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Learning to Teach Online: An Investigation of the Impacts of Faculty Development Training on Teaching Effectiveness and Attitudes toward Online Instruction

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I am submitting herewith a dissertation written by Karen Elizabeth Brinkley entitled "Learning to Teach Online: An Investigation of the Impacts of Faculty Development Training on Teaching Effectiveness and Attitudes toward Online Instruction." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Higher Education Administration.

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Learning to Teach Online: An Investigation of the Impacts of Faculty Development Training on Teaching Effectiveness and Attitudes toward Online Instruction

A Dissertation Presented for the

Doctor of Philosophy

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Dedication

To my wonderful, patient husband, Justin, who encouraged me to pursue my Ph.D., relocated to Tennessee alongside me, and supported me every step of the way. He is everything to me and I could not have achieved this without him.

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Abstract

The purpose of this study was to examine the relationship between one approach to training for online faculty and the ways in which the program influenced the participants' teaching effectiveness and attitudes toward online instruction. Two research questions guided this study: (1) how did participating in an intensive course redesign intervention influence instructors' teaching effectiveness in the online environment? and (2) how did participating in the training influence instructors' beliefs or attitudes about online teaching? The theoretical framework guiding this study was the Technological Pedagogical Content Knowledge (TPACK) model, developed by Mishra and Koehler (2005). Using a concurrent, mixed-methods design, this study used five data sources: (1) participants' application narratives, (2) post-training program evaluation data; (3) instructors' pre and post-training course syllabi, (4) pre and post-training student evaluations of teaching scores, and (5) a post-training follow-up online survey.

Findings to the first research question revealed that instructors demonstrated (a) statistically significant change in the incorporation of elements into the redesign of their syllabi, and (b) improvements in their teaching abilities as self-reported in the follow-up survey. However, there were no significant changes in their student evaluations of teaching pre-and post. Overall, then, instructors demonstrated modest improvements to their overall teaching effectiveness. Findings to the second research question revealed that, prior to training, instructors were highly optimistic about their course redesign plans and the skills and knowledge they would develop. After delivering their redesigned course online, participants were less optimistic and satisfied with their training experience than they had been immediately following it, and multiple instructors cited a need for additional or continued training and support.

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Chapter 1: Introduction to the Study

Background and Context

Higher education as a whole has experienced unprecedented growth over the last four decades, as shown by rapid and steady increases enrollment (Altback, Reisberg, & Rumbley, 2009; Calderon, 2012; Guri-Rosenblit, Sebkova, & Teichler, 2007) In fact, despite a dip in the overall enrollment across higher education reported in 2013, online enrollments still increased by 9.3% (Allen & Seaman, 2013). Online education has undergone even greater growth, in a shorter period, with approximately one-third of students having taken at least one online course (Allen & Seaman, 2013; Bichsel, 2013; Lederman, 2013; Maloney & Oakley, 2010; Parker, Lenhart, & Moore, 2011). In the last decade alone, online enrollment rose from 10% of total enrollment in 2002 to more than 30% of the total enrollment in 2013 and has continued to outpace enrollment in traditional higher education overall (Allen, Seaman, Poulin, & Straut, 2016; Allen, Seaman, Lederman, & Jaschik, 2012; Allen and Seaman, 2013). Some scholars suggest that the U.S. economic recession beginning in 2007-2008 contributed to increased demand for new online programs in the years that followed, with 73% of institutions experiencing subsequent growth in their existing online programs (Allen & Seaman, 2010). Hrastinski (2008) argued that e-learning has been "one of the most powerful responses to the growing need for education," particularly as it relates to online education filling a gap in the need for greater access to learning and skill development (p. 51).

Given the rapid change and growth of online higher education, several key terms need clarification. Reports from *The Sloan Consortium* (Allen & Seaman, 2011) and *The Online Learning Consortium* (Allen et al., 2016) identified four categories of learning environments

along the face-to-face to online spectrum. First, *traditional* courses are face-to-face and utilize zero technology. Second, *web-facilitated* courses are essentially face-to-face, although 1-29% of the course is facilitated through web-based or classroom technologies, or course/learning management systems such as Blackboard or WebCT. Third, *blended* or *hybrid* courses, mix face-to-face and online delivery, since web use/delivery makes up 30-79% of the course and typically replaces a number of face-to-face meetings. Last, *online* courses are those that typically have limited or no face-to-face meetings, with at least 80% of the course delivered online (Allen and Seaman, 2013, p. 11). Online education has been described as "distance learning," "e-learning," "web-based," "cyber," "virtual," or "internet-based" learning – terms which are increasingly used interchangeably (Smart and Cappel, 2006; Keengwe & Kidd, 2010).

Institutions of higher education continue to expand their online offerings to meet student demand and, in so doing, are able to offer greater access to more students (Kampov-Polevoi, 2010; Picciano, 2006). As a result, instructors and course designers are now encouraged to convert more face-to-face courses to online formats in traditional brick and mortar institutions. Not only do students find online course offerings to be both accessible and convenient (Shin & Lee, 2009), but more than two-thirds of chief academic officers across higher education report that online education is a "critical" long-term strategy for their institutions (Allen & Seaman, 2013, p. 4; Ward, Peters, & Shelley, 2010, para 1).

To be sure, the various technologies and tools employed in distance education have made learning online more popular and accessible than ever (Walberg & Twyman, 2013). However, these emerging technologies, or the "tools, concepts, innovations, and advancements" (Veletsianose, 2010, p. 3) used in online education, are also constantly evolving. As innovations

in technology continue, *The Economist* predicted a "ripple-effect" related to online education. First, as greater numbers of people gain access to higher education, institutions will need to determine the best tools and infrastructures in which to invest; these technological advancements will, in turn, change the skill sets required of those in the future workforce ("The Future of Higher Education," 2008, p. 16). This "ripple-effect," is likely to lead to increased demand for faculty training and support for online instructors. Faculty developers working in higher education are still evaluating and developing approaches to instructor support and identifying new and best practices to train and support online instructors. As a result, the roles and approaches used by faculty developers are evolving alongside the technology (Dawson, Mighty, & Britnell, 2010; Lewis, 2010).

Demands and expectations placed upon online instructors (as well as faculty developers) are important because faculty development can have a direct impact on the quality of one's teaching (Cole, Barker, Kolodner, & Williamson, 2004; Knight, Carrese, & Wright, 2007; Steinert, Mann, & Centeno et al., 2006). Yet, scholars have consistently demonstrated that instructors need strong and continued support and training to be effective in their online teaching (Abel, 2005; Luck & McQuiggan, 2006; Riedinger & Rosenberg, 2006; Shelton, 2011; Smith, 2005). Formal or informal training has been found to increase the likelihood that instructors will utilize online delivery for their courses (Fish & Gill, 2009; Huang, Deggs, Jabor, & Machtmes, 2011). Elaborating on this point, Hill (2012) noted that "well thought-out faculty development weaves together needed training, available resources, and ongoing support, and carries with it the same expectations for quality teaching that institutions of higher education have for their face-to-

face classes" (p. 2). However, these goals can be challenging for administrators, faculty developers, and instructors to realize.

As Brinthaupt et al. (2011) note:

> "there has been much discussion about best practices in online teaching and learning, [although] most of this discussion has focused on the use of specific tools or techniques...that is, most of the literature deals with the 'science' of online teaching rather than the 'art' of online teaching" (para. 7).

There is little question those teaching online need strong and continued training and support (Abel, 2005; Luck & McQuiggan, 2006; Riedinger & Rosenberg, 2006; Shelton, 2011; Smith, 2005), yet researchers have found campus support structures (with the exception of technology) to be lacking (Morris & Finnegan, 2008; "Online Learning," 2009; Seaman, 2009).

Skeptics of online education have wondered if online instructors receive the necessary training to be effective. The American Federation of Teachers (AFT, 2000) suggested that one of the major criticisms of online and distance education is "whether needed equipment, training, and technical support is reaching distance education students and faculty" ("Distance Education," 2000, p. 5). AFT noted online instructors tend to be more "*successful in their distance education classes when they are given the proper time, tools and training*" ("Distance Education," p. 6). The AFT also argued a position that continues to resonate today: "*faculty… must become proficient in the communications technology [and] must be prepared [to] possess strategies and skills to communicate with their students electronically*" (p.7). In order to meet these objectives, instructors "*must be provided adequate training and technical support* [which] should include special assistance in instructional design; [and,] the institution must enable

faculty members to work with knowledgeable instructional and technical design specialists in designing courses" (AFT, 2000, p.7). Indeed, even more recent research supports the AFT's (2000) claims, further demonstrating that large numbers of online instructors are not receiving the pedagogical or technological support they need prior to teaching (Lane, 2013; Ray, 2009).

A report by Pearson (2012), entitled *The Learning Curve,* concluded that successful institutional and administrative systems relevant to online instruction have several features in common: they (a) *provide relevant and ongoing training*, and (b) set clear goals/ expectations *and support teachers in meeting them*. In another study about online education and instructor preparation, researchers surveyed more than 2,500 U.S. colleges and universities. The authors found that 94% of institutions offer some form of training and development for online instructors across higher education, though "there is no single approach being taken by institutions in providing training for their teaching faculty" (Allen and Seaman, 2011, p. 6). To be sure, many colleges and universities provide a myriad of resources to assist instructors (Kyei-Blankson, 2009), often in a "cafeteria style" approach[1]. The most common training and support services used across higher education include, but are not limited to: orientation programs, technology training, mentoring, coaching, learning communities, workshops, courses, certificate programs, and a variety of online resources and materials such as videos, academic articles and papers, bibliographies and reference guides, blogs, and profiles of successful online instructors (Conrad, 2004; Cox, 2004; Daly, 2012; Graham & Thomas, 2011; Kyei-Blankson, 2009; Lackey, 2011; Lorenzetti, 2012a; Lorenzetti, 2012b; Morris & Finnegan, 2008).

[1] A cafeteria style approach is one in which an institution offers a variety of programming or professional development options, such as workshops, online resources, reading materials, or certificate programs. The instructor then chooses the combination and frequency of opportunities that are most beneficial to him/her.

In higher education, it has traditionally been the faculty member who "does it all," from identifying course objectives, determining what and when students should study, to leading discussions, providing content, and determining the methods and frequency of student assessment (Austin & Hill, 2014; Frydenberg, 2002). Some research does suggest that instructors tend to develop their own model for teaching based on the ways in which they learned as students (Gallant, 2000; Oleson & Hora, 2014). It is no surprise then, that in approaching online teaching, faculty instructors tend to use strategies they learned in a traditional classroom (Conrad, 2004), especially when proper training and support is lacking. Given the growing number of distance learning courses, more instructors teach online courses than ever before, creating a situation in which an increasing number of instructors need training and support for online instruction. Supporting this claim, McQuiggan (2011) argued:

> "Programs to prepare faculty to teach online are needed, not only to learn the technical aspects of teaching online but, more importantly, to consider new and different ways of teaching. Too many... programs have concentrated on… the conversion of course material for the online environment [and] often forget, or only skim over... knowledge needed to be successful in the online classroom. Preparing to teach online presents an opportunity to rethink assumptions and beliefs about teaching" (p. 29).

Another important point to consider is how online education fits into the larger context of higher education as a whole. It is well-known that higher education has been the focus of growing public disillusionment and criticism in recent years (Greer, 2013), with more than half of Americans (58%) believing that higher education is worse off today than it was in the past ("America's Call for Higher Education Redesign," 2013). Just as traditional higher education has

received considerable criticism, online education has not been exempt from scrutiny, with critics citing issues such as higher withdrawal and failing rates, more technical difficulties, and an overall greater sense of isolation in learning than with traditional face-to-face education (Bower & Hardy, 2004; Campbell & Lynch-McClure, 2011; Cavanaugh, 2005; Hockridge, 2013). This changing sentiment toward higher education as a whole has resulted in demands for greater overall accountability and transparency for programs and services (Campbell & Rozsnyai, 2002). These demands have become an increasingly prevalent topic of conversation (and concern) across higher education over the last two decades (Figlio & Loeb, 2011; Olson, 2010).

This movement has also had direct implications for online programs and classes (Campbell & Rozsnyai, 2002). A multitude of assessment tools are available to evaluate the quality of online courses and programs, ranging from models and frameworks to checklists and rubrics developed by individual scholars, educational research organizations, and accrediting bodies (AAUP's "Best Practices," n.d.; HLC's "Guidelines for the Evaluation of Distance Education," 2009; Moore, 2005; Quality Matters, 2014; Shelton, 2010; Valentine, 2006). There are also numerous studies, reports, guidelines, and measurement tools have been developed to demonstrate quality and effectiveness in online courses and programs (Abel, 2005; "Committing to Quality," 2012; "Distance Education Programs," 2011; Harroff & Valentine, 2006; Hosie, Schibeci, & Backhaus, 2005; Mizikaci, 2006; Moore, 2007; Porter, 2012; Shelton, 2011; Simpson & Benson, 2013; Shelton, 2010; Sims, Dobbs, & Hand, 2002; Bichsel, 2013).

A small sub-section of research has focused on the comparison of these assessment and quality tools designed specifically for online education. Interestingly, it is only in the more recent models that faculty development, training, and support have been included as a criterion for

establishing the quality, effectiveness, or success of online programs. Nonetheless, when faculty development, training, and support have been included, this criterion tends to be framed in terms of a simple either-or: either there is "adequate" training and support for online instructors, or there is not. The exclusion of this criterion from the earlier models, and the current vagueness with which it is presented in the newer ones, suggest that the developers of these models may not have perceived this aspect to be as important as some of the others when considering the quality and effectiveness of online education as a whole (Mizikaci, 2006; Shelton, 2011). While its inclusion at all in the models does suggest that some organizations and scholars note the importance of training, these models still fail to address exactly what this training looks like, and in what ways it makes a difference.

As noted, research has demonstrated that effective training does influence the quality of teaching (Cole et al., 2004; Knight, Carrese, & Wright, 2007; Steinert et al., 2006) and that instructors need thorough and continued support and training for online teaching (Abel, 2005; Luck & McQuiggan, 2006; Riedinger & Rosenberg, 2006; Shelton, 2011; Smith, 2005). However, the literature remains somewhat limited with regard to the impact of this training on teaching effectiveness online (Wolf, 2006). Specifically, research has not sufficiently addressed the relationship between the approach to training and how this may influence an instructor's teaching effectiveness online. While much has been written about effective techniques, methods, and approaches to aid in the training and support of online instructors (Bailey & Card, 2009; Lackey, 2011; Lewis & Abdul-Hamid, 2006; Segrave, Holt, & Farmer, 2005; Young, 2006), little is known about the actual impact (Wolf, 2006). The field knows relatively little about the role of institutional and administrative aspects of online teaching, such as policies for the training

and support of online instructors, or the evaluation of online courses (Tallent-Runnels, Thomas, Lan, Cooper, Ahern, Shaw, & Liu, 2006). Therefore, while it may frequently be assumed and expected that training programs will have far-reaching impacts, rigorous evaluation studies are needed to confirm that this is, in fact, true.

Some research has investigated the ways in which training for online instruction influences teaching face-to-face and instructor beliefs about teaching (McQuiggan, 2011; McQuiggan, 2012). However, it remains unknown if or how such training influences instructors' teaching effectiveness online.

Statement of the Problem

As demonstrated above, the last two decades have seen steady growth in online education, with institutions regularly offering more online courses and programs. Research has demonstrated the need for and importance of quality training and support for online instructors. Previous studies have created a strong knowledge base as it pertains broadly to online education and approaches to online instructor faculty professional development, training, and support. Yet, despite a multitude of well-documented training approaches and designs, few studies exist that have investigated the actual influence of such training and the impact it has on participants' teaching effectiveness.

Purpose of the Study

Thus, the purpose of this study was to examine the relationship between one approach to training for online faculty and the ways in which the program influenced the participants' teaching effectiveness and attitudes toward online instruction.

Research Questions

Specifically, the following research questions guided this study:

(1) How did participating in an intensive course redesign intervention influence instructors' teaching effectiveness in the online environment?

(2) How did participating in the training influence instructors' beliefs or attitudes about online teaching?

Theoretical Framework

The theoretical framework used to guide this study was the Technological Pedagogical Content Knowledge (TPACK) model developed by Mishra and Koehler (2006) at Michigan State University. This framework builds upon the work of Schulman (1986, 1987), who first described the concept of pedagogical content knowledge (PCK). Shulman (1986) argued that simply possessing content knowledge and basic pedagogical strategies was insufficient to capture the knowledge of effective teachers and maintained that content knowledge and pedagogical knowledge should not be treated as mutually exclusive domains (Shulman, 1987). Figure 1 represents Shulman's conceptualization of the CPK framework.

Mishra and Koehler argued that while Schulman's framework still held true, it could not account for the tremendous growth in technologies, stating,

> "Technologies have come to the forefront of educational discourse, primarily because of the availability of a range of new, primarily digital, technologies and requirements for learning how to apply them to teaching" (Mishra & Koehler, 2006, p. 1023).

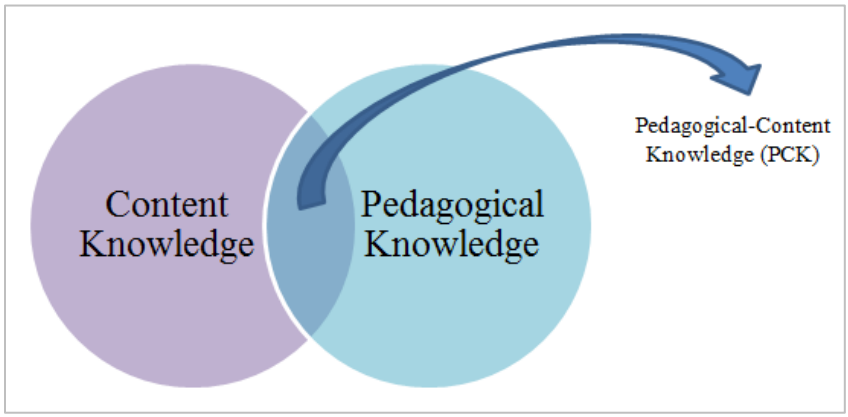

Figure 1: CPK Framework (Shulman, 1987)

Thus, Mishra and Koehler's extension incorporates technology to better understand and describe the skills and knowledge needed for effective pedagogical practice in technology-enhanced environments such as online education. TPACK examines the integration of subject matter (content knowledge) with technology and an understanding of teaching and learning (pedagogical knowledge). Mishra and Koehler noted that current thinking often views technology as a separate component from content and pedagogical knowledge; however, they argued that this is incorrect and that there are actually new and complicated relationships formed by the overlap and integration of these three elements. Figure 2 illustrates Mishra and Koehler's conceptualization of these relationships.

These three elements, Mishra and Koehler argued, are central to the TPACK framework, and are shown in Table 1. Note that the three individual components, as represented in Figure 2, are shown in the left-hand column. In the column to the right, the interactions of these components are explained, and the core of the TPACK framework, Technological Pedagogical Content Knowledge, is explained in the bottom row.

In their discussion of the TPACK framework, Mishra and Koehler (2006) argued that simply knowing *how* to use technology differs from knowing *how to teach* with it; therefore, the foundational framework that lays out the key principles of both learning and knowledge construction was necessary (p. 1034). This approach, which they refer to as *learning technology by design*, emphasizes learning by doing:

> "Learners have to actively engage in practices of inquiry, research, and design in collaborative groups – groups that have included higher education faculty members and graduate students with an interest in educational technology – to design tangible,

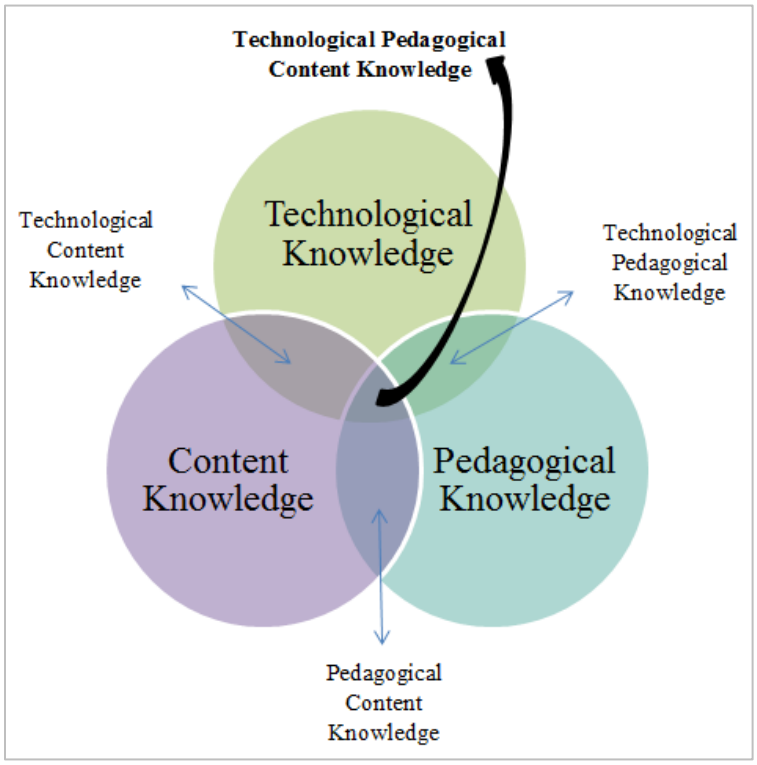

Figure 2: Conceptualization of TCPK Relationships (Mishra & Koehler, 2006)

Table 1

TCPK Components and Explanations

Individual Knowledge Components	**Combined Knowledge Components**
Content Knowledge: Knowledge about actual subject matter that is learned or taught (e.g., central facts, concepts, theories, explanatory frameworks, and procedures in a given field)	*Technological Content Knowledge:* Knowledge about the manner in which technology and content are related (i.e., how content can be changed or enhanced by the application of technology)
Pedagogical Knowledge: Deep knowledge of processes, practices, or teaching and learning methods; knowledge involved in all aspects of student learning, classroom management, design, and student evaluation	*Pedagogical Content Knowledge:* Knowing what teaching approaches fit the content or how elements of the content might be arranged to enhance one's teaching.
Technological Knowledge: Knowledge about both standard and advanced technologies, and the skills required to operate them. (Note: most tech workshops focus on the acquisition of these skills)	*Technological Pedagogical Knowledge:* Knowledge of existing, components and capabilities of instructional/ educational technologies, and the ability to choose a tool based on its fitness, and how to apply pedagogical strategies through technology
	Technological Pedagogical Content Knowledge: An emergent knowledge that goes beyond all three components separately; the basis for teaching with technology, but requires of the following: representing concepts via technology, employing technologies and pedagogical techniques to teach content; knowing how to use technology to help students learn; and knowing how technologies can be used to build on existing knowledge.

Note: Table adapted from Mishra & Koehler's (2006) descriptions

> meaningful artifacts as end products of the learning process" (Mishra & Koehler, p. 1035).

TPACK has been applied as a lens for studying the development of knowledge in teachers about educational technologies in both K-12 and higher education (Ashe & Bibi, 2011; Benson & Ward, 2013; Doering, Veletsianos, Scharber, & Miller, 2009; Koehler & Mishra, 2005; Koehler, Mishra, Hershey, & Peruski, 2004; Koehler, Mishra, & Yahya, 2007; Rienties, Brouwer, & Lygo-Baker, 2013; Stover & Veres, 2013; Yurdakul, Odabasi, Kilicer, Coklar, Birinci, & Kurt, 2012). Doering et al (2009) suggested that, since the model was created, it "has gained momentum and acceptance, and continues to flourish as a theoretical construct that helps researchers, teacher educators, and teachers themselves think about and 'do' technology integration in education" (p. 322).

The TPACK framework was particularly applicable to the present study in two key ways. First, the training program of interest in the present research involved an extensive collaboration between the university's Center for Teaching and Learning (pedagogy-focused) and the Center for Instructional Technology (technology-focused) to prepare new online instructors, which highlights the key intersection of (a) faculty members' expert *content* expertise with (b) *pedagogical* approaches and techniques, and (c) *technological* knowledge. Second, the training program involved the development of new skills and knowledge in teachers who were learning to teach online, which is consistent with the authors' description of *learning technology by design* (Mishra & Koehler, 2006).

Specifically, the TPACK framework was useful to the present study during multiple stages of the research process to identify not only the various knowledge types presented in the

model, but also the relationships that exist among them. Indeed, instructors and faculty developers alike should not treat the components of TPACK separately, but rather as a holistic and integrated design. Therefore, TPACK is a particularly relevant framework, and one that is directly applicable to faculty development for online instructors, because the individual knowledge areas of the model (namely, pedagogy and technology) are the skills emphasized by developers in training programs. This assertion was the goal of the particular training approach to training offered as the basis for the study. Although the TPACK framework did not guide the development of the program, the model does serve as a lens for examining a past program that emphasized principles consistent with that framework.

Regarding the design of the training institute, two campus educational development groups – the Center for Teaching and Learning and the Center for Instructional Technology – collaborated with the goal of fusing pedagogy with technology for each instructor's course content, demonstrating early application of the TPACK framework. With regard to the selection of data sources, this framework influenced the selection and analysis of specific sources as well. For example, the analysis of pre and post-training institute course syllabi include specific items related to both pedagogy and technology. Likewise, a group of items in the year five follow up survey included items drawn from the work of Hosseini and Kamal (2012), who worked to develop an instrument based on the TPACK framework, which could be used to measure perceived technology integration knowledge of teachers. Additional information on the design of the program and related instruments (e.g., protocols and surveys) are discussed in chapter three, with copies of each located in the appendices.

Significance of the Study

The findings of this study may prove useful in two ways. First, findings related to the design, effectiveness, and resulting impact of an intensive training program may provide information about one approach to training and its impact on teacher effectiveness in the online environment. This study focused on one approach to training characterized by three key features: (1) the program was intensive (i.e., highly concentrated and thorough); (2) facilitators (educational developers) led the training program; and (3) the program utilized a highly interactive and hands-on instructional approach. By identifying if (and if so, how) faculty professional development offered through an intensive training program impacted teaching effectiveness online, the findings may serve as a guide for the development of similar programs at other institutions. Second, this study will begin to address the gap in the current literature about the relationship between the approaches used for preparing instructors to teach online and their impact on teaching effectiveness.

Organization of the Study

This chapter has outlined the need for this research, while framing the problem, purpose, guiding theoretical framework, and significance of the study. Chapter two offers an extensive review of the literature to provide the necessary context for this study. Chapter three details the methods and procedures used to carry out this research. In chapter four, the findings of the study are presented, and chapter five closes with a discussion of the findings and implications for practice and future research.

Chapter 2: Review of the Literature

Introduction

The notion of teacher effectiveness has been researched for decades in both traditional (face-to-face) and online environments. Gorsky and Blau (2009) defined this concept as "how an instructor can best direct, facilitate, and support students toward certain academic ends, such as achievement and satisfaction" (para. 1). Early research on this topic held that there were certain processes (conditions or teaching acts) that would have a direct impact on student outcomes and learning (products). This belief came to be known as the process-product model (Dunkin & Biddle, 1974) and, as Seidel and Shavelson (2007) note, nearly all reviews and meta-analyses on teacher effectiveness since that time have been based on this model (see Anderson, 2004; Lipsey & Wilson, 1993; Scheerens & Bosker, 1997; Walberg & Paik, 2000; Wayne & Youngs, 2003).

