Allen, Julia Elizabeth. *Transformative Learning Theory as a Basis for Identifying Barriers to Faculty Confidence in Online Instruction*. Doctor of Philosophy (Learning Technologies), August 2017, 119 pp., 9 tables, 6 figures, references, 93 titles.

This study applied the stages of transformative learning to faculty perceptions and application of best practices to online learning. Research questions included: Can transformative learning theory constructs be used to identify potential barriers in faculty development and delivery of online instruction?; How does the stage of transformative learning of online faculty relate to their perceptions about online learning and their application of best practices?; Is there a correlation between stage of transformative learning and the amount of experience with online instruction a faculty member has? Principal component analysis and cluster analysis support a four-component solution. The four constructs equate to Mezirow’s four stages of learning: transforming frames of reference through critical reflection of assumptions, validating contested beliefs through discourse, taking action on one’s reflective insight, and critically assessing it. Multiple regression analyses were run to predict faculty perceptions on the identified components. Three of these were statistically significant based on years of experience teaching online, the number of professional development workshops taken on online teaching, or both. While the instrument appears to be a valid measurement of transformation of frame of reference, examination of previously contested beliefs, and critical assessment of action, further efforts will be needed before this is a fully validated instrument.
ACKNOWLEDGEMENTS

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My thanks also go out to my mentor and associate graduate faculty member, Dr. Lemoyne Dunn. “Mama” has kept me from giving up on more than one occasion. She has talked me down from the ledge and helped me realize that I could do this. She has proofread countless pages and provided tons of advice as I have gone through this journey.

Last but not least, I owe extreme gratitude to my committee and especially my chair. Drs. Knezek and Tyler-Wood, you have inspired me, encouraged me, worked with me, and challenged me to do my best. I would not be here without you.
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CHAPTER 1
INTRODUCTION

Over the 10-year history that the Online Learning Consortium has been collecting data on online learning, enrollment in online courses has increased at a higher rate than enrollments in higher education in general (Allen & Seaman, 2013). Student enrollment in online courses is at an all-time high of 32%. Allen and Seaman (2013) report 77% of administrators believe online courses to be as effective as, or more effective than, their traditional counterparts. Faculty, however, have a less-than-favorable view of online learning, with approximately 30% of chief academic officers reporting their faculty believe in the value and legitimacy of this format (Allen & Seaman, 2013). Lloyd, Byrne, and McCoy (2012) report up to 80% of faculty at institutions with no online offerings believe that online courses are inferior to face-to-face courses. As online courses are increasingly requested, additional faculty will be called upon to meet this demand. The mismatch in these statistics is indicative of a gap between student needs, administrator expectations, and faculty perceptions (Lloyd et al., 2012).

Some researchers believe that professional development offers one solution for improving faculty perspectives of online teaching and learning (Lloyd et al., 2012; McQuiggan, 2007; Whitelaw, Sears, & Campbell, 2004; Wickersham & McElhany, 2010). Unfortunately, the effectiveness of faculty development is often difficult to measure (Meyer, 2014). Meyer (2014) attributes this to a lack of theoretical foundation supporting faculty development and the fact that many researchers tend to evaluate faculty development programs as a whole rather than as individual components that might or might not contribute to the effectiveness of a program. Meyer (2014) additionally cites the need for higher quality research methods and for research to be based on more rigorous methods than faculty opinion.
As faculty gain experience with online instruction, this often results in a change in faculty perspective (Chiasson, Terras, & Smart, 2015; Conceição, 2006; Garza, 2009; McQuiggan, 2007). Faculty may also perceive that they have experienced a role shift from that of imparter of knowledge to that of facilitator (Chiasson et al., 2015; Conceição, 2006; Garza, 2009; McQuiggan, 2007). Understanding when and how this change in perspective and role-shift occur may help identify faculty barriers to adoption of online instruction.

*Transformative learning theory* (TLT) deals with the way adults turn new ideas into changes in behavior (King, 2004; Mezirow, 1981, 1991). Measurement of transformative learning may provide insight into the stage(s) at which faculty experience changes in perspective and changes in practice. Current instruments for the measurement of transformative learning involve a lengthy qualitative analysis (Glisczinski, 2005, 2007; King, 1997, 2004, 2009). A fully quantitative instrument to measure transformative learning may help researchers and learning technologists evaluate faculty readiness for online instruction and indicate areas where faculty need additional support and training. The purpose of this study was to develop and validate a quantitative instrument to measure which state of transformative learning a faculty member is in relation to their experiences with online instruction.

**Background of the Problem**

Despite the growth of online instruction, faculty acceptance of this medium is still fairly low (Allen & Seaman, 2013; Gutman, 2005; Lloyd et al., 2012). Effective faculty development in online instruction is seen as one possible solution to this issue (Gibson, Harris, & Colaric, 2008; King, 2004; Lloyd et al., 2012; Meyer, 2014). According to Garet, Porter, Desimone, Birman, and Yoon (2001) and Wilson (2012), professional development is effective when it causes a change in perspectives and behaviors. Determining whether professional development is effective is often difficult to measure (Meyer, 2014).
Occasionally changes to faculty perspectives and behaviors occur naturally as a result of experience with online instruction (Chiasson et al., 2015; Conceição, 2006; Garza, 2009; McQuiggan, 2007). An understanding of when and how faculty perspectives change in the course of their experience in the online environment may help identify faculty barriers to adoption of online instruction. Such knowledge is beneficial for planning interventions such as faculty development.

A number of theories have been proposed to explain the attitudes and behaviors of faculty in relation to online instruction. Many researchers approach this by considering the level of technology acceptance by faculty members (Gibson et al., 2008; Stewart, 2011; Stewart, Bachman, & Johnson, 2010). Some researchers examine this issue through the lens of concerns-based adoption, which focuses on faculty concerns when implementing an innovation in instruction (Fang, 2007; Song, Wang, & Liu, 2011). Others consider the technological, pedagogical, and content knowledge (TPACK) method, which measures the interaction between knowledge of technology, knowledge of content, and knowledge of pedagogy when considering faculty perceptions of online instruction (Archambault, 2008; Benson & Ward, 2013; Rienties, Brouwer, & Lygo-Baker, 2013; Ward & Benson, 2010).

While these theories all provide some insight into the perspectives of faculty regarding online instruction, the focus of these theories centers around use of technology rather than on the shift in pedagogical thinking that must occur for the development and delivery of effective online instruction (McQuiggan, 2007; Meyer, 2014). This study examines that shift in thinking through the lens of TLT (Mezirow, 1981, 1991). TLT deals with the way adults experience changes in behavior that stem from an inciting incident. Since faculty are adults and teaching online involves changes in method, behavior, pedagogy, and attitude, TLT is one way to explain the
shift that occurs as faculty become more exposed to and experienced with online instruction (King, 2004; McQuiggan, 2007; Whitelaw et al., 2004).

The current instruments available to measure transformative learning involve a lengthy qualitative process (Glisczinski, 2005, 2007; King, 2004, 2009) and are not suitable for a broad study of the learning process faculty undergo as they are exposed to online instruction. For this study, a quantitative instrument was developed, tested, and validated to measure at which stage of transformative learning the participant is compared to their experience with online instruction. This instrument may be useful in determining how the stage of transformative learning correlates to changes in faculty perspective and practice related to online learning. Such information may be useful to those providing professional development and support to these faculty members to help facilitate such changes.

Statement of the Problem

The theory of transformative learning is used in many adult education scenarios from higher education of student populations to workforce development (Snyder, 2008; Taylor, 2007). This theory considers the changes in behavior that stem from an inciting incident. Current instruments developed by King (1997) and Glisczinski (2007) appear to effectively measure the stages of transformative learning but require a time-consuming qualitative evaluation. After a lengthy literature review, no purely quantitative method for measurement of transformative learning could be identified. While a search of the literature identified many existing instruments related to technology acceptance, a gap in knowledge was identified in that no single instrument attempts to measure the relationship between the experience of a faculty member with online instruction and their stage of transformative learning. A purely quantitative instrument could help facilitate the evaluation of transformative faculty experiences in the online environment on a larger scale.
Purpose of the Study

This quantitative study involved the design and validation of a new instrument to measure the relationship between the experience of a faculty member with online instruction and their stage of transformative learning. The purpose of the study was to develop and validate a purely quantitative instrument that could be used to determine the stage of transformative learning at which a faculty member is and to compare that stage to the experience with and training in online instruction a faculty member has received in hopes of identifying a correlation. Should such a relationship exist, this instrument could be used to help plan professional development in order to assist faculty in progressing to later stages of transformative learning.

