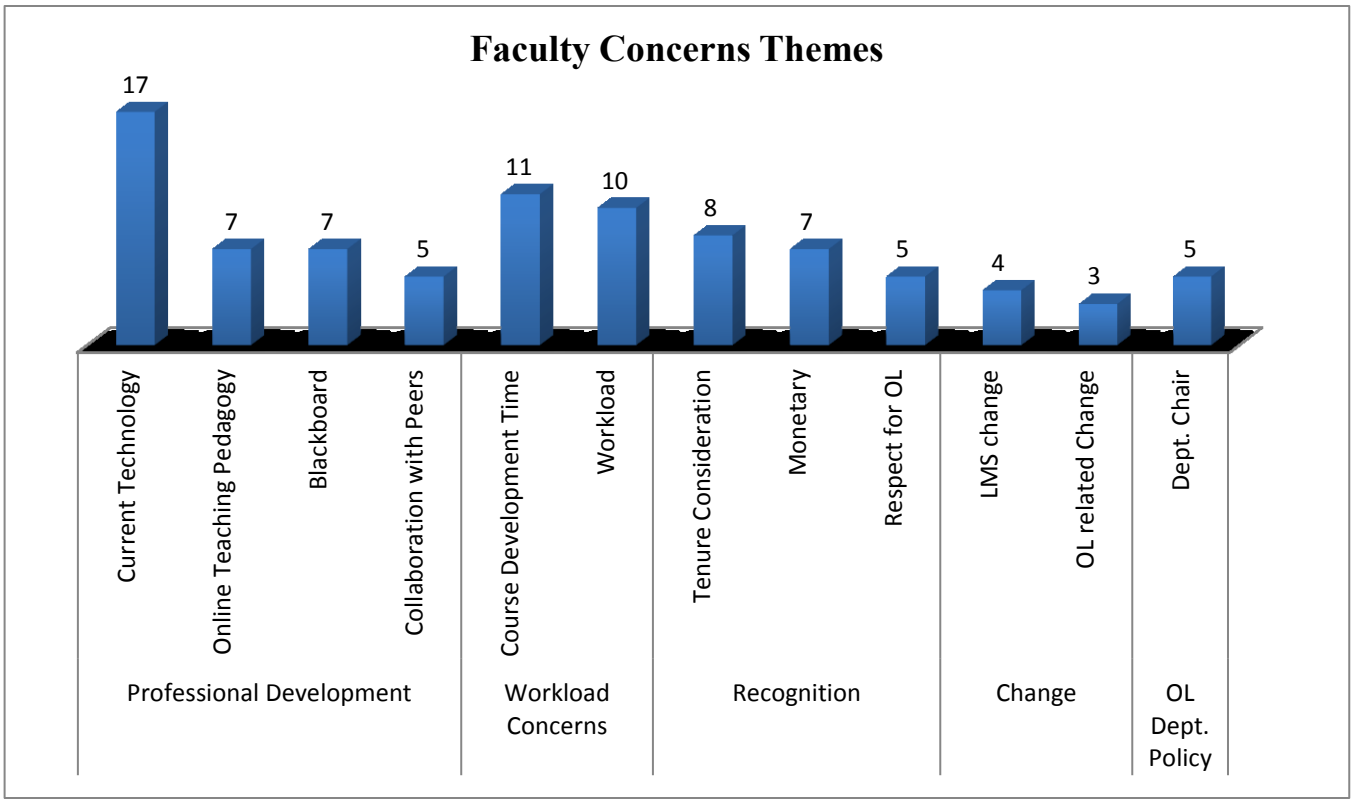
Faculty Interview Concern Themes

There were 89 units, 12 categories, and 5 overall themes regarding faculty member concerns from the interviews (Table 4.43 and Figure 4.29).

Table 4-43 *Faculty Concerns Themes*

Faculty Concern Themes		
Overall Themes	Categories	Units
Professional Development	Current Technology	17
	Online Teaching Pedagogy	7
	Blackboard	7
	Collaboration with Peers	5
Workload Concerns	Course Development Time	11
	Workload	10
Recognition	Tenure Consideration	8
	Monetary	7
	Respect for OL	5
Change	LMS change	4
	OL related Change	3
OL Dept. Policy	Dept. Chair	5
		89

Figure 4-29 *Faculty Concerns Themes*



Interviews reveal that among faculty members keeping up with current technology is an important concern, with 17 responses indicating the need for professional development in this area. In particular, faculty members were concerned about insufficient Blackboard training and with the lack of knowledge of OL pedagogy. Some faculty members expressed frustration with the need to adapt to changes of LMS in particular and OL in general. Large group of faculty members (21responses in total) expressed workload concerns that indicated their perception of online development as time-consuming process that would increase their workload. At the same time, such work is not perceived as properly recognized, having no bearing on tenure consideration, nor being monetary rewarding. Five responses of faculty members indicated concern with the insufficient respect for OL, with five stating the lack of support on the part of Department Chair for OL.

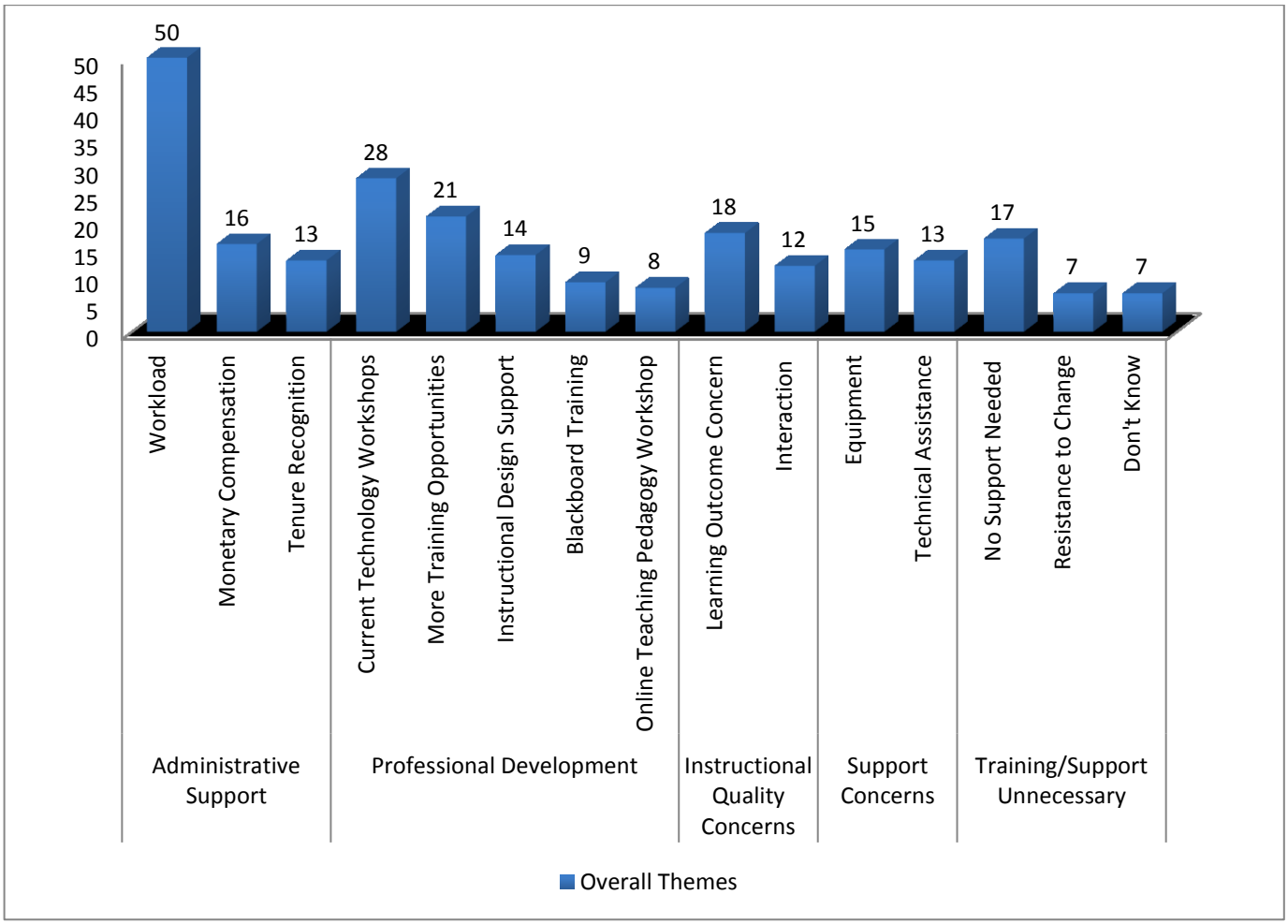
Overall Themes

There were 248 units, 15 categories, and 5 overall themes for the faculty member answers to all of the qualitative questions and interviews of the study (Table 4.43).

Table 4-44 *Overall Themes*

Overall Themes	Categories	Units
Administrative Support	Workload	50
	Monetary Compensation	16
	Tenure Recognition	13
	Total Units	**79**
Professional Development	Current Technology Workshops	28
	More Training Opportunities	21
	Instructional Design Support	14
	Blackboard Training	9
	Online Teaching Pedagogy Workshop	8
	Total Units	**80**
Instructional Quality Concerns	Learning Outcome Concerns	18
	Interaction	12
	Total Units	**30**
Support Concerns	Equipment	15
	Technical Assistance	13
	Total Units	**28**
Training/Support Unnecessary	No Support Needed	17
	Resistance to Change	7
	Don't Know	7
	Total Units	**31**
	Total	248

Figure 4-30 *Qualitative Research Overall Themes*



Administrative Support

The first overall theme was "Administrative Support," with 79 units and 3 categories. Fifty units were on the category of "Workload." Faculty would need either workload release from department chair to engage in OL or would liked to have had online course instruction as part of the current workload. A total of 16 units concentrated on "Monetary Compensation." Faculty members would like to have been better paid for teaching online course, received stipends for attending training, or have workshops and better compensation for adjuncts. There were 13 units under the category of "Tenure Recognition." Faculty would like OL activities to be recognized in their tenure portfolio.

Professional Development

The Second overall theme was "Professional Development," with 80 units and 5 categories. Twenty-eight units were on the category of "Current Technology Workshops." Faculty members would like to attend training on technologies available for OL instruction. A total of 21 units concentrated on the need for "More Training Opportunities." Faculty would like to have ongoing workshops/training to better fit their busy schedules. Another category with 9 units was "Blackboard Training." In this case, faculty needed more Blackboard related training. The last category was "Online Teaching Pedagogy Workshop," with 8 units. Some faculty wanted training on OL pedagogy.