In one of the seminal works on teaching effectiveness, following the process-product line of thinking, Chickering and Gamson (1987) suggested that there are seven specific behaviors "intended as guidelines for faculty members, students, and administrators… to improve teaching and learning" in higher education (p. 3). These behaviors included: (1) encouraging contact between students and faculty; (2) encouraging cooperation between students; (3) encouraging active learning; (4) providing prompt feedback; (5) emphasizing time on task; (6) communicating high expectations; and (7) respecting diverse talents and ways of learning. The work of Chickering and Gamson (1987) served as both a foundation and a framework for countless other studies contributing to the existing knowledge about teaching effectiveness, which, in recent years, has shifted its focus to online education (Arbaugh, 2006; Bangert, 2006; Chickering & Ehrmann, 1996; Tirrell & Quick, 2012). Yet, how do higher education faculty, the

majority of whom never received any formal teacher training or preparation (Cahn, 1978), become effective instructors?

As noted in chapter one, educational development, training, and support for online instructors is one important and impactful way of enhancing teacher effectiveness both face-to-face and online. This chapter provides a review of the research literature related to the purpose of the present study, which was to examine the relationship between one approach to training for online faculty and the ways in which the program influenced the participants' teaching effectiveness and attitudes toward online instruction. Again, the following research questions guided this study: (1) how did participating in an intensive course redesign intervention influence instructors' teaching effectiveness in the online environment? and (2) how did participating in the training influence instructors' beliefs or attitudes about online teaching?

These are important questions to consider because, although there is a strong knowledge base in the topics of instructor professional development as well as online education, relatively little remains known about its effectiveness and the lasting impact of the training provided to online instructors. In order to address these issues and to provide the appropriate context for the present study, this chapter discusses the literature as it pertains to five key assertions that support a need for this research. First, educational development and teacher training can influence teacher effectiveness. Second, adequate training is important *specifically* for online educators, particularly because this delivery method of teaching is very different than face-to-face instruction. Third, instructors need and benefit from both the pedagogical and technological expertise in the online environment that educational development training provides. Fourth,

teaching online requires a different skillset than does teaching face-to-face. Fifth, multiple approaches to training may be effective in preparing instructors for online teaching.

Educational Development Impacts Instructors

Some research has suggested that high-quality educational development can have direct impacts not only on an individual's beliefs about teaching, but can affect specific practices and overall effectiveness of one's teaching (Cole et al., 2004; Daly, 2011; Knight, Carrese, & Wright, 2007; Steinert et al., 2006). Studies investigating the impact of educational development for online instructors have typically focused on one of two broad categories of impact: (1) changes in beliefs, confidence, and attitudes toward online instruction, and (2) the impact of professional development and its effect on one's teaching.

Cole, Barker, & Kolodner et al. (2004) carried out a research study on the extent to which an intensive faculty development program led instructors to elicit changes in their assumptions, skills, and real-life performance of reflective teaching practices. The program, held weekly for nine months and delivered between 1987 and 1996, guided participants through weekly sessions with facilitators for 3.5 hours. For this period, participants included 98 instructors, with a non-participant comparison group of 112 instructors. The researchers used a pre-post design to compare the groups' changes in self-assessment of skill (teaching effectiveness, professional effectiveness, teaching enjoyment, and student learning), as well as satisfaction with the program. Findings revealed statistically significant increases across eleven of twelve teaching and professional skills for participants, while nonparticipants increased significantly in only one of the twelve skills (lecturing). Additionally, while teaching enjoyment was maintained for participants, it decreased significantly for non-participants. These findings suggest that the

program met its objectives and that the instructors' beliefs and practices likely changed because of the program.

Researchers investigating the impact of training on teaching skills reached similar conclusions through several methodological approaches. For example, Knight, Carrese, and Wright (2007) carried out a qualitative assessment of the long-term impact of the same program studied by Cole et al. (2004). The researchers sent an open-ended questionnaire to 200 past participants who had completed the training. Based on these results, the researchers identified the four broad areas of impact that the program had on respondents. These included: (1) intrapersonal development (e.g., commitment to reflection, time management); (2) interpersonal development (e.g., healthier relationships, better listening skills, and conflict management skills); (3) teacher development (e.g., overall teaching ability, confidence, satisfaction, and continued use of topics from training); and (4) career development (e.g., the influence on their careers or benefits of faculty development).

Daly (2011), who also used a qualitative approach to understand the impact of faculty development initiatives, interviewed forty instructors at seven higher education institutions about their experiences in a faculty learning community and the ways it fostered their learning and growth as educators. The findings of this study revealed that learning among participants occurred during both individual and social processes, which were also linked to their interest in improving teaching and learning in their classes. That is, the faculty valued high levels of autonomy and the opportunity to customize their learning experience via self-directed learning to some extent; these experiences led to greater intrinsic motivation, which, in turn, led to continued efforts to improve their teaching to enhance their students' learning.

Steinert, Mann, Centeno, et al. (2006) conducted a systematic review of faculty development initiatives designed to improve instructors' teaching effectiveness. The researchers identified 53 studies using measures beyond faculty satisfaction, and sought to identify the effects of these educational development interventions on the knowledge, attitudes, and skills of instructors in medical education. The interventions studied included workshops, seminars, courses, and longitudinal programs, and the researchers identified five important, common features. First, satisfaction with interventions tended to be high among participating instructors. Second, participants typically reported positive changes in their attitudes toward teaching and faculty development. Third, instructors also reported changes in their knowledge of key educational principles. Fourth, participating instructors also commonly reported changes in their own behavior. Fifth, the features of the programs leading to changes in teaching effectiveness included experiential learning, the promotion of collegial relationships, feedback from facilitators, and the use of a variety of educational methods in the training.

While the studies in this section have demonstrated that educational development can and does have meaningful impacts on individuals' beliefs and teaching practices, there are several important points to note with regard to these findings. First, one must consider that several of these studies came from the field of medical education. Although these are indeed faculty development programs, more research exploring the impact on instructors from a wider range of disciplines is necessary. Second, as Knight, Carrese, and Wright (2007) noted, there is a shortage of longitudinal studies on the effects of faculty development programs; additionally, of those that are available, the majority are strictly quantitative. Steinert et al. (2006) also argued:

> "More rigorous designs and a greater use of qualitative and mixed methods are needed to capture the complexity of [faculty development] interventions. Newer methods… utilizing diverse data sources should be explored [and] the maintenance of change over time should also be considered" (p. 497).

The present study addressed the limitations noted in the aforementioned studies. Specifically, this study sought to address the gaps identified by Knight, Carrese, and Wright (2007) and Steinert et al. (2006), through a rigorous mixed methodological design utilizing multiple sources over an extended period, in addition to including a more diverse instructor population.

Training Programs Specifically for Online Teaching are Necessary

Given the context and purpose of the present study, it is important to consider the literature that demonstrates the usefulness of faculty development in this specific context. Several studies employing varying methodologies across multiple contexts have reached one consistent conclusion: training for online instruction is both necessary and important. (Kim & Bonk, 2006; Fish & Gill, 2009; Pankowski, 2008; Roman, Kelsey, & Lin, 2010; Rovai & Downy, 2010).

Kim and Bonk (2006) carried out a quantitative study on the current state and the future of teaching and learning online. Specifically, they sought feedback from experts in the field about the issues they observed, as well as what changes they predicted in relation to online instructor roles, student needs and expectations in online education, and the use of pedagogy and technology online. The researchers surveyed 562 instructors, instructional designers, and administrators across higher education and reached several important findings. First, the results of the survey revealed that two of the top three factors identified as having the greatest impact on

online program success were: (1) the effectiveness of the pedagogical practices of online instructors (22.9%), and (2) their familiarity and comfort with technology (15.3%); (the number one factor predicted was monetary support ranked third, at 24.7%).

It is worth noting that in Kim and Bonk's study, all three groups (instructors, instructional designers, and administrators) perceived pedagogical skills to be even *more* important than technological skills for online instruction. This is a particularly important finding since, according to Cahn (1978) and others, when compared to primary or secondary educators, college and university professors receive little or no training in educational theory and methods. Findings also revealed that the top two skills believed to be necessary for effective online teaching were course development (66.4%) and facilitation (65.8%) – both of which ranked higher than subject matter expertise (55.7%). Thus, if educators are not receiving teacher training during their graduate studies, it often becomes important to acquire these important skills through professional development.

Fish and Gill (2009) carried out a study at a southwestern public university in which they surveyed 87 instructors (and representative of all the institution's colleges) about their experiences and perceptions of online teaching. Among the respondents, about half (45%) had previously taught online while the rest (55%) had no experience with this method of instruction. Of those respondents who had previously taught online, many (79%) had received some form of training to do so. The authors found that instructors' personal experiences influenced their perceptions of online teaching; those with positive experiences believed that online teaching and learning were equivalent to face-to-face classrooms whereas those who had never taught online or had a prior negative experience tended to view it less favorably.

One critique of Fish and Gill's study is that the authors had a very broad target population of instructor respondents, thus providing a relatively small sample for each of the two groups (those with online teaching experience and those without). Although the researchers cast a wide net in surveying all instructors across five colleges, they received more responses from those who had never taught online than those who had. The authors did ask participants if they had received training, but they did not collect any information about training approaches or how the experiences and perceptions of online teaching differed among instructors who received different types of training. The only conclusion that the authors drew about the impact of training was to state that, "training, whether formal or informal, increased the likelihood that faculty would utilize online delivery" (Fish & Gill, 2009, p. 59). Yet, this relates to the problem raised in chapter one with regard to accreditation, review, and training: simply noting whether professional development or training were present or took place provides little substantive information to those outside that particular context.

Two research studies of online instructor skill development through training utilized mixed methods designs. Pankowski (2008) collected data from 35 undergraduate math faculty members about how they learned to teach online. The researcher sent an online survey to all 35 faculty and conducted follow-up conversations with 14 of them about their experiences. Pankowski found that, although about 75% of the instructors had received technology training on how to use the course management system (e.g., Blackboard, D2L, or WebCT), only about 33% received any sort of pedagogical training. Interestingly, 60% of the respondents reported they would have benefitted from training in facilitation skills.

Roman, Kelsey, and Lin (2010), who explored the topic of online instructor skill development as well, sought to identify the training content and methods of delivery that were most useful and beneficial to participants. Their study focused on two sections of a six-week intensive course designed to prepare 40 faculty for teaching online at a large land grant university (with 20 participants in each section). The training program the authors studied was an immersive online course for instructors that focused on (a) distant learner behaviors and communication practices, (b) the development of effective online teaching practices, and (c) classroom management strategies. Data collected for this study included a survey of participants about their experiences in the training program, as well as qualitative analysis of the weekly written reflections about their teaching and training experiences, previously uploaded to the training course site. Findings revealed that approximately three-quarters of instructors (a) found the training to be useful, (b) believed both their technological and pedagogical skills for teaching online improved because of the training, and (c) felt more comfortable teaching online as a result of the training. However, participants were less satisfied with the fact that the training was delivered in the middle of the semester, as it did not give them time to apply what they learned soon enough. The authors concluded, "The importance of technical and pedagogical support for online instructors cannot be overstated" (Roman, Kelsey, & Lin, 2010, sec. 12 para. 1), and suggested that future research investigate methods and forms of training programs used for online instructors.

In a participatory, phenomenological study conducted at a comprehensive college located in New York, Benton (2011) studied the experiences of faculty transitioning from fully face-to-face to online teaching (in this case, hybrid or fully online asynchronous courses). The authors

focused on what was necessary to be successful in this teaching format and what support was available and utilized by the instructors. Specifically, Benton collected three sources of data from herself, students, and eight fellow instructors. Benton's sources of data included: (1) two years of the author's personal journaling on practical and procedural events in her own teaching; (2) confidential comments from students in the course submitted in an electronic drop-box; and (3) a series of interviews with eight other instructors about their experiences in learning to teach online.

Findings from Benton's study revealed all participants perceived the design of and preparation for an online course to be "intense and complicated" (p. 93); this pertained not only to the typical course updating, but also to making the content accessible, readable, and with links to all of the appropriate electronic resources. Only five students provided feedback in this study, but they revealed that it was their first experience with online learning as well. These students, along with the instructors who were teaching online for the first time, remained enthusiastic about the possibilities and planned to try it again in the future. Lastly, seven of the eight interviewees reported that they particularly struggled with mastering the required technology skills, which may have resulted in the considerable time increase in planning and delivering the course their first time. Given these difficulties, faculty in this study agreed there needed to be some incentive to participate in training to put a course online voluntarily. Benton concluded that "faculty development – particularly in the form of released time or a salary stipend for developing an online course – is a critical feature for these kinds of programs" (p. 93).

There are three important points to note about the studies reviewed in this section. First, through various methodological approaches, the research reviewed here supports the notion that

there are differences between instructors who receive preparation for online training and those who do not. Second, these works demonstrated a need for additional research that collects data from a variety of sources that goes beyond self-report data (surveys, interviews, focus groups, etc.). The present study attempted to address this issue by merging self-report data with additional sources, such as course syllabi and student evaluations of teaching data, in order to compile a more complete picture of the impacts of training. Third, several of the reported studies made no mention about the type of training that instructors received. Rather, training was described as being provided/present (or not) and, thus, providing minimal information about the impacts of specific approaches to faculty training and preparation.

Teaching Online Requires a Unique Skillset

Recent decades demonstrated a shift in the instructor's role, having moved from teacher to facilitator. During the 1980s and early 1990s, a body of research emerged which focused on the changing roles of instructors in the traditional (face-to-face) classroom in higher education (Colbeck, 1995; Cooper, 1981; Hagen, 1982; Shelton, Lane, Waldhart, 1999; Tudor, 1993). However, it was King (1993) who first described this evolution as moving "from sage on the stage to guide on the side" (p. 30). King's description has proven to be particularly applicable to online/distance education (Bailey & Card, 2009).

As research on teaching effectiveness continued to emerge, a more thorough understanding of the evolving roles and competencies needed of online instructors developed, and demonstrated that a different skillset was required of online instructors than face-to-face instructors. In addition to the new roles needed by online instructors, a related body of literature has focused on the specific competencies needed as well. While the idea of roles focuses on a

broader persona comprised of multiple facets, competencies differ in that they are measurable, observable, task-related skills or actions. The development of online instructor competencies focuses on a set of established knowledge, abilities, and attitudes and practices that instructors should possess in order to teach effectively (Abdous, 2011); these competencies typically relate to the broader roles that online instructors fulfill (Abdulla, 2004; Easton, 2003; Thach, 1994; Williams, 2003).

Thach (1994) carried one of the first studies of online instructor roles and competencies out. For her dissertation, she targeted approximately one hundred experts in the field and carried out two rounds of questioning in order to identify specific roles and competencies for distance instructors across higher education in the United States and Canada. She identified eleven roles, of which the four most important were administrator, facilitator, instructional designer, and technology expert. She also identified ten competencies, which provided one of the earliest competency models in this line of research. These included interpersonal communication, ability to plan, collaboration skills, English proficiency, writing skills, organization, ability to provide quality feedback, knowledge of distance education, basic technology skills, and technology access knowledge.

Shortly thereafter, Berge (1995) undertook an extensive review of the existing literature on the topic of instructor-facilitated computer conferencing to identify and synthesize recommendations from the field; Berge's review has become one of the most widely cited works on topic of online instructor roles and competencies. Based on his review, and guided by Thach's earlier work, Berge proposed a condensed framework based on four key roles of effective online instructors. First, *the pedagogical role* revolves around the responsibilities of a facilitator, such

as asking questions. Second, *the social role* is essential for creating group cohesiveness and an overall friendly environment. Third, *the managerial role* deals with decision-making responsibilities and strong leadership. Last, *the technical role* involves familiarity with the available technology and the ability to make students comfortable with it.

Berge's framework synthesized the many roles and competencies identified in earlier works, and distilled them into the four broader headings noted above. In the twenty years since Thach and Berge's work, other studies have reached similar conclusions about the roles and competencies required of instructors in online teaching and learning environment. These studies and others, by employing various methodological approaches, confirmed both the existence and complexity of the roles Thatch and Berge previously described.

Using an approach similar to Thach's (1994) work, other scholars have utilized the Delphi Technique in the study of online roles and competencies. William's (2003) study employed of a panel of fifteen experts in distance education and used four rounds of questioning to gather their input. The first four (of thirteen) roles identified aligned with Berge's framework and included: administrator, instructor/facilitator, instructional designer, and technology expert. Additional roles emerged when splitting and expanding roles such as separating administrator into (a) administrative manager, and (b) change agent. Williams's experts also identified more than 50 competencies, with 30 related directly to previously identified roles, clustered around communication and interaction (8 competencies), management (9 competencies), learning and instruction (8 competencies), and technology (4 competencies), with data analysis skills (1 competency) considered a miscellaneous (but necessary) skill.

Abdulla (2004) took a different approach to investigating instructor roles by surveying 140 students attending an institution in Florida, with the goal of ranking (by importance) roles and competencies derived from the literature. Abdulla confirmed the existence of Berge's four roles (managerial, technical, social, and pedagogical - which Abdulla referred to as intellectual). Abdulla also identified ten key competencies for new online instructors consistent with the earlier work of thatch and Williams: (1) content knowledge, (2) facilitation; (3) organization; (4) planning; (5) English proficiency; (6) presentation; (7) interpersonal communication; (8) learning styles and theory; (9) teaching strategies; and (10) skills with internet tools.

Like Thach and Williams, Baile (2011) also used a modified Delphi approach; the key difference was that the researcher provided a predetermined list of twenty competencies (based on the work of Thach, Williams, and Abdulla) to participants during the first round. During the three rounds, Baile's objective was to identify the most important competencies of online instructors. Participants in Baile's study included thirteen online faculty members and ten online students at a single university. The results showed a consensus among faculty and students about the most important instructional competencies required of online faculty, which included content knowledge, feedback skills, interpersonal communication skills, organizational skills, knowledge of distance learning, presentation abilities, collaborative learning skills, English proficiency, familiarity with learning styles and theory, and skills using internet tools. Baile's findings of this study were consistent with the findings of earlier studies (Baile, 2011; Thach, 1994; Williams, 2003).

Liu, Bonk, Magjuka, Lee, and Su (2005) investigated Berge's (1995) framework by studying a successful online MBA program at a Midwestern university. In this exploratory case

study, the researchers sought to understand instructors' perceptions of Berge's roles and any challenges faced in fulfilling them. The researchers used semi-structured interviews with 28 faculty, which included questions designed around Berge's four online instructor roles. Additionally, the team used an existing data source, a 65-item quantitative (Likert scale) survey used in an earlier evaluation of the program, for comparison. The researchers categorized eighteen of the survey items as aligning with the four broad roles previously identified. Beyond these dimensions, however, Liu et al. separated these roles into sub-roles based on the triangulation conducted between the survey and interview data. For example, the pedagogical dimension was separated into course designer, profession-inspirer, feedback-giver, and interaction facilitator. Likewise, the technical dimension was separated into technical coordinator and media designer. In all, the researchers identified ten specific roles aligned across Berge's four dimensions.

Though Coppola, Hiltz and Rotter (2001) did not use Berge's framework as a guide, they too investigated the roles enacted by online instructors through a series of semi-structured interviews with twenty faculty across four broad disciplinary areas (Information Science, Management, Electric and Computer Engineering, and Humanities and Social Science). During the interviews, the authors examined how instructors' cognitive processes changed when moving from face to face to online instruction (and thus from oral to computer-mediated communication). The researchers found that online instructors demonstrated affective and cognitive roles, as well as an overall managerial role. The *affective* role deals with instructor behaviors related to enhancing student relationships with others in the course, the instructor, and the overall classroom environment. Conversely, the *cognitive* role deals with cognitive and

mental processes, learning, problem solving skills, and memory. The researchers also found that, ultimately, role changes to the affective, cognitive, and managerial aspects of teaching (which the authors refer to as a "persona") must occur when instructor changes the mode of teaching (p. 9).

Carril, Sanmamed, & Selles (2013) carried out an additional and important contribution to the knowledge of online instructor roles and competencies. The authors of this study were particularly interested in how to use this information to build a framework for teaching and training initiatives in higher education. In this study, the researchers first distilled 26 key roles of online instructors identified by Berge (1995), Coppola et al. (2002), Thatch & Murphy (1995), Williams (2003), and others, and reached the same conclusion regarding the importance of the key roles previously identified: pedagogical, managerial, and technological (in additional to other highly-important roles such as organizer and facilitator). However, the authors then surveyed 166 faculty of varied teaching experience employed at a public doctoral-granting university. The purpose of the survey was first to identify faculty interest in training programs and second to identify faculty members' self-reported pedagogical competencies. The findings revealed that, overall, faculty interest in training to develop online teaching skills was high. Regarding their competencies, the score of highest interest pertained to the development of course content. Additionally, with regard to each pedagogical competency, the instructors' self-reported training needs exceeded their reported levels of proficiency. When investigating these findings further, the researchers found no significant differences among the respondents with regard to discipline, employment status, or years of teaching experience, that regardless of the

instructor's teaching experience, they indicated a need to develop skills and could identify the areas of pedagogical competencies in which they were lacking.

The works outlined in this section have served to demonstrate two important points about changing roles and competencies as they pertain to online instructor effectiveness. First, research findings continue to support King's (1993) earlier assertion that instructors were indeed moving away from a 'sage on the stage' to a 'guide on the side' approach to teaching, particularly in the online environment. Second, the literature reviewed in this section has demonstrated that online instructors are taking on a growing number of new roles and have had to develop new competencies that pertain specifically to how to lead a course and interact with students online. To be sure, research employing a range of methodological approaches has shown that instructors do require a change in both their roles and teaching competencies when moving from face-to-face to online instruction. However, just because online instructors need to acquire new roles and competencies online, the question of balance, with regard to the pedagogical and technological expertise needed, continues to be an important area of study related to online teaching.

Online Instructors Need Pedagogical and Technological Expertise

The importance of effective use of both technology and pedagogy in the online environment, in addition to an instructor's content knowledge, is well documented in the literature. Brinthaupt, Fisher, Garderner et al. (2011) pointed out that, despite the frequency of research and discussion in the literature about best practices in online teaching and learning, the majority of this work has focused on using specific tools or techniques: "most of the literature deals with the 'science' of online teaching rather than the 'art' of online teaching" (para. 7). However, Koehler and Mishra (2005) argued, "It is becoming increasingly clear that merely

introducing technology to the educational process is not enough to ensure technology integration since technology alone does not lead to change" (p. 132). Some researchers have expanded on the distinction between the two by noting the differences between a “technology-driven” approach and one that is “pedagogy-driven” (Brinthaupt et al., 2011; Clark-Ibanez & Scott, 2008; Colpaert, 2006; Fish & Wickersham, 2009; Snyder, 2009).

A technology-driven approach occurs when an instructor pays less attention to how a specific technology might bolster the learning and teaching goals, and more to the integration of technological tools for their own sake. Snyder (2009) pointed out that these educators “may select a particular tool because it is available to them, or use an instructional method...because it is the method with which they are the most familiar; however, they may not have a clear understanding of how the tool or method supports a particular type of content or instruction” (p. 48). Conversely, a pedagogy-driven approach is more “rigid and principled,” and begins with identifying what is necessary from a teaching and learning perspective in a given context, identifies the best method, and then identifies the available technology to make that possible (Colpaert, 2006).

While technology training is frequently available to online instructors at many institutions, some research has suggested that the pedagogical training component may be insufficient or non-existent in some cases (Bailey & Card, 2009; Morris & Finnegan, 2008; Ertmer & Ottenbreit-Leftwich, 2010). In recent years, there has been increased emphasis on the importance of *integrating* both pedagogical and technological knowledge and the relationship between to two, rather than treating them as separate skillsets (Bailey & Card, 2009; Ertmer & Ottenbreit-Leftwich, 2010; Georgina & Hosford, 2009).

In a phenomenological study of fifteen award-winning online instructors across one state, Bailey and Card (2009) sought to determine what these individuals perceive to be the most effective pedagogical practices based on their own experiences. Through a series of one-on-one interviews with these instructors, the authors identified eight key practices: fostering relationships, engagement, timeliness, communication, organization, technology, flexibility, and high expectations. Specifically, with regard to technology, the researchers found that the instructors "advocated the effective utilization of technology as part of effective practices for both online and face-to-face courses." Based on the findings of this study, Bailey and Card discussed the importance of adapting to new technological tools, and, based on information shared by the participants, urged administrators to "consider providing more pedagogical training and support to instructors who teach online" (p. 155).

Georgina and Hosford (2009) investigated this relationship by studying the ways in which technology training and literacy may influence instructor pedagogies. The researchers, who surveyed 236 instructors across fifteen peer institutions about their online teaching experiences, found a significant relationship between instructors' technology literacy and pedagogies utilized in course design and delivery. As the authors noted, these findings suggested that those with greater technology literacy might be more willing to integrate technology into their courses for pedagogical reasons, thus following a pedagogically driven design. The researchers also reported that 70% of respondents agreed or strongly agreed that it is the responsibility of the university to train faculty in technology for online teaching. The findings of Georgina and Hosford's study support two important conclusions in the context of this literature review. First, the results highlight the existence and importance of the relationship between

pedagogical and technological skills for online instructors. Second, the findings further support the assertion that instructors do need training for teaching online.

Based on a review of the literature on teacher change, Ertmer and Ottenbreit-Leftwich (2010) examined the integration of technology in an effort to identify what enabled instructors to enact meaningful pedagogical tools and changes. Specifically, the researchers investigated individual teacher change to identify "the characteristics...of teachers that enable them to leverage information resources… as meaningful pedagogical tools" (p. 258). The authors reached four important findings. First, they found that simply knowing *how* to use technology was not enough; rather, effective pedagogical and technological integration necessitated an expansion of knowledge with regard to planning, implementation, and evaluation. Second, the authors found that self-efficacy and confidence were important for effective integration; participating in activities such as professional development programs instructors to build the confidence they needed. Third, pedagogical beliefs influence technological integration in two ways: (a) when instructors believed that learning the tool was valuable to their teaching, they were more likely to learn it and continue to use it, and (b) instructors who held primarily constructivist beliefs were more likely to implement higher-level, student-centered technology than those who held beliefs that are more traditional.

Expansion and Clarification via TPACK

A growing body of scholarly work has investigated the integration of technology and pedagogy in terms of the Technological Pedagogical Content Knowledge (TPACK) model (Ashe & Bibi, 2011; Benson & Ward, 2013; Doering, Veletsianos, Scharber, & Miller, 2009; Koehler & Mishra, 2005; Koehler, Mishra, Hershey, & Peruski, 2004; Koehler, Mishra, & Yahya, 2007;

Rienties, Brouwer, & Lygo-Baker, 2013; Stover & Veres, 2013). Again, this framework emphasizes pedagogical and technological knowledge alongside content knowledge, as discussed in chapter one. The research outlined in this section highlights studies that have used the TPACK framework to examine the overlapping relationships that exist between knowledge of technology, pedagogy, and content.

Koehler and Mishra (2005), for example, investigated participants' learning during a faculty development course in which teams of instructors and graduate students worked together to create an online graduate course that would be taught as part of a master's program in education at the researchers' university. Specifically, Koehler and Mishra designed a survey intended to collect information on perceptions of the learning process, evolution of thinking about online education, and evolution in knowledge at the intersection of technological, pedagogical, and content knowledge that occurred in the instructors and graduate students who enrolled in the training. In all, 17 participants (4 faculty and 13 graduate students) completed online surveys during weeks 1, 4, 8, and 13 of the course. The researchers compared the results for weeks 4 and 13 in order to identify changes that occurred because of the training course. Findings revealed initial discomfort in the participants' thinking about and use of technological and pedagogical integration online, which was later replaced by a sense of accomplishment. Another change that occurred from weeks 4 to 13 was that respondents initially saw few differences between face-to-face and online teaching, but later concluded that online teaching required a change in both content and pedagogy. Lastly, over the course of the nine weeks, participants reported changes in their own thinking about content, pedagogy, and technology, and could better recognize their own skill development.