Significance of the Study

This study is significant because existing instruments to measure transformative learning involve a lengthy qualitative analysis. A quantitative instrument could help facilitate the measurement of transformative learning in larger scale studies. Such information is important to administrators, learning technologists, and professional development facilitators to determine the support and professional development a faculty member needs to be successful with online instruction. A quantitative instrument will enable formative as well as summative evaluation of training and other assistance, allowing facilitators of professional development to adjust ongoing training and support to meet the needs of faculty, potentially resulting in deeper learning, greater impact to faculty perceptions, and higher application of new knowledge to practice.

Primary Research Questions

An extensive literature review revealed only instruments that measure transformative learning through a mix of quantitative and qualitative methods. This study sought to relate the stages of transformative learning to faculty perceptions and application of best practices to online learning using a quantitative instrument. Several research questions were identified:
1. Can transformative learning theory constructs be used to identify potential barriers in faculty development and delivery of online instruction?

2. How does the stage of transformative learning of online faculty relate to their perceptions about online learning and their application of best practices?

3. Is there a correlation between stage of transformative learning and the amount of experience with online instruction a faculty member has?

The goal of this study was to develop and validate a quantitative instrument for measuring transformative learning of faculty as it relates to their experience with online instruction. Such an instrument may be useful in determining if the stage of transformative learning of a faculty member can help identify barriers faced by faculty in various stages of proficiency in teaching in online environments; thus, allowing facilitators, administrators, and learning technologists to provide timely support.

Hypotheses

In the 10th-anniversary edition of her *Handbook of Transformative Learning*, King (2009) discusses the development of her original qualitative instrument over its history. King’s survey, called the Learning Activities Survey, includes seven mostly qualitative survey questions and seven demographic questions. These questions were geared toward uncovering experiences that challenged previously held beliefs or feelings (called a *disorienting dilemma*) among college students, the influences that led to that dilemma, how this dilemma was related to their school experiences, and whether or not the student tended to reflect on their past behaviors as well as on their studies. The handbook looked at the way the survey had been used in research studies over the years since its original development. King determined that the instrument was most effective when piloted and modified to meet the specific needs of a study.
Glisczinski (2007) examines the relationship between disorienting dilemma and transformative learning among college students. In this study, 153 teacher education students used a modified version of King’s (1997) instrument. The students were asked to report on a disorienting dilemma, and what effect, if any, this experience had on changes to their previously held beliefs or feelings, to their considerations regarding future actions, and to their behavior. If a disorienting dilemma resulted in a change of behavior, transformative learning was said to have occurred.

Given the work of King (2009) and Glisczinski (2007), it was hypothesized that a purely quantitative survey to measure transformative learning could be developed and validated for use in the evaluation of faculty experience in online instruction.

Research Design

The instruments developed by King (1997) and Glisczinski (2007) both focused on transformative learning as applied to college students and contained primarily qualitative questions. The purpose of this study was to develop a new quantitative instrument that included questions specifically designed to apply transformative learning to faculty professional development.

This researcher developed quantitative questions designed to capture the essence of Mezirow’s 10 precursory steps of transformative learning (1981). These questions were initially organized into four constructs based on the four stages of transformative learning identified by Mezirow (1997). Each of these four initial constructs of the instrument contained between seven and 22 questions. Additional questions were included to determine the experience of the faculty with online instruction and the amount of training received in this area, as well as to obtain general demographics.
The instrument was analyzed by three faculty members with expertise in instrument development for content validity and pilot-tested by doctoral students from the same program as this researcher for additional validity checking (understandability, clarity, brevity), initial factor reduction, and to obtain a baseline of time needed to complete the instrument. Following the pilot phase, the first construct was shortened from 22 to 18 items. The second construct was reduced from 13 to nine items. The third construct went from 14 to eight items, and additional questions were added to the fourth construct to bring it from seven to 12 items. In addition, items in the final construct were revised to ensure clarity and to correct grammatical errors.

Following this revision stage, the instrument was administered to 156 faculty members from 10 regionally accredited comprehensive public universities in Texas that offer at least some online courses. Faculty participants were identified in two ways. Some online faculty were identified and invited to participate by center for teaching excellence staff members in each of the institutions. At other institutions, a list of online faculty was unavailable, so all faculty were invited to participate. Validity and reliability testing was performed on the instrument using the survey results. Data analysis included a comparison of results by level of experience teaching online and extent of prior training, along with other demographical factors.

All surveys were delivered anonymously. An aggregate report of the results was downloaded, scrubbed, and analyzed using SPSS. Any excluded cases were noted with explanation for the exclusion. Specific analyses performed included exploratory and confirmatory factor analysis, construct and item validity, multiple regression analysis, hierarchical cluster analysis, Pearson’s r, and analysis of variance.

**Theoretical Framework**

TLT was originally examined by Mezirow (1991). This adult-learning theory addresses the perspective transformation that results from a person’s exposure to an inciting incident.
Following this disorienting dilemma, as Mezirow calls it, the adult learner begins to question previously held beliefs. Current research on the theory posits that for learning to have a far-reaching impact on the behavior of the learner or cause a shift in the beliefs of the learner, the learner must go through four stages;

- “transforming frames of reference through critical reflection of assumptions”,
- “validating contested beliefs through discourse”,
- “taking action on one’s reflective insight”, and
- “critically assessing it” (Mezirow, 1997, p. 11).

Assumptions, Limitations, and Scope (Delimitations)

An instrument to measure the level of transformative learning an instructor is at with regard to online instruction has been developed and tested within this study. One assumption of this study is that the items on the instrument evaluated relate to the levels of transformative learning.

Several other limitations were identified. Using a nonrandom sample may affect the validity of the data. This was addressed to the greatest extent possible by including faculty from each of the various disciplines offered at a number of regionally accredited Texas universities. A second limitation is the potential for response and nonresponse bias. To mitigate the risk of response bias, both negatively and positively worded items were included on the instrument. Several steps were taken to offset the risk of nonresponse bias. First, the survey tool was pretested thoroughly on several browsers and devices, including mobile devices to ensure it would be compatible with participant devices. The survey was delivered over a period of several months to ensure participants had ample time to respond, and reminders were sent periodically to ensure everyone had an opportunity to respond. Responses were collected anonymously to
ensure participants felt confident in participating in the survey, and an incentive was offered in the form of a drawing for a $25 Amazon gift card to encourage participation.

Definition of Terms

For purposes of this study, the term *online instruction* is defined as formal higher education coursework delivered entirely over the Internet using any combination of synchronous and asynchronous delivery options, including but not limited to use of a learning management system, content management system, Web conferencing system, or social media.

*Professional development* is formal training provided to faculty that is not applied toward a formal degree. This training may be provided in one sitting or over a period of time, may be delivered synchronously or asynchronously, and may be either in person or online.

*Transformative learning* is defined as adult learning that results in a change to the beliefs and actions of the learner (King, 2009; Mezirow, 1981, 1991).

Summary

The purpose of this study was to develop and validate a quantitative instrument for the measurement of faculty transformative learning as applied to experience with online instruction. This chapter discusses various theories about faculty perceptions of online instruction and the ways professional development has been used as a catalyst for changes in perceptions and behaviors. It also discusses how transformative learning has been applied to the area of online instruction, and to identify ways transformative learning might be useful in identifying the stages at which faculty begin to experience changes in perceptions and behavior. Chapter 2 summarizes the literature that was examined.
CHAPTER 2
LITERATURE REVIEW

In a tertiary educational setting, professional development is encouraged but not necessarily required. Faculty are rarely trained in the pedagogical aspects of instruction. They often learn to teach others by imitating the faculty that modeled teaching skills—good or bad—for them during their education.

This potential lack of formal training is even more evident when it comes to online instruction. Faculty describe their introduction to online instruction as coming with little or no preparatory training (Cohen, 2005; Lloyd et al., 2012). It is often assumed that the ability to teach well in a face-to-face environment is sufficient preparation for online instruction. Palloff and Pratt (Palloff & Pratt, 2000) discuss the pedagogical differences between online and traditional instruction. For example, Palloff and Pratt (2000) indicate that while it is important for faculty to understand the technology used to conduct online instruction, this in and of itself is not sufficient for student success; faculty must also change the way course materials are designed and delivered. Palloff and Pratt (2000) describe ways to help faculty make the transition from face-to-face to online instruction, discussing the importance of establishing clear guidelines and procedures right from the outset, as well as promoting collaboration between students, among other suggestions.