Instructional Quality Concerns

The third overall theme was "Instructional Quality Concerns," with 30 units and 2 categories. "Learning Outcome Concerns" scored a total of 18 units. In general, faculty needed to ensure the OL course outcomes are the same as face-to-face class. "Interaction Concerns" were another significant category from faculty members with 12 units. Faculty members were concerned with what was the best way to interact student in online learning environment and how to provide meaning feedback, compared to F2F interaction.

Support Concerns

The fourth overall theme was "Support Concerns," with 28 units and 2 categories. The need for "Equipment" scored a total of 15 units. In general, faculty needed more smart-classrooms, working projectors, and updated personal laptops. "Technical Assistance" was another significant need of faculty members, with 13 units. Faculty needed help in resolving technical problems and accessible assistance.

Training/Support Unnecessary

The last theme was "Training/Support Unnecessary," with 31 units and 3 categories. Some faculty members specified that they did not need either training or support, with a total of 17 units. Most of them stated that OL was not applicable to them, since they were research-only. "Resistance to Change" was the second category with 7 units. Seven faculty members stated they did not know and were not interested in OL or what type of support they needed in order to adopt it.

Chapter Summary

The data in this study were obtained from 96 faculty members at University of Alaska Fairbanks. The data were analyzed using quantitative measures (descriptive data analysis and inferential analysis) and qualitative measures (survey open-ended questions and interviews). Descriptive data analysis revealed that 39.8% of the participants were female and 60.2% were male. Most of the participants were in the age range of 41-50 (43.82%) and 31-40 (22.47%). Most of the faculty members had 6 to 10 years of teaching experience (26%) and 22% of faculty had taught between 11 to 15 years. Most of the participants were affiliated with the College of Liberal Arts (51.6%), 38.7% of faculty came from College of Natural Science and Mathematics and the rest were from the School of Management (9.87%). Most of the participants were associate professors (34.4%) and assistant professors (32.3%), with 24.7% of faculty being Professors and 8.6% at the instructor rank. Only 26% of faculty members believed that UAF administrators support faculty use technology in their instruction, while 40% of them claimed there was no such support. Fifty-four percent of faculty members rarely utilized an LMS in their teaching (less than 20%) and 30% of them used LMS regularly (over 40%). More than 34%

faculty members had positive attitudes toward using an LMS, while 15% of them had negative attitudes on using an LMS.

UAF faculty SoC findings were that the Awareness stage was the highest stage of concern, with a mean score percentile of 98%, followed by the Informational stage SoC, with mean score percentile of 93%, then the Personal stage SoC, with a mean score percentile of 91%, the Management stage SoC, with a mean score percentile of 88%, the Refocusing stage SoC, with a mean score percentile of 73%, the Consequence stage SoC, with a mean score percentile 63% and, finally, the Collaboration stage SoC ,with mean score percentile of 57%.

The Stages of concerns questionnaire suggested that the majority of UAF faculty members exhibited the typical ScCQ nonuser profile in adopting OL, with a warning that faculty might be resistant to OL or had negative attitudes toward OL.

The *Technographic Characteristics* were measured using inferential analysis.

Inferential analysis: Research question one: One-way MANOVA test results of the personal characteristics indicated that the participants' concerns in adopting OL were not influenced by their age, and gender. A statistically significant difference was found in the participants' concerns in adopting OL by years of teaching experience, sig = .000. The significances were found in stages zero awareness (sig = .000). Therefore, Null Hypothesis 1.2 was rejected. Null hypotheses 1.1 and 1.2 were accepted.

Inferential analysis: Research question two: One-way MANOVA test results of the contextual characteristics indicated that the participants' concerns in adopting OL were influenced by their administrative support of technology, sig = .041. The significances were found in stages six (sig = .004). Therefore, Null Hypothesis 2.1 was rejected. A statistically significant difference was found in the faculty members concerns in adopting OL by academic

rank, sig = .005. The significances were found in stages zero and three (sig = .002 and .013). Null hypothesis 2.4 was rejected. Null hypothesis *2.2 and 2.3* were accepted.

Inferential analysis: Research question three: One-way MANOVA test results of the technographic characteristics indicated that the participants' use of technology in teaching was not influenced by their prior instructional technology use. Therefore, Null Hypothesis 3.1 was accepted. A statistically significant difference was found in the faculty members use of technology in teaching was influenced by their technology-related professional development, sig = .02. Hence Null hypotheses *3.2* rejected. Additionally, statistically significant difference was found in the participants' use of technology in teaching was influenced by their attitudes toward teaching with technology, sig = 0.038. Thus, null hypothesis *3.2* was accepted.

Qualitative analysis: the qualitative data in this study were obtained to provide an in-depth understanding of University of Alaska Fairbanks faculty member concerns and professional development needs in adopting OL. Through the qualitative data, 363 units, 75 categories, and 24 themes of the faculty members answers to all of the qualitative questions and interviews of the study (question 36: 98 units, 21 categories and 7 themes, question 65: 100 units, 20 categories and 5 themes, question 66: 67 units, 12 categories and 4 themes, Administrative Support: 52 units, 10 categories and 3 themes, Professional Development: 31 units, 6 categories and 2 themes and Teaching with Technology: 14 units, 6 categories and 3 themes).

Ninety-six participants answered the first open-ended question about their concerns in adopting OL. This question presented 97 units, 21 categories and 7 themes. The first theme was "Instructional Quality Concerns" with 40 units and 7 categories. The second theme was "Unaware of OL Applicability," with 15 units and 2 categories. The third theme was

"Workload/Course Compensation," with 14 units and 4 categories. The fourth theme was "Support Concerns," with 11 units and 3 categories. The fifth theme was "Not Applicable (Research Faculty Only)," with 11 units. The sixth theme was "OL Course Improvement," with 5 units and 2 categories. The last theme was "Unrelated," with 2 units and 2 categories.

In the second open-ended question, 95 answered the question about their professional development needs in adopting OL. It provided 100 units, 20 categories and 5 themes. The first theme was "Online Teaching Pedagogical Support" with 34 units and 6 categories. The second theme was "Classroom Technology," with 21 units and 6 categories. The third theme was "Support Unnecessary or Unknown," with 21 units and 2 categories. The fourth theme was "OL Course," with 17 units and 4 categories. The last theme was "OL Opposition," with 7 units and 2 categories.

Eighty-nine participants answered the third open-ended question. It provided 68 valid units with 12 categories and 4 themes. The first theme was "Administrative Support," with 28 and units 4 categories. The second theme was "Technology Support," with 19 units and 4 categories. The third theme was "Professional Development Support," with 17 units and 2 categories. The fourth theme was "Course Development," with 4 units and 2 categories.

A total of 52 individual units were found related to *Administrative Support of Technology* from the faculty interviews. There were 10 categories and 3 themes. The first theme was "Recognition," with 21 units and 5 categories. The second theme was "Workload Support," with 21 units and 2 categories. The third theme was "OL Related Support," with 10 units and 3 categories.

A total of 31 individual units were found related to *Technology-Related Professional Development* from the faculty interviews. There were 6 categories and 2 themes. The first

theme was “Workshops,” with 21 units and 3 categories. The second theme was “Training,” with 10 units and 3 categories.

A total of 14 individual units were found related to *Attitudes Toward Teaching with Technology* from the faculty interviews. There were 6 categories and 3 themes. The first theme was “Resistance to Change,” with 7 units and 2 categories. The second theme was “Advantages of OL Through LMS,” with 5 units and 2 categories. The last theme was “Student OL Advantages,” with 2 units and 2 categories.

The major themes among the three open ended questions and 16 interviews were: 1) “Administrative Support,” with three categories: “Workload” (50 units), “Monetary Compensation” (16 units), and “Tenure Recognition” (13 units). 2) “Professional Development,” with four categories: “Current Technology Workshops” (28 units), “More Training Opportunities” (21 units), “Instructional Design Support” (14 units), “Blackboard Training” (9 units) and “Online Teaching Pedagogy Workshops” (8 units). 3) “Instructional Quality Concerns,” with two categories: “Learning Outcome Concerns” and “Interaction Concerns.” 4) “Support Concerns,” with 2 categories: “Equipment” (15 units) and “Technical Assistance” (13 units). 5) “Training/Support Unnecessary,” with 3 categories: “No Support Needed” (17 units), “Resistance to Change” (7 units) and “Don’t Know” (7 units).

Chapter 5 - Summary, Conclusions and Recommendation for Future Studies

Chapter Overview

The purpose of the study was to identify the concerns of full-time faculty and instructors in adopting Online Learning (OL) in the three colleges and schools (the College of Liberal Arts, the College of Natural Science and Mathematics, and the School of Management) of the University of Alaska Fairbanks for which there was highest need for OL. The study also investigated UAF faculty professional development needs in adopting and implementing OL. The study proposed three research questions:

- *Is there a significant relationship between full-time faculty personal characteristics (age, gender, and years of teaching experience) and their concerns in adopting Online Learning?*
- *Is there a significant relationship between full-time faculty contextual characteristics (administrative support of technology, colleagues using technology, college, and academic rank) and their concerns in adopting Online Learning?*
- *Is there a significant relationship between full-time faculty technographic characteristics (prior instructional technology use, technology-related professional development, attitudes toward teaching with technology) and faculty use of technology in teaching?*

To answer these three research questions, a survey was designed to collect quantitative and qualitative data from closed-ended and open-ended questions, as well as conducting faculty interviews. In this chapter, a summary of the quantitative and qualitative data findings and

offers conclusions for these findings is provided. Finally, recommendations for the University of Alaska Fairbanks and for future studies are presented.

Summary

Personal Characteristics

The personal characteristics examined in this study were: gender, age, academic rank, and years of teaching experience.

Age range

Fewer than 2% of the participants' ages ranged between 20-30; 22.47% were in the age range of 31-40; 43.82% of the participants were in the age range of 41-50; 22.47% of the participants were in the age range of 51-60; while 10.11% were in the age range of 61-70.

Gender

Males comprised 60.2 % of the participants, while 39.8 % were female.

Years of Teaching Experience

Those who had more than 6 to 10 years of post-secondary teaching experience were the largest group in this study, at 26.07%. The second largest group in this study was faculty with 11 to 15 years of experience, at 21.74%. Faculty with 16 to 20 years experience comprised the third largest group, at 18.48%, and the smallest group in this study was faculty with 26+ years, at 6.52%.

Contextual Characteristics

The contextual characteristics examined in this study were administrative support of technology, colleagues using technology, college, and academic rank.

Administrative Support for Teaching with Technology

Only 26% of respondents believed that UAF administrators supported the use of technology in their instruction, while 40% of respondents claimed there was no such support. There were approximately 36% of faculty who did not have enough information (selected "undecided") to answer these questions.

Colleagues Using Technology

Fifty-four percent of faculty members rarely ("rarely" < 20%) utilized a Learning Management System (LMS) in their teaching, and 30% of them used an LMS regularly ("regularly" > 40%). More than 34% of faculty respondents held a positive attitude toward using an LMS, while 15% of them had a negative attitude towards using an LMS.