A 2007 study by Koehler, Mishra and Yahya was designed to trace the development of teacher knowledge in the same design course studied by Mishra and Koehler (2005) (described above), but was carried out over fifteen weeks during a different semester. In this study, the researchers were interested in tracking how the 6 instructors and 18 students who enrolled in the training course learned the integration of technology, pedagogy, and content as they designed an online course. Researchers collected data from four sources: notes taken from discussion groups, emails between group members, group notes and artifacts, and the same self-progress surveys used by Koehler and Mishra (2005). Research data were coded along all intersections of technology, pedagogy, and content (e.g., T, P, C, TP, TC, TPC, and TPACK, which was described in more detail in chapter one). Findings from both the survey and qualitative coding showed that both 'teams' evolved over time with regard to their learning and roles, suggesting that TPACK is a "multigenerational process" that requires time and guidance to understand the intersections that take place between technology, pedagogy, and course content.

In a study by Benson and Ward (2013), the authors used the TPACK model as framework for evaluating teacher expertise in a higher education context and contributing to the growing body of work that applies this framework in the study of faculty. Specifically, Benson and Ward were interested in understanding how the model manifests itself in practice and identifying the factors that explain variation in the balanced depiction of the model (see Figure 2). The authors studied three experienced post-secondary online teachers and their courses by conducting in depth interviews and by acting as observers in the course. In the course, the researchers monitored four key aspects: the course syllabi, news (announcements) instructional modules, and the discussion board. By using thematic content analysis of their data (and by applying the

TPACK components as a priori coding categories, the authors reached two key findings. First, they found that, the instructors had differing levels of knowledge in the three areas, although content knowledge was consistently among their most substantial areas of knowledge. Second, even when instructors possess knowledge in the three areas, "the development of knowledge overlap depends on many factors and is a different process for each instructor" (p. 168).

Rienties, Brouwer, and Lygo-Baker (2012) also carried out a study of TPACK application in higher education involving instructors teaching at nine institutions in the Netherlands. In this study, however, the authors were interested in the effects of professional development on the beliefs and intentions faculty hold toward learning facilitation and technology. The training program focused primarily on collaborative knowledge building, web 2.0 tools, measuring knowledge and understanding, and supervising online students. The authors collected pre and post-training surveys from 33 participants who completed the program by using the TPACK model and the Teacher Beliefs and Intentions questionnaire to develop their survey. The researchers found that TPACK scores were higher overall on the post-training assessment and showed a significant improvement in participants' self-reported perceived integration skills. Another key finding from Rienties, Brouwer, and Lygo-Baker's study was that completion of the training program did not lead to change in the participants' beliefs about or intentions of implementing a more student-centered approach to learning.

Doering, Veletsianos, Scharber, and Miller (2009) applied the TPACK framework to the study of teachers' metacognitive awareness (of the three knowledge types) to better understand the changes experienced by the teachers following their participation in a professional development program for online learning. Eight experienced middle and high school geography

teachers participated in this mixed methods study by completing TPACK self-assessment questionnaires (pre and post-participation) and by engaging in semi-structured interviews with the researchers. Doering et al. found that the teachers perceived a generally positive change in their technological, pedagogical, and content knowledge following the training. However, the instructors reported in both the surveys and interviews that they believed their technological knowledge improved the most, while three actually reported a decline in their pedagogical knowledge.

Stover and Veres (2013) also conducted research on the TPACK framework in higher education, but they were interested in the framework as a way for understanding participant learning in the various knowledge areas, since "the majority of college and universities have bifurcated professional development programs that address these types of knowledge separately" (p. 94). In their study, eleven graduate students in an online course (Instructional Design in Online Learning), offered at a public university in the Midwest, were asked to self-report their learning in technology, pedagogy, content, and technology-pedagogy-content (TPACK) throughout the course by a survey given prior to and after the course ended. Using a paired t-test of the scores, the researchers found significant improvements across TPACK learning overall, but found that the participants rated themselves lower on technology learning than they did on the pedagogical and content knowledge areas.

The studies outlined in this section not only build upon the notion that online teaching requires a unique skillset, but that it also requires the integration of new kinds of knowledge (i.e., technology and pedagogy). To be effective online teachers, instructors must think about new ways to teach their content to students over a different medium of communication. The research

reviewed here further served to demonstrate that pedagogy and technology are not separate skills that one learns in a day; rather, they must be fully integrated for effective online teaching.

Approaches to Preparing Online Instructors

It is important to note that, depending on the both the size and/or geographic location of an institution, the availability of educational development and training opportunities for teaching online may vary considerably (Diaz, Garrett, & Kinley et al., 2009). In a large quantitative study of the major trends in online learning throughout the U.S., Allen and Seaman (2011) collected survey responses from more than 2,500 colleges and universities on a variety of topics related to online education, including attitudes and perceptions of online learning, availability of training for faculty, and institutional enrollment trends. The authors reported that 94% of institutions offered some form of training and support; however, they noted, "there is no single approach being taken by institutions in providing training for their teaching faculty" (p. 6). As reported in the literature, the major approaches used in the preparation of higher education faculty to teach online include orientation programs, technology training, mentoring, coaching, learning communities, individual consultation, workshops, courses and certificate programs, as well as other piecemeal approaches such as online papers or brief instructional videos.

Orientation Programs

It has become increasingly common for colleges and universities to require instructors who teach online for the first time to complete an orientation training session. These orientations, which typically last from a few days to several weeks are often led through the learning management system (LMS) (e.g., Blackboard, Moodle, or Edmodo) by experienced online faculty members, and are designed to provide instructors with an overview of the institution, the

LMS, and best (pedagogical) teaching practices. Orientation training is generally broad, and provides instructors with a breadth of knowledge about the institution and its resources, as opposed to providing depth in any particular area. It is certainly the case, however, that institutions offer orientation programs in conjunction with other faculty training opportunities, such as technological training, peer mentors or coaches, face-to-face or online workshop sessions, intensive training courses or certificate programs, and other synchronous and asynchronous resources.

Technology Training

Many institutions that offer online courses and programs have made technical training readily available to their instructors. Technology training provides support on learning how to use specific tools teaching online, such as how to video record a lecture. Typically, online instructors have access to training and support for their institution's course/learning management systems (CMSs/LMSs), as well as other institutionally supported technologies such as iPads, Zoom Conferencing, or Camtasia, which of course vary by institution. While technological knowledge is necessary for effective online teaching, Ertmer and Ottenbreit-Leftwich (2010) found that, due to rapid changes in available technologies, instructors often find themselves being "perpetual novices" since they will never have complete knowledge about [all] available digital tools (p. 261).

Mentoring, Coaching, & Learning Communities

Pairing new online instructors with an experienced online teachers acting as mentors or coaches is another common approach for preparing faculty. Both mentors and coaches can reinforce and clarify information that instructors receive through other sources such as

orientation or web-training sessions, and can provide guidance on technology, institutional policies, and services (Angulo & De la Rosa, 2006; Sands, Parson, & Duane, 1991; Mandernach et al., 2005). An alternative, but similar, approach to peer mentoring and coaching programs is the faculty learning community (FLC). Cox (2004) defined this as "a group of interdisciplinary faculty who engage in an active, collaborative program," which focuses on enhancing teaching and learning and provides opportunities to participate in various meetings and activities (p. 8). Unlike other approaches to faculty development, learning communities place responsibility on the faculty member rather than a faculty developer or trainer for leading the session on a particular topic.

Individual Consultation

In a consultation approach to online preparation, instructors typically make an appointment with an educational developer (i.e., instructional designer, educational consultant, instructional technologist, etc.) to review questions, issues, topics, or challenges specific to that instructor and his or her course. Individual consultation differs from other collaborative approaches in that the assistance may be as limited as a single meeting, whereas mentoring, coaching, and learning communities promote an ongoing relationship between the individuals involved. Also, unlike a mentor within the same department, an instructional consultant "may know little about the subject matter the faculty teach, [but] is trained to observe and reflect on the pedagogical actions and decisions that take place in instructors' courses" (Lenze, 1996, p. 2). In the online environment, consultations may focus on teaching-related issues, those that are strictly technological, or both.

Workshops

Single workshops and workshop series represent another approach to instructing faculty in online teaching and learning. This method of training instructors to teach online includes single-topic sessions that address teaching and learning issues. Workshops may last from as little as one hour to as much as a full work day; they may be short sessions arranged by increasing difficulty over a given time period, or may include a collection of topics covered over a given period.

Courses and Certificate Programs

Two common, similar methods used by higher education institutions to prepare instructors to teach online include courses and certificate programs. Both approaches cover a variety of topics related to online teaching, and typically include both technological and pedagogical training. Courses and certificate programs are commonly offered face-to-face or in blended/hybrid formats, although another approach comes in the form of self-paced, asynchronous courses that may or may not have a live facilitator. Faculty developers have taken various approaches to certification and training courses. In a commentary piece about the preparation of online instructors, Lorenzetti (2012b) described three versions of certificate programs commonly used for online instructors: (1) *course facilitation,* (2) *course revision,* and (3) *course development*. In the first approach, instructors learn to facilitate an online course that they did not develop; the content focuses more on the kinds of activities that engage students, communication strategies, and grading practices. The second approach guides instructors through a process of moving a face-to-face course they developed into an online format. In the third

approach, instructors learn to develop an online course that they plan to teach in the future. To be sure, courses and certifications vary widely in terms of length and content.

Additional Training Options

Lastly, some institutions provide archived materials as a training resource for their online instructors. These resources typically include papers, bibliographies, or links to articles related to online instruction. Other resources may include videos, profiles of faculty recognized for teaching excellence (highlighting their effective practices), or links to external training and resources. Much like orientation programs, these materials may be available as supplemental information to a variety of other resources and training options. While these approaches demonstrate the various ways in which online instructors become prepared to teach online, one should note that most institutions use a combination of services to assist their faculty.

Writing on the various approaches to training, Kyei-Blankson (2009) stated, "Training faculty to teach in online environments necessitates investigation and reflection... [since] few discussions have been directed at the issues of preparing educators for online instruction directly" (p. 2). Indeed, much of the research available regarding these types of training approaches addresses topics limited to: (1) the design and/or implementation of the program or training approach; (2) changes in instructor beliefs, attitudes, and confidence about online teaching; (3) participation satisfaction with the training; or (4) how it compared to another approach. Through a search of the literature, however, one finds that studies investigating individual approaches and the direct impact on instructor's teaching practices in the online environment are noticeably absent.

Collaborative Learning is Favored, No Matter the Training Approach

As previously demonstrated, there is tremendous variation in the ways instructors develop their teaching skills. However, it has been consistently established in a variety of contexts that high levels of learner interaction has many positive effects not only on the development of knowledge and skill building, but also on one's satisfaction with and attitudes toward a learning experiences overall (Holmberg, 1983; Jung, Choi, Lim, & Leem, 2002; Steinert, Mann, Centeno, et al., 2006; Tsay & Brady; 2010).

Jung, Choi, Lim, and Leem (2002) investigated three types of interaction (academic, collaborative, and social) on learning, satisfaction, participation, and attitudes toward online learning at university in Korea. Participants included 124 students across three online courses which all contained five modules. The students completed a pre-course survey, and were asked to spend 30-60 minutes each day in the course. Each course focused on academic interaction (the control group), and collaborative and social interactions for the two treatment groups. Students were surveyed again at the end of the course and their achievement scores for each of the courses were calculated. The researchers found a significant difference in satisfaction and found their score related to the amount of active interaction they had with other students in the course (which was even more important that interaction with the instructor). There were also significant differences in learning achievement: social interaction students performed better than those without it. The researchers found no statistically significant differences in how the three groups viewed online learning, however.

Steinert, Mann, Centeno, et al. (2006) reviewed faculty development initiatives designed to improve participants' teaching effectiveness. The authors identified 53 studies using non-

satisfaction measures, and sought to identify the effects of these educational development interventions on the knowledge, attitudes, and skills of instructors in medical education. The various program types they reviewed included workshops, seminars, courses, and longitudinal programs, and the researchers found a key common feature: the programs resulting in the greatest changes in teaching effectiveness included experiential learning, the promotion of collegial relationships, and feedback from facilitators.

Tsay and Brady (2010) investigated the effects of cooperative learning and communication-focused pedagogy on performance. The researchers carried out a case study involving 24 students enrolled in a communications course at a large Northwestern university, and wanted to know what effects cooperative learning had on academic achievement. The researchers focused on seven components based on the literature, which included group processing, motivation, competition, dependability, accountability, interactivity, and the use of collaborative skills. Together, these components made up the independent variable, cooperative learning. The dependent variable was academic performance, which was measured by individual assessment scores, group assessment scores, and the students' final course grades. Based on these components, the researchers surveyed students with Likert-scale items before the semester started about their attitudes toward the seven components of cooperative learning. At the end of the semester, the researchers used bivariate correlations between cooperative learning and academic performance and found significant positive correlations. Tsay & Brady also found that the students who were heavy participants in group learning also performed better outside of the group setting as well.

Literature Summary and Existing Gaps

Research and tracking in higher education shows that enrollment and participation in online classes grew faster than ever before during the last forty years (Altback, Reisberg, & Rumbley, 2009; Guri-Rosenblit, Sebkova, & Teichler, 2007) and that, in the last decade alone, online education experienced faster growth than traditional education (Allen, Seaman, Lederman, & Jaschik, 2012; Allen and Seaman, 2013). Amid these changes, colleges and universities continue to offer more courses and programs online (Kampov-Polevoi, 2010; Picciano, 2006). Not surprisingly, an important issue has been the professional development, training, and support of online instructors.

Effective teaching, particularly online, is both a 'science' and an 'art' (Brinthaupt et al., 2011, para 7), and a growing body of scholarly work has contributed to what is currently known about the impacts of educational development on both face-to-face and online instructors. For example, high quality training has been found to directly impact the quality of one's teaching (Cole et al., 2004; Knight, Carrese, & Wright, 2007; Steinert et al., 2006). Additionally, training can also serve to address common concerns or misconceptions instructors hold about online teaching and learning (Allen & Seaman, 2013; Fish & Gill, 2009; Kim & Bonk, 2006; Roman, Kelsey, & Lin, 2010). There is also a strong knowledge base about the unique skillset required of online instructors in terms of roles and competencies (Abdulla, 2004; Baile, 2011; Coppola, Hiltz, & Rotter, 2001; Williams, 2000). Further, research has demonstrated the necessity of infusing pedagogy and technology in this teaching environment (Brinthaupt et al. 2011; Clark-Ibanez & Scott, 2008; Colpaert, 2006; Fish & Wickersham, 2009).

Indeed, there is a large knowledge base for areas noted above, in addition to all that has been written about effective techniques, methods, and approaches to training and support of online instructors (Bailey & Card, 2009; Lackey, 2011; Lewis, 2006; Segrave, Holt, & Farmer, 2005; Young, 2006). However, little remains known about the impact of particular approaches to training, the comprehensiveness and effectiveness of much of the available training, or the extent to which the training impacts last or extend to future courses ("Distance Education," 2000; Morris & Finnegan, 2008; Seaman, 2009). The literature demonstrates a clear need to investigate the ways in which training programs impact online instructors with regard to their teaching effectiveness (Steinert et al., 2006).

Thus, the present study began to examine the relationship between one approach to training for online faculty and the ways in which the program influenced the participants' teaching effectiveness and attitudes toward online instruction. This was achieved by examining one program that was developed according to many of the principles outlined in this chapter, in order to determine the impacts on the instructors' online teaching effectiveness. The following chapter describes the approaches and methods for addressing this problem in the current study.

Chapter 3: Methods and Procedures

Overview

As described in chapters one and two, higher education institutions have experienced rapid and steady growth in online education during recent decades. As a result, colleges and universities continue to offer more online courses and programs. Researchers have demonstrated the need and importance of having quality faculty training and support available to online instructors. However, while there is a strong knowledge base regarding online education and online instructor faculty professional development, training, and support, the field knows relatively little about the effectiveness of different approaches to training and development or the lasting impact of this preparation. Therefore, the purpose of this study was to examine the relationship between one approach to training for online faculty and the ways in which the program influenced the participants' teaching effectiveness and attitudes toward online instruction. Again, the following research questions guided this study:

(1) How did participating in an intensive course redesign intervention influence instructors' teaching effectiveness in the online environment? and

(2) How did participating in the training influence instructors' beliefs or attitudes about online teaching?

This chapter details the methods and procedures used in this study, beginning with the research design, and going on to describe the research site and population, sources of data, and the processes for gathering and analyzing these data. This chapter also addresses the limitations of the study, including considerations related to the reliability and validity of the findings.

Research Design

This study employed a concurrent embedded mixed methods research design, as described by Creswell (2009) and Teddlie & Tashakkori (2009). In this design, both qualitative and quantitative methodologies are leveraged to address the research questions. Creswell (2009) noted that, in this particular approach, "the researcher collects both qualitative and quantitative data concurrently and then compares the two databases to determine if there is convergence, differences, or some combination" (p. 213). Creswell and Plano Clark (2011) expanded further on the notion of embedded research as one of the six major design types that involves the collection and analysis of both qualitative and quantitative data within a traditional design, which enhances the overall strategy. The study reported here was *guided by* qualitative research methods and *supported by* quantitative methods. The concurrent mixed method strategy described here also fits into Morse's (2003) typologies of mixed methods research, specifically following the "QUAL + quan" design, which indicates a study that is mainly qualitatively driven but carried out simultaneously or concurrently with the quantitative component (Morse, 2003, p. 198).

"QUAL + quan"

In a discussion of mixed methods research designs, Teddlie and Tashakkori (2009) suggested that the qualitative research aspect is often exploratory in that it helps to generate information about a phenomenon's unknown aspects. In this study, the relationship between one's participation in an intensive training program and the impact on his or her future online teaching remains unknown, and this study plans to describe that in detail. Teddlie and Tashakkori also note that qualitative research may follow one of five traditions: grounded theory,

critical theory, phenomenology, biography, or case study. Among the various qualitative designs available, case study involves in-depth analysis of an unknown phenomenon. While the authors point out case studies may also include quantitative data that relates to the particular case, it is also quite common in mixed methods research to use the qualitative component as the overall design and augment the findings with a quantitative component.

The qualitative portion of this research was modeled after a case study, which Baxter and Jack (2008) described in three important steps. First, it is necessary to determine the case or unit of analysis, which, in this study, is how the training provided to participating instructors influenced their teaching effectiveness in the online environment. Second, Baxter and Jack noted the importance of determining the particular *type* of case study one intends to use. Yin (2003) identified three broad areas of case study: explanatory, exploratory, and descriptive. Yin's definition for explanatory case study applied to the present study, which one would use to answer a question that tries to explain presumed causal links related to real-life interventions that are too complex for strictly survey or experimental research strategies alone. Once the researcher selects the type of case study, the third step is to determine whether a single or multiple case design is most appropriate. This study employed a single case study approach with embedded units, meaning that only one type of training program offered at one institution was studied in depth, but there were multiple units (participants) embedded in this particular case.

Because this study followed a QUAL + quan concurrent embedded mixed method research design, additional sources of quantitative data were used to support or disconfirm the qualitative findings of this investigation (Creswell & Plano Clark, 2011; Morgan, 1998). The quantitative component, which was a second strand of this research, was carried out separately in

terms of collection and analysis, but has been integrated in the presentation of the findings in the following chapter.

Research Site

The research site for this study was the campus on which the training program was designed and delivered. This particular institution is a large, high-research land grant university in the southeastern United States. During the 2014-2015 year, approximately 27,000 students were enrolled, of which 78% were undergraduate and 22% were graduate students. The university also employed approximately 1,500 full-time instructional faculty members across 13 colleges; of these faculty, just over half (54%) were tenured, 20% were tenure-track, and the remaining 26% were non-tenure track. In recent years, this institution, like many others, has moved in the direction of greater numbers of online course and program offerings. At the time of this study, the university offered a growing selection of fully-online programs, which included 1 undergraduate, 15 master's, 1 post master's-level, 3 doctoral, and 5 graduate course credit certificate programs, in addition to an assortment of individual online courses across a variety of disciplines.

University Faculty Professional Development on Campus

As it currently operates, the institution supports two distinct groups of educational developers in support of both online and face-to-face teaching. The first is the Center for Teaching and Learning (CTL), which specializes in pedagogical training support; the second is the Center for Information Technology (CIT), which specializes in technological training and support for university instructors (the names for these centers have been changed to pseudonyms). While these entities are separate, there is indeed some overlap in responsibility

across the two units. For example, if an instructor visits the CTL for a pedagogical issue that incorporates technology, such as the use of a web-based course delivery site or classroom "clickers," the instructor would receive service initially in the CTL, but may ultimately receive a referral to the CIT for assistance. Likewise, instructors who visit the CIT for a tech-related issue (e.g., video recording a lecture or hosting a synchronous class meeting online) would also receive guidance on how to do this effectively (from a teaching perspective) in the particular course. In rare instances, a member of the CTL staff may be invited to join the consultation.

The CTL, housed under the Chief Academic Officer, was founded in 2009 and is made up of a staff of four full-time individuals (two administrators, a coordinator, and a support staff member), and five part-time individuals (two professors, two doctoral students, and one undergraduate assistant). Among its main services, the CTL offers a three-day teaching institute for new university faculty in the fall. Other key services include individual consultation for instruction and program assessment, a graduate teaching certification program, campus-wide and departmental workshops, seed grants for creative course redesigns, a faculty book club, an instructor library, and a growing selection of online resources including short papers, blogs, videos, and other self-directed materials for university instructors.

The Center for Information Technology, which reports to the Chief Information Officer for the university, is comprised of more than fifteen separate units. In the Support Unit, more than 20 full-time staff provide instructional and course delivery support through a variety of services. Examples of services include technology training workshops, a faculty fellows program (which involves a course release to work on enhancing teaching and learning in an academic

department), faculty learning communities, individual consultation services, grant programs for instructors, and an iPad loan program for classes of up to twenty students.

Overview of the Program

The training program of study was a joint effort of the CTL and the CIT, and received all funding from the Provost's Office. The program, which was offered for four consecutive summers (2011-2014), lasted approximately three weeks, was delivered in a hybrid-blended format (a mix of online and face-to-face sessions and assignments) and was available to selected university instructors interested in redesigning an existing face-to-face course into a hybrid, flipped, or online course. The purpose of the training was to help participants as they moved through the redesign process, while also demonstrating best teaching practices and innovative uses of technology.

Working together, staff from the two centers provided a series of highly interactive sessions on a variety of topics (Appendix A includes a sample schedule from 2013 of the training program). During each year of the program, full time staff and doctoral students employed by the CTL facilitated all of the sessions. For years two, three, and four, former instructor participants of the training returned to share progress and updates about the changes they made during an introductory session, providing tips and suggestions for the instructors enrolled in the program at that time.

Throughout the training program, instructor participants from all across campus learned course design elements, and prepared their new online course sites, syllabi, lesson plans, assignments, and assessments. Individuals who completed the program and met the requirement of producing the elements previously noted received a $2,500 stipend to fund their course

redesign process. During the four years of the program, nearly 100 university instructors participated. It is important to note that this particular program is worthy of study because the design of the training program followed research-based practices for this type of training; these principles were addressed briefly in the previous chapter. However, to highlight the ways in which these principles guided the program's development, a more complete description of the program is in Appendix B in Table A-1 which links key practices to the supporting literature.

Study Population

The population for this study included instructors who participated in the training program between 2011 and 2014 and who met five criteria. First, participants must have successfully completed all requirements of the training program, beginning with a completed application file that included materials for their face-to-face course, such as their course syllabi. Completed files also required that instructors delivered their course in its revised format, and that they had acceptable student evaluation of teaching data available. Second, instructors must have completed the training and all of its requirements for the program's online, flipped, or hybrid track. During the training program's first year (2011), a face-to-face course redesign track was available in addition to the online and hybrid options; therefore, the data for these six individuals were excluded. Similarly, four participants between years three and four attended the training program as grant recipients (another grant program) and were excluded they had different objectives for their course redesign. Third, instructors who no longer teach at the university were excluded from the sample due to (a) insufficient post-training data were available, and (b) inconsistent comparisons of courses across institutions. Two participants were identified as having since left the university. Fourth, graduate students were excluded from participation as

they had insufficient pre-training teaching knowledge and experience. After applying these established requirements, 42 instructors remained. The last requirement for inclusion was that the instructors provide their informed consent for inclusion of their work products in this study. As a result, the aforementioned parameters reduced the population of instructors for this study from 92 (2011, *n*= 24; 2012, *n*= 32; 2013, *n*= 24; and 2014, *n*= 12) to 28 (2011, *n*= 5; 2012, *n*= 11; 2013, *n*= 8; and 2014, *n*= 4). Table 2 provides a summary of the final participants' discipline, the level of the course redesigned, teaching rank, and program participation track for each year. For purposes of comparison and to illustrate the representativeness overall of the instructors included in the sample of total participants, Table 3 summarizes the same data for all 92 instructor participants.

Institutional Review Board Process

Before any data collection began, the researcher secured Institutional Review Board approval for all the work to be carried out during this research study; copies of (1) all researcher training and (2) IRB-related documents (e.g. study approval letter, recruitment email, and letter of informed consent) may be found in Appendix C and Appendix D, respectively. Although this study did not involve the collection of any new data from human subjects, informed consent was required for inclusion because non-public work samples and course documents served as the data sources.

Sources of Data and Analysis

This study involved the use of five existing data sources: (1) participant application narratives, (2) post-training program evaluation data; (3) pre and post-training course syllabi, (4) quantitative pre and post-training scores from the instructors' student evaluations of teaching,

Table 2

Program Participant Summary (Included in Study)

Training Program Year	**Discipline of Instructor**	**Course Level of Redesign**	**Teaching Rank of Instructor**	**Program Design Track**
2011: 5	Humanities: 5	100 Level: 5	Tenure-Track: 17	Flipped-Hybrid: 17
2012: 11	Social Science: 9	200 Level: 5		
2013: 8	STEM Fields: 6	300 Level: 7		Blended-Hybrid: 7
2014: 4	Professional: 4	400 Level: 6	Non-Tenure Track: 11	
	Agriculture: 4	500+ Level: 4		Fully Online: 4

Note: A total of 28 participants were included in this study

Table 3

Program Participant Summary (All Program Participants for Comparison)

Training Program Year	**Discipline of Instructor**	**Course Level of Redesign**	**Teaching Rank of Instructor**	**Program Design Track**
2011: 24	Humanities: 18	100 Level: 15	Tenure-Track: 55	Flipped-Hybrid: 34
2012: 32	Social Science: 37	200 Level: 14		
2013: 24	STEM Fields: 15	300 Level: 18		Blended-Hybrid: 23
2014: 12	Professional: 16	400 Level: 18	Non-Tenure Track: 37	
	Agriculture: 6	500+ Level: 27		Fully Online: 35

Note: 92 instructors completed the program

and (5) the results of an online survey distributed one year after the program ran its final year. Data were collected, aggregated, and analyzed for all participants who met the established criteria. Table A-2 in Appendix E shows a complete listings of the codes applied during qualitative data analysis.