While the need for professional development for online instruction is evident, the value and effectiveness of such training is often difficult to measure (Meyer, 2014). Meyer (2014) attributes this to a lack of theoretical foundation supporting faculty development. She indicates that many researchers tend to evaluate faculty development programs as a whole and fail to consider individual components that might or might not contribute to the effectiveness of a program. Meyer (2014) additionally cites the need for higher quality research methods and for
research to be based on more rigorous methods than faculty opinion. This literature review examines a number of relevant theories regarding technology acceptance and adult learning, the various methods used to determine what constitutes effective professional development, methods used to evaluate the impact of professional development on teaching practices (including transformative learning theory), and research on faculty perceptions of professional development related specifically to online teaching and learning.

Overview of Theories Regarding Adult Learning and Technology Acceptance

The question of how to measure faculty technological and pedagogical knowledge and how technological knowledge is applied to instruction has been examined in a variety of ways. A number of theories about adult learning and technology acceptance have developed over the years. Several theories were examined as possible frameworks for this study.

Theories Surrounding Technology Acceptance

Since the problem of the lack of faculty acceptance of online instruction relates to the adoption or lack of adoption of a technology, several theories related to technology adoption were examined. The following theories and models are specifically considered and discussed in this section:

- Technology acceptance model (TAM, Davis, 1989)
- TAM2, its derivative (Venkatesh & Davis, 2000)
- Unified technology acceptance and use theory (UTAUT, Venkatesh, Morris, Davis, & Davis, 2003)
- Bagozzi’s model (Bagozzi, Davis, & Warshaw, 1992).

All of these examine the factors that cause faculty to accept technology and their intention to use it. Also related to technology adoption is technological, pedagogical, and content knowledge (TPACK, Shin, Koehler, and Mishra as cited in Ward & Benson, 2010). The TPACK instrument
measures the amount of knowledge a faculty member has in each of the three areas of technology, pedagogy, and content knowledge, and the effectiveness of application of technology to pedagogical (instructional method) and content knowledge areas.

*Technology Acceptance Model*

The TAM was originally developed by Fred Davis (Davis, 1989) as a means of determining the factors that influence users’ acceptance or rejection of technology. Davis developed, piloted, and validated a two-construct instrument based around perceived usefulness of a technology and its perceived ease of use. A significant correlation was found between perceived usefulness and usage that grew stronger, as regression analysis controlled for perceived ease of use. The researchers believed this relationship to make sense, as users will often work through some difficulty learning to use new technology (e.g. software) if they perceive its use to be valuable to their job or life.

Legris, Collerette, and Ingham (2003) revisited the TAM in their metastudy. Their review looked at 22 studies in which TAM was used as a framework for measuring factors influencing technology adoption. The original TAM, influenced by the theory of reasoned action, includes two constructs and four intervening external variables. The original model is illustrated in Figure 1. Empirical studies demonstrated the model predicts approximately 40% of a system’s use.

Legris et al.’s metastudy revealed that the results of studies using this model were generally consistent with one another. The analysis also revealed a significant positive relationship between perceived usefulness and attitude towards technology. While the analysis indicated a high proportion of positive results, inconsistencies led the researchers to determine that the variables were insufficient to predict adoption of technology. The strongest effects were found when comparing different types of technology using student participants, which the researchers believe to be due to the simpler environment in which students function as opposed to real-world application. The researchers then examined studies involving the model as it has evolved over time, known as TAM2. This revised model included additional variables, such as subjective norm, job relevance, image, voluntariness of use, and experience.

Legris et al. believed that the TAM2 reflects much needed improvement over the original model but still found this new model able to explain only about 40% of the variance in actual use of information technologies.

Schepers and Wetzel (2007) also conducted a meta-analysis of the TAM. This large-scale study looked at the role of subjective norm on the TAM. They also further examined the impact of using students on TAM results, the influence of using different technologies on effect sizes, as well as the influence of culture on effect sizes. The researchers examined 51 articles from various journals and other sources that met certain criteria. The study examined 15 pairwise correlations from the original TAM model. These correlations were subjective norms–perceived usefulness, subjective norms–perceived ease of use, subjective norms–attitude towards use, subjective norms–behavioral intention, subjective norms–actual use, perceived usefulness–perceived ease of use, perceived usefulness–attitude towards use, perceived usefulness–behavioral intention, perceived usefulness–actual use, perceived ease of use–attitude towards use, perceived ease of use–behavioral intention, perceived ease of use–actual use, attitude
towards use–behavioral intention, attitude towards use–actual use, and behavioral intention–actual use.

Schepers and Wetzels (2007) found that the pairwise relationships between subjective norm–perceived ease of use, subjective norm–attitude towards use, subjective norm–actual use, and attitude towards use–actual use showed no statistical significance. All other pairs indicated a statistically significant relationship. The study demonstrated nonhomogeneity, indicating the possible presence of moderating variables. A cluster analysis based on student status showed higher correlations for students than nonstudent groups, statistically significant for all but three pairwise comparisons. A second cluster analysis was conducted based on microcomputer studies and nonmicrocomputer studies. The correlations were lower for microcomputers for all but one comparison. Finally, clustering on study location, culture was found to be a significant moderating variable in about half of the cases.

Schepers and Wetzels (2007) concluded that given the strong influence of subjective norm on perceived usefulness, managers needed to focus on organization-wide acceptance rather than concentrating on individuals. Consideration should be made for age and cultural differences as well.

In a study by Buchanan, Sainter, and Saunders (2013), researchers examined why faculty resist adopting new technologies. Using the TAM as a framework, they measured Internet self-efficacy, actual technology use, and barriers to technology adoption for 114 faculty members. The study showed significant associations between three perceived barriers and technology adoption; specifically, structural constraints within the University, perceived usefulness of the tools, and Internet self-efficacy. The researchers concluded that training alone could not increase technology adoption. Training must be balanced by structural factors such as technical support and provision of resources.
Unified Theory of Acceptance and Use of Technology

While researchers worked to study and revise the TAM, others were developing new measures. Analyzing similarities between eight existing models including the TAM and the TAM2, Venkatesh, Morris, Davis, and Davis (2003) developed the UTAUT, which contains unifying elements between all eight models. The new model identifies four constructs: (a) performance expectancy (perceive usefulness), (b) effort expectancy (perceived ease of use), (c) social influence (subjective norm), and (d) facilitating conditions (structural factors), as well as four potential moderating variables; gender, age, experience, and voluntariness of usage. Figure 2 demonstrates the effects of the proposed model on behavioral intention and actual usage.

Bagozzi’s Model

Bagozzi, Davis, and Warshaw (1992) pointed out problems with the TAM, UTAUT, and other models and proposed their own model for measuring technology acceptance. Bagozzi et al. outlined a process for decision-making that begins with goal desire and its causes. The process then proceeds through goal intention and action desire as affected by constraints. These two stages are all influenced by self-regulation. Finally, the process ends with action intention and its effects, leading to a decision.

Concerns-Based Adoption Model

The concerns-based adoption model (CBAM) was originally established by Hall (1974) as a means of explaining adoption of innovations in education. Initially derived from Rogers’ diffusion of innovation theory (1962, 2003) and Fuller’s concerns theory (1969), the model presumes that the innovation will be adopted and focuses on the concerns of teachers during the adoption process. CBAM posits that teachers move through a variety of stages of concern from initial awareness of the innovation to a refocusing stage, where teachers seek additional solutions to the problem solved by the innovation. Hall’s stages of concern (SoC) are outlined in Figure 3.
### STAGES OF CONCERN ABOUT THE INNOVATION (SoC)

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The Stages of Concern Questionnaire, an instrument for the measurement of CBAM initially developed by Hall, George, and Rutherford (1977), has gone through multiple iterations (Bailey & Palsha, 1992; Cheung, Hattie, & Ng, 2001; Shotsberger & Crawford, 1996) before settling on the most recent 5-factor, 35-item instrument (Hall & Hord, 2015). The CBAM model has been applied to faculty adoption of online instruction (Song et al., 2011) and to the evaluation of professional development (Saunders, 2012).
TPACK is a technology integration model used to explain the relationship between technology, pedagogy, and content knowledge and how these relationships interplay in teaching. The concept of TPACK is based on the model of pedagogical and content knowledge developed by Schulman (cited in Kabakçi Yurdakul et al., 2012). Shin et al. (cited in Ward & Benson, 2010) were the first to incorporate technology into the TPACK model. Schulman’s (cited in Kabakçi Yurdakul et al., 2012) idea was that each of these areas should be considered separately in the field of teacher education, and that knowledge in these areas was acquired interactively. The relationship between these areas is shown in Figure 4. Kabakçi Yurdakul et al. (2012) developed and tested an instrument to measure TPACK. The result was a 33-item, 4-factor scale. The four factors measured by the TPACK instrument were (a) design, (b) exertion, (c) ethics, and (d) proficiency.
Figure 4. The TPACK framework was revised by Shin et al. (2009, p. 2) based on Shulman’s work (1986) on PCK. From tpack.org by M. J. Koehler, 2012. Copyright 2012 by tpack.org. Reprinted with permission.