College Association

Fifty-one percent of the participants were associated with the College of Liberal Arts. Approximately 39% of the faculty members were associated with the College of Natural Science and Mathematics. Nearly 10% of the participants were associated with the School of Management.

Academic Rank

Among the 93 participants who reported their academic rank, the largest group of participants (34%) was from Associate Professors. Assistant Professors made up the next largest group, with 32.3%, and Professors were 24.7%. The participants with the rank of Instructor were the smallest group, with 8.6%.

Technographic Characteristics

The technographic characteristics examined in this study were prior instructional technology use, technology-related professional development, and attitudes toward teaching with technology.

Prior Instructional Technology Use

Approximately 16% of faculty members replied "none" when asked to indicate which of two LMS they used. However, the overwhelming majority (81.7% of faculty members) chose Blackboard as their primary LMS, and only 2% identified WebCT as their primary LMS.

Technology-Related Professional Development

Inquiries into faculty professional development needs indicated that 60% agreed or strongly agreed that faculty members needed more time to change curriculum in order to incorporate technology; 67% agreed or strongly agreed that faculty members should have a stronger voice in the technology professional development program; and 53% agreed or strongly agreed that attending a few technology workshops and seminars was enough for faculty to start using instructional technology.

Attitudes Toward Teaching with Technology

The results of faculty attitudes toward teaching with technology suggested that almost 70% of faculty agreed or strongly agreed to using UAF's campus-wide web-based system, Blackboard, for online instruction; 82% agreed or strongly agreed that all faculty members used basic computer applications; and 86% agreed or strongly agreed that use of instructional technology had been helpful in their teaching and learning tasks.

Stages of Concern

The Stages of Concern Questionnaire indicated that the majority of UAF faculty members displayed a typical SoCQ "nonuser" profile in adopting OL. Faculty members were not fully aware of the OL opportunities available to them. They were somewhat more concerned about other things (e.g., research, advising); however, they were interested in acquiring more information about OL. The Stage 6 tailing up indicated that faculty would likely be resistant to OL or had negative attitudes toward OL.

Quantitative Measures

Research Question One:

Is there a significant relationship between full-time faculty personal characteristics (age, gender, and years of teaching experience) and their concerns in adopting OL?

One-way MANOVA test results of personal characteristics implied that the participants' concerns in adopting OL were neither influenced neither by age nor by gender. A statistically significant difference was found in the participants' concerns in adopting OL by years of teaching experience, sig = .000. The significance was found in Stage Zero's awareness (sig = .000). Therefore, the Null Hypothesis 1.2 was rejected. Null hypotheses 1.1 and 1.2 were accepted.

Research Question Two:

Is there a significant relationship between full-time faculty contextual characteristics (administrative support of technology, colleagues using technology, college, and academic rank) and their concerns in adopting OL?

One-way MANOVA test results of the contextual characteristics show that the participants' concerns in adopting OL were influenced by their administrative support of

technology, sig = .041. These significances were found in Stage Six (sig = .004). Therefore, Null Hypothesis 2.1 was rejected. A statistically significant difference was found in the faculty members concerns in adopting OL by academic rank, sig = .005. The significances were found in Stages Zero and Three (sig = .002 and .013). Null hypothesis 2.4 was rejected. Null hypothesis *2.2 and 2.3* were accepted.

Research Question Three:

Is there a significant relationship between full-time faculty technographic characteristics (prior instructional technology use, technology-related professional development, and attitudes toward teaching with technology) and faculty use of technology in teaching?

One-way MANOVA test results of the technographic characteristics indicated that the participants' use of technology in teaching was not influenced by their prior instructional technology use. Therefore, Null Hypothesis 3.1 was accepted. A statistically significant difference was found in the faculty members use of technology in teaching and was influenced by their technology-related professional development, sig = .02. Hence Null hypotheses *3.2* was rejected. Additionally, a statistically significant difference was found in the participants' use of technology in teaching and their attitudes toward teaching with technology, sig = 0.038. Thus, null hypothesis *3.2* was accepted.

Qualitative Measures

There was a total of 363 units, 75 categories, and 24 themes generated from faculty member responses to all of three survey qualitative questions and faculty interviews in the study.

Survey Open-Ended Questions

The data from survey open-ended questions were first transferred to Microsoft Office Word and then analyzed based on the themes that emerged from UAF faculty answers. There were total 266 units, 53 categories and 16 themes for three open-end questions. Question #36 had 98 units, 21 categories and 7 themes emerged. The respondents offered 100 total units of information on question #65, with 20 categories and five themes. There were 68 units of information for question #66, from which 12 categories and four themes emerged.

Question Thirty-six*: Provide your comments and/or concerns about Blended Learning in the space below.*

Data analysis displayed 97 units, 19 categories, and 6 themes emerging from UAF faculty responses regarding their concerns in adopting OL.

There were 40 total units and seven categories on the first theme "Instructional Quality Concerns." Eighteen units were on firs category "Learning Outcome Concerns." "Interaction" was the second category, with 12 units. There were 5 units on "Hands-on Learning", which was the third category. "Passiveness of OL" was the fourth category, with 2 units. The three other categories with one unit each were "Pedagogical Concerns," "Course Quality" and "Self Discipline."

There were 15 total units and two categories on the second theme of"Unaware of OL Applicability." Eight units were on the first category, "Need More Information." "Survey Purpose Unclear" was the second category, with 7 units.

The third theme was that of "Workload/Course Compensation," with 14 units and 4 categories. The first category was "Course Development Issues," with 8 units. There were 3

units in the category "Extra Teaching Time." The third category was "Compensation," with 3 units. "Academic Freedom" was the last category, with one unit.

The fourth theme was "Support Concerns," with 11 units and 3 categories. The first category was "Technical Assistance," with 4 units. There were 4 units in the second category "Training Support." The last category was "LMS Course Management," with 2 units.

The fifth theme was "Not Applicable (Research-Only Faculty)," with 11 units.

The sixth theme was "OL Course Improvement," with 5 units and two categories. There 3 units in the first category "Efficiency." The last category was "Effectiveness," with 2 units.

The last theme, "Unrelated", had two units, since the answers were unrelated to the questions asked. The faculty members took the opportunity to ask about bookstore facilities and whether or not the UAF distance learning services would be de-centralized.

Question Sixty-five*: What professional development activities, incentives, support, etc., do you need in order to teach online and/or apply online learning tools for your instruction needs? List them using the space below.*

There were 95 responders to this question. The respondents offered 100 total units of information on this question, with 20 categories and 5 themes.

The first theme was "Online Teaching Pedagogical Support," with 34 units and six categories. Twenty units were on the first category of "LMS Training." There were 6 units on the category "Instructional Design." "Training for off-Campus", which was the third category to participants with 3 units. "Effectiveness of OL" was another category with three responses from faculty members. The last had one unit each for "Flexible Training Schedule" and "Interaction."

The Second theme was "Classroom Technology," with 21 units and six categories. Eight units were on the category "Technical Assistance." There were 7 units on "Equipment", which was the second category. "Software" was third category with two units. "LMS Improvement" was another category with two units. "Internet Connection" and "Administrative Pedagogical Support" both contained one unit each.

The third theme was "Don't Need Support or Don't Know," with two categories and 21 units. Seventeen units were on the first category, "No Support Needed". There were 4 units on the second category, "Don't Know."

The fourth theme was "OL Course," with 17 units and 3 categories for Question Sixty-five. Eight units were on the first category "Course Development Time." There were six units in second category "Workload Release." "Remuneration" was the third category with 2 units. The last category was "Floating" Teaching Assistant," with one unit.

The last theme was "Opposition to OL," with 7 units and 2 categories for Question Sixty-five. Six units were on the first category "No Interest." "Colleagues Discourage OL" was the second category, with one unit.

Question Sixty-six*: From the response you gave above (Q65), what is the most important professional development activity, incentive, support, etc. you need in order to teach online and/or apply online learning tools for your instruction needs? List them using the space below.*

There were 89 respondents to this question. The respondents offered 68 total valid units of information on this question, out of which 12 categories and four themes emerged. There were 28 total units on the first theme, "Administrative Support." Ten units were on the first category "Workload." There were 9 units on "Monetary Compensation," which was the second

category. "Recognition" and "Time" were the third and fourth categories, with five and four units respectively.

The second theme was "Technology Support," with 19 units and 4 categories. Eight units were on the first category of "Instructional Design Support." There were 6 units on the second category of "Better Equipment." The category, "Technical Support," had 4 units, while "Better Integration" had 1 unit.

The third theme was "Professional Development Support", with 17 units and two categories. Fourteen units were on the category of "More Training Opportunities." "Ongoing Training" was the second category with three units.

The last theme was "Course Development," with two categories and 4 units. Two units were on the category of "Outcome Assessment." "Online Course Example" was another category with one unit.

Faculty Interviews

Microsoft Word and Live Scribe (a computerized transcription software) were used to transcribe all 16 interviews into text verbatim from the digital audio file. The researcher collected and coded the data that were relevant to aspects of faculty concerns, administrative support, and professional development needs. Microsoft Excel was used for the coding process of developing patterns and themes. The research questions were used to organize information during the analysis stage. There were 97 units, 22 categories, and 8 themes generated from sixteen faculty member interviews of the study. Themes and categories were recorded and presented in the table and chart.

Administrative support of technology

A total of 52 individual units were found related to *Administrative Support of Technology* from the faculty member interviews. There were 10 categories and 3 themes.

The first theme was "Recognition," with 21 units and 5 categories. Eight units were in the category "OL Tenure Consideration." The category "Appreciation" had 5 units, while "Monetary" had 4 units. In addition, the category of "Better Adjunct Compensation" had 3 units and "Increased Travel Support" had 1 unit.

The second theme was "Workload Support," with 21 units and 2 categories. Eleven units were on the category "Course Development Time." This was the largest category to the respondents. "Workload Release," the second category, had 10 units.

The third theme was "OL Related Support," with 10 units and 3 categories. Five units were on the category "Better Department Chair Support." "Training" was the second category, with three units. The last category, "Online Teaching Support Group," had 2 units.

Technology-related Professional Development

A total of 31 individual units were found related to *Technology-related Professional Development* from the faculty member interviews. There were 6 categories and 2 themes.

The first theme was "Workshops," with 21 units and 3 categories. Eleven units were on the category "Current Technology Workshop." The category, "Online Teaching Pedagogy Workshop," had 7 units, while "Request iTeach Workshop Format" had 2 units.

The second theme was "Training," with 10 units and 3 categories. Seven units were on the category "Blackboard Training." There were two units in second category of "More Accessibility on Training," while "Demonstration of Online Teaching" had 1 unit.