Data Source 1: Participants' Descriptive Narratives

The first source of data utilized in this study was the application narrative submitted by each instructor prior to participating in the training program. Instructors submitted a written narrative that addressed four common questions: (a) reasons that the instructor wanted to participate, (b) information about the course that the instructor intended to design, (c) what each instructor hoped to learn about teaching online, and (d) specific outcomes they identified for their participation and in their course redesign. To analyze and report on these data, responses were moved into a spreadsheet that organized the participants' application narratives by application question to allow for consistent comparison of each of the four questions' responses in addition to the coding. Next, this spreadsheet was read multiple times before being transferred to Nvivo for coding and analysis. During the process of coding in Nvivo, several features and approaches were used to aid in the review and analysis of data. One such approach involved assigning "parent nodes" (larger umbrella terms) as well as "child nodes" (smaller, more focused codes). Figure 3 presents a visual map and description of the nodes applied to this source during the three of coding, and is described in greater detail below. Note in Figure 3 that each iteration was assigned a different color and that, as additional nodes were created and applied, these are shown by the shades of each color becoming lighter.

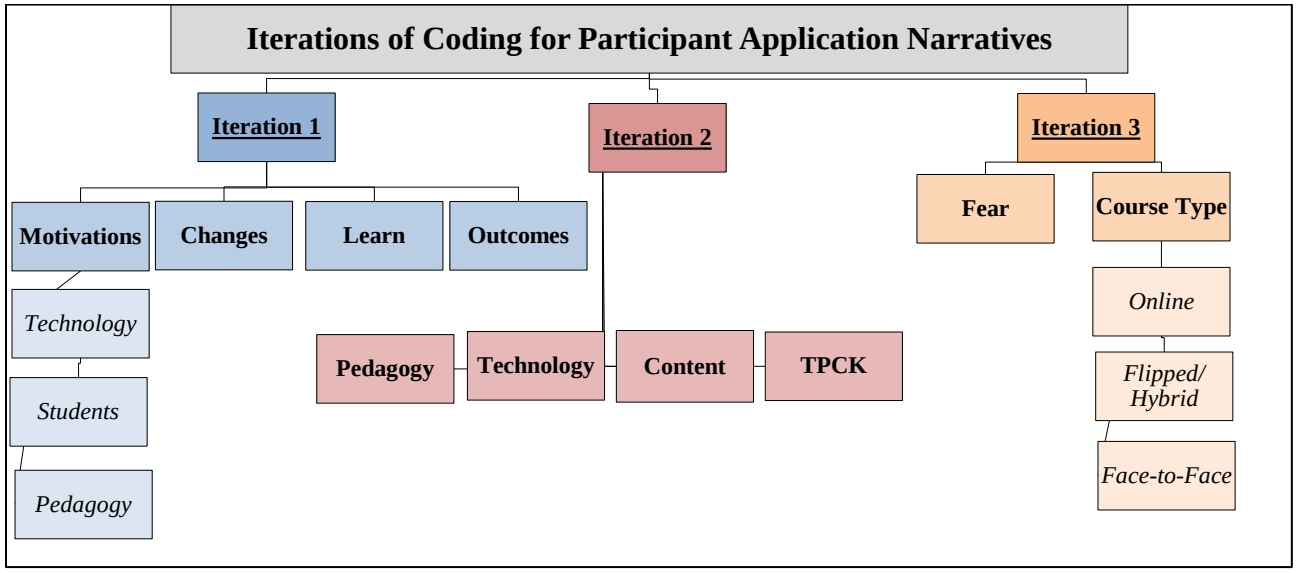

Figure 3: Iterations of Coding for Participant Application Narratives

The process for the first iteration of coding this data source was twofold. First, each statement was assigned a code based on the four questions using the following nodes: (a) motivations, (b) changes, (c) learn, and (d) outcomes. The purpose of this coding was to allow for easier comparison of each instructor's response to the four questions. It was necessary to subdivide the "motivations" node into four additional categories:

During the second iteration, codes were based on the TPACK model, with nodes created and applied for all instructor statements pertaining to: (a) pedagogy, (b) technology, and (c) content (as described in Koehler, Mishra, & Yahya, 2007, as well as in chapter one of this study). A fourth node, "TPCK," was also created for statements that combined two or more of the TPACK model's elements.

After the first two iterations of coding, two additional themes became evident, which resulted in the creation of additional nodes which were applied during a third iteration on this particular source.

The first of these two additional nodes was "fear," as multiple instructors included statements in their applications that reflected concern, apprehension, or reservations about the online teaching experience. The second additional node applied during this final iteration of coding on the application narratives was "course type," which was then subdivided into (a) online, (b) flipped/hybrid, and "face-to-face." The purpose of coding with these additional nodes was to organize and review all comments made by instructors in terms of a course delivery approach. Each statement or phrase from this particular data source was double-coded as being "pre-training," or a statement made by an instructor before he or she began the program. This

approach allowed for a holistic comparison of all pre-training comments against comments collected afterward.

Another feature of Nvivo used in the analysis of this, and subsequent, qualitative data sources was to check the identified themes against a word cloud. This software feature allows the user to generate a visual representation of the most commonly used words in a single data source or group of sources. Since each data source was analyzed separately, however, that was the approach used in Nvivo. Figure 4 illustrates a word cloud generated for the application narratives. Note that the most prominent word is "students," followed by other notable words such as "class," "online," "online," "teaching," and "learning." These words clearly align with the nodes and key themes that emerged in the data.

Data Source 2: Program Evaluation Feedback

The second data source was the existing program evaluation information collected at the end of each year's training, and included both quantitative and open-ended items designed to collect feedback from participants about their experiences and satisfaction with the training. While complete data sets were available for 2011-2013, data from 2014 was unavailable in the CTL's files. Appendix F contains a copy of the program evaluation questions. The reason for including this data source was that it was useful to know if participants *believed* the program met their needs and expectations and whether they perceived the information they learned to be useful and relevant to improving their teaching knowledge effectiveness.

Again, these evaluation forms contained both quantitative (Likert-scale) items and open ended (write-in questions). To analyze this data, all paper evaluation forms were scanned and subsequently converted into an editable electronic format. Next, all responses were moved into a

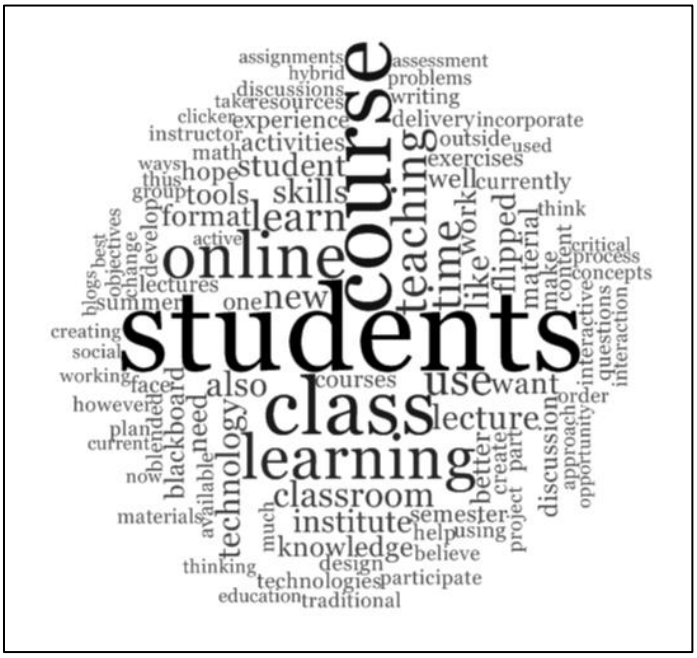

Figure 4: Nvivo Word Cloud Result for Application Narratives

spreadsheet for analysis, and were organized by (a) instructor participation year and (b) evaluation survey question. For this data source, both the analysis (below) and findings (in chapter 4) are presented first by quantitative program evaluation data and then by qualitative data.

Quantitative Data

Quantitative satisfaction data were cleaned by checking for accuracy and/or missing data and corrected; descriptive statistics were then generated. The same questions were asked each year of the program, which allowed for consistent organization and analysis of the responses. Additionally, all quantitative items were Likert-scale questions on a 1-5 scale (1= Strongly Disagree to 5= Strongly Agree). The four statements to which participants were asked to agree included: (1) the training was beneficial; (2) the training was well-organized; (3) the program was engaging; and (4) the program was informative. The only demographic item included in the program evaluation data was program year.

Qualitative Data

On each form, participants could also respond to three open-ended (write-in) questions which asked the instructors (a) what they liked the most about the training, (b) what could be improved about the training, and (c) what additional, general comments the instructors would like to share. All open-ended responses on the forms were transcribed into a single spreadsheet and organized by question. Data were coded similarly to the approach used in the analysis of the application narratives. This process was necessary so that codes would be searchable across multiple data sources in Nvivo. As was the case with each statement or phrase from the application narratives being double coded with “pre-training,” the same approach was used with

this data source as well. However, all data collected from the program evaluation were double-coded as being "post-training," to differentiate comments made by an instructor after he or she completed the program, along with any other code that applied to the particular statement. This approach allowed for a more thorough comparison of all post-training comments against those that were pre-training.

As was the case with the previous data source, three iterations of coding were carried out to ensure the most thorough analysis of the available text. During the first iteration, all instructor feedback was coded as being either positive, negative, or as a recommendation. Because feedback had been read multiple times prior to coding, it was evident that a fourth node was also needed in the first round, and that was "community." This node was created because many of the instructors spoke not of the program itself, but of the relationships they developed with both the facilitators of the program as well as the other participating instructors. While this would typically be perceived as a positive statement, it was not about the program itself, so it was not treated as a "child" node of positive statements. Although "community" was created as its own node, the relationship between the two is noted in Figure 5 by the blue arrow leading from "Positive" to "Community."

The second iteration of coding on this source pertained to the framework that guided this study; again, comments were coded as pertaining to technology, pedagogy, content, or a combination of two or more of these elements (TPCK). The third iteration of coding was carried out to log statements made about both (a) what the participants said they *learned* in the program, and (b) what they said they *actually changed* in their courses, as well as to track any statements offered about particular course types. Figure 5 illustrates each iteration of coding applied to this

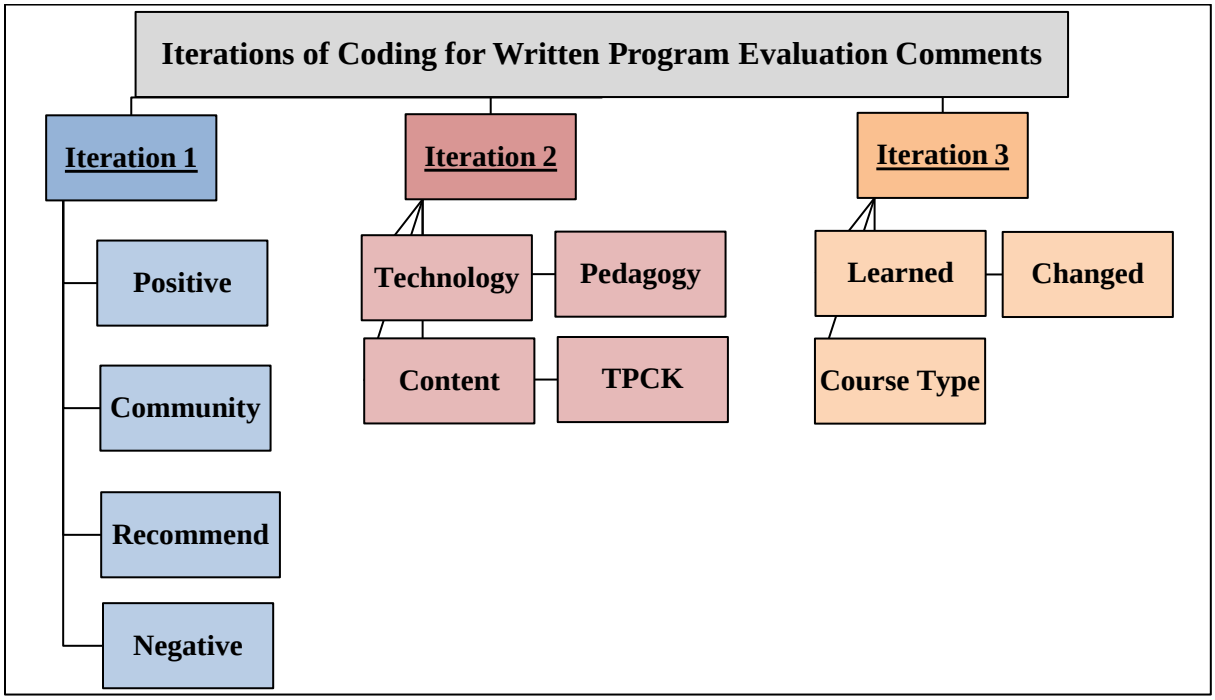

Figure 5: Iterations of Coding for Written Program Evaluation Comments

data source. Similar to the procedure of checking nodes against a word cloud on the application narrative data source, the same was done for the write-in program evaluation data as well. Figure 6 shows the word cloud generated for the qualitative evaluation data and that the most prominent words include “group,” “sessions,” “course,” “technology,” and “learning,” which also align with the nodes and key themes that emerged in the data.

Data Source 3: Student Evaluations of Teaching

The third data source for this study involved the collection and analysis of student evaluations of teaching (SETs). Specifically, pre-training and post-training evaluation scores for the course the instructors redesigned in the program were collected and compared to determine what, if any, impacts on the quality of the instructors’ teaching were noted by their students over time. The university involved in this study, at the time of this study, used an online system for students to provide both qualitative (Likert-scale) and written feedback to their instructors. This evaluation system allowed instructors to choose among eleven different forms, depending on the type of class or teaching format.

Among these options, a core set of four questions were consistent across the form types, all of which were rated on a 5-point Likert scale (1=Very Poor to 5=Excellent). These items included: (1) the course as a whole, (2) instructor contribution to the course, (3) instructor effectiveness in teaching the material, and (4) course organization. While all quantitative data are publically available, written comments are not public and all instructors receive these at the close of each semester. Therefore, this study only included quantitative comments, since this approach guaranteed the availability and analysis of identical data for each instructor included in the study.

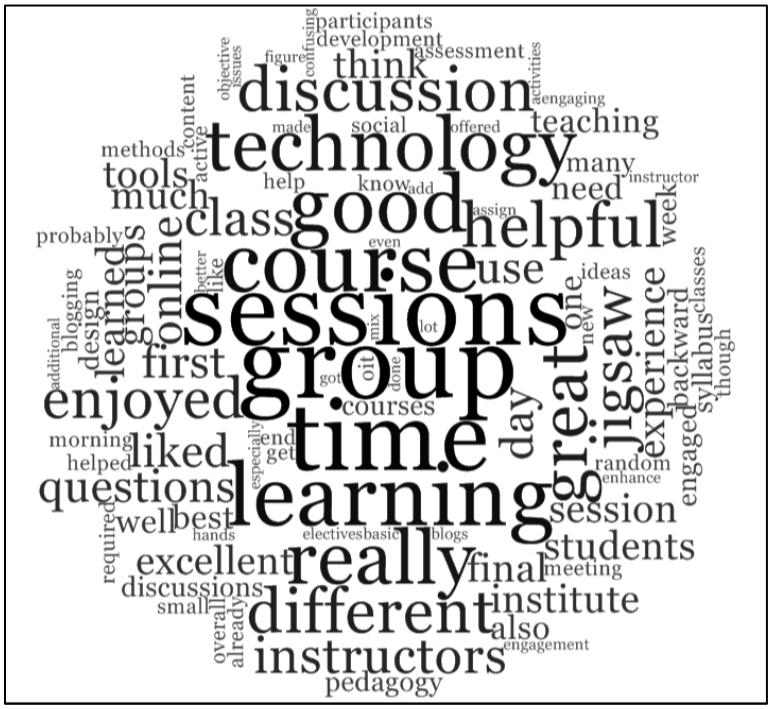

Figure 6: Nvivo Word Cloud Result for Program Evaluation Comment Data

Student evaluation data were collected online via an online database, and forms that had not yet been uploaded were requested directly from the university's office of research. All values for the four common items were entered into SPSS for analysis. Data were collected for all semesters prior to and following participation in the training program for the redesigned course. Figure A-1, located in Appendix G, illustrates how these data were collected for each instructor. Since minor changes in the course, student population, enrollment, or completion rates of evaluation forms may lead to differences in SET scores, all available course data were averaged in order to combine pre-training scores (by individual question as well as an overall average), which were compared to the averaged post-training scores for the course redesigned in the training program.

Student evaluation data were collected online via an online repository, and forms that had not yet been uploaded were requested directly from the university's office of research. Again, regardless of discipline, course, or class size, all instructors at the university have the same four common questions on all student evaluation of teaching forms.

All values for these four common items were entered into SPSS, and these SET data were analyzed in two ways. First, descriptive statistics were generated, including frequencies by group (pre-training and post-training), and by item (for each of the four core questions). Measures of variability were also identified for the two aforementioned categories. Inferential statistics were used to determine what, if any, changes in the scores occurred by chance. Specifically, a paired t-test was used to measure the difference between the pre and post-training scores for all participants by item and by the averaged score. In preparation for analysis, however, several procedures were followed. First, assumptions were tested and, second, data were checked for

normality and outliers via boxplots. Across all pre and post-training items, as well as differences, an outlier was detected in a single case across all four items. Inspection of these values revealed the case to be extreme and it was therefore excluded from analysis. A second series of Shapiro Wilk's tests confirmed normality for the remaining sample (n= 27) across the four areas.

Data Source 4: Pre and Post-Training Course Syllabi

The fourth source of data collection and analysis involved the comparison of pre and post-training versions of course syllabi for the class the instructors redesigned in the training. When instructors applied to participate, they were required to provide a copy of the syllabus for the course they planned to redesign. Upon completion, instructors also provided a final, revised syllabus as the last required deliverable of the training. Comparing the two versions of each instructor's course syllabi made it possible to review and document any specific changes the instructor made during the training program.

Using a 20-point checklist based on (a) key facets of the training and (b) best practices identified in the literature, comparisons were made between these two versions. Appendix H contains a copy of this checklist. The use of a checklist in the analysis was to make it possible to determine most objectively which components were implemented in the courses following the training. Two important points about the scoring checklist used to analyze this source should be noted. The first is that the intent of the scoring sheet was not intended to evaluate the *quality* of a particular section of the syllabus, such as the instructor's learning objectives. Instead, the purpose here was simply to establish whether this aspect was *included* in the syllabus. This was due to two reasons: First, there would be no way to measure the quality of certain components, such as having detailed course and instructor contact information; either it was included or it was

not, resulting in a score of 1 point or 0 points, respectively. Second, simply including certain components at all (such as a value proposition statement) confirms the instructor has at the very least considered the component and made an effort toward actual change in the course. To further clarify, the purpose of analyzing the syllabi was to establish an indirect measure of teaching effectiveness in the newly-designed course. It is certainly possible that instructors did improve the quality of many aspects of the course syllabus and, in turn, their teaching; however, this could not be directly proven or disproven by the inclusion of a component in the syllabus. Rather, the intent was only to identify (a) the number of instructors who incorporated new components to the syllabus that were not included prior to the course redesign and (b) to identify which components they were most or least likely to include.

The second point worthy of discussion with regard to the scoring checklist is that it incorporates high-impact or effective practices for *both* online and face to face teaching. For example, the checklist includes a point for whether the syllabus mentions any technology that may be used in the course. To be sure, many fully face-to-face courses already integrated various technologies such as the use of a course management system (i.e. Blackboard), clickers, or other online resources. The point assigned via the checklist simply identified whether these tools were stated explicitly in the course syllabus. That is, the 'best practice' emphasized in the training was that it is beneficial to provide this information to students upfront (prior to the class's start date), *not* whether the particular technology was used at all. Therefore, it is possible that an instructor used clickers but did not mention this explicitly in the syllabus; in this scenario, he or she would not receive the point for that item. However, even if an instructor maintained this aspect of the course, say, in a flipped classroom design following the training, it would be expected that the

instructor would state this clearly in the syllabus to receive the point for that item in the post-training version of his or her syllabus. Thus, the checklist did not account for instructors who did not use and, subsequently, did not mention a technology tool (as this would result in a score of zero for that item). Yet, the use of a pre and post-training checklist allowed for a baseline and subsequent comparison that facilitated objective analysis of specific components.

To analyze the instructors' syllabi, an SPSS spreadsheet was created which contained a row for each score, pre and post-training (i.e. Pre-1, Pre-2, Pre-3… Post-18, Post-19, Post-20). Again, for each instructor, a score of either 0 or 1 was assigned for each of the 20 pre-training and 20 post-training scores. This approach was useful during the analysis for this source in two ways.

First, this made it possible to compute a raw score for each instructor for both versions of the syllabus. Each instructor received a raw score of 0 through 20 for each version of the syllabus, which was the total for all of the pre-training categories (Pre-1 + Pre-2 + … Pre-19 + Pre-20) and another for the total of all the post-training categories (Post-1 + Post-2 + … Post-19 + Post-20). Next, raw scores were converted into a percentage score for each instructor's course syllabi versions. For example, if an instructor had 12 of 20 possible components for the raw score, this converted to a percentage score of 60% (12/20 * 100).

Second, this approach was useful during analysis because it was possible to calculate a combined raw score for each component of the syllabus rubric as well. For example, it was possible to see that one component was not included on *any* of the pre-training syllabi, so the combined raw and combined percentage scores were 0 and 0%, respectively. The approach to the combined raw and percentage scores made allowed for thorough and objective identification of

trends with regard to which components were included or excluded the most, as well as to determine which components of the syllabus instructors were most likely to incorporate following the training.

Descriptive statistics were used to track and report trends in both versions, and inferential statistics were used to determine what, if any, changes in the scores did not occur by chance. A paired t-test was used for the aggregated sample of instructor's two versions, to measure the difference between the pre and post-training composite scores of each version of the course syllabi. Prior to running a t-test analysis, however, several procedures were followed. First, assumptions were tested, and data were checked for normality and outliers using boxplots. In an examination of the total pre and post-training syllabi scores, no outliers were detected and a Shapiro-Wilks test confirmed normality of both the pre-training ($p = .747$) and post-training syllabi ($p = .591$).

Data Source 5: Existing Survey Data

One year following the completion of the summer program's fourth and final offering, a follow-up survey was sent to all participants who had completed the training, with the exception of the six individuals who completed the face-to-face track during year one. The follow-up survey was designed to collect information from training participants about their current teaching practices, use of instructional technology, and the extent to which individuals continued to implement changes and use tools and practices covered in the training. Appendix I contains a copy of this instrument. The survey collected select demographic information, such as disciplinary field, track, and instructor status (tenure, non-tenure, or graduate

assistant/researcher). Additionally, the survey also asked respondents about the climate they perceived at the university about these types of courses.

The post-participation survey received 46 complete response sets; however, three of these were eliminated because two were submitted by graduate students and one was submitted by a face-to-face track participant from year one. Since these two groups were excluded from all other data sources and analyses, this decision was made for reasons of consistency. Regarding the quantitative data, descriptive statistics were used to report demographic data and general trends among the participants' responses. Inferential statistics allowed for analysis of relationships and group differences in the data.

In order to analyze the written responses submitted via the online survey, responses were entered into a spreadsheet according to question, which allowed participants to share: (1) new ideas, concepts, tools, or skills that they were exposed to during the training, and (2) any other comments they would like to share about their experience in the program. The approach to coding for this data source was identical to that which was used in coding the application narratives and program evaluation feedback. No new nodes needed to be created in the analysis of this third source of data and, given the notably shorter responses and lower number of responses than what was collected in the other sources, only one iteration of coding was necessary, although all comments were read multiple times before the coding process began.

Careful attention was paid any statement pertaining to (a) the various types of courses (online, flipped, hybrid, or face-to-face) instructors spoke of, as well as (b) reflections or statements that could be linked to pre-training attitudes, practices, or beliefs. In this particular source, however, "fear" was the only pre-training related node applied. Additionally, responses

were coded for (c) indications of what participants either learned or changed in their courses, or (d) any response pertaining to the TPACK framework either in part or whole. Figure 7 illustrates the coding applied to the two open-ended survey items.

Use of Findings to Answer the Research Questions

The first research question for this study asked, "How did participating in an intensive course redesign intervention influence instructors' teaching effectiveness in the online environment?" To answer this question, three data sources were used: (1) course syllabi, (2) student evaluations of teaching, and (3) survey results from year five. First, pre and post-training syllabus scores demonstrated whether the instructors made specific changes in their redesigned course syllabi after training. The findings from the syllabi were compared to the student evaluation of teaching scores to determine whether students perceived and reported any differences in the instructors' teaching following their participation in the training.

The findings for the syllabi and SETs were then compared to the results from three sections of the survey. These included: (a) instructors' self-ratings on a set of skills directly emphasized in the training program, (b) TPACK-related items that address how well participants integrate pedagogy, technology, and content, and (c) written comments provided by the respondents, showing what the participants learned in the training and what they actually changed. Findings from syllabi comparisons, teaching evaluation scores and the sections of the survey noted above were triangulated to determine how the training program influenced the teaching practices (and, in turn, effectiveness) of the program's participants from both the instructors' and students' perspectives.

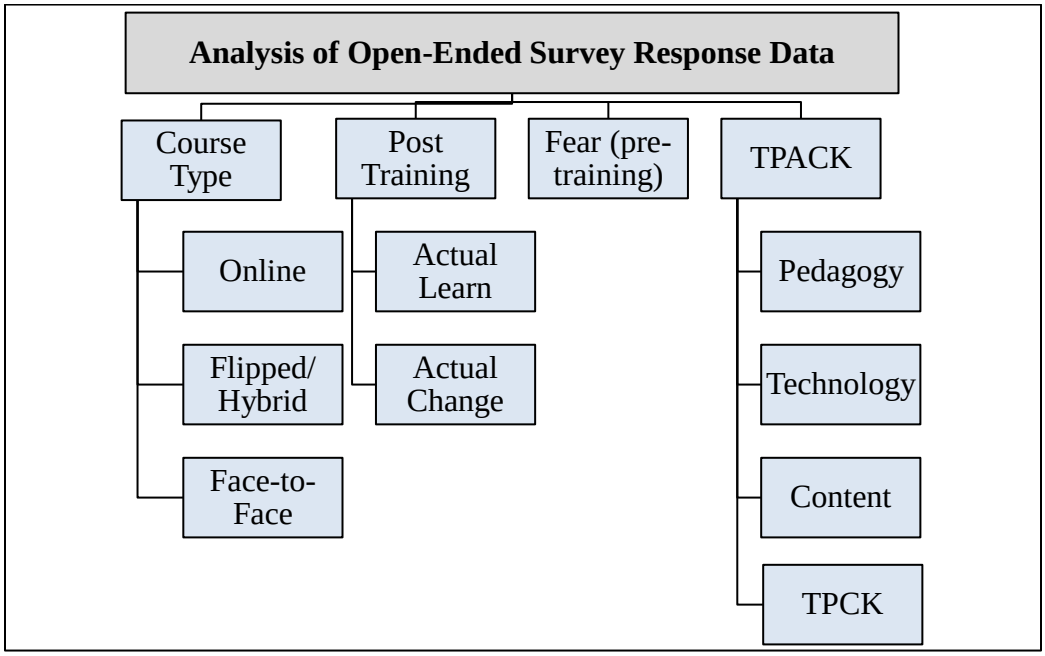

Figure 7: Analysis of Open-Ended Survey Response Data

The second research question for this study asked, "How did participating in the training influence instructors' beliefs or attitudes about online teaching?" Three sources of data were used to answer this question: (1) participants' application narratives; (2) annual program evaluation (satisfaction) data; and (3) follow-up survey responses. Findings from the applications demonstrated how participants felt prior to the training. These results were then compared to the program evaluation data to see what, if any, changes in attitudes or beliefs occurred during the course of the training. Last, these findings were compared to two key sections of the survey results: (1) satisfaction items regarding their actual online experience and (b) the written statements provided in the "general comments" section at the end of the survey. Together, these three sources were used to establish general attitudes and beliefs at three separate points in time to determine if or how the participants changed following the training as well as after the experience of actually teaching online. Table 4 summarizes how each data source contributes to answering each of the research questions.