McGrath, Karabas, and Willis (2011) used TPACK as a framework to guide the professional development efforts of a medium-sized school district in New York. The district targeted improvement of two required courses through a three-pronged approach involving the integration of various classroom technologies. The researchers found that instructors felt the focus of the professional development sections had been on technological knowledge (TK) and that this was what the teachers expected of the sessions. Sessions focused on pedagogical knowledge (PK) involving learning theories were looked upon by instructors as a waste of time; however, practical instruction in pedagogy was accepted and sought after, particularly from the perspective of using the technology. Instructors felt that there was not a need to cover content knowledge (CK) in the professional development sessions, but did feel they benefited most from
instruction focused on their content areas so they could learn to apply technology to their content area.

Morsink et al. (2011) conducted a seven-month study in which 13 elementary school instructors participated in professional development designed to help them integrate technology into their classrooms. TPACK was used to analyze the instructors’ growth from the program. The study found that following the training, instructors exhibited various degrees of improvement in TPACK scores.

Unger (2012) studied the impact a technology professional development intervention had on secondary school instructors when learning to implement Google Apps into their classroom practice. TPACK was used as the framework for the design of the professional development sessions, but was not used in the evaluation of teachers’ reflective journals during and following the study. Participant perceptions identified several factors that should be included in the design of technology professional development. These include (a) relevance to practice, (b) access to resources beyond professional development, (c) relaxed and flexible self-paced design, and (d) clear instructional messages, instructions for assignments, and instructor feedback.

Benson and Ward (2013) conducted a study using a purposeful sample of three experienced online education faculty to develop TPACK profiles for each of them through interviews and observations. The three cases demonstrate the interaction between CK, PK, and TK, as well as the intersections of these areas. The researchers found that the TPACK profiles of the participants were most balanced when they were able to express their technology implementation in pedagogical terms.

*Transformative Learning Theory*

Online instruction represents more than a technology adoption problem, but rather a paradigm shift that requires a new way of thinking about teaching and learning (Harasim, 2000;
Lloyd et al., 2012; Reilly, Vandenhouten, Gallagher-Lepak, & Ralston-Berg, 2012). TLT deals with how adults turn new ideas into changes in behavior. Since faculty are adults and teaching online involves changes in method, behavior, pedagogy, and attitude, TLT was selected as the framework for this study because it is one of the few models that specifically addresses the way adults learn and change. The choice of TLT as the framework for this study was additionally supported by extensive anecdotal evidence, which suggests that most faculty members go through similar steps to those posited by TLT when faced with the paradigm shift of teaching online.

Mezirow’s (1981, 1991) seminal work on TLT was based upon the third domain or “cognitive interest” of Habermas’s theory of communicative action, namely emancipatory action (as cited in Mezirow, 1981). According to Mezirow, Habermas indicates that emancipatory action involves reflection of self and how the history and biography of a person influence that person’s roles (Mezirow, 1981). Mezirow reasons that his theory of perspective transformation is roughly the same concept and goes on to explain that the use of education or training to spur emancipatory action or perspective transformation equates to what Habermas considers “providing of the learner with an accurate, in-depth understanding of his or her historical situation” (Mezirow, 1981, p. 6).

The self-reflection described by Mezirow causes the learner to question and even change what he or she knows and believes, otherwise known as meaning structures (as cited in Culatta, 2015). These meaning structures relate to the other two stages of Habermas’s work; instrumental learning and communicative learning (Taylor, 1998). The change in meaning structures takes place through perspective transformation. In the words of Mezirow, “Perspective transformation is the emancipatory process of becoming critically aware of how and why the structure of psycho-cultural assumptions has come to constrain the way we see ourselves … and acting upon
these new understandings” (Mezirow, 1981, p. 6). Mezirow (1981) discusses the role of a disorienting dilemma, a situation that calls into question the accepted habits and roles of a person, to force them to become conscious of why they think the way they do.

Mezirow indicates that the path to transformation lies along 10 precursory steps:

1. Disorienting dilemma
2. Self-examination
3. Critical assessment of personally internalized role assumptions and a sense of alienation from traditional social expectations
4. Relating one's discontent to similar experiences of others or to public issues – recognizing that one's problem is shared and not exclusively a private matter
5. Exploring options for new ways of acting
6. Building competence and self-confidence in new roles
7. Planning a course of action
8. Acquiring knowledge and skills for implementing one's plans
9. Provisional efforts to try new roles and to assess feedback
10. Reintegration into society on the basis of conditions dictated by the new perspective (Mezirow, 1981, p. 7)

Mezirow is credited with coming up with four ways of knowing; ways in which learning occurs in “one or more of the following four ways (a) elaborating existing frames of reference, (b) learning new frames of reference, (c) transforming points of view, or (d) transforming habits of mind” (as cited in Whitelaw et al., 2004, p. 3). Elaborating existing frames of reference is a way to augment what a person already knows or thinks they know (their assumptions) and what they expect. Learning new frames of reference involves adding new assumptions and new expectations to existing meaning structures. Transforming points of view involves critically
reflecting on how assumptions support the ability of a person to solve problems. *Transforming habits of mind* allows a person to become critically aware of how their habits affect their ability to learn as well as what assumptions they and others hold (Kitchenham, 2015).

Culatta (2015) applied the theory to secondary educational curriculum development. He stated that when evaluating a curriculum there are three areas of critical reflection to look for: (a) content reflection, (b) process reflection, and (c) premise reflection. Reflecting on the content would involve curricular mapping. Reflecting on process revolves around application of best practices and literature-based indicators. When you reflect on both process and content together and use these reflections to make recommendations for change, you are demonstrating premise reflection.

*Application of Transformative Learning Theory*

In 1997, King developed an instrument for measuring transformative learning. In the 10th anniversary edition of her *Handbook of Transformative Learning*, King (2009) discusses development of the instrument over its history. King’s survey, called the Learning Activities Survey, includes seven survey questions and seven demographic questions. The first question provides participants with 13 statements that the participant is to check if they related to that statement. These statements, when examined singly or in combination, assist the researcher in identifying which of Mezirow’s (1981) 10 precursory steps of transformation may have been experienced by the participant. For example, should the participant check the box next to the statement “I thought about acting in a different way from my usual beliefs and roles,” the researcher is instructed to consider that the participant has experienced Mezirow’s fifth step, or “exploring options for new ways of acting” (King, 2009, pp. 15; 20). The remaining survey questions are qualitative, designed to help the researcher identify the underlying source of the transformation. It is important to note that King considers her survey quantitative despite the
need to code the results. Therefore, studies conducted using this tool are considered quantitative studies.

Originally, the Learning Activities Survey was used in an attempt to uncover “disorienting dilemma” experiences among college students, the influences that led to that dilemma, how this dilemma was related to their school experiences, and whether or not the student tended to reflect on their past behaviors as well as on their studies. The Handbook looked at the way the survey had been used in research studies over the years since its original development. King determined that the instrument was most effective when piloted and modified to meet the specific needs of a study.

Glisczinski (2007) also examines the relationship between disorienting dilemma and transformative learning among college students. In this study, 153 teacher education students used a modified version of King’s (1997) instrument. The students were asked to report on a disorienting dilemma, and what effects, if any, this experience had on changes to their previously held beliefs or feelings, to their considerations regarding future actions, and to their behavior. If a disorienting dilemma resulted in a change of behavior, transformative learning was said to have occurred. This happened in approximately one-third of these students, while the other two-thirds were in various early stages of the transformative learning process.