Attitudes Toward Teaching with Technology

A total of 14 individual units were found related to *Attitudes Toward Teaching with Technology* from the faculty member interviews. There were 6 categories and 3 themes.

The first theme was "Resistance to Change." with 7 units and 2 categories. Four units were on the category "Frustrated with LMS Change." In addition, the category of "Unwilling to Try OL" had 3 units.

The second theme was "Advantages of OL Through LMS," with 5 units and 2 categories. Three units were on the category of "Appreciate Blackboard Teaching Options." The second category of "Enjoy Interaction via OL" had 2 units.

The last theme was "Student OL Advantages," with 2 units and 2 categories. Both "Utilizes Student Technologies" and "Degree Obtained Earlier with OL" categories contained one unit.

Overall Themes

There were 5 overall themes. The first overall theme was "Administrative Support," with 79 units and 3 categories (Workload - 50 units, Monetary Compensation -16 units, and Tenure recognition, with 5 units). The second overall theme was "Professional Development," with 80 units and 5 categories (Current Technology Workshops - 28 units, More Training Opportunities - 16 units, Blackboard Training - 9 units, and Online Teaching Pedagogy Workshop - 8 units). The third overall theme was "Instructional Quality Concerns," with 30 units and 2 categories (Learning Outcome Concern - 18 units, and Interaction Concern - 12 units). The fourth overall theme was "Support Concerns," with 28 units and 2 categories (Equipment - 15 units, and Technical Assistance - 13 units). The last theme was "Training/Support Unnecessary," with 31 units and 3 categories (No Support Needed- 17 units, Resistance to Change -13 units, and Don't Know - 7 units).

Conclusions

The following conclusions are based on descriptive statistics and quantitative and qualitative data. They are organized according to each research question and provide the implications of the results obtained in relation to previous studies.

Research Question #1

Is there a significant relationship between full-time faculty personal characteristics (age, gender, and years of teaching experience) and their concerns in adopting Online Learning?

In a review of descriptive statistics, the following conclusions emerged on the results of the SoCQ (questions 1-35). The findings from Research Question One indicate a significant relationship between years of teaching experience and stages of concern (sig = 0.000) in adopting Online Learning at the University of Alaska Fairbanks. According to the ANOVA results, years of teaching experience were predictive of unrelated concerns (Stage Zero, sig 0.000). "Unrelated concerns" means that online learning did not occupy a major place in faculties' preoccupations and that their attention was dedicated to other matters. The data does not provide conclusive information about how the years of teaching experience increase or decrease in UAF faculty's unrelated concerns, or whether there was a positive or negative correlation between the two variables. Petherbridge (2007), who also found a significant relationship between years of teaching experience and unrelated concerns, concluded that more years of teaching experience were predictive of a lower unrelated concerns score due to pervasiveness of and inevitability of contact with technology in the educational field. This study seems to confirm her conclusions.

Gender was not found to be significantly related to faculty stages of concern, which corresponded with Hall and Hord (2006), who found a lack of statistically significant gender differences in the stages of concerns scores in the United States. Similarly, there was no significant difference found between age and faculty's concerns in adopting OL, which was consistent with the research of Atkins & Vasu (2000), who did not find such differences among middle school teachers.

Faculty members with more years of teaching experience may have had lower unrelated concerns scores due to the ubiquity of technology, which means faculty were inevitably concerned about, or at least exposed to, the technologies they might encounter while teaching (Petherbridge, 2007; Morrison & Twigg, December, 1997). The introduction of Online Learning, even for teaching faculty who may not be interested in using it, could increase their self-informational concerns about the innovation as it arrives on campus, thus lowering their unrelated concerns.

Research Question #2

Is there a significant relationship between full-time faculty contextual characteristics (administrative support of technology, colleagues using technology, college, and academic rank) and their concerns in adopting Online Learning?

In the findings from Research Question Two, a significant relationship was found (sig= 0.019) between administrative support of technology and faculty member concerns in adopting online learning. Both departmental and senior administrative support were found to be predictive of faculty stages of concerns in utilizing OL. Furthermore, ANOVA results indicated that both departmental and senior administrative support of teaching and learning with technology were predictive of faculty refocusing concerns score (stage 6, sig .003). The

ANOVA results also indicated that senior academic administrators' recognition of the additional workload required for teaching with technology had a statistically significant relationship in both consequence concerns score (stage 4, sig .032) and refocusing concerns score (Stage 6, sig 0.003). This finding was similar to the finding of Petherbridge (2007), who found that perceived academic administrative support was predictive of faculty's task concerns score (Stage 3). Additionally, faculty member concerns in adopting online learning were influenced by their academic rank. According to the ANOVA results, faculty academic rank was predictive of unrelated concerns (stage 0, sig .002) and impact concerns (stage 3, sig .013). Petherbridge (2007) found faculty rank was significantly related to their Stages of Concerns score, as well.

UAF Faculty consequence and refocusing concerns were significantly related to departmental and senior administrator support of OL adoption. At first glance, this finding may seem obvious; after all, administrative support is an oft-cited need for faculty who are asked to use new technologies (Baldwin, 1998; Petherbridge, 2007; Rogers, 2000). Additionally, other literature notes the importance of providing administrative support for those who have impact concerns, presumably to address and relieve faculty of these concerns (Baldwin, 1998; Hall & Hord, 2001).

Perhaps when senior campus academic administrators voice support for adopting OL, paired with mixed support at the departmental or college level, the result is faculty who feel pressured to use the technology, thus they become very concerned about the overall benefits of adopting OL, the time needed to learn OL pedagogy, changing courses from face-to-face to online courses to use OL well, workload considerations, student evaluations, and the changes needed to improve student outcomes in the new delivery method.

Descriptive statistics on survey questions regarding administrative support of technology indicated that most faculty did not believe that administrators either supported or understood all that was involved in changing to OL teaching, nor were they supportive of various means of compensation for doing so, either monetary or otherwise. More than 49% of faculty members either disagreed or disagreed strongly with the statement that UAF administrators communicated with faculty about the value of teaching with technology. Approximately 46% of faculty members did not think that UAF administrators recognized the additional workload required to teach with technology. Fifty percent of faculty did not agree that administrators at UAF understood how to assess the quality of teaching with technology. Overall, another 40% of faculty did not have enough information (selected "undecided") to answer these questions.

Qualitative analysis results revealed that the first overall theme was "Administrative Support," while "Workload" related concerns was the largest response category. Faculty either needed a workload release from their department chair to engage in OL, or they would have liked to have had online course instruction as part of the current workload. Illustrating these concerns, one faculty member wrote, "*There is not a clear chain of command at UAF related to how CDE fits in to workloads and faculty commitments and tenure.*" Assistant Professor 1 stated, "*If I had an online course, I'd probably need a semester to develop it which means I would need out of one course to develop and I would have to switch an online course for an in-class course.*"

"Monetary Compensation" was the second largest category. Faculty members would like better compensation for teaching online courses, stipends for attending trainings, or workshops and more pay for adjuncts. A faculty member suggested, "*stipends for attending technology workshops, where specific projects need to be created/implemented (e.g., design of*

an online course, integrating blackboard into a course), are required for completion of the workshops to receive the stipend." Another significant concern faculty had was "Tenure Recognition." Faculty would like to see that OL activities were recognized in their tenure portfolio. Professor 3 stated, "*I still think that an incentive to get more of them to do it would be official recognition in a tenure file. If I were provost, I would offer that. Not a huge part of their portfolio but definitely some of it.*"

The quantitative and qualitative data in this study displayed a great need for better administrative support in order for UAF faculty to adopt OL. This indicates that the university has asked faculty to integrate technology into their teaching and adopt OL without workload consideration, proper compensation, or recognition in tenure process, all of which would incentivize faculty members to develop and teach online courses. The cause of this situation, most likely, was the lack of a clear plan or direction on how to adopt OL on the part of UAF senior administrators. It will be crucial for UAF to lay out a comprehensive plan on what Online Learning means for UAF, how important it is for the future of UAF, what will be done to provide faculty-workload support, and what the compensation and recognition policies will be in adopting Online Learning.

Research Question #3

Is there a significant relationship between full-time faculty technographic characteristics (prior instructional technology use, technology-related professional development, and attitudes toward teaching with technology) and faculty use of technology in teaching?

The findings from Research Question Three were that there is a significant relationship (sig= 0.020) between technology-related professional development and faculty use of technology in teaching. ANOVA results showed that faculty members who need more software

which is subject/curricular-based had statistically significant differences in how often they use Microsoft Excel/Access for instruction. (sig 0.023). The technographic characteristics data indicated that more than 76% of faculty members participated in fewer than 10 hours of computer-technology related professional development in the last two years. Additionally, 53% of faculty members agreed or strongly agreed that they need more training opportunities along with teaching strategies that integrate technology. The results also indicated that 54% of UAF faculty had no formal training in using a web-based learning management system. Moreover, 79% of faculty members either disagreed or did not know that the university's faculty technology professional development plan meets their technology needs. This finding displayed the need for professional development in general, more accessible training opportunities, and professional development in LMS in order for UAF faculty to adopt Online Learning.

This finding corresponded with a study by Sarrani (2010), which found a significant relationship between the Chemistry Department faculty perceptions of technology professional development needs and faculty use of technology in teaching. Petherbridge (2007) also found that faculty impact-consequence concerns scores increased due to faculty participation in technology-related training. In addition, Petherbridge (2007) stated that "faculty members will need a variety of professional development activities in order to move beyond intrinsic concerns associated with using a new innovation, achieving the 'ideal' concerns area of impact-consequence and impact-collaboration (p.246)." Similarly, Adams (2002) found that there was a correlation between faculty attendance of technology-integration professional development sessions and increased levels of technology use in their teaching.

The data from qualitative measures indicated that the second overall theme was "Professional Development." The primary needs were current technology training/workshops,

more accessibility to training, Blackboard training, and training focused on OL pedagogy. Professor 4 wrote, "*I would need to attend workshops on teaching online.*" Assistant Professor 2 stated, "*I would need some intense Blackboard training. I've never been trained and it has always been hit or miss.*" Assistant Professor 1 stated, "*I always have issues with that. For some reason it's during a time that I can't commit to.*" Therefore, these findings revealed the increasing need for professional development at the University of Alaska Fairbanks.

Moreover, the data indicated that 79% of faculty members had fewer than six semesters or three years of experience in utilizing the LMS (Blackboard), which was surprising, since UAF adopted Blackboard in 1998, more than 13 years ago. This result was supported by qualitative results. Professor 3 stated that he *"would like to see different kinds of Blackboard lessons offered regularly at a regular time and a regular place by a good instructor because there are a lot of complaints about the teaching of Blackboard.*"

The qualitative data indicated that faculty members had significant concerns about student learning outcomes via OL. In other words, faculty members were concerned about OL and its ability to achieve the same learning outcomes as traditional classes, especially for science lab courses. One respondent worried, saying, "*I am concerned about delivery of lab science courses via distance delivery. Although I am in favor of making science courses available in this way, I want to be sure that the quality of the laboratory exercises remains high."* Another respondent specified, "*I would like to know about whether students can have similar or better learning outcomes in online learning.*" These statements indicated that faculty members needed more training and workshops that centered on how to develop and deliver courses online. Additionally, clear examples of specific qualities that comprised a good online course would help to relieve some OL outcome concerns.