Reliability, Validity, and Trustworthiness

Reliability and validity are important considerations in any research process because they communicate the rigor of the process and ultimately affect how trustworthy the findings come to be. Researchers may address reliability and validity in both qualitative and quantitative research, but there are ways of addressing these concepts in mixed methods data as well (Roberts, Priest, & Traynor, 2006). The following sections review specific approaches used to ensure reliability for the qualitative and quantitative components of this study, followed by a brief discussion of how these considerations were addressed specifically for the mixed methods approach used in this study.

Table 4

Integration of Findings to Address Research Questions

Research Question	**Corresponding Data Source**	**Type of Data**
RQ1: How did an intensive course redesign intervention influence instructors' teaching effectiveness in the online environment?	Pre-post syllabi comparisons	Qualitative and Quantitative
	Pre-post evaluations of teaching	Qualitative only
	Post-training follow-up survey	Qualitative and Quantitative
RQ2: How did instructors' beliefs or attitudes about online teaching change following their participation in the training?	Pre-training application narrative	Qualitative only
	Post-training evaluation data	Qualitative and Quantitative
	Post-training follow-up survey	Qualitative and Quantitative

Qualitative Research

Scholars have identified and discussed various approaches that one can take to ensure the credibility of qualitative research (Noble and Smith, 2015; Onwuegbuzie & Leech, 2007). Several approaches were incorporated into the present study. First, for example it is necessary that researchers are aware of possible bias, which can affect one's research at any stage during the process (Dellinger & Leech, 2007). In the present study, personal biases that could potentially influence the findings were detailed in a reflexivity statement at the close of this chapter. As Miles, Huberman, and Saldana (2013) discussed, researcher biases can further be avoided through actions such as identifying and following a theoretical framework and continuously reviewing the research questions – both of which were carried out in the present study.

Thorough recordkeeping of the data analysis trail is an important practice in qualitative research, as this can provide justification for why decisions were made and offer clarity on how the findings were reached (Halpern, 1983; Onwuegbuzie & Leech, 2007). In the present study, this practice was carried out with the use of a qualitative data analysis software (CAQDAS) program. CAQDAS programs can increase the reliability of qualitative research because they allow for thorough documentation of the research processes and research decisions, as well as the use of dated notes during analysis (Baxter and Jack, 2008; Roberts, Priest, & Traynor, 2006; Roberts & Woods; 2000). Nvivo software was used for the organization and analysis of multiple data sources, and research-related decisions and notes were tracked in time-stamped research memos. Birks, Chapman, and Francis (2008) note:

> "Memoing serves to assist the researcher in making conceptual leaps from raw data to those abstractions that that explain research phenomena [and that through memoing], data exploration is enhanced, continuity of conception and contemplation is enabled and communication is facilitated" (p. 68).

Specifically, the use of the CAQDAS program allows for an external review of the researcher's processes. By utilizing a large number of participants, four years of data, employing the use of a CAQDAS in the research, organization, and analysis processes, trustworthiness of the study was enhanced overall.

Quantitative Research

With regard to the quantitative components of the present study, validity (the extent to which a concept is accurately measured) is an important consideration. Criterion validity of quantitative data can be established when tools or questionnaires can be compared to other similar validated measures of the same concept (Eby, 1993). In the present study, pre-established validated TPACK items were incorporated into the follow-up survey, which is one way that validity was enhanced. Content (face) validity was also established for the syllabus comparison checklist sheet, as it was based on the content of the training as evidenced in Appendix A and by the review of the instrument by other education researchers prior to its use in this study.

Mixed Methods Research

Teddlie and Tashakkori (2003) authored one of the early works on the topic of validity in mixed methods research, suggesting common language be developed that "transcend[s] the separate QUAL and QUAN orientations" (p. 12). In their work, the authors recommended the terms *inference quality* and *inference transferability*, which Onwuegbuzie and Leech (2003,

2008) expanded upon with a discussion of legitimation models. As Creswell (2009) noted, legitimation is a growing concept with a related body of work that addresses validity in mixed methods research and, according to Greene (2008), "builds on the "methods and warrants of mixed methods as a distinctive methodology" (p. 7). One such approach to legitimation identified by Onwuegbuzie & Johnson (2006) used in the present study is *weakness minimization legitimation*, which requires the researcher to "consciously and carefully assess the extent to which the weakness from one approach can be compensated by the strengths from the other approach and then plan and design the study" accordingly (p. 58).

In the present study, some of weaknesses of qualitative research (e.g., potential for researcher bias, and lower perceived reliability in some cases) were addressed by incorporating the quantitative data. Likewise, certain weaknesses of quantitative data (e.g. the inability to account for "deviant cases" and the difficulty in explaining complex phenomena) were addressed by the richness provided by the qualitative data (Cormack, 1991). Data triangulation with quantitative sources was used to substantiate the findings from the qualitative data. A research design involving triangulation, or the use of multiple methods to answer the research question(s), can enhance the trustworthiness of a study (Onwuegbuzie & Leech, 2007; Shenton, 2004), by compensating for each method's individual limitations (Brewer & Hunter, 1989; Guba, 1981). In addition, the use of multiple sources of data allowed for triangulating the findings across those multiple sources, thereby enhancing the overall trustworthiness of the study.

Limitations

While the purpose of the present study was to examine the relationship between one approach to training for online faculty and the ways in which the program influenced the

participants' teaching effectiveness and attitudes toward online instruction, a limitation resident in the nature of the training should be noted. While the training offered each year was relatively consistent over the four years, minor changes were made to the program each year. Three changes should be noted. First, in 2011, the face-to-face track was removed from the institute. Second, there were several changes in presenters and certain session activities as a result of staffing changes. Third, the training's breakout sessions were periodically altered based on the availability of software or instructional technologies. This means that the participants in year one did not receive the identical intervention to the participants in year four, although the overall objectives and general processes were the same. As a result, it is possible that these changes to the training could have influenced how effective it was each year. Thus, the findings may not be generalizable to all situations or institutions in which this type of training program is used. The findings may be limited in their application to the institution in which the training program occurred.

Reflexivity Statement

I began my doctoral experience in an assistantship three months before I actually took my first class. I was hired in 2011 to work in my campus' faculty development office, which was actually a completely new experience for me. Previously, I taught at the middle and high school levels; teaching the teachers, however, was an opportunity I entered with a limited understanding. It did not take long before I began to absorb and adopt many of the beliefs and values of my colleagues and mentors in the center where I worked. Some of these beliefs include:

- Everything we teach and share must be established by research

- Experiences for instructors must be high-quality, interactive, and engaging
- Teaching is extremely important, even in a research institution
- Knowledge and the value of learning are not simply transmitted; rather, they are created together and have very different meanings and applications for different faculty
- Both new and experienced instructors can enact meaningful change in their pedagogy
- The knowledge and experience of faculty developers should also grow and change
- One person cannot have all the answers; we can only hope to be able to find them over time and allow them develop as others contribute to our understanding of them.

As a graduate research assistant, I played an active role in laying the research foundations of what came to be the summer teaching program described in this study. As a member of a small and mostly close-knit team of faculty developers, I attended nearly all of the workshops, training sessions, and presentations of my colleagues and, in turn, became acquainted with literally hundreds of faculty on my campus. I actually sat in the room with every single instructor who participated in this summer program and directly interacted with the large majority of them.

When I chose this particular program of study for my dissertation research, I did o was for several reasons. First, I have a personal interest in online education. Although I've only taken one online course and only actually taught one semester online, I do find the technologies, opportunities in online course design, and the trend of online education overall to be fascinating. Second, I completed the cognate for my doctoral coursework in the area of Evaluation, Statistics, and Measurement. During my time in class, as well as in my assistantship, I developed a deep interest in program performance and impact, carrying out nearly a dozen program evaluations in various settings between 2012 and 2015. The third reason that I selected this topic is because I do

believe in the program. I know the care and attention to detail that went into its creation, and the anecdotes shared by faculty participants at other events. The program ended in 2014 and was not replaced by another opportunity that would guide faculty through this process. While all findings and conclusions relied on the *existing* data only, it is still important for me to acknowledge my biases moving forward.

Chapter 4: Findings

Introduction and Organization of Chapter

The purpose of this research study was to examine the relationship between one approach to training for online faculty and the ways in which the program influenced the participants' teaching effectiveness and attitudes toward online instruction. The following research questions guided this work:

(1) How did participating in an intensive course redesign intervention influence instructors' teaching effectiveness in the online environment? and

(2) How did participating in the training influence instructors' beliefs or attitudes about online teaching?

To answer these research questions, this study involved the use of five sources of data:

- participant application narratives submitted before the training program (qualitative data source, *n*= 28),
- anonymous program evaluation data collected immediately following the conclusion of the program (qualitative and quantitative data source, *n*= 75);
- pre and post-training course syllabi which were submitted prior to and following the graining (quantitative data source, *n*= 28)
- pre and post-training scores from the instructors' student evaluations of teaching collected for the redesigned course (quantitative, *n*= 28); and
- results of an anonymous online survey distributed one year after the program ran its final year (quantitative and qualitative data, *n*= 43)

In this study, the Technological Pedagogical and Content Knowledge (TPACK) framework was applied during each stage of the research process, including analysis and the presentation of findings, as a lens for examining the changes and experiences of a group of educators who participated in an intensive faculty development program for new online instructors. The findings for each of the five data sources will be presented individually, followed by an explanation of how the findings were integrated to address the study's research questions.

Data Source 1: Participant Application Narratives

The first source of data used in this study was the participants' pre-training application narratives. This source was used to answer the second research question, which sought to understand how instructors' beliefs or attitudes about online teaching changed following their participation in the training. Each application included responses to four common responses: (a) reasons that the instructor wanted to participate in the program, (b) planned changes for the redesigned course, (c) personal reflections on what each instructor hoped to learn about teaching online, and (d) specific outcomes they identified for their participation in the program and in their course redesign. All four application responses were used to inform the second research question. Although the narratives did not answer the second research question directly, the instructors' responses were used as an indirect measure of pre-training beliefs and attitudes toward online teaching. Based on these responses, it was possible to determine an overall tone and draw general conclusions about how the instructors viewed the opportunity of learning to teach online. Analysis of these applications sought to determine whether the participants were optimistic and enthusiastic or pessimistic and hesitant about the prospect of online instruction.

There were three reasons instructors wanted to participate in the training program: (1) to develop or enhance their pedagogies or teaching abilities; (2) to acquire skill in new instructional technologies; or (3) to improve their students' learning or offer some other benefit to their students. Responses were equally distributed among these three categories (roughly the same number of participants commented on each), and all 28 instructors were highly motivated. More than half directly discussed a desire for improving their pedagogy, which they believed would result in improved student learning. One instructor predicted that as students enjoyed *learning* more, that she would in turn come to enjoy *teaching* more. Additional information about the instructors' motivations to participate can be found in Table A-3 of Appendix J.

Narrative findings also revealed that instructors already knew what they wanted to be able to do in their courses and were aware of the specific skills and tools they needed to acquire in order to carry out the changes. They identified a wide and comprehensive range of plans and learning expectations for the program. Of the 28 instructors, 24 included statements in their applications pertaining to technology *and* pedagogy. However, they viewed pedagogy and technology as two separate, distinct components, and not as the integrated components the Technological Pedagogical and Content Knowledge (TPACK) framework emphasizes. As an example, note the following response to the question about what the instructor hoped to learn: "An overview of the use of new technologies … like Captivate …[*and*] how to run a classroom to get more participation and involvement from my students." Another instructor stated simply, "In all, I hope to learn new pedagogical techniques, *and* what current educational technology offers."

Although 24 instructors recognized the need for developing their knowledge and skills in the areas of pedagogy and technology, only two instructors mentioned content (the third component of the TPACK model) directly. These two participants expressed an interest in having students learn more content, and to make the content more applicable to "real life." The majority of what instructors addressed pertained nearly exclusively to the areas of pedagogy and technology. Table A-4, located in Appendix J, presents an overview of (a) key plans for the courses to be redesigned and (b) the identified areas for learning and skill development in terms of the TPACK model's components of pedagogy, technology, and content.

When discussing their expectations for the program, 24 instructors had a distinctly positive tone to their response. These responses, much like their motivations for participation, fell into the areas of: (a) a reinvigorated passion for teaching, (b) a strong interest in learning something new (primarily technology), or (c) an eagerness about the possibilities of their students learning and engaging more. One instructor offered the following statement of her expectations, which was representative of many similar responses:

> "I anticipate coming away from [the training] with a newly revised syllabus, a class much richer in focus, content, and learning (and probably more fun to teach!), and a new network of peer contacts across campus. I expect that my instructional style may change as a result of implementing these changes in future classes."

Five instructors mentioned an interest in learning from others. A second instructor who mentioned collaboration also believed the program would be a positive experience simply by the nature of its design:

> "From my perspective, the strengths of the program [will be the] dedicated time for

> reflection and focus on improving teaching and learning, a collaborative work environment, and the opportunity to consult technology and pedagogy experts about particular ideas and tools."

Only four of the 28 instructors showed any nervousness about the process. The concerns of these instructors pertained to: (a) teaching evaluation scores; (b) shifting greater responsibility to the students in the new format; (c) the challenges of teaching undergraduates online; and (d) teaching a very large class online, and how engaged (or unengaged) the students might be.

Overall, responses to the narratives consistently demonstrated a positive attitude toward participation, personal and professional growth and development, and a desire to improve the learning experiences of their students. Their answers revealed a tone of optimism and eagerness to learn, and covered a wide range of desired pedagogical and technological skill development.

Data Source 2: Program Evaluation Data

The second data source utilized in this study was the program evaluation data collected via a paper survey at the end of each year's training and was also used to address the study's second research question (pertaining to attitudes and beliefs). The survey included both quantitative and open-ended items to assess the participants' experiences, satisfaction, and perceptions of content relevancy for improving their teaching knowledge and effectiveness. Therefore, this source of data served as an indirect measure of attitudes and beliefs at the point in time immediately following the training but prior to actually teaching online. In the presentation of findings for this data source, the quantitative data's results will be presented first, followed by the findings from the qualitative data.

Quantitative Data

Table 5 presents the aggregated quantitative responses of these data for 2011-2013 (n = 75). All responses were on a 5-point Likert scale (1= Strongly Disagree to 5= Strongly Agree). These data revealed that instructors were satisfied with their experience immediately following the training program, and found it to be both beneficial (M= 4.33, SD= .98) and well-organized (M= 4.22, SD= .94). Additionally, they found the sessions to be engaging (M= 4.21, SD= .93) and informative (M= 4.16, SD= .98). To view additional program evaluation data by year, see Table A-5 in Appendix K.

Qualitative Program Evaluation Data

Of the 75 respondents who completed the program evaluation data, 48 provided additional written comments. These comments revealed several insights about their immediate perceptions of the experience. First, the written comments supported the numerical program evaluation scores in showing that most viewed the program as a positive experience. Instructors offered roughly the same number of positive comments in the areas related to pedagogy and technology. Six instructors reported feeling confused about certain aspects of the training, although they did not specify what was confusing. With regard to the comments made about their learning, instructors consistently demonstrated a high level of satisfaction with their experience overall, offering statements such as, “I was so impressed by all of the technology” and, “The teaching methods presented were enlightening,” “The program was above average,” and “I was constantly engaged.” However, several instructors did state they would have appreciated having more time to learn the various tools presented (with the exception of Blackboard).

Table 5

Mean Scores for Satisfaction with the Program, 2011-2013, Aggregated (n=75)

Item Statement	**M**	**S.D.**
The training program was beneficial overall	4.33	.98
The training program was well organized	4.22	.94
Overall, the sessions were engaging	4.21	.93
Overall, the sessions were informative	4.16	.98

The aspect of the training program that received the greatest number of responses, however, was related to the interpersonal communication that took place among the participants as well as with the facilitators. Nearly one-third of all written comments referenced these relationships and collaboration, and it was the only topic that received exclusively positive feedback. Some examples of these statements included:

- "I learned so much through all of the collaboration"
- "I loved being able to talk to people who care about good teaching," and
- "The group activities were the best part"

Taken together, the quantitative scores and written comments show that most participants had a positive and engaging experience. Although certain aspects were confusing to some and they would have liked more time on the technology tools, they were satisfied overall with the training program and enjoyed the collaborative learning experience.

Data Source 3: Pre and Post-Training Student Evaluations of Teaching

The third data source for this study involved comparing pre and post-training teaching evaluation scores for the courses the instructors redesigned in the program. This made it possible to determine if the training had any impact on the quality of the instructors' teaching as perceived by their students. Teaching evaluation scores were used to answer the first research question, which asked, "How did participating in an intensive course redesign intervention influence instructors' teaching effectiveness in the online environment?" The four items collected and analyzed were rated on a 5-point Likert scale (1=Very Poor to 5=Excellent) and included: (1) the course as a whole, (2) instructor contribution to the course, (3) instructor effectiveness in teaching the material, and (4) course organization. The highest possible score an

instructor could potentially receive was an average of 5.00 in any given area. Table 6 summarizes the aggregated mean scores and standard deviations by pre-training scores, post-training scores, and the difference between the two.

The data revealed that, following completion of the training program, the instructors' scores did not improve in any area. SET scores actually declined by -.12 for the course a whole, -.07 for course content, -.15 for the instructor's contribution to the course, and by -.12 for the instructors' effectiveness in teaching the material. For the 27 instructors included in the analysis, the averaged score across the four areas fell between "fair" and "good" for both pre-training (*M*= 3.84, *SD*= .44) and post-training (*M*= 3.72, *SD*= .62). When comparing the four items, the highest rated score was for the instructors' contribution to the course, both in the pre-training data (*M*= 4.03, *SD*= .42) and in the post-training data (*M*= 3.88, *SD*= .70) for that particular question. The second highest rated score was for the instructors' effectiveness in teaching the material, both in the pre-training data (*M*= 3.84, *SD*= .50) and in the post-training data (*M*= 3.69, *SD*= .70). There was also a match between the lowest scores in each item set, which were given for the course as a whole in both the pre-training (*M*= 3.74, *SD*= .46) and post-training (*M*= 3.64, *SD*= .63).

A paired t-test of group differences comparing averaged pre and post-training evaluation scores revealed no statistically significant difference (*t* (26) = .714, p= .482). There were also no significant differences in scores when using a paired t-test to compare instructors' pre and post-training SET data for: the course as a whole (*t* (26) = 1.098, *p*= .282), course content (*t* (26) = .859, *p*= .398), instructor contribution (*t* (26) = 1.487, *p*= .149), and instructor effectiveness (*t* (26) = 1.313, *p*= .201). These results indicate students did not perceive much difference in these

Table 6

Aggregated Mean Scores for Instructor SET Data (n=27)

Rating Item Statement	**M**	**S.D.**
Pre-Training Scores		
1. The course as a whole	3.74	.46
2. Course content	3.77	.43
3. The instructor's contribution to the course	4.03	.42
4. The instructor's effectiveness in teaching the material	3.84	.50
Average of Pre-Training Items 1-4	*3.84*	*.44*
Post-Training Scores		
1. The course as a whole	3.64	.63
2. Course content	3.69	.53
3. The instructor's contribution to the course	3.88	.70
4. The instructor's effectiveness in teaching the material	3.69	.72
Average of Post-Training (Items 1-4)	*3.72*	*.62*
Differences between Pre & Post-Training Scores		
1. The course as a whole	-.12	.50
2. Course content	-.07	.44
3. The instructor's contribution to the course	-.15	.53
4. The instructor's effectiveness in teaching the material	-.15	.52
Average Difference Pre to Post (Items 1-4)	*-.12*	*.48*

areas when evaluating their instructors and the instructor's courses in the face-to-face and online versions.

Data Source 4: Pre and Post-Training Course Syllabi

The fourth data source used in this study involved comparing pre and post-training versions of course syllabi for the class the instructors redesigned in the training. Comparing the two versions of each instructor's course syllabi made it possible to identify specific changes the instructor made during the training program. To carry out the comparisons, a 20-point checklist was used to assess differences in the two versions. Because two versions of the course's syllabus were compared from before and after the training, this particular data source was included to address the first research question, which sought to identify how participating in the program influenced instructors' teaching effectiveness online. Table 7 provides information for each of the 20 checklist criteria points, including the percentage of instructors who included this item in the pre and post-training version of their course syllabus. The column on the far right shows the percent change in the proportion of instructors who included each when comparing the two versions (i.e. *% Difference = Post % - Pre %)*. Twenty-eight instructors provided their consent for review of the syllabi they submitted before and after they participated in the program.

For the twenty inclusion criteria in the checklist, 19 increased (indicating the addition of the particular criteria in the post-training version) following completion of the program. Only one area (complete instructor contact information) saw zero change. However, 27 of the 28 instructors already included this in the pre-training version of the syllabus.

A comparison of raw scores for the pre and post-course syllabi revealed that, following the training, instructors scored considerably higher on the syllabus checklist of key components

Table 7

Summary of Changes from Pre- to Post-Training Course Syllabi (n= 28)

Syllabus Checklist Criteria	**Syllabi Pre-Training (%)**	**Syllabi Post-Training (%)**	**Pre to Post % Difference**
Detailed Course Information	88.0%	96.0%	+ 8.00%
Course Learning Outcomes	75.0%	92.0%	+ 17.0%
Program/Dept. Outcomes	0.00%	21.0%	+ 21.0%
Instructor Contact Information	96.0%	96.0%	0.00%
Course Description/ Statement	88.0%	100.0%	+ 12.0%
Value Proposition Statement	13.0%	83.0%	+ 70.0%
Learning Environment Statement	13.0%	88.0%	+ 75.0%
Info about Required Texts	88.0%	96.0%	+ 8.00%
Technology Resource Info	8.00%	79.0%	+ 71.0%
Grading/Assessment/Evaluations	92.0%	100%	+ 8.00%
Complete Assignment Info	54.0%	79.0%	+ 25.0%
How to be Successful	54.0%	92.0%	+ 38.0%
Methods of Feedback	13.0%	75.0%	+ 62.0%
University Policies	63.0%	88.0%	+ 25.0%
Links to Key Student Resources	58.0%	75.0%	+ 17.0%
Entire Course Calendar Outline	79.0%	96.0%	+ 17.0%
Community Component	13.0%	33.0%	+ 20.0%
Use of Instructional Technology	21.0%	46.0%	+ 25.0%
Required Technology Skills	8.00%	17.0%	+ 9.00%
Accessibility	65.0%	70.0%	+ 5.00%
AVERAGE	49.0%	76.0%	+ 27.0%

(M= 15.19, SD= 2.16) than they did on their pre-training syllabus version (M= 9.38, SD= 2.54). A paired t-test of group differences for combined average raw scores comparing the pre and post-training versions revealed a significant difference (t = -8.610., p < .001).

Data Source 5: Follow Up Survey

One year after the program's final year, a follow-up survey was sent to all participants who had completed the training and solicited information from respondents in five main areas:

a. beliefs about online teaching at the university
b. current teaching practices and the extent to which they conform to the Technological Pedagogical and Content Knowledge (TPACK) framework
c. satisfaction with their online teaching experience
d. self-ratings on skills requisite for effective online instruction, and
e. continued implementation of what they learned during the training.

Items from areas (b), (d), and (e) addressed the first research question by revealing what participants were doing in their classes and how well they were doing it, thereby demonstrating changes in teaching following the training. Items from areas (a) and (c) addressed the second research question by providing insight into the instructors' beliefs, attitudes, and satisfaction pertaining to their online teaching experiences. In the presentation of findings for this data source, the quantitative data results are presented first, followed by the findings from the qualitative data.

Quantitative Items

Of the 43 response sets included in the analysis of the follow-up survey data, respondents were fairly representative of the participants in the program as a whole (n= 92), as well as with

the population included in this study (*n*= 28) with regard to their participation year and tenure status. Several areas, however, were not representative of the program as a whole or the study's population. For example, although the percentage of survey respondents and entire program participants was identical (37%), flipped-track instructors made up twice as many participants in the present study (61%). Similarly, there were differences in the number of men who agreed to participate (14%) or answer the survey (19%) when compared to the program as a whole (38%) Table 8 contains the proportions for the study sample, survey respondents, and the entire program for complete comparisons across program year, redesign track, gender, and tenure status.

The first set of items contained a mix of questions that asked instructors about how they perceived training, interest in flipped, hybrid, and online teaching at the university, and their personal preferences for these courses. Each item was rated on a 5-point scale (1= Strongly Disagree to 5= Strongly Agree), and mean scores for each item are shown in Table 9. The scores suggest that participants have a neutral to positive view of how they perceived interest in and support of flipped, hybrid, and online teaching at the university. The respondents believed professional development opportunities would be beneficial to instructors new to online teaching (*M*= 4.49, *SD*= .77), and they equally agreed that the university needed to make more of these training and development opportunities available (*M*= 4.49, *SD*= .77).

Instructors only slightly agreed that teaching online was supported by the university administration (*M*= 3.58, *SD*= .90) and within their departments (*M*= 3.47, *SD*= 1.3); they agreed even less that online teaching was preferable to face-to-face instruction (*M*= 3.44, *SD*= 1.0).

Table 8

Sample and Population Comparisons by Year, Track, Gender, and Tenure Status

Sorting Category	**Study Group (*n*= 28)**	**Survey Respondents (*n*= 43)**	**Entire Program (*n*= 92)**
Program Year			
2011	18%	19%	26%
2012	39%	28%	35%
2013	21%	28%	26%
2014	22%	19%	13%
Unknown	0%	6%	0%
Program Track			
Flipped	61%	37%	37%
Blended	25%	26%	25%
Online	14%	19%	38%
Unknown	0%	18%	0%
Gender			
Male	14%	19%	38%
Female	86%	74%	58%
Unknown	0%	4%	4%
Tenure Status			
Tenure Track	61%	42%	60%
Non-Tenure Track	39%	56%	40%
Unknown	0%	2%	0%

Table 9

Mean Scores for Respondent Perceptions of Online Teaching (n= 43)

Item Statement	M	S.D.
Instructors new to flipped, hybrid, or online teaching would benefit from training.	4.49	.77
The university needs more training opportunities for those teaching flipped, hybrid, and online courses.	4.49	.77
I would likely participate in additional training on these types of course designs.	3.90	.90
I would like my department to offer more flipped, hybrid, and online courses	3.58	.79
University administration encourages flipped, hybrid, and online course designs campus-wide	3.53	.90
My department actively encourages the creation and delivery of flipped, hybrid, and online courses.	3.47	1.3
I prefer teaching online to fully face-to-face courses	3.44	1.0

The second subset of items in the survey contained a series of online teaching skills designed and validated by Schmidt et al (2009) and applied by Shin and Lee (2009). These items allowed the instructors to self-report their perceptions of the extent to which they had achieved Technology-Pedagogy-Content Knowledge integration, and pertain directly to the framework that guided this study. Instructors responded to each statement using a 5-point scale (1= Strongly Disagree to 5= Strongly Agree). Table 10 contains the mean scores for each of these eight items.

Of the eight statements pertaining to the integration of technology, pedagogy, and content, instructors rated themselves highest in their abilities to integrate the three components of the TPACK model (*M*= 4.26, *SD*= .73). They also rated themselves highly on their use of the tools they select to support student learning and research (*M*= 4.19, *SD*= .79) and on their use of strategies from the training they received that combine pedagogy and technology (*M*= 4.19, *SD*= .76). Participants rated themselves lowest on their abilities to help their colleagues coordinate the use of technology (*M*= 3.53, *SD*= 1.0) and on how easily they could adapt to unexpected changes that arise (*M*= 3.65, *SD*= 1.2) in the tools they utilize. Instructors also reported that, although they were relatively confident about choosing the technologies they wanted to use to enhance their students' learning (*M*= 4.00, *SD*= .82), as well as enhance their teaching (*M*= 3.98, *SD*= .86), they felt slightly less confident in evaluating new tools independently (*M*= 3.93, *SD*= .86).