A meta-analysis conducted by Snyder (2008) examined 10 studies that used Mezirow’s TLT to study the effectiveness of higher and professional education. Snyder divided the studies he analyzed into groups; the first group consisting of three studies that most closely followed Mezirow’s 10 precursory steps of transformative learning. The next group (one study) focused on one aspect of these 10 phases. A third group consisted of two studies that looked at Mezirow’s application of four ways of knowing. Another group consisted of three studies that applied TLT to specific situations, while the last group consisted of one study that was selected
for the lessons it provided toward future TLT study designs. Snyder’s findings indicate that although several studies demonstrated some degree of transformative learning taking place, longitudinal studies using more than self-reported data would be needed to document true transformative learning over time. One recommendation was to include field observations, especially to permit close attention to participant conversations, in future studies. Another recommendation by Snyder was to continue emphasis on the process of transformation rather than on the outcome. Snyder recommended extended use of tested models, such as the King instrument or the unnamed instrument based on Mezirow’s work on reflective thinking that was developed by Kember et al. (2000), for evaluation of transformative learning, and to gather data about the process of transformative learning more than on the number of people achieving transformation. Snyder also cautioned researchers to conduct future studies in a place of contextual relevance to the learner.

A study by Nichols and Dewerse (2010) utilized King’s survey and analyzed the results against student performance to evaluate the effectiveness of core questions in the curricula on student transformative learning in a theology course. The goal of this study was to provide insight into areas of course design that could be utilized to produce a disorienting dilemma and subsequent transformative changes. The researchers considered several issues extending beyond the design of the course that may have influenced the learners’ transformation or lack thereof, including reasons for enrolling in the course and a lack of ability for students to reflect effectively on their own learning and transformation. They did identify several areas for improvement, especially in creating core questions designed to incite a disorienting dilemma, establishing an expectation of change beforehand, and designing assessments targeted at transformation.
In a quantitative study on transformative learning conducted by Brock (2010), 256 undergraduates were surveyed using King’s instrument. This instrument compares students’ self-reported incidents of transformative learning experiences to each of the ten precursor steps. The goal of the study was to identify those steps best able to predict transformative learning. Brock confirmed Mezirow’s assertions that critical reflection was a key step in predicting transformative learning.

Whitelaw et al. (2004) examined TLT as it applies to faculty professional development. Study participation was extended to the 48 members of the Academic Technologies for Learning Partnership (ATL, an instructional development initiative at the University of Alberta). The researchers conducted semistructured interviews with former and current ATL staff members and key stakeholders. The researchers used data derived from these interviews to develop a survey that included both quantitative and qualitative questions. Sixteen members of the ATL staff completed this initial survey. Nine of these 16 agreed to be interviewed following the collection of the survey data. The survey was designed to focus on how effective the program was at influencing instructor-teaching practices. Interview results indicated that the majority of interviewees felt they did not experience a transformative event during the study, however, further analysis suggests that all participants interviewed showed at least some evidence of change. Researchers identified three emergent themes; (a) alignment/misalignment of expectations with experience, (b) a change in attitudes toward technology-enhanced instruction, or (c) a change in pedagogical style. Whitelaw et al.’s (2004) article is indicative of the way transformative learning could be applied to professional development sessions.
Effective Professional Development

The last article examined how TLT applies to professional development. The following studies consider what constitutes effective professional development. The first two studies relate to TLT.

Transformative Learning Theory as Applied to Professional Development

A big step in transformative learning is to get the learner to question what he or she believes to be true. McQuiggan (2007) conducted a metareview of studies to examine how faculty development aids in that step. This analysis of the literature identified four emergent themes: (a) moving from classroom practice to online teaching, (b) changes related to online teaching, (c) framing faculty development within adult education, and (d) faculty development models. McQuiggan identified evidence of change through her analysis of the studies but did not identify a single study that focused on how that change affected classroom practice. McQuiggan recommended incorporation of opportunities for critical self-reflection into professional development to facilitate changes to online practice and even face-to-face practice.

A study by Şahin İzmirli, and Kabakçı Yurdakul (2015) identified the separation between the training prospective teachers receive on information and communication technologies (ICT) and their application of these technologies. Their study uses TLT to close this disconnect, contrasting TLT to the technology acceptance theories examined earlier. In the study, 54 prospective IT teachers enrolled in a practice teaching course participated in a quantitative survey (using the Learning Activities Questionnaire, King, 1997), of that group, 12 participated in follow-up semistructured qualitative interviews. Only about 31% of the participants exhibited evidence of transformative change related to the integration of ICT into practice. Analysis of the data against demographic information indicated a significant negative correlation between transformative change and age, suggesting that younger prospective teachers were more likely to
experience a transformative change related to ICT integration. The study identified two factors that emerged as reasons for change. One factor was the desire to attract student attention. The second included a quest for supplementary tools for learning. The reasons behind this second factor might stem (a) from feedback they had received from students, (b) be due to an unexpected situation, (c) be due to the perceived benefits of technology integration, or (d) be a result of the amount of integration demonstrated by their supervising teachers.

Planning and Evaluating Effective Professional Development

The remaining studies in this section relate to the planning or evaluation of professional development. These do not relate specifically to transformative learning; however, they are considered because they reviewed other methods of looking at the effectiveness of professional development. TLT will be revisited in the next section.

A study by Drew and Klopper (2014) examined the actual practices of faculty through peer review and evaluation to determine what is needed in terms of professional development. The study revolved around 40 science, technology, engineering, and mathematics (STEM) faculty participating in the Peer Review and Observation of Teaching (PRO-Teaching) project in use at an Australian university (Drew & Klopper, 2014). Drew and Klopper (2014) examined data related to student perceptions of teaching, a comparison between stated learning objectives and text related to outcomes extracted from one-minute learning outcome papers written by students, peer observations, and teacher reflections. The researchers found value in the PRO-Teaching approach to enhance the quality of teaching for both individual teachers and for the organization as a whole.

Garet et al. (2001) examined the characteristics of an effective faculty development program by evaluating results of the Teacher Activity Survey collected for the Eisenhower Professional Development program, a federal program which supports professional development
for teachers. The researchers identified features of an effective professional development program as found in the literature and compared that to self-reported changes in knowledge, skills, or behavior of teachers participating in professional development activities funded by the program. Garet et al. found a significant positive correlation between the amounts of time spent on professional development activities (both in terms of total number of contact hours and span of time) and opportunities for active learning and coherence, including connections to the teachers’ experiences and alignment with state standards. They also found that greater emphasis on content in professional development led to greater increases in the teachers’ self-reported knowledge and skills. Increases in teacher knowledge and skills were positively associated with changes to teacher practice. These results were consistent with professional development best practices as identified in the literature.

Garza (2012) discussed practices for evaluating the effectiveness of professional development. The researcher operated from the assumption that teachers seek development sessions to strengthen knowledge and skills they already possess. The study came about because of a cooperative effort between Greenwich Community College and Jeddah Community College to form a business development unit with hopes of increasing enrollment in the school, especially from the English-speaking community. Training for the instructors was provided initially through Greenwich Community College. Those completing the initial training in turn trained their peers. The researcher found the results of the development positive in helping the college achieve its goals. Garza does caution administrators offering in-house development opportunities to discover what types of training teachers require to limit the resistance of teachers with advanced degrees and extensive experience to training.

Murthy, Iyer, and Warriem (2015) described a faculty development effort geared toward the successful integration of ICT with student-centered constructivist practices. These
researchers studied the impact of the Attain Align Integrate (A2I) model (Warriem, Murthy, & Iyer as cited in Murthy et al., 2015) on 1,138 participating faculty from 38 colleges during a 7-week blended synchronous/asynchronous implementation of the program. The A2I model, which aims to enable student-centered learning with ITC integration, offers a three-phase design. In the Attain phase, participants are expected to attain knowledge of topics in each of the modules. The Align phase focuses on aligning the modules together, such as selecting an ICT tool and a teaching strategy that helps students to meet a higher-order learning objective. During the Integration phase, participants are expected to develop an entire lesson plan based on the initial two stages. A posttraining survey conducted by the researchers indicated 89% of participants had learned something from the training, with 82% indicating an intent to implement what they had learned in their own classrooms.

An article by Webster-Wright (2009) examined current practices in professional development through an extensive literature review of 203 articles, about half of which were empirical research articles, discussing professional development. Following an extensive exposition detailing current practices, Webster-Wright proposes moving to a model of professional development that is centered on teacher practice and based on authentic learning. She uses the literature to support her opinion that such models of professional learning are more effective at improving practice.

Wood et al. (2011) discussed the need for pedagogical training of tertiary education faculty. This article centers around the pedagogical skills required to teach math (Wood et al., 2011). A mixed-methods approach was used via a survey distributed to academics and Ph.D. candidates in mathematics departments at Australian universities. The survey created by Wood et al. (2011) contained both closed and open-ended questions based in part on information obtained from the Preparing Academics to Teach in Higher Education project, which aims to devise a
framework for teacher induction through research conducted by participating Australian universities (Flinders University, 2008). There were 111 responses to the survey, representing various positions at their respective universities. Survey responses indicated 35% of the respondents had no professional development in learning and teaching, while 41% had participated in teaching induction sessions when they first began teaching. Only 9% completed a formal education qualification program. Researchers identified a need for more formal, discipline-specific professional training. They suggested that a foundation course in teaching along with a mentoring program might be beneficial.