Both quantitative and qualitative results indicated that there was a lack of technology support that hindered adoption of OL and teaching with technology. More than 57% of faculty stated they had no access to technical support personnel. Faculty members also indicated that they need better equipment, instructional design support, and software/hardware support. One faculty member suggested a *"working computer lab and the money to make use of it*." Another faculty member stated the need for this design support, "*I would need to be taken through step by step on the process, and then have tech help available during the actual online classes.*" These kinds of comments indicated that UAF needs to provide both sufficient funding to update technology-related equipment and more technical support to assist faculty in adopting Online Learning.

Additionally, these results indicated that faculty member use of technology in teaching is influenced their attitudes toward teaching with technology (sig 0.000). ANOVA results revealed that faculty member attitudes surrounding the use of basic computer applications had statistically significant differences in how often faculty used computer-based technology in classroom management (sig 0.008) and teaching activities for students (sig 0.004). These results also indicated that faculty member attitudes on the use of basic computer applications had statistically significant differences as to how often faculty used Microsoft Word for word processing (sig. 0.00) and Microsoft PowerPoint for presentations in class (sig. 0.00). Furthermore, faculty member attitudes regarding the use of internet search for teaching materials had a statistically significant relationship to both how often faculty use computer-based technology in personal communication (sig 0.008), and how often faculty used the Internet and/or Email for research (sig 0.01).

The results of Research Question Three are consistent with the findings of Petherbridge (2007), who found that positive attitudes of faculty toward teaching with technology were predictive of their concerns scores. Positive faculty attitudes lowered unrelated and task concerns scores, while faculty with negative attitudes toward technology had increased unrelated concerns scores. Similarly, Sarrani (2010) also found that faculty use of technology in teaching was influenced by attitudes toward technology integration into science curricula by department.

The data in this study indicated that 86% of UAF faculty agreed or strongly agreed that use of instructional technology had been helpful in teaching and learning tasks. Moreover, 82% agreed or strongly agreed that all faculty members use basic computer applications (e.g., word processing, spreadsheets, and slide presentations) for instruction. Therefore, the data suggested that faculty had mostly positive attitudes toward integrated technology in their teaching. This finding was not surprising, since 50 % of the participants ranged in age between 20 to 40, which is considered a relatively young age in an academic career.

The qualitative data in this study indicated that faculty had either a positive (7 units) or negative attitude (7 units) toward OL. Professor 3 wrote, "*I like the connection so I enjoy the efficiency of the Blackboard system more than the old way of sending me email lessons or typing and sending lessons. It's efficient and it's quick to do online.*" Some faculty enjoyed the convenience of technology. However, Professor 2 stated, "*When Blackboard changed, it threw me for a loop and pissed me off. It required a lot of time to relearn and I'm very busy with multiple classes and time consuming grad classes.*" These kinds of statements indicate that faculty were frustrated when technology changes, which negatively impacted their workload.

UAF is looking to expand its Online Learning offerings in order to deliver quality education opportunities for both non-traditional students and a large rural population. UAF also needs to respond the Title 24 of the Alaska Statute's Recommendation #3, which requires sufficient faculty training in distance education technologies for teaching UAF distance courses. The quantitative and qualitative data both revealed a need for professional development in order for UAF faculty to adopt Online Learning. Though there was some hesitation, mostly due to a lack of knowledge about technology, most faculty were willing to improve their technological skills and incorporate Online Learning, if they received proper administrative support, recognition in tenure, professional development and technical support. Finally, the data and findings in this study was consistent with similar studies. Professional development leads to increased faculty use of technology and enhanced positive attitudes toward integrating technology into instruction.

Faculty Interview Concern Themes

Faculty interviews indicated that faculty members perceived OL adoption as change. However, while some faculty members expressed frustration with the need to adapt to change with the LMS, in particular, and to OL, in general, the majority saw the solutions to reside in better professional development. Keeping up with current technology was an overarching concern. In particular, faculty members were concerned about insufficient Blackboard training and with the lack of knowledge of OL pedagogy. The second largest group of concerns was workload-related, indicating that the perception of online course development as a time-consuming process would increase faculty member workload.

In addition, such work was not perceived as properly rewarded. It did not count toward tenure nor did it pay well. Some responses of faculty members indicated a concern with the

insufficient respect for OL and lack of support on the part of Department Chair for faculty members teaching online. These concerns pointed to the need for clearly stated administrative policies that would emphasize the importance of OL and support for the faculty who taught online.

Research "Lessons Learned"

This study was conducted at the end of Fall semester, when most faculty were busy grading and advising students. Clearly, this was one of the reasons that the survey return rate was only 40%. It would have been better to conduct the survey data collection six to eight weeks prior to the end of semester in order to have achieved a higher return rate.

The survey was conducted through KSU AXIO system, which did not provide information on who answered the questionnaire compared to who did not. This lack of comparison data made tracking the non-responders difficult. The researcher contacted every faculty member via telephone to verify participation in the survey, as a result. It would have been much more efficient and effective to conduct the survey via a system that could have provided a list of non-responders. This was a problem with data collection on the AXIO system.

One hundred surveys were submitted, with a final response rate of 41.15%. Four surveys were incomplete, which then brought response rate down to 39.5%, with 96 surveys considered usable. Several unexpected factors contributed to such a disappointing response rate. For example, there were approximately 50 faculty members from CNSM, whose primary funding sources were grants and contracts (approximately 75% or more). Those faculty members either had no teaching components or taught one graduate seminar per academic year. Therefore, they either spent the majority of their time on research with minimum no interest in adopting OL, or they found the survey inapplicable to their particular situation. If those 50 faculty members had been excluded, the study return rate would likely have been higher. It is recommended that future studies exclude "research-only" faculty.

Recommendations for the University of Alaska Fairbanks

This research revealed that the University of Alaska Fairbanks needed to assist faculty members in adopting OL in their teaching. Solutions must be sought in response to Title 24 of the Alaska Legislative Audit Recommendation #3, which requires sufficient faculty training in distance education technologies for teaching UAF distance courses. The following are specific recommendations that may help the University of Alaska Fairbanks to accomplish these objectives:

1. *Administrative support of OL through tangible incentives*. As previously discussed, the current research emphasized the need for a holistic approach to support innovation adoption. Tangible support must be in place in order for faculty to utilize the technology in teaching. Tangible support may include a workload release for the development of online or hybrid courses; the provision of teaching assistants to support faculty in adopting OL; funds for new or updated equipment; and (perhaps, most importantly), a clearly stated administrative policy that encourages faculty to explore Online Learning potential, followed up by expressions of appreciation of faculty who use it well. Administrators should set aside time at regular departmental or college meetings to showcase exemplary technology use in their departments and ensure that faculty members using the technology well are recognized for their work. Administrators could encourage collaborative efforts of faculty, rewarding those who work with their peers to build shared resources and best practices that benefit more than one course.
2. *Promotion of learner-centered methodology in the transition to OL:* Teaching online courses demands that instructors shift from teacher-centered methods to learner-centered ones (the

Personal Learning Environment approach). Thus, UAF faculty needed to know more about learner-centered teaching methods and OL pedagogy in order to teach online courses. More professional development in learner-centered methods and more understanding of the best practices in online instruction need to be promoted in order to prepare faculty to adopt OL in teaching. Collaborative learning and problem-based learning are two clear, teachable examples of the learner-centered approach that UAF faculty need to be embraced in order to be able to use it in teaching.

3. *Professional development*: The data revealed that there was a lack of professional development within UAF, which was critical in helping faculty to integrating technology into teaching. Comprehensive professional development activities could range from information exchanges, such as presentations and demonstrations, to regularly scheduled workshops, custom training sessions, and in-depth institutes. Additionally, UAF needs to provide resources to support accessible professional development opportunities for the faculty and staff at UAF's rural campuses. Therefore, to improve UAF faculty skills in adopting OL, the university must take the initiative to create a strategic approach for training faculty to more adeptly develop online learning courses and to create a learning community in which to share best practices. Most faculty members who were not familiar with online courses had serious concerns regarding student integration practices and student learning outcomes assurance (especially the science lab courses). Therefore, there was a tremendous need for professional development that is centered on instructional design for UAF faculty to both design and teach online courses.
4. *Blackboard-specific professional development*: The data indicated there is still a demand for Blackboard-specific professional development. Numerous steps must be taken in order

to expand the utilization of Blackboard within the university. First, information must be provided about the Blackboard and its use both in online learning and in face-to-face instruction via general presentations for each school and college. Second, the best practices in using Blackboard in instruction should be available via a self-paced professional development resource website. Senior administrators need to promote the importance of the integration of Blackboard into teaching. Proper technical support staff needs to be assigned to deal with hardware, software, technical support, and access for faculty.

5. *Enhanced technology support:* No matter what a faculty member's level of concern, the greatest expressed need was for technology support. Qualitative responses indicated that technology support was needed, including better equipment (e.g, more smart classrooms, functional projectors and desktop computers in every classroom), instructional design support (e.g, accessible instructional design and personnel, demonstration of best practice of OL) and technical support (e.g, local technical staff, teaching assistants, and tech-savvy support students). Unfortunately, there was a greater number of people who needed assistance than there were available centralized staff members to provide it. Centralized instructional design staff should work closely with any college or school's technical support staff to ensure that, collectively, they support the faculty. Centralized support staff should focus on creating training/workshops; designing self-help web resources and FAQs that could be shared with local support; and leveraging local technical-support students or any other person who could be trained or enabled to assist faculty to use the technology successfully on a day-to-day basis.
6. *Proper recognition for adopting OL*. Qualitative data revealed that faculty members would have liked to see real value added to OL in order to embrace it. Real value means giving

adequate recognition for achievement in the areas of online course development, teaching online courses, participating in faculty professional development workshops, and teaching with technology. Such recognition has to be incorporated into the standard rewards structure at both the departmental and the college level, not only at UAF but nationally, as well. Promotional opportunities, workload considerations, monetary rewards, and job security should be addressed for faculty who are exploring OL and teaching with technology. These faculty members should receive workload releases for developing or teaching online courses. Perhaps some innovative, peer-reviewed uses of OL that benefit teaching and learning within the discipline could count toward faculty tenure and promotion. For example, the successful development of an online course through participation in iTeach workshop could be counted as equivalent to curriculum development in a tenure-track portfolio. This would be a tremendous incentive for tenure-track faculty to explore OL possibilities. Lacking that, monetary incentives, work release or merit consideration would be in order.