The third subset of items from the survey contained a series of items that asked instructors about their satisfaction with various aspects of their recent flipped, hybrid, or online teaching experiences. These items were used as an indirect measure of the participants' overall

Table 10

Mean Scores for Instructors' Self-Reported TPACK Skills (n= 43)

Item Statement	**M**	**S.D.**
I can teach lessons that appropriately combine course content, technology, and teaching approaches.	4.26	.73
I can use the tools that I select to support student learning and research	4.19	.79
I can use strategies that combine what I learned in my training about technology and teaching.	4.19	.76
I can choose technologies that enhance my students' learning.	4.00	.82
I can select technologies that enhance what and how I teach.	3.98	.86
I can evaluate and select new technologies based on their usefulness to specific goals of the content.	3.93	.86
I can easily adapt to changes in existing technology tools that I utilize.	3.65	1.2
I can help others to coordinate the use of technologies and teaching approaches.	3.53	1.0

satisfaction with experiences common to online teaching, and a summary of the results of these items is shown in Table 11.

Instructors were most satisfied with their comfort levels using their chosen technologies (*M*= 3.95, *SD*= .1.4) and with how well the course management site (i.e. Blackboard) worked for them (*M*= 8.82, *SD*= .1.43). Instructors were moderately satisfied with other aspects of their online teaching experience such as the sense of community (*M*= 3.59, *SD*= 1.4), student interaction (*M*= 3.56, *SD*= 1.5) and the amount of time they spent designing (*M*= 3.15, *SD*= 1.40) and teaching (*M*= 3.51, *SD*= 1.43) their courses. Respondents were, by far, the least satisfied with the level of student participation in both synchronous (*M*= 2.21, *SD*= 2.08) and asynchronous activities (*M*= 2.59, *SD*= 1.4). High standard deviations (when compared to the program evaluation data, for example) across all of the statements in this section reveal a much broader range in their reported overall satisfaction teaching online.

The fourth subset of questions from the survey contained a series of fifteen, 2-part items. The first part of each question was a particular skill that had been heavily emphasized during the training program. After rating their abilities across these dimensions using a four-point scale (1= Poor, 2= Fair, 3= Good, 4= Excellent), respondents were then asked about the extent to which each skill improved as a direct result of the training program. For the second part of the item, respondents used a three-point scale of 1= Not at All, 2= Somewhat, and 3= Very Much. Table 12 summarizes these results. All means and standard deviations are reported in Table X for the 4-point self-rating on each skill dimension.

Also in Table 12, the column with the heading “Credit” indicates whether respondents credit the training program as having a high (H), moderate (M) or low (L) level of impact on that

Table 11

Mean Scores for Instructors' Satisfaction with Online Teaching Experiences (n= 39)

Item Statement	M	S.D.
My level of comfort using the technology I selected	3.95	1.4
The functionality of my course site(s)	3.82	1.43
My students' ability to use the selected technology	3.64	1.4
The sense of community established in the course	3.59	1.4
The interaction between students in the course	3.56	1.50
The amount of time I spent teaching	3.51	1.43
My students' level of engagement in the course	3.15	1.40
The feedback I received on my teaching evaluations	3.26	1.50
The amount of time I spent designing my course(s)	3.15	1.40
Student participation in asynchronous activities	2.59	1.94
Student participation in synchronous activities	2.21	2.08

Table 12

Mean Scores and Program Credit Given for Self-Ratings of Online Teaching Skills

Item Statement	**N**	**M**	**S.D.**	**Credit**
My ability to plan a course	36	3.58	.50	L
My organization in teaching	35	3.46	.61	H
My ability to facilitate the course	36	3.36	.64	H
My interpersonal communication with students	35	3.34	.59	M
The clarity of my written communication with students	35	3.31	.68	M
My multicultural competence	35	3.23	.73	M
The quality of feedback I provide to my students	35	3.17	.66	H
My use of student collaboration (group work)	36	3.08	.81	M
My use of higher order questioning	36	3.06	.53	L
My knowledge of student learning differences	35	3.03	.51	M
My use of classroom assessment techniques (CATs)	35	3.00	.87	H
My familiarity with web-based teaching tools	36	2.72	.74	L
My knowledge of online teaching methods	36	2.67	.93	L
My familiarity with adult learning theory	36	2.64	.96	M
My ability to actively engage students online	35	2.34	1.06	M

particular skill. Levels of impact were based on the percentage of respondents who attributed their ability in each area as being "very much" a result of the program using the following criteria. If more than sixty percent of instructors responded as "very much," a high level of credit (H) was assigned. If greater than thirty percent, but fewer than sixty percent of the instructors responded that the skill was "very much" due to the training, then a moderate level of credit (M) was assigned. Last, if fewer than thirty percent responded that the skill was "very much" a result of the training *or* greater than 30% responded that the skill was "not at all" due to the training, then a low level of credit (L) was assigned.

Participants rated themselves highest in the area of course planning (M= 3.58, SD= .50), although they cited the training program as being of little influence in this area. Respondents also had similarly high self-ratings in the areas of organization in teaching (M= 3.46, SD= .61) and facilitation abilities (M= 3.36, SD= .64). In these two areas, however, instructors attributed a high level of credit to the program for their level of skill. Instructors rated themselves lowest on their ability to engage students (M= 2.34, SD= 1.06) and on their overall familiarity with adult learning theory (M= 2.64, SD= .96); respondents attributed a moderate level of credit to the program in both of these areas. Instructors also rated themselves relatively low regarding their knowledge of online teaching methods (M= 2.67, SD= .93) and their familiarity with web-based teaching tools (M= 2.72, SD= .74); in these areas, however, respondents also attributed a low level of credit to the program for their abilities.

One survey question asked participants what they believe to be an online instructor's most important role to fulfill. Of the four choices, respondents answered: pedagogical (57.5%), social (20%), managerial (20%), and technical (2.5%). A chi-square goodness-of-fit test was

used to interpret respondents' opinion about which of the four key roles was the most important. Results of the chi square test showed that the frequencies differed significantly in favor of the pedagogical role over the social, technical, and managerial roles, $\chi^2(3, n = 40) = 25.8\ p < .01$).

Open-Ended Survey Items

In the fifth and final section of the survey, respondents were asked to share information about any new skills, concepts, ideas, methods, or tools they learned in the training program. As participants reflected on their experiences *after* they had taught their first flipped, hybrid, or online course, they provided insight into not only what they learned (and retained), but also about what they actually did differently in their redesigned courses. Table 13 summarizes the instructors' responses in terms of pedagogy and technology. Note that comments have been further separated in terms of what they said they learned (left) and what they said they actually changed (right).

Participants shared a variety of pedagogical and technological skills learned during the program, and most were still able to name specific skills (e.g., syllabus design, group work, classroom management strategies, etc.) or tools (e.g., Blackboard, clickers, Camtasia, etc.) that they learned about during the training. However, this did not necessarily translate into action. For example, one participant shared, "I've retained only the parts that I immediately implemented," and another stated, "I like using Zoom now for online synchronous classes but am still trying to figure out a few things."

Although instructors were mostly satisfied with the program itself, some instructors felt the follow-up *after* the training concluded was insufficient. The theme that began to emerge was one

Table 13

Instructors' Self-Reported Learning and Instructional Changes Following Program Participation

	What Participants *Learned* from the Training	**What Participants *Changed* Following the Training**
Pedagogy	• "That the onus is on [the faculty] to create the learning environment, but it is essential for students to come prepared" • "Information on active learning techniques; ways to engage students in collaborative learning; and information about rubrics." • "I learned the importance of making connections with your students the first day of class and group work" • "I learned skills for promoting successful teamwork and the use of peer evaluations" • "Syllabus design" • "I learned how to plan a lesson and conduct assessments" • "Classroom engagement strategies" • "Minute papers" • "I learned about scaffolding and backward course design"	• "I give more thought to higher-level thinking and learning than I did previously" • "I continue to use the group methods we practiced in the sessions" • "I have started to incorporate the students doing some work outside of the class for the current lesson"
Technology	• "I was introduced to the iPad, and now I have purchased one, but I have not yet used it in class" • "I learned the use of collaborative learning tools such as wikis" • "We went through so much tech stuff so quickly that it was hard to fully learn and remember most of it. I've retained only the parts that I immediately implemented" • "Blackboard tests and assignments" • "Clickers	• "I feel comfortable with aspects of Blackboard that I did not understand previously and use it much more effectively" • "I learned video screen capture and was introduced to Camtasia, which I now use every year" • "I like using Zoom now for online synchronous classes but am still trying to figure out a few things since I teach using manual communication" • "I learned about using clickers in my classroom. I am still working on using them in all of the classes I teach"

of being “abandoned,” as one participant described it, but also expressing a desire for continued support. Another summarized this sentiment, noting,

> “I wish this weren't immersion and then dumping us... [it] would be really helpful to have some sort of follow-up (maybe monthly) throughout the next year… to share what we've learned, what we are doing, ask questions and get additional direction.”

Another stated, “I would like to continue more training. However, the communications from [facilitators] has slowed down and I hardly ever get any emails announcing more courses etc... I still would like feedback and to learn of new techniques.” Yet another instructor expressed an interest in simply being able to access and revisit materials from the training program, asking, “Is there a database of materials available for people who want/need to refresh what we learned during our summer session? Also, it would be great to be able to review the stuff I didn't cover...like the fully online course materials.”

These participant comments reflected a strong interest in continued support following the end of the training.

Instructors offered additional comments regarding their overall satisfaction with the experience of teaching in their newly-designed format. One the one hand, several participants offered positive remarks, such as “I was very impressed with [the program] and how it prepared me for my newly developed online course,” and “I think this is a great program.” However, other participants offered a contrasting perspective. As one instructor noted,

> “Nothing can be successful without administrative support. Ultimately, administration evaluates faculty, and if administration is not on board, then faculty will be punished for any student failings. In situations like that, faculty revert to the old lecture format.”

Another participant stated,

> "In retrospect (three years later), I feel like the whole project of creating hybrid/flipped classes does not contribute to more student learning. It contributes to making higher education a commodity, which it is not."

A third instructor simply decided that teaching online was simply not his preferred method: "I'm not trying to fault [the facilitators'] efforts - it's just that creating these courses is just way too time-consuming to make it worthwhile." Overall, the findings from the survey revealed that participants had varied experiences in learning to teach online.

Integration of Findings

This study's first research question asked, how did an intensive course redesign intervention influence instructors' teaching effectiveness in the online environment? In order to answer this question, it was necessary to integrate the findings from the following sources of data: (1) comparisons of pre and post-training course syllabi, (2) comparisons of pre and post-training student evaluations of teaching for the redesigned course, and (3) responses collected from participants via the follow-up online survey pertaining directly to their acquired skills and related experiences.

As shown in the findings, instructors demonstrated the greatest amount of change in terms of their course syllabi, which showed a statistically significant difference in terms of the number of components they included in their post-training syllabi when compared to the pre-training versions. When reviewing the pre to post-training student evaluation of teaching scores, there were no statistically significant differences. In fact, the participants' scores declined across all four areas (although the amount was negligible). These findings revealed that, at least from

the students' perspective, no differences were perceived after the instructors completed the training and delivered their redesigned courses. In comparing these results to the survey items pertaining to skill acquisition, instructors rated themselves most highly on pedagogical skills and credited the training to the highest degree in this regard; several self-ratings for technology skills were low, and the program was credited least in this area.

Thus, the findings to research question one revealed that instructors demonstrated change in two of the three areas: the redesign of their syllabi and in their abilities reported in the follow-up survey. The instructors felt they had improved their pedagogical practice and increased in self-confidence about their teaching ability, but this was not true with respect to technology. Even when instructors did teach in the new format, they felt less-skilled with their technological abilities. This was further supported by the finding that the statistically significant finding that they believed the pedagogical role was far more important than the technological role.

This study's second research question asked, how did instructors' beliefs or attitudes about online teaching change following their participation in the training? In order to answer this question, it was necessary to integrate the findings from the following sources of data: (1) instructors' pre-training application narratives, (2) post training evaluation data, and (3) responses collected via the follow-up online survey pertaining to the instructor's overall attitudes and satisfaction with online teaching.

From the time instructors applied to the training program, completed it, and delivered their online course, there were clear changes that took place in the instructors' attitudes and beliefs related to online teaching. The application narrative findings revealed that participants were highly optimistic about their proposed changes and in their expectations for learning.

Participants were also, for the most part, satisfied immediately following the training, although some reported that they could have benefitted from either having additional time or going at a slower pace for learning. Participants commented extensively about the connections they had made, both with fellow instructors and the facilitators, which was the most positive aspect of the experience for them.

By the time participants had delivered their course, it was evident that a considerable number did not have the experience they had anticipated. They were less optimistic about the experience than they had been going into the program and immediately after the program ended. Multiple participants spoke to a sense of abandonment and the need for additional support. To be sure, some participants had a wonderful experience in the program with a successful experience teaching their online course. Some participants rated both their skill and satisfaction levels highly and credited the program for their abilities highly as well. Nevertheless, based on the overall optimistic tone of the application narratives and the many expectations instructors had, this seemed to fall short of the anticipated results by the time the follow-up survey was distributed. Thus, findings for research question two revealed (a) a decline in positive perceptions of online teaching and (b) lower confidence and satisfaction than would have been expected based on the pre-training narratives.

Conclusion

This chapter presented the findings of the current study. Each data source's findings were reviewed separately, then integrated and presented in terms of the study's research questions. Chapter five closes with a discussion of these findings and their implications for research and practice.

Chapter 5: Discussion and Conclusion

Introduction and Organization of Chapter

The purpose of this study was to examine the relationship between one approach to training for online faculty and the ways in which the program influenced the participants' teaching effectiveness and attitudes toward online instruction. Two research questions guided this study:

(1) How did participating in an intensive course redesign intervention influence instructors' teaching effectiveness in the online environment?

(2) How did participating in the training influence instructors' beliefs or attitudes about online teaching?

This study used a concurrent (QUAL + quan) embedded mixed methods research design to answer these questions through five sources of data. These sources included participant application narratives (qualitative, $n = 28$), multiple year post-training anonymous program evaluation data (qualitative and quantitative, $n = 75$), pre and post-training course syllabi (quantitative, $n = 28$), pre and post-training teaching evaluation scores from students (quantitative, $n = 28$), and an anonymous online survey distributed one year after the program ran its final year (quantitative and qualitative, $n = 43$).

Qualitative data (narrative and open ended text responses) were analyzed using iterative text analysis in a computer assisted qualitative data analysis software program (Nvivo). Pre and post-training versions of the instructors' course syllabi were scored in comparison to a standardized rubric; rubric scores were compared by tracking differences in each of the two versions. Quantitative (numerical) data were aggregated, reviewed, cleaned, and presented

descriptively. Pre and post-training findings were compared using paired t-tests where appropriate.

The Technological Pedagogical Content Knowledge (TPACK) framework provided the conceptual framework for the study. It was applied during each stage of the research process as a lens for examining the changes and experiences of the educators who participated in the faculty development program for new online instructors at a large research institution in the southeastern United States.

Findings

Findings to the first research question were based on the results of the pre and post-training comparisons of course syllabi and student evaluations of teaching, as well as the results of the follow-up online survey. Findings revealed that instructors demonstrated (a) statistically significant changes in the incorporation of elements into the redesign of their syllabi, and (b) improvements in their teaching abilities as self-reported in the follow-up survey. There were no statistically significant differences in student evaluation scores of teaching pre and post-training. Overall, the findings to the first research question revealed only modest improvements to the instructors' teaching effectiveness.

Findings to the second research question were based on the results of the pre-training application narratives, post training program evaluation data, and the follow-up online survey. Prior to the training, instructors were highly optimistic about their course redesign plans and the skills and knowledge they would develop in the training. Immediately following training, they were generally satisfied with the program. However, after delivering their newly redesigned course online, participants were less optimistic and satisfied with their training experience than

they had been prior to and following it, and multiple instructors cited a need for additional or continued training and support.

Discussion of Findings

Multiple Data Sources Aid Understanding

The integration of five sources of data collected from multiple perspectives and spanning a four-year window provided a far more complete understanding of the instructors' learning experience and of the program's impact than could have been provided by one or two of those sources alone. The use of a single source (for example, the pre and post-training course syllabi comparison) would have led to incorrect assumptions about the possible impact of training. Steinert et al. (2006) addressed this issue when they argued: "More rigorous designs and a greater use of qualitative and mixed methods are needed to capture the complexity of [faculty development] interventions" (p. 497). For practitioners in the field of faculty development, it is common to collect and rely on program evaluation data, most often satisfaction data. However, it is important to utilize multiple sources of data to understand the complexities of such an experience and the possible impacts that training has on participants.

Collaborative Learning is Advantageous

An important observation in the present study was to discover that the participants were most satisfied with the high level of collaboration and interaction they experienced during the training. It has been consistently established that high levels of learner interaction has many positive effects not only on the development of knowledge and skill-building, but also in satisfaction with and attitudes toward learning experiences (Holmberg, 1983, Jung, Choi, Lim, & Leem, 2002; Tsay & Brady, 2010; Yang & Chang, 2012). Steinert et al. (2006) found that a key

feature of effective faculty development programs was the establishment of peer and colleague relationships. Scholars have consistently demonstrated the benefits of interaction on student learning and the same applies to teacher training programs. In faculty development training programs, facilitators can effectively model interactive learning practices for participants who are placed in the role of the student. Further, social learning experiences can significantly improve one's self-reported teaching abilities, confidence, and satisfaction, as Knight, Carrese, and Wright (2007) found.

Participants Were Already Effective Teachers

The absence of statistically significant changes to the participants' student evaluation scores was an interesting finding, although even cursory examination of their pre-training SETs revealed their average scores were already relatively high. The relatively high initial scores left less room for improvement following the program, which may explain why there was ultimately no significant change in their SET scores. A study by Brinkley-Etzkorn and Schumann (2015) found that SET scores consistently improved for instructors in another faculty development intervention when the starting scores were lower overall. Perhaps if the instructors' pre-training SETs had been lower, there would have been a demonstrable improvement.

Certain Changes May be Incremental

From a faculty development perspective, it was a pleasant surprise to see how much the instructors changed their post-training syllabi. By incorporating components such as a course value statement, information about student resources, clearly-defined roles and expectations, feedback methods, or a complete course calendar, the instructors planned for and established clear communication channels with students post training. This observation is consistent with

Chickering and Gamson's (1987) classic work on teaching effectiveness which reported that key behaviors for effective teaching included: encouraging feedback between students and faculty, communicating high expectations, and providing prompt feedback. One possible explanation for the significant change in this area is that these adjustments to the syllabus were among the easiest changes to make. In this regard, instructors could demonstrate almost immediate change, as opposed to learning new programs or increasing teaching evaluation scores, which can require an extended period of time. Additions to the course syllabi represented small, incremental changes that the instructors achieved relatively quickly and easily. The inclusion of many new components demonstrated that the training program did influence the instructors' thinking about their approaches to teaching. However, it was not clear if such changes had any impact on their actual teaching effectiveness in the classroom.

Ongoing Support for Instructors is Critical

Scholars in the field have consistently found that instructors need strong and continued support and training to be effective in their online teaching (Abel, 2005; Luck & McQuiggan, 2006; Riedinger & Rosenberg, 2006; Shelton, 2011; Smith, 2005). Findings from this study regarding the need for continued training and support are consistent with these well-established findings. Multiple survey respondents discussed being "abandoned" and "dumped" after the training, demonstrating that there was minimal continuation of training and support when the instructors taught independently online for the first time. The training program designed and implemented for this faculty development did not include a follow-up component and, in that, ignored a key component of training recognized in the literature. It is likely that continued

support and follow-up with instructors would have allowed the experience and learning to be more positive and impactful.

Full Integration of Pedagogy and Technology is Difficult

It is important to reiterate that scholars stress the importance of integrating pedagogy and technology rather than separating the two (Bailey & Card, 2009; Ertmer & Ottenbreit-Leftwich, 2010; Georgina & Hosford, 2009). In the present study, contrary to what was desired, it appears that the instructors did not perceive pedagogy and technology to be integrated. Rather, they perceived them to be separate, distinct components throughout the learning process. While crediting the program with the development of their skills, instructors rated themselves more highly on pedagogical skill development post training than on technological skill development, supporting the notion that they did not perceive them as intimately related to one another. This finding was consistent with that of Benson and Ward (2013), who found that the circles of the TPACK framework, as illustrated in Figure 2, are not of equal size. For the instructors in the present study, the pedagogical knowledge circle would be shown as larger than the technological knowledge circle.

The TPACK framework idealizes a continuous focus on the intersection of all three components, content, pedagogy and technology (Benson & Ward, 2013; Koehler & Mishra, 2005; Hershey, & Peruski, 2004; Koehler, Mishra, Koehler, Mishra, & Yahya, 2007; Mishra & Koehler, 2006; Stover & Veres, 2013). Given the findings of this study related to the lack of integration of pedagogy and technology, this model may not explain how instructors actually experience the process of learning to teach online. Indeed, as Stover and Veres (2013) argued,

"The majority of colleges and universities have bifurcated professional development

> programs that address these types of knowledge separately which results in unrelated separate professional development programs that do not emphasize the importance of the relationship between technology, pedagogy, and content" (p. 94).

Particularly in higher education, it is quite common for instructors to learn much of their content knowledge prior to ever stepping foot in an actual classroom. For instructors who begin their careers teaching exclusively face-to-face, they learn and develop pedagogical skills next, as Shulman (1987) suggests. For the instructors who later begin teaching online, full integration of technological knowledge with the other components they have already mastered (content and pedagogy) may prove to be more of a challenge than has been considered. In the present study, learning development appeared to be more linear than integrated.

One reason for the disconnect between technology and pedagogy could be due to the simple fact that technology changes faster and far more frequently than pedagogy. Ertmer and Ottenbreit-Leftwich (2010) found that many online instructors feel like "perpetual novices" when it comes to technology (p. 261). This feeling is due, in part, to the fact that while one can develop and retain effective pedagogical skills and learn how to integrate them with new content, the technology changes so rapidly teachers may find it difficult to keep up with the changes. Whatever the case, the instructors reported higher confidence in the area of pedagogy and responded that it might have been beneficial to spend more time on the technology components.

The training program that was delivered in the present study had the intent of integrating pedagogy and technology for online instructors, but did not do this in practice. The notion of full integration is complicated, both from a teaching and a learning perspective. To be sure, some institutions, such as the University of Maryland, have merged their pedagogy and technology

teams into a single unit. While this may not be a panacea for all discrepancies between pedagogy and technology with respect to how instructors learn, it does lend support the notion of earlier and more consistent integration being more effective. Ultimately, when considering the findings of this study and where they fit with current knowledge and program delivery in the field, more information will be needed on how this integration is best achieved in training.

Recommendations for Practice

The first recommendation for practice is to ensure that the design and execution of the training is clearly aligned with its purpose. In this particular case, the purpose of the training was to develop and integrate the instructors' skills in both pedagogy and technology. However, as multiple participants in the present study noted, this was not achieved in this case. Multiple instructors observed and commented on the distinction between pedagogy and technology, and remarked that it would have been helpful to more effectively integrate the two during the training. A notable discrepancy among the intent, design, and execution of the training program may have played a role in how and why these instructors continued to view these as separate components. New and collaborative efforts could be incorporated into and executed in similar initiatives, and implemented earlier in the process. More specifically, faculty developers could teach the pedagogy alongside the particular technology that supports the teaching or learning goal during the same session, as opposed to doing so separately or on entirely different days and by two separate presenters, as was the case in this training program.

A second recommendation is that faculty developers do more to temper their participants' high expectations with those that are more realistic for the time and effort to be invested. Prior to the program, nearly every applicant wrote at length about their highly ambitious and positive

expectations for their experience and outcomes associated with the training. In reality, three weeks may be insufficient to learn everything they had anticipated. Perhaps differentiating between the basic objectives of the training that will be met within the timeframe and the higher expectations or goals that may require substantially more time could help temper unrealistic expectations about what the participants will learn or be able to do. More realistic expectations, in turn, may assist faculty members in remaining equally satisfied with the training over time and in feeling less frustrated about aspects that did not happen as initially expected.

Third, faculty developers should seek new ways of soliciting participation from instructors who could likely benefit the most from these types of training experiences. The student evaluation of teaching data revealed that the instructors who sought out this opportunity were already effective teachers, and intrinsically motivated to improve their abilities online. Not all instructors fall into this category, and faculty developers sometimes find that they are providing training for a consistently small, self-selected group of faculty who, while they will profit from training, need it least. Faculty developers should seek new ways of soliciting participation from other faculty, less motivated to participate in training. This recommendation could certainly prove to be challenging in institutions where teaching is perceived to be of lesser value than research, as the incentive structures in place to encourage investment in time-consuming teaching improvements may be noticeably absent (Fairweather, 2005). The findings of this study suggest the need for consideration and conversations about this issue to ensure that the instructors who may need training and support the most actually receive and benefit from it.

Another recommendation is that faculty programs integrate high levels of social learning and participant collaboration into their training programs. Scholars of earlier research have

demonstrated the importance of collaborative and interactive learning, and this study supports that notion, particularly as it relates to participant satisfaction with their learning experiences. Other professional development and training programs should continue to model this ideal of placing instructor participants in the seat of an actively and engaged student, engaged with one another as well as with the instructor, if they are not doing so already.

The fifth recommendation is to build continuing training and support into faculty development training programs. As the conclusions of this study, and others, suggest, strong and ongoing support for instructors learning to teach online is key to ensuring follow through with newly-acquired skills and knowledge.

A final recommendation for practice is that faculty developers use multiple data sources to evaluate their program's impact. With regard to executing a program or initiative, faculty developers often see the engagement happen, receive the positive evaluation scores for the programs or service, and feel safe in the assumption that all is well and that the desired impact was achieved. Multiple sources of data provide more accurate date about the complex nature and impact of professional development interventions.

Suggested Future Research

Additional research is needed on the long-term impact of faculty development and training programs. While this study of an intensive course redesign program demonstrated a modest impact on teaching effectiveness, other studies are needed to determine if changes instructors make evolve over time to carry over to their other courses. This topic could be addressed through a mixed methods study utilizing sources of data such as:

- review of syllabi for other courses taught by the instructor to determine if there may be content transference from the training program;
- comparisons of SET scores for all courses taught by participating instructors prior to and following their completion of a faculty development program that extend several years pre- and post-training;
- comparisons of a classroom observation using a rubric designed to collect information on the use of training knowledge across several courses taught following the training;
- analyses of course sites (e.g. in Blackboard or Moodle) to see which web-features learned in the training have actually been applied in the instructors' courses.

This topic of long-term impact is important because research is still needed to demonstrate the reach that faculty development programs have on participants. To best understand the complex nature of faculty development interventions and the outcomes they have on instructors, it is key that future research utilize sources of data from several points in time and from multiple perspectives (e.g. instructor self-report data, information collected from students, work product and document analysis, or independent observations of an instructor's teaching in action).