Borko (2004) provided an overview of what has been learned about effective professional development programs and their impact on teacher learning. Her analysis of the research indicated that high-quality professional development programs capable of affecting changes in practice were (a) intensive, (b) focused on subject matter knowledge, (c) on understanding how students learn, and (d) on instructional practice. She also suggested that effective professional development programs should (a) be well structured, (b) have stated objectives, (c) include specified instructional materials and activities for the instructors, and (d) defined roles for facilitators. She drew a correlation between effective instructional practices for students and for instructors. Finally, Borko (2004) indicated that successful programs also included a teacher-teaching-teachers model.

A small-scale meta-analysis by Saroyan and Trigwell (2015) examined the themes related to professional learning in higher education as found in the nine articles that appeared in the same journal issue. One of the five themes that emerged revolved around the scale of professional learning initiatives compared to their voluntariness and effectiveness. The researchers indicated that while extended-length programs tended to have a much greater impact on practice, they also tended to be smaller in scale (between 10 and 35 participants). They stated
that the one exception to this was in universities where participation in a certification program was a requirement prior to taking a position. Saroyan and Trigwell (2015) also recommended keeping the scale of a program small enough (in number of participants) to make measuring the impact of the program possible.

*Professional Development to Prepare Faculty for Online Instruction*

An article by Lackey (2011) presented effective faculty professional development strategies as applied to online instruction. In this phenomenological study of three higher education institutes offering online programs in northeast Ohio, two faculty members from each institution participated in semistructured interviews. The participants all indicated that prior to teaching online, they had all participated in face-to-face workshops focused solely on the learning platform and other technological skills. All had also previously taught online, although with varying levels of experience. While most of this training focused solely on technical skills, some in-depth training included online facilitation and pedagogical strategies. Most of the faculty had also participated in one-on-one training with members of the Center for Teaching and Learning group on each campus or with more experienced colleagues. These training sessions varied from asking questions related to use of the platform to more formal mentoring sessions where faculty engaged with one another over questions related to logistics, pedagogy, facilitation, and technological skills. Despite the fact that all six participants had received training in one form or another, three of the participants felt they had been thrown into teaching online with no formal training. The interviews revealed that faculty found the training they received too focused on the technology and not focused enough on the content they were teaching or problems they were facing. Most agreed that formal training programs were either too basic or too advanced for their level of skill, and found one-on-one assistance from either a colleague or training staff much more beneficial. Most felt that they would have benefitted from
more training focused on online pedagogy and access to instructional design personnel to help them in course design. Most agreed that more formalized opportunities to meet with colleagues regarding online practice would also be beneficial.

Horvitz and Beach (2011) examined effective methods of preparing faculty to teach online. Benner as cited by Horvitz and Beach (2011) identified five stages of proficiency in practice: (a) novice, (b) advanced beginner, (c) competent, (d) proficient, and (e) expert. Horvitz and Beach (2011) indicated that even once faculty received training in the learning platform and rudimentary skills in online instruction, they might still be stuck in the novice or advanced beginner stage, despite being interested in increasing their skills. The researchers reported on the results of a pilot professional development program called the Master E-Teacher program. This program combined elements of a faculty learning community (FLC), where small cohorts of faculty collaborate with one another under the direction of a facilitator around teaching and learning issues, along with a problem-based learning approach, where faculty are encouraged to apply new skills to improve their current online courses. The program itself lasted eight weeks, with the FLC component continuing for the duration of a year. A convenience sample of five faculty members with at least one semester of online teaching participated in the study. Participants completed the Educators’ Sense of Efficacy for Online Teaching Scale, developed by Robinia (2008), at the start of the program, at the end of the eight-week training program, and after completion of the FLC. This 31-item instrument is broken into four factors surrounding efficacy in (a) student engagement, (b) instructional strategies, (c) classroom management, and (d) use of computers. Although the group was too small for statistical significance, the study does show that participants increased in every skill over time, with classroom management showing the greatest increase, followed by student engagement. Researchers concluded that programs targeting experienced online instructors could have a positive impact on practice.
A meta-analysis of research related to the evaluation of faculty development was conducted by Meyer (2014). Meyer (2004) identified faculty development as a critical component toward online course quality as identified by Online Learning Consortium’s (OLC, formerly Sloan’s Consortium) five pillars of quality. These five pillars of quality include (a) learning effectiveness, (b) scale, (c) access, (d) faculty satisfaction, and (d) student satisfaction, with each pillar including a goal, process, and metrics for measurement. Meyer included faculty development as a part of the process for faculty satisfaction. Analysis of the research indicated that theory was an important component when evaluating faculty development, and identified adult learning theory and TLT as two important theories by which faculty development could be evaluated. Meyer also identified a number of models for faculty development and recommended consistency in the way models were defined and described to facilitate further research into their effectiveness. Finally, Meyer recommended research to disentangle the various treatment methods by which faculty development was conducted to simplify and extrapolate evaluation.

Research by Jubanyik (2013) examined the perspectives of faculty who have completed professional development in online instruction. In this qualitative study, 14 community college faculty selected from a convenience sample of online instructors participated in semistructured interviews. Themes emerging from this study revealed that faculty were often given technical training by a member of IT but felt they would have benefited from professional development that gave them an opportunity to dialogue with faculty already teaching online. Participants indicated that professional development did not adequately prepare them for the new pedagogical approaches necessary to teach successfully online. Many indicated a desire for continuous training as well as collaboration and sharing of information.
Research on Faculty Perceptions of Online Teaching and Learning

The previous section looked at professional development as it applies to online teaching specifically. This section looks specifically at research surrounding online instruction and faculty perceptions related to it. The first part of this section examines faculty perceptions regarding online instruction and how these perceptions color their professional learning.

Gutman (2005) and Lloyd et al. (2012) used different approaches to examine faculty perceived barriers to online instruction and made suggestions for how to overcome those perceptions. Lloyd et al. (2012) used factor analysis to classify 22 identified barriers into four main classes: (a) interpersonal barriers, (c) institutional barriers, (c) training and technology barriers, and (d) cost/benefit analyses barriers. These factors aligned well with the six barriers identified by Gutman (2005), namely (a) salary, (b) promotion and tenure, (c) workload, (d) training, (e) interpersonal relations, and (f) quality. For example, the barrier of inadequate salary would fall under the factor of cost/benefit analysis and the barrier of promotion and tenure aligned with the interpersonal barriers factor. Gutman recommended “recognition, collaboration, technical support, online sharing of pedagogical practices, and instructional design assistance are all ways to increase faculty involvement and the adoption of Web-based technologies in college teaching” (Gutman, 2005, pp. 55–56). The research of Lloyd et al. (2012) indicated that perceived barriers to teaching online significantly lessened with experience. Consequently, Lloyd et al. (2012) recommended that resistant faculty be encouraged to try online instruction along with being given opportunities to address their concerns, and that seasoned online faculty serve as facilitators to these processes.

Gahungu, Dereshiwsky, and Moan (2006) described the experiences of 27 faculty members participating in the then-somewhat-new field of online instruction and provided their perceptions. The research focused mainly on faculty perceptions of communication in an online
forum, which faculty members found challenging but manageable for most subject areas. Jamlan (2004) also examined faculty perceptions regarding the introduction of eLearning. Thirty of 49 faculty from the College of Education at the University of Bahrain were selected using stratified random sampling. Results of their 20-question instrument indicated faculty held a largely positive perception of eLearning, despite concerns regarding the economic viability of this method of instruction. Research in both cases indicates that despite perceived barriers, faculty are largely accepting of the idea of online instruction.

An article by Stein, Shephard, and Harris (2011) examined how faculty member perceptions about eLearning colored their experience and their professional learning related to eLearning. In this study, 114 tertiary education faculty responded to a questionnaire and 20 participated in follow-up semistructured interviews. Researchers separated faculty perceptions into two groups: perceptions about eLearning and perceptions about professional development for eLearning. Researchers found a correlation between the way faculty perceived eLearning and the way they characterized training. For example, faculty who saw eLearning as a collection of the tools used to facilitate this learning also viewed professional training as training on how to use the tools. Faculty who perceived eLearning to be a collaborative enterprise also saw professional development as an opportunity to collaborate.