7. *Better support on LMS upgrades:* The University should provide better support and communication to help faculty understand changes in Blackboard functionality whenever there is a required version change in Blackboard. Additional workshops should be made available at the department level to demonstrate any new changes in layout or function. Any change of the LMS should be demonstrated with examples of advantages and conveniences of the new LMS and supported with a series of workshops to ease the faculty into the new LMS.
8. *Strategic plan:* The results of this study indicated that the University of Alaska Fairbanks should develop a strategic technology plan to help faculty better adopt Online Learning.

The first step in this plan would be to address the specific concerns that faculty may have restricted faculty in adopting Online Learning. Second, senior administrators need to have a clear sense of direction for Online Learning at UAF. Third, UAF should commit additional resources to support faculty in adopting Online Learning. Finally, UAF needs to define a clear reward system for faculty, departments, and colleges for the successful implementation of Online Learning.

Recommendations for Future Studies

The following are suggested for future investigation:

1. This study was limited to UAF faculty from the Fairbanks campus. It is recommended that UAF conduct a comparative study to find if there are any differences between UAF Fairbanks faculty and faculty within UAF's College of Rural and Community Development (which includes five rural campuses and one urban campus) regarding adopting Online Learning in their teaching, as there may be differences in needs, attitudes, and possible uses for OL.
2. This study was limited to the faculty at University of Alaska Fairbanks. University of Alaska recently hired a new president; his primary goal is to graduate more students more expeditiously via Online Learning. Thus, it is recommended that future studies be conducted at the University of Alaska Anchorage and the University of Alaska Southeast. This would provide an overall picture of UA faculty member SoC profiles and their needs in adopting OL. In turn, this would aid in understanding what professional development avenues to pursue at each campus and across the system.
3. Petherbridge (2007), in her study on adoption of LMS, recommended that qualitative methods studies should be conducted to further expand the understanding of faculty

needs and concerns in universities and colleges in rural areas, since OL is a way to expand the student body beyond the constraints of the physical space of the classroom.

4. As the Sarrani (2010) study indicated, there was an international dimension to the adoption of Blended Learning, and, by extension, OL, in general. Through this study the insights provided insight into how administrative support could help faculty members to increase OL options, not only in the US, but in other countries as well.
5. In this study, faculty members were very worried about the level of OL interaction and outcomes. A more extensive qualitative research would provide valuable information on how to address these concerns. A longitudinal approach could enhance the understanding of how the faculty member's concerns could change over time by repeating the study in the same setting within two or three years. It could also be conducted in a more targeted way by assessing the impact of enhanced technical or administrative support.
6. In this study, a significant number of faculty members specified the needs of workload consideration and tenure recognition in order to adopt Online Learning. These comments indicated a range of concerns on OL teaching, technology, and rewards structures. Additionally, administrative support of OL appeared to be a significant factor in faculty concerns in adopting OL. To help faculty and administrators (department, college and senior academic) build a shared vision of what is valued in the workload consideration and recognition structure of universities, a qualitative study, which would include a regional or even national purposive sample by rank, region and university mission, with extensive interviews of both faculty members and administrators should be conducted. This information could be used to create OL policies, discover mutual

expectations on how teaching and developing OL courses could be viewed as part of a new approach to the tenure process and and workload considerations of a changing university climate.

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Appendix A - The Survey

Invitation to Survey Participants

Dear Colleague,

My name is Shih-Hsung (Alex) Hwu – Director of Center for Distance Education, a PhD candidate in the Department of Curriculum and Instruction, College of Education, Kansas State University. I am seeking your help in a survey of Concerns and Professional Development Needs of Faculty at University of Alaska Fairbanks in Adopting Online Learning. This study is being conducted as part of a research project for my dissertation. This study will investigate the concerns of Faculty in University of Alaska Fairbanks, United State, in adopting online learning. The findings will provide direction for addressing the professional development needs of faculty members in adopting online learning at the UAF and in technology integration.

Your response to this survey would be greatly appreciated. It will take you approximately 20 minutes to complete the survey. Your participation is voluntary, and therefore you may discontinue participation at any time without penalty. By agreeing to complete the survey, I will assume your agreement to participate in this study.

The confidentiality of your responses is an ethical issue that I will respect in this study. Your professional and personal information will be kept anonymous in order to protect your individual identity and privacy.

If you have any questions regarding this study or the survey, please contact the researcher, Shih-Hsung Hwu at shwu@alaska.edu, office phone: 1-907-479-4701, cell: 1-319-471-5428. You may also contact Dr. Talab, the researcher's major advisor, at Kansas State University, talab@ksu.edu.

Thank you for taking time to complete this task and assistance,

Sincerely,

Shih-Hsung (Alex) Hwu – Director of Center for Distance Education
Ph.D. Candidate
Curriculum and Instruction
Kansas State University

Concerns about the Innovation

Questions 1 – 35, reprinted with permission of the Southwest Educational Developmental Laboratory**)**

The purpose of this questionnaire is to determine what people who are using or thinking about using various innovations are concerned about at various times during the innovation adoption process. The items were developed from typical responses of school and college teachers, who ranged from no knowledge at all about various innovations to many years of experience in using them. *Therefore, some of the items on this questionnaire may appear to be of little relevance or irrelevant to you at this time*. For the completely irrelevant items, please circle "0" on the scale. Other items will represent those concerns you do have, in varying degrees of intensity, and should be marked higher on the scale.

For example:

This statement is very true of me at this time.	0 1 2 3 4 5 6 **7**
This statement is somewhat true of me now.	0 1 2 3 **4** 5 6 7
This statement is not at all true of me at this time.	0 **1** 2 3 4 5 6 7
This statement is irrelevant to me.	**0** 1 2 3 4 5 6 7

Please respond to the items in terms of *your present concerns*, or how you feel about your involvement or potential involvement with **Online Learning**. Online Learning is an open and distributed learning environment that uses pedagogical tools, enables by Web-based technologies (Blackboard), to facilitate learning and knowledge building through meaningful action and interaction.

Since the *first* part of this questionnaire is used for a variety of innovations, the name "**Online Learning**" does not appear. However, phrases such as "the innovation," "this approach," and "the new system" all refer to **Online Learning**.

Remember to respond to each item in terms of your present concerns about your involvement or potential involvement with **Online Learning**.

Thank you for taking time to complete this task.

1.	I am concerned about students' attitudes toward this innovation.	0 1 2 3 4 5 6 7
2.	I now know of some other approaches that might work better.	0 1 2 3 4 5 6 7
3.	I don't even know what the innovation is.	0 1 2 3 4 5 6 7
4.	I am concerned about not having enough time to organize myself each day.	0 1 2 3 4 5 6 7
5.	I would like to help other faculty in their use of the innovation.	0 1 2 3 4 5 6 7
6.	I have a very limited knowledge about the innovation.	0 1 2 3 4 5 6 7
7.	I would like to know the effect of reorganization on my professional status.	0 1 2 3 4 5 6 7
8.	I am concerned about conflict between my interests and my responsibilities.	0 1 2 3 4 5 6 7
9.	I am concerned about revising my use of the innovation.	0 1 2 3 4 5 6 7
10.	I would like to develop working relationships with both our faculty and outside faculty using this innovation.	0 1 2 3 4 5 6 7
11.	I am concerned about how the innovation affects students.	0 1 2 3 4 5 6 7
12.	I am not concerned about this innovation.	0 1 2 3 4 5 6 7
13.	I would like to know who will make the decisions in the new system.	0 1 2 3 4 5 6 7
14.	I would like to discuss the possibility of using the innovation.	0 1 2 3 4 5 6 7
15.	I would like to know what resources are available if we decide to adopt this innovation.	0 1 2 3 4 5 6 7
16.	I am concerned about my inability to manage all the innovation requires.	0 1 2 3 4 5 6 7
17.	I would like to know how my teaching or administration is supposed to change.	0 1 2 3 4 5 6 7
18.	I would like to familiarize other departments or persons with the progress of this new approach.	0 1 2 3 4 5 6 7
19.	I am concerned about evaluating my impact on students.	0 1 2 3 4 5 6 7
20.	I would like to revise the innovation's instructional approach.	0 1 2 3 4 5 6 7
21.	I am completely occupied with other things.	0 1 2 3 4 5 6 7
22.	I would like to modify our use of the innovation based on the experiences of our students.	0 1 2 3 4 5 6 7
23.	Although I don't know about this innovation, I am concerned about things in the area.	0 1 2 3 4 5 6 7
24.	I would like to excite my students about their part in this approach.	0 1 2 3 4 5 6 7

25. I am concerned about this time spent working with nonacademic problems related to this innovation. 0 1 2 3 4 5 6 7
26. I would like to know what the use of the innovation will require in the immediate future. 0 1 2 3 4 5 6 7
27. I would like to coordinate my effort with others to maximize the innovation's effects. 0 1 2 3 4 5 6 7
28. I would like to have more information on time and energy commitments required by this innovation. 0 1 2 3 4 5 6 7
29. I would like to know what other faculty are doing in this area. 0 1 2 3 4 5 6 7
30. At this time, I am not interested in learning about this innovation. 0 1 2 3 4 5 6 7
31. I would like to determine how to supplement, enhance, or replace the innovation. 0 1 2 3 4 5 6 7
32. I would like to use feedback from students to change the program. 0 1 2 3 4 5 6 7
33. I would like to know how my role will change when I am using the innovation. 0 1 2 3 4 5 6 7
34. Coordination of tasks and people is taking too much of my time. 0 1 2 3 4 5 6 7
35. I would like to know how this innovation is better than what we have now. 0 1 2 3 4 5 6 7
36. Provide your comments and/or concerns about online learning in the space below, If there is not enough space for your comments, then write on the back, as well:

Part II: Administrative Support for Teaching with Technology

37. Please indicate your agreement with the following statements by circling your response, with "1" indicating a strong disagreement and "5" indicating a strong agreement. Mark "don't know" only if you feel you simply cannot provide an opinion regarding the question.