Additional research is also needed that builds on the TPACK model and how the idealized integration of the technology-pedagogy-content components can best be achieved in faculty development programs. Specifically, more knowledge is needed regarding the ways instructors learn and perceive the individual components and their integration beginning earlier in the process, for example, during learning and course planning and development. A study on this topic could be carried out qualitatively with a small group of junior faculty and training

developers, following them throughout the learning process. It would be useful to include data sources such as:

- written reflections about how both instructors and faculty developers view these components and how they understand their interrelatedness at various points in time;
- observations of the training program to determine if (and if so, *how*) content is taught in an integrated fashion;
- interviews with faculty developers and instructors immediately following the training to determine if faculty developers correctly perceive what instructors report they actually learn about integration;
- written program evaluation data to identify specific topics, skills, or tools were most challenging and how these gaps in knowledge could best be addressed.

By developing a more thorough understanding of when and how instructors learn, integrate, and apply the various components of the TPACK model, faculty developers and training program designers will be able most effectively align their training and delivery for the benefit of both online instructors and their students.

Third, additional research is needed to identify how, and to what extent, follow-up after training makes a difference for instructors. A growing body of research has demonstrated that follow-up matters. It is not yet understood, however, what this should look like or how it impacts instructors. A quantitative study comparing the differences between instructors who receive follow-up and those who do not could be useful to answering this question. Such a study would first require developing a structured follow-up training plan, and then surveying both groups at various points in time, beginning on the last day of the training and continuing for two

semesters following online course delivery. Survey items should address topics such as: continued satisfaction with the training, satisfaction with the online teaching experience, frequency and extent of the follow-up utilized, perceived usefulness of the follow-up, and information about what additional resources or further training would be of the greatest use.

Conclusion

As is the case with most skills a person acquires, there are multiple ways of doing it and likely even more ways of learning *how* to do it. The role of research in this regard is often to find how the process works, how it works best, and to determine the ways in which it can be improved to maximize the desired outcomes in varying contexts. In the case of learning to teach online, much of this work has been carried out already, but more is needed. This study demonstrated a need for more research regarding (a) how to best integrate the components of technology and pedagogy, and (b) how this integration relates to the design and execution of faculty development programs that have demonstrable impacts on instructors' teaching effectiveness.

In spite of what was not found in this study, the findings of this study may be useful to scholars and practitioners in two key ways. First, the findings demonstrated the challenges of achieving successful integration of technology and pedagogy from both a learning and a faculty development perspective. Second, this study began to address the gap in the current literature about the relationship between the approaches used for preparing instructors to teach online and their impact on teaching effectiveness and attitudes toward online instruction.

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Appendices

Appendix A: Supplemental Program Information and Schedule
Call for Proposals from Year 4

[redacted], with funding from the Provost office, are pleased to announce a Call for Proposals for the 2014 [redacted]. The goal of the Institute is to improve the quality of [redacted] courses by redesigning them using one of the following delivery methodologies:

Online: A course that you will offer totally online in an engaging, interactive format. This course could be a course moving online or a new course offering.

Flipped: A course that uses a pedagogical model in which the typical lecture and homework elements are reversed. Lecture / content material is presented in an engaging online format so that class time can be spent on problem-solving, discussion, and group activities that reflect higher levels of learning.

Blended: A course that uses online technologies to replace a subset of face-to-face sessions (for example, currently in the Spanish language offerings, one session a week is online). The online time is instructor-designed and facilitated, with interaction between instructor and student, and student-to-student.

The Institute offers authentic, hands-on learning experience and guidance to redesign and develop exemplary courses regardless of your delivery methodology. Faculty will be introduced to and implement best teaching practices, innovative use of technology, and quality standards for course development.

Stipends

The $2,500 stipends are awarded in 2 installments. The first half is paid upon participants meeting the expected deliverables of the Institute. The second part is paid based upon the participants achieving a successful course review and having the redesigned course listed in the timetable.

Prerequisites

Before the start of the Institute, all participants should have basic working knowledge of [redacted] (Blackboard Learn). For those who will be offering online courses, these participants need to complete training for (or have working knowledge of) Blackboard Collaborate. You can register for online introductory workshops at: [redacted]. Participants will engage in some online content and discussion two weeks prior to the Institute.

Participants are required to bring a laptop to the Institute, as well as have a Twitter account.

Dates:

March 26, 2014	Proposal submission due
April 14, 2014	Program recipients to be notified

June 3, 2014	Institute starts
June 21, 2014	Institute ends
June 27, 2014	Deliverables due (First half of stipend paid when deliverables are submitted)
Summer / fall 2014	Course reviewed
Fall 2014, spring 2015 or summer 2015	Course appears on the timetable (second half of stipend paid)

Who Should Apply

The [redacted] is open to tenured and tenure-track faculty, lecturers, and adjuncts. Priority will be given to instructors whose departments have identified a need and those whose departments need online courses. Instructors will be revising or creating a course that should be delivered in the fall, spring or summer following the Institute.

Expectations for Institute Participants

Participants will be involved in active learning, including groups designed to support individual work. Sessions will include discussions of course design, learning environments, active learning, scaffolding, assessment, and the creation of learning communities. Training will also incorporate instructional technology topics on Blackboard Learn tools: grade center, assignment manager, assessments, online groups, blogs, and wikis; course content tools such as Adobe Captivate and Camtasia; classroom technologies; and more. Training on tool use will be paired with discussion of pedagogy and with practice in the context of an individual's course design.

The Learning Objectives of the Institute:

Discuss course design principles in online, blended, and flipped formats and create course goals and student learning objectives.

Apply knowledge and tools of instructional design and pedagogy / andragogy in redesigning a course site.

Integrate institutional knowledge (including ADA and copyright) into online teaching.

Apply active, engaged learning principles to the course design and delivery.

Select and implement appropriate technology tools.

Plan and practice online social presence and online learning community building.

Determine how to meaningfully assess student learning and course effectiveness in an online, blended, or flipped class.

Deliverables

Syllabus (which includes course planning elements):

objectives/teaching-learning strategies/assessments

calendar (of activities, learning events etc., indicating what is f2f and what is online)

Blackboard site laid out (learning units; communication tools and activities; major assessments)

Online activity that builds online learning community using, for example, a discussion forum, blog, wiki, voice thread, and Blackboard Collaborate. During the Institute, each participant will implement this activity for practice of social presence (teacher-student-student communication) with other participants.

An assessment plan, including a major assessment with rubric (e.g., an end of semester assignment or test) posted on your Blackboard course site.

Session plan ("three column model") for the first week of the course (online, blended, or flipped).

One or more multi-media products to deliver content online.

The completed course will be made available to your [redacted] facilitator for course review

Proposal Requirements

Please provide the following:

- A cover page:
- Course name and number
- Faculty's name and title
- UT campus and mail address
- Faculty's college and department
- Faculty's phone number and email

- A 1-2 page narrative:
- Why you want to participate in the Institute
- How you plan to change your course
- What you hope to learn
- Anticipated outcomes
- A syllabus for the existing course selected for redesign or university-approved course proposal.
- An example of a major assessment (e.g., final exam, project) and grading criteria if available.
- A letter of support from the department head:
- The department head should indicate either that
- The course is useful and helpful to the curriculum or
- There is a need for an online or blended course, for example, to accommodate enrollment or need for space.
- If supporting an adjunct or GTA, the department chair should indicate how the course could be transferred to other instructors as needed.
- A statement of commitment to meet the Institute expectations.
- Selection of participants may be based on degree of impact of the course, course demand, and departmental objectives, and curriculum needs.

Please submit your proposal as Microsoft Word or Adobe PDF documents attached to [redacted] by March 26, 2014. Contact [redacted] at [redacted] or [redacted] at [redacted] if you have questions regarding this Institute.

Sample Program Schedule

- All sessions in gray are required.
- Attend **at least 4 electives** (find the workshop descriptions on a numbered list of elective workshops below the table).
- **Bring your laptop** to all sessions unless the Topic indicates that the CIT laptops will be provided.

Week 1				
Date	Time	Topics		Location
Tue, June 4 **Institute starts**	9:00-9:30	Introduction	Jen, Dan, Sally, Jenny All	408 Milton Hall
		Table introductions	Joe, Lila, Brandy	
	9:30 -11:00	Guest presentations (OTI 2012 participants)	Dan	
	11:00-noon	Course values and goals		
	1:00-1:15	The OTI Blackboard site and deliverables	Jen & Isabel	408 Milton Hall
		Course learning outcomes		
	1:15-2:15	BREAK	Tammy	
	2:15-2:30	Syllabus revised		
	2:30-3:00	Learning environments	Jen	
	3:00-4:00	Reflection/feedback	Steve	

Wed, June 5	9:00-9:40	Three types of teaching	Dan	408 Milton Hall
	9:40-10:30	Social engagement for community building	Tammy & JoAnne	
		BREAK		
	10:30-10:45	Group management		
	10:45-11:30	Managing groups in Blackboard Learn	Dan, Tammy, JoAnne	
	11:30-noon	Reflection/feedback	Rosa	
Electives	1:00-4:00	Adobe Captivate – CIT laptops, limited to 10 participants (#1)	Celia	520 Milton Hall
	1:00-3:00	Camtasia for Windows (#2)	Isabel	408 Milton Hall
	3:15-5:00	One Shot Video (#3)	Marty & Tammy	408 Milton Hall
Thur, June 6	9:00-9:10	Overview	Dan or Jen	408 Milton Hall
	9:10-10:10	Critical thinking questions	Kara and Tammy	
	10:10-10:25	BREAK		
	10:25-11:00	Questioning for higher order and inquiry based learning	Gina	
	11:00-noon	Technology tools and active learning	Isabel	
	LUNCH			

	1:00-2:15 2:15-2:30 2:30-3:30 3:30 – 4:00	Scaffolding learning BREAK Session design Week 1 Reflection	Steve & Tammy Steve, Tammy, Isabel	408 Milton Hall
Fri, June 7		Day Off		
Week 2				
Mon, June 10 Electives	9:00-11:00 9:00-11:00 1:00-3:00 1:00-3:00	Mobile Technology (#4) PowerPoint with Voiceover for Windows – CIT laptops, limited to 14 participants (#5) Blogs and Wikis in Online@EDU (#6) Camtasia for Mac (#2)	Lois, Gina & Margaret Donna Leesa Isabel	408 Milton Hall 520 Milton Hall 408 Milton Hall 520 Milton Hall
	3:30-5:00	Blackboard Collaborate test flight (this is not a workshop)*	Marilyn	Online
Tue, June 11	9:00-noon	Blackboard Collaborate session	Marilyn, Rosa, Tammy	Online

	Afternoon	Work time on your own. Consultation on your course is available on request.		408 Milton Hall
Wed, June 12	9:00-9:15 9:15-10:00 10:00-10:15 10:15-11:00 11:00-noon	Formative and summative assessment introduction Creative summative assessment BREAK Rubric creation Blackboard course design Online@EDU assessment tools overview	Steve, Tammy, Steve, Tammy, Corinne Corinne, Beth Rosa Rosa, Ted	408 Milton Hall
	1:00-1:45 1:45-2:30 2:30-2:45 2:45-4:00	Formative assessment BREAK Independent work/Open consultations Reflection/feedback	Steve, Tammy,	408 Milton Hall

Thur, June 13	9:00-11:00	Engagement in the Online Classroom (#7)	Marilyn & Rosa	Online
Electives	9:00-noon	Adobe Captivate – CIT laptops, limited to 10 participants (#1)	Cyndy	520 Milton Hall
	1:00-3:00	Best Practices for Online@EDU Assessment Tools (#8)	Ted	408 Milton Hall
	1:00-3:00	Clicker Technology (#9)	Gina & Dan	520 Milton Hall
Fri, June 14	9:00-11:00	One Shot Video (#3)	Marilyn & Tammy	520 Milton Hall
Electives	9:00-11:00	Grade Center Best Practices (#10)	Ted	408 Milton Hall
	1:00-3:00	Visual Learning (#11)	Tammy, Beth, and Joan	408 Milton Hall
	1:00-3:00	SMART Classroom (#12)	Julie & Dan	205-Humanities
Week 3				
Mon, June 17	9:00-noon	Group sharing – discuss your progress and course development plans		408 Milton Hall
Electives	1:00-3:00	Threshold Concepts in Course Design (#16)	Tammy	520 Milton Hall
		Online@EDU Rubrics (#17)		
	1:00-3:00		Leesa	408 Milton Hall

Tue, June 18 Electives	9:00-11:00 9:00-11:00 1:00-3:00 1:00-3:00	Classroom Management (#13) Mobile Technology for the Classroom (#11) Clicker Technology (#9) Engagement in the Online Classroom (#7)	Steve, Tammy, Jean Lois, Gina, Margaret Gina & Dan Marilyn & Rosa	408 Milton Hall 520 Milton Hall 520 Milton Hall Online
Wed, June 19 Electives	9:00-11:00 9:00-11:00 1:00-3:00 1:00-3:00	Accessibility in Online Instruction (#14) Blogs and Wikis in Online@EDU (#6) Integrating Library Resources (#15) SMART Classroom (#12)	Jerry & David N. Leesa Rosa & Leesa W. Julie & Dan	220-E Hodges 408 Milton Hall 220-E Hodges 205-A HSS
Thur, June 20		*Work day*		
Fri, June 21 **Institute ends**	9:00-noon	Participants presentations Deliverables are due		408 Milton Hall

*Blackboard Collaborate Test Flight

The Blackboard Collaborate Test Flight gives you the opportunity to log in and test your system for a LiveOnline class before the actual live online sessions. You will need speakers and a microphone or a headset with a microphone to fully test your in-class audio and a webcam to test your video. If you have any questions or problems during the Test Flight, support personnel are available via telephone (865.974.3117 or 1.877.974.3117) to assist you.

Elective Workshops

(1) Adobe Captivate

Turn your PowerPoint presentation into a self-contained online learning module in which students interact with the slides through hyperlinks and quizzes. Learn how to use Adobe Captivate to create an online interactive learning module that contains slides, images, screenshots, video, audio, captions, hyperlinks, and self-testing quiz questions.

(2) Camtasia

Using Camtasia, you can create a course site tour, learning guide, exam review, or a slide presentation. This hands-on workshop will guide you through the steps of creating an online instructional video that includes digital recording of a computer screen. You will learn how to record your interaction with a website or application, then you will polish your screencast with basic editing techniques, zoom-in effects and transitions, imported media, callouts, and closed captions.

(3) One Shot Video

This workshop will present two methods of creating video lectures in “one shot” (without video editing). Each video will be short and convey a concept to students quickly and without fuss—using either Blackboard Collaborate or your own video capture device (tablet, phone, or webcam). Participants will leave with some practice in each video method in the context of approaches and techniques for creating engaging video.

(4) Mobile Technology for the Classroom

Take an iPad or tablet out for a spin! This class will be driven by you! What do you want to do? Become more efficient? Have interactivity? Learn organization tips? Engage students beyond the class? Discuss what enhancements are available for iPads and tablets? Then take things to the next level using the tablet in and outside of the classroom. Participants will discover mobile technologies for creating and storing course content while adding collaboration and interaction to the teaching and learning environment.

(5) PowerPoint with Voiceover

In this workshop, you will learn how to create a PowerPoint 2010 presentation with audio narration on a Windows PC, save it as a video, and then share the video online.

(6) Blogs and Wikis in Online@EDU

In this workshop, you will be introduced to the types of interactive tools found in Blackboard Learn. You will work in small groups to brainstorm ideas for the use of blogs and wikis. You will develop student learning activities using blogs and wikis for your own courses. This will be hands on with support so that there will be time to work and learn with guidance.

(7) Engagement in the Online Classroom

Join in the fun as we review engagement tools within the online classroom. We'll go "hands-on" with Emoticons, Text Chat, Webcams and Microphones, and then launch into interactive engagement tools like online Polling and Quizzes. Learn how to add quiz questions before and during the session, build an interactive poll, and share the results in real-time.

(8) Best Practices for Online@EDU Assessment Tools

Learn to create, manage, deploy, and grade online assessments using the assessment tools in Online@EDU. We will also learn about best practices to create a more efficient online experience for both you and your students.

(9) Clicker Technology

Learn how to use Turning Point Clicker Technology, an audience response system, to enhance student engagement, gather data, and provide instant feedback and assessment.

(10) Grade Center Best Practices

Learn about best practices in managing grades online using the Grade Center within your Blackboard Learn course site.

(11) Visual Learning

Learn about new research on visual learning, aligning the use of visuals with student learning at various levels (based on Bloom's taxonomy), and using resources appropriate to the discipline.

(12) SMART Classroom

Have you heard about or seen the flexible classrooms in HHS? Chairs on wheels. Multiple two sided whiteboards, also on wheels. A Smart Interactive Display panel on one wall, and a large projection screen on a different wall. No "front" of the room. Sound chaotic? Yes. Sound exciting? Yes. Ready to STOP using the Smartboard and empower your students to use it instead? Join us for this workshop.

(13) Classroom Management

Learn and practice effective class management techniques as well as think through ethical issues and methods of promoting civility in the classroom. Managing groups in flexible classrooms will also be an emphasis.

(14) Accessibility in Online Instruction

Course sites and course materials must be accessible to all students, including those with disabilities. Discuss the barriers that students with disabilities may encounter online, find out about the techniques to minimize those barriers, and learn about the EDU accommodation process.

(15) Integrating Library Resources

This hands-on session will assist you with finding and integrating a variety of online library resources into your Blackboard Learn course sites, such as books, articles, videos, search results and more. We will also provide suggestions for partnering with your subject librarian liaison to create course materials specifically tailored to your course content.

(16) Threshold Concepts in Course Design

This workshop will introduce you to the idea of Threshold Concepts, those concepts in your course that students are most likely to stumble on and that they need to grasp in order to move forward in your discipline. Participants will look at their own disciplinary content and related resources, and then we will consider how to best design a course with a focus on teaching threshold concepts.

(17) Online@EDU Rubrics

You will have an introduction to the rubric tool in Online@EDU/Blackboard Learn. You will work in a small group to brainstorm rubric qualities for online assignments. Then you will develop one or more for your own course. This will be hands on with support so that there will be time to work and learn with guidance.

Program Syllabus

[redacted]

COURSE SYLLABUS
[redacted]
2013

Meeting Time and Place: [redacted]

FACULTY CONTACT INFORMATION: See facilitator introductions on BlackBoard as well as [redacted] websites.

I. COURSE DESCRIPTION: The Institute, sponsored by the Provost's office, supports faculty in redesigning a course using one of the following delivery methodologies:

- **Flipped:** A course that uses a pedagogical model in which the typical lecture and homework elements are reversed. Lecture / content material is presented in an engaging online format so that class time can be spent on problem-solving, discussion, and group activities that reflect higher levels of learning.
- **Blended:** A course that uses online technologies to replace a subset of face-to-face sessions (for example, currently in the Spanish language offerings, one session a week is online). The online time is instructor-designed and facilitated, with interaction between instructor and student, and student-to-student.
- **Online:** A course that you will offer totally online in an engaging, interactive format. This course could be a course moving online or a new course offering.

II. VALUE PROPOSITION: The goal of the Institute is to improve the quality of [redacted] courses, and the value of the institute lies in the time and attention given to this task. Faculty can take time to reconsider their approaches, assumptions, and past practices in the company of peers who are engaged in the same goal, all the while supported by a team of faculty developers and instructional designers from [redacted] and the [redacted].

III. COURSE OBJECTIVES:

This institute is designed to

- raise awareness of teaching types and variety of choices in technology;
- extend awareness of [redacted] resources for teaching;
- build awareness of use of social media to build community;
- And increase awareness of the need for flexibility in pedagogy and classroom dynamics. We want to help participants feel more positive and successful about teaching online and about using technology. We want to help participants' better use of course and session design and

evidence of learning in their teaching.

The institute is designed to help participants teach through use of active learning, with technology and none-tech means, both online and in classrooms, to engage students in a learning community, and to create courses that bring about student engagement and better student learning outcomes.

IV. STUDENT LEARNING OUTCOMES:

Upon completion of the institute, participants will:

- Begin to implement methods of course and session design
- Write effective student learning outcomes
- Make choices about technology that supports these outcomes
- Demonstrate skills with course design (with flipping a course / elements of a course or putting a course online)
- Redesign an existing course syllabus
- Create a session design
- Redesign assessment(s)
- Begin a redesigned Blackboard site

V. LEARNING ENVIRONMENT: The Institute emphasizes active learning through class activities, group collaboration, and online group and individual work. A facilitator is assigned to each group, so that participants can easily ask questions and get prompt feedback. This year, the Institute is designed around some features of the flipped classroom. While not every day is "flipped," most of the required sessions have pre-session assignments, and participants are given more time in sessions to work on their own courses.

VI. TEXTS/MATERIALS/RESOURCES: Laptop and online reading are required.

VII. INFORMATION LITERACY/TECHNOLOGICAL RESOURCES: Each day is outlined on our Blackboard site, including supporting materials.

VIII. COURSE REQUIREMENTS, ASSESSMENT AND EVALUATION METHODS: Please consult the Blackboard site for required deliverables.

IX. COURSE FEEDBACK: We will ask for feedback daily! Please participate in calls for tweets and in our short surveys and reflective writing prompts. Thank you for completing the pre-institute survey.

X. PARTICIPANTS WITH DISABILITIES POLICY: Please let us know if you require accommodations.

XI. COURSE SCHEDULE:

- All sessions in gray are required.
- Attend **at least 4 electives** (find the workshop descriptions on a numbered list of elective workshops below the table).
- **Bring your laptop** to all sessions unless the Topic indicates that the [redacted] laptops will be provided.

Appendix B: Program Components as Supported by the Scholarly Literature

Table A-1

Effective Practices for Preparing Online Instructors

Practice/Recommendation	**Supporting Literature**
Ensure broad institutional support (i.e., administration, faculty development, departments, etc.) for instructor training	Covington, Petherbridge, & Warren (2005); Marek (2009); Yang & Cornelius (2005)
Provide clear expectations about content, workload, and time commitment	Lee et al. (2010); Maguire (2005); Park & Bonk (2007); Paulus et al. (2010);
Provide a stipend, incentive or other recognition/reward for instructor participants	Benton (2011); Daly (2011); Rovai (2009); McQuiggan (2006); Yang & Cornelious (2005);
Place instructors in the role of the student	Conceicao (2006); DeMaria & Bongiovanni (2010); Dukes, Waring & Koorland (2006);
Model best teaching practices for participants	Diaz et al. (2009); Paulus et al. (2010);
Incorporate multiple dimensions of learning/ follow adult learning theory	Diaz et al. (2009); Paulus et al. (2010); McQuiggan (2007)
Provide opportunities for group sharing, discussion, or reflection among peer participants/ create community of learners	Covington, Petherbridge, & Warren (2005); Paulus et al. (2010); Schauer et al. (1998);
Integrate technological and pedagogical training (as opposed to delivering separately)	Bailey & Card (2009); Keengwe & Kidd (2010); Marek (2009); Oomen-Early & Murphy (2009); Roman, Kelsey, & Lin (2010)
Have pedagogy guide the technology training and use	Appana (2008); Jacobsen et al. (2002); Keengwe & Kidd (2010); Shieh, Gummer & Niess (2008)
Support all levels of instructors (from novice to expert) throughout their training process	Diaz et al. (2009); Marek (2009); Terantino & Agbehonou (2012)
Training and/or support should be ongoing	Barker (2003); Diaz et al. (2009); Fish & Gill (2009);
Offer the training during a time that enables instructors to enact changes sooner (i.e., do not offer in the middle of the semester)	Roman, Kelsey, and Lin (2010)

Appendix C: Researcher Qualifications

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)

SOCIAL & BEHAVIORAL RESEARCH - BASIC CURRICULUM COMPLETION REPORT

Printed on 10/11/2014

LEARNER	Karen Brinkley (ID: 2554783) [redacted] Knoxville Tennessee 37920 USA
DEPARTMENT	Education
PHONE	8033617600
EMAIL	kbrinkl2@utk.edu
INSTITUTION	University of Tennessee-Knoxville
EXPIRATION DATE	10/09/2017

SOCIAL & BEHAVIORAL RESEARCH - BASIC/REFRESHER : Choose this group to satisfy CITI training requirements for Investigators and staff involved primarily in Social/Behavioral Research with human subjects.

COURSE/STAGE:	Refresher Course/2
PASSED ON:	10/10/2014
REFERENCE ID:	10961878

REQUIRED MODULES	DATE COMPLETED	SCORE
SBE Refresher 2 - Instructions	10/10/14	No Quiz
SBE Refresher 2 – Federal Regulations for Protecting Research Subjects	10/10/14	1/1 (100%)
SBE Refresher 2 – Defining Research with Human Subjects	10/10/14	1/1 (100%)
SBE Refresher 2 – Research with Children	10/10/14	1/1 (100%)
SBE Refresher 2 – Research in the Public Schools	10/10/14	1/1 (100%)
SBE Refresher 2 – International Research	10/10/14	1/1 (100%)
SBE Refresher 2 – Informed Consent	10/10/14	1/1 (100%)
SBE Refresher 2 – Privacy and Confidentiality	10/10/14	1/1 (100%)
SBE Refresher 2 – Assessing Risk	10/10/14	1/1 (100%)
SBE Refresher 2 – Research with Prisoners	10/10/14	1/1 (100%)
SBE Refresher 2 – History and Ethical Principles	10/10/14	1/1 (100%)
Completing the SBR 201 Refresher Course	10/10/14	No Quiz

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI Program participating institution or be a paid Independent Learner. Falsified information and unauthorized use of the CITI Program course site is unethical, and may be considered research misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Program Course Coordinator

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)

RESPONSIBLE CONDUCT OF RESEARCH CURRICULUM COMPLETION REPORT

Printed on 10/11/2014

LEARNER	Karen Brinkley (ID: 2554783) 306 Hermitage Drive Knoxville Tennessee 37920 USA
DEPARTMENT	Education
PHONE	8033617600
EMAIL	kbrinkl2@utk.edu
INSTITUTION	University of Tennessee-Knoxville
EXPIRATION DATE	10/06/2024

SOCIAL AND BEHAVIORAL RESPONSIBLE CONDUCT OF RESEARCH COURSE : This course is for investigators, staff and students with an interest or focus in Social and Behavioral research. This course contains text, embedded case studies AND quizzes.

COURSE/STAGE:	RCR/1
PASSED ON:	10/09/2014
REFERENCE ID:	7006857

REQUIRED MODULES	DATE COMPLETED	SCORE
Knoxville Institutional Page	09/18/14	No Quiz
Responsible Conduct of Research (RCR) Course Introduction	09/18/14	No Quiz
Research Misconduct (RCR-SBE)	09/18/14	5/5 (100%)
Data Management (RCR-SBE)	09/18/14	4/5 (80%)
Authorship (RCR-SBE)	09/18/14	4/5 (80%)
Peer Review (RCR-SBE)	10/09/14	5/5 (100%)
Mentoring (RCR-Interdisciplinary)	10/09/14	5/5 (100%)
Conflicts of Interest (RCR-SBE)	10/09/14	5/5 (100%)
Collaborative Research (RCR-SBE)	10/09/14	4/5 (80%)
Plagiarism (RCR-Basic)	10/09/14	4/5 (80%)
Responsible Conduct of Research (RCR) Course Conclusion	10/09/14	No Quiz
ELECTIVE MODULES	**DATE COMPLETED**	**SCORE**
Case Study - Truth or Consequences (RCR-Physical Sciences)	10/09/14	3/3 (100%)

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI Program participating institution or be a paid Independent Learner. Falsified information and unauthorized use of the CITI Program course site is unethical, and may be considered research misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Program Course Coordinator

Appendix D: IRB Approval for Study and Related Study Documents

THE UNIVERSITY OF TENNESSEE KNOXVILLE

June 14, 2016

Re: UTK IRB-16-02825XP
Study Title: Preparing for Online Instruction: An Investigation of the Impacts of Faculty Development Training on Teaching Effectiveness Online

Dear Karen Elizabeth Brinkley:

The UTK Institutional Review Board (IRB) reviewed your application for the above referenced project. It determined that your application is eligible for expedited review under 45 CFR 46.110(b)(1), category (5). The IRB has reviewed these materials and determined that they do comply with proper consideration for the rights and welfare of human subjects and the regulatory requirements for the protection of human subjects. Therefore, this letter constitutes full approval by the IRB of your application (version 1.8) as submitted, including PI Response Form (v3.0), Consent Letter IRB 6.13 (v2.0), and the Recruitment Email 5.9 (v1.0), which have been dated and stamped IRB approved. Approval of this study will be valid from June 14, 2016 to June 13, 2017.