Wickersham and McElhany (2010) considered the perceptions of administrators and faculty regarding online education. They discussed the differences in these perceptions and suggested solutions for bringing these two groups together. The researchers conducted interviews with 16 academic department heads and three academic deans (one from each college within the university – the college of business & technology, the college of education and human services, and the college of arts and sciences) and administered a survey to 114 faculty distributed among the three colleges. The results of the questionnaire indicated faculty were most concerned with
learning more about online teaching and how it would personally affect them, despite a long history of online instruction at the participating university. Administrators echoed many of the same concerns as faculty but were unprepared to address these concerns in the ways suggested by faculty. For example, faculty identified the time it takes to design an effective online course as one barrier to online instruction; however, administrators were unwilling to consider release time and monetary compensation as a means of addressing this concern. The researchers recommended continuous support on several levels to address faculty concerns as well as comprehensive faculty development.

As shown in the research in this section, many of the poor perceptions of faculty related to online instruction come from lack of stakeholder buy-in and lack of preparation in designing, developing, training for, and introducing an online program or project. Many faculty resented the feeling of being thrown headlong into online instruction. Dechant and Dechant (2010) articulated the journey of their institution in developing an online program, including the pitfalls they encountered and lessons they learned. They used systems theory as a framework for examining the introduction of online learning to an institution. The recommendations made by Dechant and Dechant include (a) making online learning a part of the vision or mission of the institution, (b) establishing sufficient infrastructure to support online learning, (c) investing in appropriate training and preparation for faculty to teach online, and (d) reinforcing the importance of online learning to the mission of the school through investment of resources (2010).

Conclusion

The research included this literature review indicates that even when faculty are positive about the value of online instruction, they have concerns regarding their ability to effectively facilitate such instruction. Additionally, faculty are concerned about the amount of uncompensated time spent developing online instruction, particularly if the time spent
developing and teaching online courses fails to factor into decisions about promotion and tenure. Faculty concerns vary—from the lack of intrinsic or extrinsic motivators for teaching online to the lack of adequate preparation and support. Faculty often lack adequate professional development to prepare them to teach online. Even when professional development has been offered, it often focused on technological skills rather than pedagogical training and best practices. Studies identified in this literature review found that faculty believe professional development that includes collaboration with experienced online educators is essential to success, and that training should be ongoing rather than offered as isolated sessions.

These findings track with research into what is considered effective professional development. Additionally, research showed that professional development has not been well evaluated to determine its effectiveness. Various methods have been used in the past to assess the effectiveness of professional development, including instruments related to technology adoption, teacher concerns, and transformative learning. Due to its emphasis on change in perspectives and behavior, a quantitative instrument for measuring the stage of transformative learning may prove useful in planning effective professional development and assessing the success of professional development for online instruction.
CHAPTER 3

METHODOLOGY

Transformative learning theory (TLT) deals with how adults turn ideas into changes in behavior. The seminal work of Mezirow (1981, 1991) on TLT tracks the learner through a process of self-reflection that causes the learner to question and even change what he or she knows and believes. Mezirow discusses the role of a disorienting dilemma to force us to become conscious of why we think the way we do.

Faculty experience with online instruction often provides a disorienting dilemma to established beliefs about the nature of teaching and learning. This study sought to relate the stages of transformative learning to faculty perceptions and application of best practices to online learning. Can transformative learning theory constructs be used to identify potential problems in faculty development and delivery of online instruction? How does the stage of transformative learning of online faculty relate to their perceptions about online learning and their application of best practices? Is there a correlation between stage of transformative learning and the amount of experience with online instruction a faculty member has?

No purely quantitative instrument that measures transformative learning was identified during a lengthy literature review. The original qualitative instruments developed by King (1997, 2009) and Glisczinski (2007) have both been validated as instruments for measuring transformative learning in adult students. King (2009) stated that her instrument was most effective when piloted and modified to meet the specific needs of a study. It was therefore hypothesized that a quantitative instrument could be developed and validated for use in measuring the stages of transformative learning toward application of new ideas in online instruction.
Participants

Faculty from 10 regionally accredited comprehensive Texas colleges were invited to participate in this study. A majority of the participants (71.8%) held terminal degrees in their respective fields; however, invited faculty included tenure-track and nontenure track as well as full- and part-time faculty, with and without terminal degrees, to be representative of the population. While online faculty were identified at some of the schools by staff from academic excellence or distance education departments at each institution, such a list was not available at every school. In these schools, invitations were sent to all faculty regardless of their online experience. Invitations to participate were sent directly to more than 800 faculty members, not including those on distribution lists sent out by staff of from academic excellence or distance education departments at each institution. For this reason, questions at the beginning of the instrument screened out participants who lacked online experience or training. Invitations to participate in the study were sent via email. Three reminder emails requesting faculty participation were also sent to each individual or distribution list. These were sent about two weeks apart.

Setting

The comprehensive regionally accredited universities included in this study are spread across Texas. They represent diverse student and faculty populations with enrollments ranging between approximately 2,000 and 66,000. These universities encompass small rural areas and large metropolitan areas. One caters to a mostly international population, while another serves a large number of military students and their families. Several of the universities have a large number of online offerings, but all have online courses to one degree or another.
Instrumentation

The instruments developed by King (1997) and Glisczinski (2007) both focused on transformative learning as applied to college students and contained only a handful of quantitative questions. For this study, a new instrument was developed that included questions specifically designed to measure which state of transformative learning a faculty member was in related to their experiences with online instruction. The researcher developed questions designed to quantitatively capture the essence of the 10 precursive steps listed by Mezirow (1981), namely:

1. Disorienting dilemma
2. Self-examination
3. Critical assessment of personally internalized role assumptions and a sense of alienation from traditional social expectations
4. Relating one's discontent to similar experiences of others or to public issues – recognizing that one's problem is shared and not exclusively a private matter
5. Exploring options for new ways of acting
6. Building competence and self-confidence in new roles
7. Planning a course of action
8. Acquiring knowledge and skills for implementing one's plans
9. Provisional efforts to try new roles and to assess feedback
10. Reintegration into society on the basis of conditions dictated by the new perspective (Mezirow, 1981, p. 7)

The questions were formulated as statements with a 5-point Likert-style scale ranging from strongly disagree to strongly agree. While researchers disagree on the appropriate number of scale responses in a Likert-type questions, most agree that scales of between 5 and 9
items increase both reliability and validity (Cox, E. P., 1980; Dawes, 2008; Devlin, Dong, & Brown, 2003; Preston & Colman, 2000). This is consistent with Miller’s law (Miller, 1956), which identifies 7 plus-or-minus 2 as a magic number for information processing. Dawes indicates that almost no difference exists between mean scores obtained from a 5- versus a 7-point scale (Dawes, 2008). Cox states that an odd number of statements is preferable to allow participants a neutral response (1980). Further, several researchers agree that a five-scale format is easy to use and understand (Dawes, 2008), and may increase response rate and reduce response fatigue (Buttle, 1996). These factors influenced the researcher’s decision to use 5 scale items.

Statements described the potential feelings, behaviors, or beliefs of faculty members at various stages of transformative learning in relationship to their development in online instruction. These statements are similar to those included in the first question of King’s Learning Activities Survey (2009); however, this researcher included several statements for each stage to help prevent response bias and to assist the researcher in determining if a particular transformative step had been reached by the participant.

Three demographic question were included to help determine how many years of experience participants had with online instruction, how much training participants had received in this area, and with which institution they are affiliated. The latter question was included to help the researcher determine the types of training to which participants may have been exposed, as well as whether such training was required or optional, as indicated by policies regarding professional development for online instructors at each institution. The instrument also contained questions regarding general demographics that are used in survey analysis.

Current research on transformative learning theory posits that for learning to have a far-reaching impact on the learner’s behavior or cause a shift in the learner’s beliefs, the learner
must go through four stages: “transforming frames of reference through critical reflection of assumptions, validating contested beliefs through discourse, taking action on one’s reflective insight, and critically assessing it” (Mezirow, 1997, p. 11). This suggested an initial breakdown of the survey into four potential constructs, with questions relating to each of these stages. This differs from King’s (2009) instrument, which was not broken into constructs, as it is too short for such classification.

The statements designed by this researcher to quantify Mezirow’s 10 precursory steps were organized between these four constructs. Between 7 and 22 items were initially included in each of these four constructs to ensure there were enough questions for factor analysis and tests for internal consistency, both of the instrument as a whole and within constructs. The number of items in the initial instrument was reduced following pilot testing.