1 **Strongly Disagree**	**2** **Disagree**	**3** **Undecided**	**4** **Agree Strongly**	**5** **Agree**	**DK** **Don't Know**
Administrators in my department are supportive of faculty members who teach with technology.					1 2 3 4 5 DK
Administrators in my department use technology in their own teaching practices.					1 2 3 4 5 DK

Administrators in my department recognize the additional workload required to teach with technology.	1 2 3 4 5 DK
Administrators in my department communicate with faculty about the value of teaching with technology.	1 2 3 4 5 DK
Administrators in my department understand how to assess the quality of teaching with technology.	1 2 3 4 5 DK
Administrators in my department have positive attitudes toward teaching with technology.	1 2 3 4 5 DK
Administrators in my department positively recognize the effective use of technology in reappointment, promotion and tenure decisions.	1 2 3 4 5 DK

Administrators in my college are supportive of faculty members who teach with technology.	1 2 3 4 5 DK
Administrators in my college use technology in their own teaching practices.	1 2 3 4 5 DK
Administrators in my college recognize the additional workload required to teach with technology.	1 2 3 4 5 DK
Administrators in my college communicate with faculty about the value of teaching with technology.	1 2 3 4 5 DK
Administrators in my college understand how to assess the quality of teaching with technology.	1 2 3 4 5 DK
Administrators in my college have positive attitudes toward teaching with technology.	1 2 3 4 5 DK
Administrators in my college positively recognize the effective use of technology in reappointment, promotion and tenure decisions.	1 2 3 4 5 DK

Senior campus academic administrators (e.g. Vice-Provosts & above) are supportive of faculty members who teach with technology.	1 2 3 4 5 DK
Senior campus academic administrators (e.g. Vice-Provosts & above) use technology in their own teaching practices.	1 2 3 4 5 DK
Senior campus academic administrators (e.g. Vice-Provosts & above) recognize the additional workload required to teach with technology.	1 2 3 4 5 DK
Senior campus academic administrators (e.g. Vice-Provosts & above) communicate with faculty about the value of teaching with technology.	1 2 3 4 5 DK
Senior campus academic administrators (e.g. Vice-Provosts & above) understand how to assess the quality of teaching with technology.	1 2 3 4 5 DK
Senior campus academic administrators (e.g. Vice-Provosts & above) have positive attitudes toward teaching with technology.	1 2 3 4 5 DK

Senior campus academic administrators (e.g. Vice-Provosts & above) positively recognize the effective use of technology in reappointment, promotion and tenure decisions.	1 2 3 4 5 DK

Part III: Colleagues Using Technology

Please respond to the following questions regarding your knowledge of your colleagues' use of Learning Management Systems (Blackboard) to support their instruction (whether face-to-face or distance education).

38. Estimate the percentage (i.e. 20%, 50%, etc.) of faculty in your department who are using Web-based Learning Management Systems (Blackboard) _____

39. Overall, my faculty colleagues are (choose one):
    a. encouraging me to use Web-based Learning Management Systems
    b. encouraging me NOT to use Web-based Learning Management Systems
    c. no opinion

40. On a scale of 1 to 5, my colleagues seem to be:
    1. very negative toward using Web-based Learning Management Systems.
    2. negative toward using Web-based Learning Management Systems.
    3. neutral/no opinion toward using Web-based Learning Management Systems.
    4. positive toward using Web-based Learning Management Systems.
    5. very positive toward using Web-based Learning Management Systems.

Part IV: Faculty Use of Technology in Teaching and Attitude Toward Teaching with Technology

41. How often do you use computer-based technology in the following areas?
Please, rate your frequency of use as follows: Almost Always (AA = 5),

Frequently (F = 4), Sometimes (S = 3), Rarely (R = 2), Never (N = 1)

Statement	**AA**	**F**	**S**	**R**	**N**
a. Personal communication.	5	4	3	2	1
b. Research work, i.e. web browsing	5	4	3	2	1
c. Classroom management	5	4	3	2	1
d. Teaching activities for your students	5	4	3	2	1

42. How often do you use the following application software for instruction?
Please, rate your frequency of use as follows: Almost Always (AA = 5),

Frequently (F = 4), Sometimes (S = 3), Rarely (R = 2), Never (N = 1)

Item	AA	F	S	R	N
a. Microsoft Word for word-processing.	5	4	3	2	1
b. Microsoft Excel/Access for instruction	5	4	3	2	1
c. Microsoft PowerPoint for presentation in class	5	4	3	2	1
d. Internet/E-Mail for research.	5	4	3	2	1
e. ELive for conducting class or communication.	5	4	3	2	1

43. Please, circle the option that best reflects how you feel about each of the following statements.

Rating Scale: Strongly Agree (SA = 5), Agree (A = 4), Neutral (N = 3), Disagree (D = 2), Strongly Disagree (SD = 1)

Statement	SA	A	N	D	SD
a. I would use instructional technology tools more often, if they were available in my classroom.	5	4	3	2	1
b. I hardly ever use instructional technology in my class.	5	4	3	2	1
c. I use basic computer applications (e.g., word processing, spreadsheets and PowerPoint) for instruction.	5	4	3	2	1
d. If I get the opportunity, I would like to use audio and video web-based systems for instruction.	5	4	3	2	1
e. I use the Internet to search for teaching materials.	5	4	3	2	1
f. Overall, the use of instructional technology has been helpful in my teaching and learning tasks.	5	4	3	2	1

PART V: Faculty Perceptions of their Technology Professional Development Needs & Prior Technology Used

Please, circle the option that best reflects how you feel about each of the statements.

Rating Scale: Strongly Agree (SA = 5), Agree (A = 4), Neutral (N = 3), Disagree (D = 2), Strongly Disagree (SD = 1)

Statement	SA	A	N	D	SD
45. I have an immediate need for more training with curriculum that integrates technology.	5	4	3	2	1
46. I need convenient access to more computers for my students.	5	4	3	2	1
47. I need more reliable access to the Internet.	5	4	3	2	1
48. I would need more technical support to keep the computers working during instruction.	5	4	3	2	1
49. I need more software that is subject/curricular-based.	5	4	3	2	1
50. I need more resources that illustrate how to integrate technology into the curriculum.	5	4	3	2	1
51. I need more training opportunities with teaching strategies that integrate technology.	5	4	3	2	1
52. I need more compelling reasons why I should incorporate technology into teaching.	5	4	3	2	1
53. I need more time to change the curriculum to incorporate technology.	5	4	3	2	1
54. I believe faculty members must have a stronger voice in the technology professional development program.	5	4	3	2	1
55. Attending a few technology workshops and seminars is enough for me to start using instructional technology.	5	4	3	2	1
56. I need more regular instructional technology seminars/workshops.	5	4	3	2	1
57. I would like to collaborate with my colleagues on instructional technology issues.	5	4	3	2	1
58. My effort is primarily directed towards mastering tasks required to use instructional technology.	5	4	3	2	1
59. My university's faculty technology professional development plan meets my technology needs.	5	4	3	2	1

60. Please indicate your experience with the following Web-Based Learning Management Systems by:
    a. Indicate the number of semesters you have used a particular system (column B).
    b. Checking the system you primarily use as the entry point for students to conduct or supplement your courses (column C) (that is, where do you send your students *first* to

access Web-based resources if you use these systems).

If you have not used a particular system, please select **None**.

A. System	B. Indicate the approximate number of semesters you have used this system, at any time previously and including this semester.	C. Check the system you primarily use as the entry point for your students.
Moodle		□
Disire2Learn		□
WebCT		□
BlackBoard		□
None - I don't use any Web-based Learning Management Systems	XXXXXXXXXXXXXXXXXX	□

61. Approximately how many computer-technology related professional development hours have you completed/attended in the last two years? Please write your response on the line. (Note: computer-technology related professional development hours may include workshops, seminars, programs, institutes or conferences that you have attended relating to using computer and instructional technology).

    _____

62. Have you received any formal training (sponsor by the university) in adopting online learning for instruction?
    □ YES NO

63. Have you received any grants that have supported your use of Web-Based Learning Management Systems (Blackboard)?
    □ YES NO

64. Do you have access to personnel (e.g. student assistants, staff) that can help you use Blackboard and ELive?
    □ YES □ NO

65. What professional development activities, incentives, support, etc., you need in order to teach online and/or apply online learning tools for your instruction needs? List them using the space below. If there is not enough space, then write on the back, as well:

66. From the response you gave above (q 65), what is the most important professional development activity, incentive, support, etc. you need in order to teach online and/or apply online learning tools for your instruction needs? List them using the space below. If there is not enough space, then write on the back, as well:

PART VI: Demographic Information

67. Gender □ Male □ Female

68. Age _____

69. How many years of teaching experience do you have at the post-secondary level?

_____

70. What is your primary college affiliation?_____

71. Please indicate your faculty status using the table below. Make sure you identify any modifiers that proceed your rank, and then indicate your academic rank, and your tenure status.

Select Rank Modifier(s)	Select Academic Rank	Select Tenure Status
□ Teaching	□ Professor	□ Tenure
□ Research	□ Associate Professor	□ Tenure track– non tenured
□ Extension	□ Assistant Professor	□ Non-tenure track
□ Other	□ Instructor	□ Other

Appendix B - Letter of Consent

Name Date
Dear (name):

I am completing a doctoral research project at Kansas State University that investigate the concerns of full time faculty and instructors in three colleges and schools (College of Liberal Arts, College of Natural Science and Mathematic and School of Management) in the University of Alaska Fairbanks in adopting online learning. It will study UAF faculty's professional development needs in adopting and implementing OL. The findings of this project will response to Title 24 of the Alaska Statutes recommendation #3, which requires sufficient faculty training in distance education technologies for teaching UAF distance courses. It will take about 20 minutes to complete the electronic questionnaire.

I will also randomly select 11 interviewees from each academic rank as follows: 3 faculty members from the professor pool, 3 from the associate professor pool, 3 from the assistant professor pool, and 2 from the instructor pool. The interview will be conducted either through a face-to-face meeting or by phone conversation in case of time and/or location limitation. Each participant will be asked to answer the several open-end questions, it will take about 15 minutes.

The researcher will keep all returned surveys and interview transcripts. Your identity will be kept confidential. The results of this study are available per your request by contacting Professor Rosemary Talab of Kansas State University at talab@ksu.edu. A copy of the final dissertation will be available on K-REX, Kansas State University's electronic thesis and dissertation repository.

Your participation in this study is very valuable and appreciated!

Sincerely,

Shih-Hsung (Alex) Hwu / Dr. Rosemary Talab
Doctoral Candidate/Researcher Professor and Dissertation Committee Chair
Kansas State University
Phone: (319) 471-5428

Appendix C - Interview Protocol

Online Learning Questionnaire

Time of Interview: Date:

Interviewee Code: Academic Rank:

Introduction

Thank you for coming to this interview session. You're here today to participate in an interview for a study of online learning. The purpose of this interview is for me to learn your concerns and professional development needs in adopting online learning.

You will be anonymous and any remarks that you make during the interview will remain confidential. The interview will take approximately one hour. Please take a moment to read the study information sheet.

Key Questions

Have you taught any online courses before, if you do what was your experiences?

What professional development activities you need in order to teach online?

What incentives and supports you need in order to teach online?

What are the barriers that deter you adopting online learning or teach online?

What professional development activities you need in order to apply online learning tools for your instruction needs?