In the event that subjects are to be recruited using solicitation materials, such as brochures, posters, web-based advertisements, etc., these materials must receive prior approval of the IRB. Any revisions in the approved application must also be submitted to and approved by the IRB prior to implementation. In addition, you are responsible for reporting any unanticipated serious adverse events or other problems involving risks to subjects or others in the manner required by the local IRB policy.

Finally, re-approval of your project is required by the IRB in accord with the conditions specified above. You may not continue the research study beyond the time or other limits specified unless you obtain prior written approval of the IRB.

Sincerely,

Colleen P. Gilrane

Colleen P. Gilrane,
Ph.D. Chair

A Study of Training and Preparation for Online Instruction

RECRUITMENT EMAIL

Dear _____

My name is Karen Brinkley and I am a doctoral candidate at the University of Tennessee, Knoxville in the Higher Education Administration program. You may recognize my name or know me personally through interaction at events held by the [redacted], where I was a graduate research assistant for four years.

For my dissertation, I am interested in how instructors such as yourself learned to teach online, and I would like to better understand the impact of the training you received. Specifically, I am conducting a study involving individuals who participated in the [redacted] between 2011 and 2014. My research involves the examination of several sources of data that are currently in possession of the [redacted], including your course syllabi and STI application materials. The current director of the [redacted], Dr. [redacted], has agreed to share this information with me *only* for the instructors who provide their consent for me to access it. Beyond providing me your consent to review these materials, you will not be asked to do anything else for this research.

Since you are a former participant of the [redacted], I hope you will allow me to access these materials as part of my research. Should you decide to participate, you will play an important role not only in helping to formulate a more thorough understanding of the impacts of training for online instructors, but also in development of future programs designed to assist online instructors both here and outside of The University of Tennessee.

For your review, I have attached a copy of the informed consent letter for this study. I hope you will take a few moments to review it so that you may learn more about my research. Please do not hesitate to contact me at any time should you have any questions.

Thank you,

Karen Brinkley

A Study of Training and Preparation for Online Instruction

INFORMED CONSENT LETTER

Introduction

My name is Karen Brinkley and I am a doctoral candidate at the University of Tennessee, Knoxville in the Higher Education Administration program. You may recognize my name or know me personally through interaction at events held by the [redacted] ([redacted]), where I was a graduate research assistant for four years.

For my dissertation, I am interested in how instructors, such as yourself, learned to teach online, and would like to better understand the impact of the training you received. Specifically, I am conducting a study of individuals who participated in the [redacted]'s [redacted] between 2011 and 2014.

Since you are a former participant, I hope you will allow me to review some of your completed STI materials as part of my research.

Information about Your Part in this Study

If you agree to participate, I would like to request your permission to access and review the following materials for use in this research study:

(1) **The written responses you submitted to the [redacted] in the 4-question application** prior to your participation, which asked you:

a. Why do you want to participate in the program?
b. How will your course be redesigned?
c. What do you hope to learn?, and
d. What are your anticipated outcomes?

(2) **The pre and post syllabi for your redesigned course** that you submitted along (first) with your application and (second) via Blackboard at the end of the [redacted].

(3) **Your permission to view the numerical/quantitative SAIS (teaching evaluation scores) for the class you redesigned.** These scores will be collected by the researcher from the publically-available Tennessee 101 website database, so you will not be asked to provide any information beyond your consent. Only the four core questions from the form will be collected, and these Likert-scale items include:

a. The course as a whole
b. The course content

c. Instructor contribution to the course, and
d. Instructor effectiveness in teaching the material

Risks

The risks of participating in this research are minimal, and are no greater than those encountered in everyday life. However, while highly unlikely, the loss of confidentiality is always possible any time identifiable research data is used.

Benefits

While participants will receive no anticipated or immediate benefit, your involvement and feedback may assist faculty developers within and outside of The University of Tennessee, Knoxville in providing quality training for future online instructors.

Confidentiality

Your information will remain confidential and protected at all times and will not be shared with others. No reference will be made in oral or written reports which could link you to the study. This means that your name, teaching status, departmental affiliation, and the course you redesigned will *not* be reported in any way that could be used to identify you. This will be done by:

(a) Using a pseudonym in the event a direct quote from your application is used, and
(b) Reporting all other data *only* in the aggregate form

All information on the researcher's computer will use an unidentifiable participant identification number in place of your name to ensure your further protection. Throughout the duration of this project and for three years following, all electronic copies of data will be kept on one password protected computer in the researcher's home office.

Compensation

No payment or other compensation will be given to participants for their involvement in this research.

Contact Information and How to Learn More about this Research

If you would like to obtain more information about this project, or have any problems please feel free to contact the researcher, Karen Brinkley via:

- Office Phone: 865.974.2104 / Email: kbrinkl2@utk.edu

- Mail: 1331 Circle Park Drive / P225-C Andy Holt Tower / Knoxville, TN 37996
- Faculty Advisor: Norma Mertz / nmertz@utk.edu / 865-974-6150

If you would like more information about your rights as a participant, or have questions about university policies and procedures for research involving human subjects please contact University of Tennessee Knoxville IRB Office, telephone 865-974-7697.

Participation

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be excluded in its entirety.

Only the researcher and her advisor will know if you agree to have your data sources reviewed for this research. Data collection for this research study is planned to begin June 15, 2016 and will conclude by July 31, 2016.

Sincerely,

Karen Brinkley

Karen Brinkley, Ph.D. Candidate, Educational Leadership and Policy Studies

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Statement of Consent

If you agree to participate in this study, please sign and date below, and return to the researcher at your earliest convenience.

I agree to take part in this project. I have been advised of the purpose of the study and the activities involved, and I am aware that I may withdraw or cancel my involvement at any time. I have received a copy of this consent form for my records.

Participant Signature	**Date**	**Investigator Signature**	**Date**

Appendix E: List of Nvivo Codes and Emergent Themes

Table A-2

Complete List of Codes Applied During Qualitative Analysis

Node Name	Definition	Sources	Total
TCPK	*Addresses aspects/merging of TCPK components*	*3*	*122*
Technology	Comments pertaining to the use, adoption, implementation, challenges, or opinions on any technology tool, resource, or instrument.	3	73
Pedagogy	Comments specific to teaching, teaching practices, implementation of new methods, attempts, or interest in pedagogical techniques	3	36
Content	Comments about the contents of a course, subject, material, etc.	2	9
Pre-Training	*What participants said before they began their training*	*2*	*98*
Outcomes	Outcomes expected as a result of participation	1	22
Learn	What the instructor hoped to learn most in the STI	1	33
Fear	Fear, concern, apprehension, nervousness, or other negative expectation about online teaching	2	8
Desire	This was the instructor's intended plan for his or her redesigned course	1	1
Changes	The change to the course the instructor plans to make	1	34
Post-Training	*Comments made after participants' training*	*1*	*25*
ActualLearn	What the participant learned in the program	1	15
ActualChange	What the participant changed as a result of the program	1	7

Table A-2: Continued

Complete List of Codes Applied During Qualitative Analysis

Motivations	**Primary reason the instructor wanted to participate in the program**	**1**	**49**
Technology	The instructor wants to learn for his or her own professional and skill development	1	15
Students	The students or their learning is the primary motivator for participation	1	17
Pedagogy	The instructor wants to learn for his or her own professional and skill development	1	15
Other	Other motivations for participating	1	1
Feedback	**Comments that instructors made about the nature of the training**	**3**	**173**
Recommend	A specific recommendation based on the instructor's experience in the program	2	31
Positive	A positive statement made about any aspect of the instructor's experience in the program	3	90
Negative	A negative/critical statement or opinion about the instructor's experience in the program	2	29
Community	Comments related to building relationships; camaraderie; friendship, peer feedback.	2	23
CourseType	**Comments made about specific formats of courses**	**3**	**28**
Online	Comments specifically about online courses	2	5
Flipped/Hybrid	Comments specifically about flipped or hybrid courses	2	19
Face-to-Face	Comments specifically about face-to-face courses	3	4
	TOTAL NODES ACROSS ALL QUALITATIVE DATA SOURCES:		*495*

Appendix F: Sample Program Evaluation Form Conducted Annually

	Strongly Disagree		Neutral		Strongly Agree
The program was beneficial overall.	1	2	3	4	5
The program was well organized.	1	2	3	4	5
Overall, the sessions were engaging.	1	2	3	4	5
Overall, the sessions were informative.	1	2	3	4	5

What did you like most about the program?

What could be improved about the program?

General comments:

Appendix G: Collection of Student Evaluation of Teaching Data

Figure A-1 shows the SET data collected for each instructor who met the study inclusion parameters outlined in chapter three.

Instructor Identification Code (1)			**Course Redesigned (2)**		**STI Participation Year (3)**	
Course Taught	***Semester Taught***	***SET Item A: Course as a Whole***	***SET Item B: Course Content***	***SET Item C: Instructor Contribution***	***SET Item D: Instructor Effectiveness in Teaching***	***# of Students who Completed SAIS Form***
		(4)				
		(5)				
		(6)				
		(7)				
		(8)				
		(9)				
		(10)				
		(11)				
Pre-Training Averages		**(12)**	**(12a)**	**(12b)**	**(12c)**	**(15)**
Post-Training Averages		**(13)**				
Difference from Pre to Post		**(14)**				

All gray cells will include the identifying instructor information; data were for all instructors who have data available per the parameters established in chapter three.
See items 1, 2, and 3.

All green cells include data available for the course the instructor planned to redesign in the training program; the data collected is for all available sections of the particular course, pre-training. The data collected is for all available sections of the particular course taught by the instructor, pre-training. As an example, see items 4, 5, 6, and 7.

All blue cells include data for the course the instructor redesigned in the training program; the data collected is for all available sections of the particular course taught by the instructor, post-training. As an example, see items 8, 9, 10, and 11.

The purple cells include averages for all pre-training course evaluation sections *and* all post-training course evaluations in the second purple row. As an example, item 12 would include an average of items 4, 5, 6, and 7; likewise, item 13 would show the average of 8, 9, 10, and 11.

The peach cells show the change that took place between the pre-training averages as compared to the post-training averages. For example, item 14 would show the difference for item 13 minus item 12.

The darker purple cells, shown above as items 15 and 16, would show the pre and post-training averages across all 4 indicators. For example, cell 15 would show the average for items 12, 12a, 12b, and 12c.

Figure A-1: Illustration of SET Data Collection

Appendix H: Copy of Syllabus Review Checklist

Syllabus Template Checklist

Instructor:

Course:

Pre or Post STI Syllabus:

Participant Year:

Participant Track:

☐ **Detailed course information**, such as the course section and number, meeting time and place, and course credit hours
Comments:

☐ **Course Learning Objectives/ Outcomes** (clearly stated in the syllabus)
Comments:

☐ **Programmatic outcomes or department goals** (in addition to course goals)
Comments:

☐ **Faculty contact information** as well as TA information if it is available
Comments:

☐ **Description or overview statement of the course** (such as what would be found in the course catalogue)
Comments:

☐ **Value statement** of the course, explaining to students why the course is important or useful to them
Comments:

☐ **Learning environment statement** (methods of instruction, roles and or responsibilities of students/instructor, what will take place in the class, tools for learning, etc.)
Comments:

☐ **Information about required texts**, recommended texts, materials or supplies or other related information such as the course URL
Comments:

☐ **Information about or Links to Technology Resources** (Blackboard, Libraries, etc.)
Comments:

☐ **Course requirements, assessments, and student evaluations** (e.g. the grading system, rubric use, weighting or curves, grade distribution, grade appeals, etc.)
Comments:

☐ **Names and due dates** of major assignments and exams
Comments:

☐ **Information on how to be successful in the course** (guidelines, time to prepare, expectations for participation, etc.)
Comments:

☐ **Course feedback**, or the methods of feedback from student→teacher and teacher→student
Comments:

☐ **University policies** (e.g. discrimination, civility, cheating and plagiarism, honor statement, etc.)
Comments:

☐ **Links to key resources** for students (catalog, *Hilltopics*, student success, etc.)
Comments:

☐ **Entire course outline** or schedule/calendar
Comments:

☐ **Community Component** (e.g. discussion boards, online forum, or chat component)
Comments:

☐ **Instructional Technologies / Web 2.0** (uses and/or informs students of course use of one or more instructional technologies or Web 2.0 tools for in or out of class components of the course)
Comments:

☐ **Technology Skills Needed** (syllabus provides specific information on what skills are needed and/or where and how to obtain technical assistance if necessary)
Comments:

☐ **Accessibility** (the syllabus provides a statement about accessing disability services or explains how components of the course have been made accessible for students)
Comments:

Total Checkmarks: / 20
Percentage Checked:

Appendix I: Copy of Online Follow-up Survey

The purpose of this brief survey is to collect information about your experience and ongoing satisfaction with the [redacted], which will help us to improve our programs for faculty by determining the impact of the services we provide. Your participation in this research will involve only the completion of the following online survey which should take less than 15 minutes to complete.

Regarding your participation, we want you to know that:

- The survey is completely anonymous and no one will know if you choose to participate.
- Taking part in this project is entirely voluntary.
- You may close the survey at any time without penalty. However, once you submit your completed survey, your data may not be withdrawn as the survey is anonymous and there will be no way to locate your responses within the data set.
- No payment or other compensation will be given to participants for their involvement in this research. While participants who complete the survey will receive no immediate benefit, their involvement and feedback will assist the [redacted] in offering quality educational development services.
- There are also no foreseeable risks to you if you complete this survey, as it contains no items that ask about sensitive or personal information.
- We are targeting approximately 120 participants for this research; all instructors who participated between 2011 and 2015 have been invited to respond.

If you would like to obtain more information about this study, please feel free to contact me via email at tolsen@utk.edu. If you would like more information about your rights as a research participant or have questions about university policies and procedures for research involving human subjects, please contact the Compliance Officer and IRB Administrator for the University of Tennessee Knoxville, telephone 865-974-7697.

Thank you for your time,

[redacted] and the [redacted] Staff

❍ I consent to participate
❍ I do not consent to participate

If I do not consent to partici... Is Selected, Then Skip To End of Survey

PLEASE READ BEFORE YOU BEGIN SURVEY

This survey refers to classes taught in flipped, hybrid / blended, or online formats as FHBOs. Several items will ask your opinions about FHBOs at The University of Tennessee, Knoxville or within your individual department; other items ask you specifically the course that you redesigned in the [redacted]; this refers to the "track" you were on (e.g. flipped, hybrid / blended, or online). Again, FHBOs, for the purpose of this survey, refer broadly to the group of classes taught in flipped, hybrid, blended, or online formats. These differ from face-to-face (F2F) courses, which are taught in the traditional sense - fully delivered in a physical classroom with instructors and students all in the same space. We thank you for your participation.

Q1 During what year did you participate in the [redacted]?

- 2011 (1)
- 2012 (2)
- 2013 (3)
- 2014 (4)
- I prefer not to answer. (0)

Q2 In which course redesign track did you participate?

- Online (1)
- Blended or Hybrid (2)
- Flipped Hybrid (4)
- I do not recall my particular track (0)

Q3 In which college do you teach?

- ❍ _____
- ❍ Prefer not to Answer (2)

Q4 Please indicate your teaching status at the university.

- ❍ Tenure-track (1)
- ❍ Non-tenure track (2)

Q5 Approximately how many years of teaching experience do you have?

- ❍ 0-3 (1)
- ❍ 4-9 (2)
- ❍ 10-19 (3)
- ❍ 20+ (4)

Q6 What is your gender?

- ❍ Male (1)
- ❍ Female (2)
- ❍ Prefer not to disclose (3)
- ❍ Write-in choice (4) _____

Q7 In the boxes below, please write the approximate number of flipped, blended/ hybrid, or online courses you have taught since you participated in the [redacted].

_____ Flipped Courses (1)
_____ Hybrid or Blended Courses (2)
_____ Online Courses (3)

Please indicate the extent to which you agree with each statement below regarding the climate of flipped, hybrid, blended, or online courses (FHBOs) at the university. (Again, FHBOs = flipped, hybrid, blended, and online courses).

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
(Q8) My department supports faculty interest in FHBO course designs.	❍	❍	❍	❍	❍
(Q9) UTK administration encourages FHBO designs campus-wide.	❍	❍	❍	❍	❍
(Q10) I prefer teaching FHBOs over fully face-to-face courses.	❍	❍	❍	❍	❍
(Q11) I would like my dept. to offer more FHBOs.	❍	❍	❍	❍	❍
(12) FHBOs are more time-consuming to teach than traditional face-to-face courses.	❍	❍	❍	❍	❍

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
(Q13) Instructors new to FHBOs would benefit from training.	❍	❍	❍	❍	❍
(Q14) UTK needs more training opportunities for FHBOs.	❍	❍	❍	❍	❍
(Q15) I would likely participate in additional training for other FHBO designs.	❍	❍	❍	❍	❍
(Q16) My dept. actively encourages the creation and delivery of FHBOs.	❍	❍	❍	❍	❍
(Q17) My colleagues were excited to learn about the course I redesigned in the training.	❍	❍	❍	❍	❍

Q18 In a flipped, hybrid/ blended, or online course, which of the following roles do you believe is the most important role for an instructor to fulfill?

- SOCIAL (creating a friendly, social environment that promotes learning and relationships) (1)
- MANAGERIAL (setting a clear agenda, goals, and objectives while overseeing interactions) (2)
- PEDAGOGICAL (acting as an effective and knowledgeable educational facilitator) (4)
- TECHNICAL (ensuring you and your students are comfortable with the web tools you use) (5)

Please indicate the extent to which you agree with each statement about your comfort and ability using instructional technologies.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
(Q19) I can teach lessons that appropriately combine course content, technology, and teaching approaches.	❍	❍	❍	❍	❍
(Q20) I can select technologies that enhance what and how I teach.	❍	❍	❍	❍	❍
(Q21) I can help others to coordinate the use of technologies and teaching approaches.	❍	❍	❍	❍	❍
(Q22) I can choose technologies that enhance my students' learning.	❍	❍	❍	❍	❍

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
(Q23) I can evaluate and select new technology tools based on their usefulness to specific goals of the content.	❍	❍	❍	❍	❍
(Q24) I can use the tools I select to support student learning and research.	❍	❍	❍	❍	❍
(Q25) can use strategies that combine what I learned in my training about technology and teaching.	❍	❍	❍	❍	❍
(Q26) I can easily adapt to changes in existing technology tools that I utilize.	❍	❍	❍	❍	❍

Read each skill or ability in the column on the left; using the drop-down menu in the middle column, rate how effectively you currently do this skill (from excellent to poor).

Then, in the column on the right, please indicate to what extent this skill improved as a result of your participation in the training program you completed.

	My Current Ability at Each Task (A)					*To what extent did this skill improve as a result of your participation in the STI program? (B)*		
	Excellent (1)	Good (2)	Fair (3)	Poor (4)	Not Applicable (5)	*Not at All (1)*	*Somewhat (2)*	*Very Much (3)*
(Q27) The quality of feedback I provide to my students	❍	❍	❍	❍	❍	❍	❍	❍
(Q28) My ability to facilitate the course	❍	❍	❍	❍	❍	❍	❍	❍
(Q29) My organization in teaching	❍	❍	❍	❍	❍	❍	❍	❍
(Q30) My interpersonal communication with students	❍	❍	❍	❍	❍	❍	❍	❍
(Q31) My use of higher-level questioning	❍	❍	❍	❍	❍	❍	❍	❍

	My Current Ability at Each Task (A)					*To what extent did this skill improve as a result of your participation in the STI program? (B)*		
	Excellent (1)	Good (2)	Fair (3)	Poor (4)	Not Applicable (5)	*Not at All (1)*	*Somewhat (2)*	*Very Much (3)*
(Q32) My familiarity with web-based teaching tools.	❍	❍	❍	❍	❍	❍	❍	❍
(Q33) My ability to plan a course	❍	❍	❍	❍	❍	❍	❍	❍
(Q34) The clarity of my written communication with students	❍	❍	❍	❍	❍	❍	❍	❍
(Q35) My use of student collaboration (group work)	❍	❍	❍	❍	❍	❍	❍	❍
(Q36) My knowledge of online teaching methods	❍	❍	❍	❍	❍	❍	❍	❍
(Q37) My familiarity with adult learning theory	❍	❍	❍	❍	❍	❍	❍	❍
	❍	❍	❍	❍	❍	❍	❍	❍

	My Current Ability at Each Task (A)					*To what extent did this skill improve as a result of your participation in the STI program? (B)*		
	Excellent (1)	Good (2)	Fair (3)	Poor (4)	Not Applicable (5)	*Not at All (1)*	*Somewhat (2)*	*Very Much (3)*
(Q38) My knowledge of student learning differences	❍	❍	❍	❍	❍	❍	❍	❍
(Q39) My use of classroom assessment techniques (CATs)	❍	❍	❍	❍	❍	❍	❍	❍
(Q40) My multicultural competence	❍	❍	❍	❍	❍	❍	❍	❍
(Q41) My ability to actively engage students online	❍	❍	❍	❍	❍	❍	❍	❍

Think about the flipped, hybrid / blended, or online course you taught most recently, and indicate how satisfied you were with each of the following aspects.

	Very Dissatisfied (1)	Dissatisfied (2)	Neutral (3)	Satisfied (6)	Very Satisfied (7)	Not Applicable (5)
(Q42) The functionality of my course site(s)	❍	❍	❍	❍	❍	❍
(Q43) My students' ability to use the selected technology	❍	❍	❍	❍	❍	❍
(Q44) The quality of the work my students produced	❍	❍	❍	❍	❍	❍
(Q45) The feedback I received on my teaching evaluation scores	❍	❍	❍	❍	❍	❍
(Q46) My students' engagement in the course	❍	❍	❍	❍	❍	❍

	Very Dissatisfied (1)	Dissatisfied (2)	Neutral (3)	Satisfied (6)	Very Satisfied (7)	Not Applicable (5)
(Q47) The interaction between students in the course	❍	❍	❍	❍	❍	❍
(Q48) Student participation asynchronous activities	❍	❍	❍	❍	❍	❍
(Q49) Student participation synchronous	❍	❍	❍	❍	❍	❍
(Q50) The sense of community established in the course	❍	❍	❍	❍	❍	❍
(Q51) The amount of time I spent designing my course	❍	❍	❍	❍	❍	❍
(Q52) The amount of time I spent teaching my course	❍	❍	❍	❍	❍	❍

(Q53) My level of comfort using technology I selected	❍	❍	❍	❍	❍	❍

For each item below, indicate the extent to which you agree or disagree regarding your overall training experience.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
(Q54) The length of the training program was appropriate.	❍	❍	❍	❍	❍
(Q55) The training content continues to be relevant to my needs.	❍	❍	❍	❍	❍
(Q56) I was pleased with the work I completed in the training.	❍	❍	❍	❍	❍
(Q57) Overall, the training program met expectations.	❍	❍	❍	❍	❍
(Q58) My teaching confidence increased as a result of the training.	❍	❍	❍	❍	❍

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
(Q59) I continue to apply skills I learned during the training.	❍	❍	❍	❍	❍
(Q60) The training improved my teaching.	❍	❍	❍	❍	❍
(Q61) The stipend I received was appropriate for what was required of me.	❍	❍	❍	❍	❍
(Q62) I would recommend a training program like this to other faculty.	❍	❍	❍	❍	❍

Q63 Please share any new ideas, methods, concepts, tools, or skills that you were exposed to in the training that you believe had a long-term impact on your teaching practice.

Q64 Use the space below to provide any additional comments you may have.

Appendix J: Supplemental Tables on the Analysis of Application Narratives

Table A-3

Representative Statements of Instructor Motivations for Participating

Node	Representative Statements
Pedagogy	"My desire to be a good teacher is still strong, but I seem to lack new skills and insights necessary to achieve that"
	"As the years have gone by, it has become clear to me that a thorough review of my pedagogy is in order if I want to continue engaging students"
	"To enhance my teaching capabilities and effectiveness as an instructor"
	"Speaking as a full-time lecturer, one of our challenges is to keep our pedagogy fresh and up-to-date"
	"I haven't had the instruction or time to fully develop a satisfying pedagogy"
Technology	"I need to become proficient in the utilization of online videos"
	"It is important that as instructors we incorporate technology into teaching"
	"I am excited to continue along the path of technology"
	"I want to learn to integrate new technologies…into my course"
	"I want to make greater use of the many available online resources"
Students	"My students seem to respond well to the use of technology"
	"To accommodate the educational needs of an increasingly diverse population"
	"I expect the students will learn more, so I expect to enjoy teaching more"
	"I think it will enhance my students' learning experience"
	"I think participating will make the course more interactive for my students"

Table A-4

Planned Changes and Learning Expectations of Instructor Participants

	Desired/Planned Course Changes		What Instructors Expect to Learn	
Pedagogy	Inspire students	Make teaching more efficient	Create learning communities	How to engage students
	Improve assignments	Better clarify my expectations	How to stimulate critical thinking	Improved assessments
	Help students use resources	Add debates	Course design	Scaffolding
	Create a new syllabus	Improve pre-class exercises	About active learning	Syllabus development
	Make students more engaged	Create multi-modal projects	Requiring higher-level skills	Classroom management
	Have students solve problems	Incorporate more active learning	How to increase participation	Best teaching practices
	Teach in a flexible classroom	Make students more responsible	Write course goals / outcomes	Any new pedagogies
Technology	Use online texts	Use animations	Blogs	Wikis
	Make online lectures	Use clickers	Skype	Podcasts
	Add discussion forums	Virtual office hours	Blackboard	Use of online modules
	Use social e-communication	Add mini lectures online	Active learning technologies	Using social media
	Develop a website	Put voice over my PowerPoints	Conducting online discussions	Camtasia
	Incorporate technology	Add videoconferencing	RSS feeds	Online delivery methods
	Add Web 2.0 tools	Move group-work online	Creating video lessons	SMART technologies
	Have students learn tech tools		Online student journals	Online gradebooks
Content	Make content more applicable to real life			
	Have students learn more content			

Appendix K: Supplemental Information from Program Evaluation Data

Table A-5

Mean Scores for Satisfaction with the Program, 2011-2013, Sorted by Year

Item Statement	**2011**			**2012**			**2013**		
	N	M	S.D.	N	M	S.D.	N	M	S.D.
The training program was beneficial overall	20	4.90	.31	31	4.23	.91	24	4.23	1.04
The training program was well organized	20	4.85	.49	31	4.11	.93	24	4.23	.95
Overall, the sessions were engaging	20	4.55	.60	31	4.18	.85	24	4.20	.98
Overall, the sessions were informative	20	4.8	.41	31	4.06	.96	24	4.17	1.01

Vita

Karen Brinkley Etzkorn received a dual B.A. from the University of Georgia in Political Science and Spanish. She then received her Master's in Public Administration (MPA) degree from the University of South Carolina. While at the University of Tennessee, she worked in the Teaching and Learning Center as a Graduate Research Assistant from 2011-2015, before beginning full time employment as a Research Associate in the University of Tennessee's System Office of Academic Affairs and Student Success.