What incentives and supports you need in order to apply online learning tools for your instruction needs?

How would you describe your computer/technology skill level?

Concluding Remarks

Thanks for your time for this interview. I want to remind you again that your responses will remain confidential. May I have your contact information in order to contact you again for follow-up questions and to check to see if I understand your responses correctly?

Appendix D - SEDL License Agreement

ADVANCING RESEARCH
SEDL
IMPROVING EDUCATION

SEDL License Agreement

To: Shih-Hsung Hwu (Licensee)
Director of Center for Distance Education
University of Alaska Fairbanks
2175 University Avenue S
Fairbanks, AK 99709

From: Nancy Reynolds
Information Associate
SEDL
Information Resource Center—Copyright Permissions
4700 Mueller Blvd.
Austin, TX 78723

Subject: License Agreement to reproduce and distribute SEDL materials

Date: March 17, 2011

Thank you for your interest in using the ***Stages of Concern Questionnaire*** (SoCQ 075) published by SEDL and written by Archie A. George, Gene E. Hall, and Suzanne M. Stiegelbauer in 2006 as Appendix A, pages 79-82 in *Measuring Implementation in Schools: The Stages of Concern Questionnaire*, as a PDF document on an accompanying CD-ROM, in electronic format as SEDL's *Stages of Concern Questionnaire (SoCQ) Online* and published on pages 48-49 in the SEDL publication *Taking Charge of Change*, revised ed., published in 2006, 2nd printing, 2008, that was written by Shirley M. Hord, William L. Rutherford, Leslie Huling, and Gene E. Hall.

This instrument will be referred to as the "work" in this License Agreement. SEDL is pleased to grant permission to the Licensee who will administer the *SoCQ Online* as part of a dissertation survey and will include the work in his diesertation. The following are the terms, conditions, and limitations governing this limited permission to reproduce the work:

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Thank you, again, for your interest in using the ***Stages of Concern Questionnaire (SoCQ)***. If you have any questions about this License Agreement, please contact me at 800-476-6861, ext. 6548 or 512-391-6548, or by e-mail at nancy.reynolds@sedl.org.

Sincerely,

_____ _____

Nancy Reynolds for SEDL Date signed

Agreed and accepted:

Signature: _____ _____

Date signed

Printed Name: _____

Appendix E - Petherbridge's Permission

Permission request on using Dissertation Survey

3 messages

Alex Hwu <shwu@alaska.edu> **Thu, Mar 3, 2011 at 12:45 AM**

To: donna_petherbridge@ncsu.edu

Dear Dr. Petherbridge,

My name is Alex Hwu, a PhD candidate at Kansas State University. I would like to ask your permission to use your dissertation survey (particularly the portion after SoCQ) for my dissertation survey.

Thank you and have a wonderful weekend,

Shih-Hsung(Alex) Hwu
Director
Center for Distance Education
College of Rural and Community Development, UAF
2175 University Ave. S. Ste. 200
Fairbanks, AK 99701
Phone: 907-479-4701 Fax: 907-451-4083
Audio Conference: 907-451-4065
Toll free 1-800-277-8060

Donna Petherbridge <donna_petherbridge@ncsu.edu> **Thu, Mar 3, 2011 at 4:05 AM**

Reply-To: donna_petherbridge@ncsu.edu
To: Alex Hwu <shwu@alaska.edu>
Cc: petherncsu@gmail.com

Hi Alex,
For the portion of the survey that is not the SoCQ, you can certainly use any questions that you like.
For the SoCQ, you'll need to go through the authors that gave me permission to use that part, should you choose to do that.
Very best of luck with your survey,
Donna :-)

[Quoted text hidden]

--

==========

Dr. Donna Petherbridge
Associate Vice Provost of Instructional Support Services
Distance Education and Learning Technology Applications
(delta)

Adjunct Assistant Professor, Leadership, Policy& Adult and Higher Education
College of Education

919.513.3737(phone)
919.513.4237(fax)

North Carolina State University
Venture II (Centennial Campus)
Suite 500, Room 500-55
Campus Box 7113
Raleigh NC 27695-7113

donna_petherbridge@ncsu.edu
learntech@ncsu.edu
http://delta.ncsu.edu

Appendix F - Al-Sarrani's Permission

Permission for use your dissertation survey

2 messages

Alex Hwu <shwu@alaska.edu> **Sun, Mar 27, 2011 at 3:25 PM**

To: al-sarrani Nauaf <nsarrani2005@yahoo.com>

Dear Dr. Al-Sarrani,

Would you please give me your permission to adopt and revise your dissertation survey questionnaire.

Thank you,

Shih-Hsung(Alex) Hwu
Director
Center for Distance Education
College of Rural and Community Development, UAF
2175 University Ave. S. Ste. 200
Fairbanks, AK 99701
Phone: 907-479-4701 Fax: 907-451-4083
Audio Conference: 907-451-4065
Toll free 1-800-277-8060

---

al-sarrani Nauaf <nsarrani2005@yahoo.com> **Tue, Mar 29, 2011 at 3:07 PM**

To: Alex Hwu <shwu@alaska.edu>

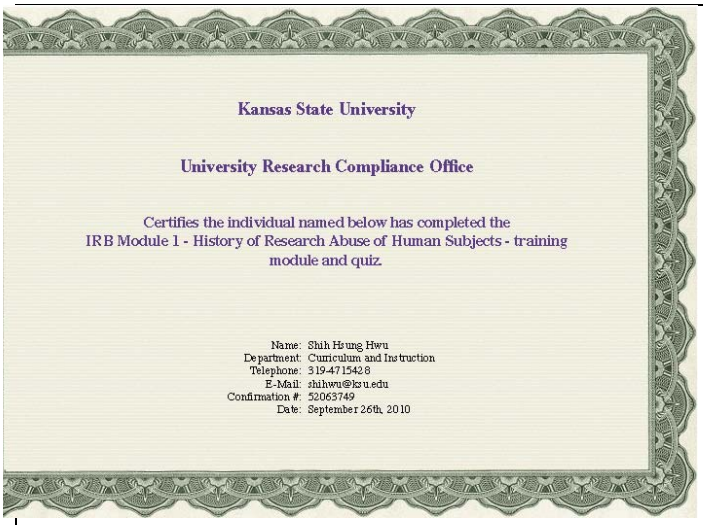
Dear Alex,

For the first section of the survey "The Stages of Concern Questionnaire (SoCQ) (questions 1 – 35)" you have to take permission from the Southwest Educational Development Laboratory (SEDL) in Austin, Texas (www.sedl.org), to reprint and distribute the questionnaire.

For the other sections, you are more than welcome to use the survey that I have revised and compiled from other surveys which you also have to take permission from. In my dissertation you will find a section where I include in detail the different sources of the survey I have compiled.

Best Regards,
Dr. Nauaf AL-Sarrani

Appendix G - KSU IRB Certifications



Kansas State University

University Research Compliance Office

Certifies the individual named below has completed the
IRB Module 1 - History of Research Abuse of Human Subjects - training module and quiz.

Name: Shih Hsung Hwu
Department: Curriculum and Instruction
Telephone: 319-4715428
E-Mail: shihwu@ksu.edu
Confirmation #: 52063749
Date: September 26th, 2010

Kansas State University

University Research Compliance Office

Certifies the individual named below has completed the
IRB Module 2 - Introduction to Human Subjects Research and The Multiple Project Assurance - training module and quiz.

Name: Shih Hsung Hwu
Department: Curriculum and Instruction
Telephone: 319-4715428
E-Mail: shihwu@ksu.edu
Confirmation #: 52065325
Date: September 26th, 2010

Kansas State University

University Research Compliance Office

Certifies the individual named below has completed the
IRB Module 3 - K-State Federalwide Assurance (FWA) for the Protection of Human Subjects - training module and quiz.

Name: Shih Hsung Hwu
Department: Curriculum and Instruction
Telephone: 319-4715428
E-Mail: shihwu@ksu.edu
Confirmation #: 52066670
Date: September 26th, 2010

Kansas State University

University Research Compliance Office

Certifies the individual named below has completed the
IRB Module 4 - The Belmont Report - training module and quiz.

Name: Shih Hsung Hwu
Department: Curriculum and Instruction
Telephone: 319-4715428
E-Mail: shihwu@ksu.edu
Confirmation #: 52077231
Date: September 26th, 2010

Kansas State University

University Research Compliance Office

Certifies the individual named below has completed the
IRB Module 5 - Identifying, Assessing, and Minimizing Risks of Social and Behavioral Research - training module and quiz.

Name: Shih Hsung Hwu
Department: Curriculum and Instruction
Telephone: 319-4715428
E-Mail: shihwu@ksu.edu
Confirmation #: 52077505
Date: September 26th, 2010

Kansas State University

University Research Compliance Office

Certifies the individual named below has completed the
IRB Module 6 - Ethics of Research with Human Subjects - training module and quiz.

Name: Shih Hsung Hwu
Department: Curriculum and Instruction
Telephone: 319-4715428
E-Mail: shihwu@ksu.edu
Confirmation #: 52087393
Date: September 26th, 2010

Appendix H - KSU IRB Approval

University Research
Compliance Office
203 Fairchild Hall
Lower Mezzanine
Manhattan, KS 66506-1103
785-532-3224
Fax: 785-532-3278
www.k-state.edu/research/comply

TO: Rosemary Talab
Secondary Education
226 Bluemont

Proposal Number: 5859

FROM: Rick Scheidt, Chair
Committee on Research Involving Human Subjects

DATE: May 13, 2011

RE: Approval of Proposal Entitled, "Concerns and Professional Development Needs of University Faculty in Adopting Online Learning."

The Committee on Research Involving Human Subjects has reviewed your proposal and has granted full approval. This proposal is **approved for one year from the date of this correspondence, pending "continuing review."**

APPROVAL DATE: May 19, 2011

EXPIRATION DATE: May 19, 2012

Several months prior to the expiration date listed, the IRB will solicit information from you for federally mandated "**continuing review" of the research**. Based on the review, the IRB may approve the activity for another year. **If continuing IRB approval is not granted, or the IRB fails to perform the continuing review before the expiration date noted above, the project will expire and the activity involving human subjects must be terminated on that date. Consequently, it is critical that you are responsive to the IRB request for information for continuing review if you want your project to continue.**

In giving its approval, the Committee has determined that:

☒ There is no more than minimal risk to the subjects.
☐ There is greater than minimal risk to the subjects.

This approval applies only to the proposal currently on file as written. Any change or modification affecting human subjects must be approved by the IRB prior to implementation. All approved proposals are subject to continuing review at least annually, which may include the examination of records connected with the project. Announced post-approval monitoring may be performed during the course of this approval period by URCO staff. Injuries, unanticipated problems or adverse events involving risk to subjects or to others must be reported immediately to the Chair of the IRB and / or the URCO.