Additional questions identified participant experience with online instruction, participation in prior professional development related to online instruction, and demographics. The instrument did not contain questions considered to be of a sensitive nature. The initial survey is included in Appendix A. This version of the survey was reviewed by several instrumentation specialists for content validity testing.

This version of the instrument was pilot-tested by 16 members of this researcher’s doctoral cohort to get feedback regarding the survey design. This researcher polled the pilot group to determine areas where the survey (a) lacked clarity, (b) where items might be misunderstood, (c) which items were redundant, and (d) which items needed to be shortened. The instrument was revised based on feedback from the pilot group and analyzed via factor reduction to reduce the survey size and total number of items. Participants in the pilot study were also asked about the length of time it took them to complete the survey as a baseline to use in the recruiting email to participants. Based on their responses, it was estimated that the final version
of the instrument required approximately 20 minutes to complete. The final 47-item instrument is included in Appendix B.

Procedures

IRB approval was obtained from each of the 10 participating institutions and at the school with which this researcher is affiliated. Signed copies of IRB approval or equivalent appear in Appendix C. The researcher emailed staff at academic excellence or distance education departments at each of the ten universities to obtain cooperation for study participation. This researcher worked with these contacts to identify online faculty; however, some schools did not have access to such a list. At these institutions, a method was identified by which to contact the faculty population at large. Faculty identified through this process were invited to participate via email with a link to the survey. Invited faculty were presented with a notice of informed consent in both the emailed invitation and prior to beginning the instrument. Failure to complete the survey was considered withdrawal from the study.

The instrument was delivered anonymously via Survey Monkey, an online survey tool, and all items were evaluated in the aggregate. Survey results contained no personally identifiable information. Access to survey results was available only to this researcher and her supervising professor.

As an incentive for study participation, faculty were offered the option to enter a drawing for a $25 Amazon gift card at the end of the instrument. This was accomplished by redirecting interested participants to a separate form where email addresses were collected without being tied to survey data. A drawing was held following data collection and a winner selected.

An aggregate report of the results was downloaded, scrubbed, and uploaded into SPSS. Of the 156 completed surveys, 20 cases were excluded based on lack of online experience or training. Three incomplete surveys were utilized based on completion of individual constructs
within the instrument. Abandoned surveys were not utilized as abandonment of the instrument was considered withdrawal from the study. Data was analyzed using SPSS.

Data Analysis

Content validity was established through instrument review by experts in the field of distance learning and instrument development. Feedback from three experts was used to ensure the instrument appears to measure what it was designed to measure.

Participant responses were randomly divided into two approximately equal groups for the purpose of factor analysis, with half being used for exploratory factor analysis and the other half for subsequent confirmatory factor analysis. Factor analysis was utilized to identify and confirm instrument structure, as well as to reduce the instrument to its minimum effective number of items. Hierarchical cluster analysis was used to identify further the similarity or dissimilarity in answering patterns for questions identified as belonging to each specific factor. Multidimensional scaling was performed to provide a visual representation of the similarities or distances among the instrument questions, again for the purpose of factor identification and validation.

Factor means were correlated against online experience and professional development participation using multiple linear regression. These correlations were performed to establish construct and item validity of the instrument. A $p < .05$ level of significance was used for all analyses. The effect size was calculated using the Eta-squared statistic and interpreted based on Cohen’s $d$ (1988). Cronbach’s alpha was used to determine the reliability of the instrument by analyzing internal consistency of the instrument as a whole and for each identified factor.

Conclusion

Because of this study, a quantitative instrument for the measurement of transformative learning of faculty experience with online instruction was developed and validated, hereafter
referred to as the Transformative Learning Questionnaire. The initial instrument was developed with four constructs reflecting the four stages of transformative learning posited by Mezirow (1997), namely (a) transformation of faculty frames of reference, (b) examination of previously contested beliefs, (c) taking action, and (d) critical assessment of action. The initial instrument was reviewed by content experts to evaluate its content validity and pilot-tested by members of this researcher’s doctoral cohort to check for understandability, clarity, and brevity. Pilot data was used for initial factor reduction and the instrument was revised based on feedback from this pilot.

Study participants consisted of faculty from 10 regionally accredited Texas universities, all of which have at least some online courses. Participants completed the final version instrument using Survey Monkey. Results of the study were evaluated in aggregate using SPSS.

The data was analyzed for item, construct, and content validity, as well as for exploratory and confirmatory factor analysis of the instrument. The instrument was also tested for reliability. Specific tests performed for these analyses included (a) factor analysis, (b) hierarchical cluster analysis, (c) multiple regression, (d) ANOVA, (e) eta-squared, and (f) Cronbach’s alpha.

In the future, it is hoped the resulting instrument can be used to determine if the stage of transformative learning of a faculty member can help to identify barriers faced by faculty at various stages of proficiency with online instruction. Such information may help facilitators, administrators, and learning technologists offer support at critical stages in the learning process, helping to facilitate the conditions for deeper learning and greater success in online environments.
CHAPTER 4

DATA ANALYSIS

Demographic data was collected from study participants. Of the 156 participants, 150 had completed some online faculty development, with the mean response of two to three workshops. Similarly, 134 respondents indicated they had experience teaching online, with a mean experience level of four to five years.

Demographic descriptive statistics are shown in Table 1.

Table 1

*Descriptive Statistics*

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of faculty development workshops taken</td>
<td>150</td>
<td>3.12</td>
<td>1.461</td>
</tr>
<tr>
<td>Number of years online teaching experience</td>
<td>134</td>
<td>4.08</td>
<td>1.594</td>
</tr>
</tbody>
</table>

Of the 125 survey participants who responded to the question asking gender, there were slightly more female participants than male, with 58.4% (n = 73) female, 40% (n = 50) male, and 1.6% (n = 2) unspecified. The question on ethnicity was answered by 122 participants. White non-Hispanic participants predominated at 74.6% (n = 91), with 5.7% (n = 7) listing Asian/Pacific Islander as their ethnicity, 3.3% (n = 4) Black non-Hispanic, 9.8% (n = 12) Hispanic, 1.6% (n = 2) Biracial, and 4.9% (n = 6) ethnicity not listed above. The participants (125) were distributed across various ages. Of the participants, 11.2% (n = 14) listed their ages as between 25 and 34, 24% (n = 30) as between 35 and 44, 24% (n = 30) as between 45 and 54, 29.6% (n = 37) as between 55 and 64, and 11.2% (n = 14) as 65 or over. These demographics are similar to the demographics of the total population of the schools invited to participate. Additionally, 124 specified education level, with 28.2% (n = 35) having a Master’s degree, and 71.8% (n = 89) having a doctoral degree. Demographic frequencies are in Table 2.
Table 2

Descriptive Frequencies

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>73</td>
<td>58.4</td>
</tr>
<tr>
<td>Male</td>
<td>50</td>
<td>40.0</td>
</tr>
<tr>
<td>Unspecified</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>7</td>
<td>5.7</td>
</tr>
<tr>
<td>Black non-Hispanic</td>
<td>4</td>
<td>3.3</td>
</tr>
<tr>
<td>Hispanic</td>
<td>12</td>
<td>9.8</td>
</tr>
<tr>
<td>White non-Hispanic</td>
<td>91</td>
<td>74.6</td>
</tr>
<tr>
<td>Biracial</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td>Ethnicity not listed above</td>
<td>6</td>
<td>4.9</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-34</td>
<td>14</td>
<td>11.2</td>
</tr>
<tr>
<td>35-44</td>
<td>30</td>
<td>24.0</td>
</tr>
<tr>
<td>45-54</td>
<td>30</td>
<td>24.0</td>
</tr>
<tr>
<td>55-64</td>
<td>37</td>
<td>29.6</td>
</tr>
<tr>
<td>65 and above</td>
<td>14</td>
<td>11.2</td>
</tr>
<tr>
<td>Education Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master’s degree</td>
<td>35</td>
<td>28.2</td>
</tr>
<tr>
<td>Doctorate degree</td>
<td>89</td>
<td>71.8</td>
</tr>
</tbody>
</table>

Overall scale internal consistency is acceptable, with a Cronbach’s alpha score of 63.4.

Exploratory principle component analysis (PCA) was completed using approximately half the cases. The suitability of PCA was assessed prior to analysis. Inspection of the correlation matrix identified three variables without a correlation coefficient greater than 0.3; specifically, (a) “Learning online is much easier than learning in a traditional classroom,” (b) “My peers do not understand my new perspectives since I started teaching online,” and (c) “Learning online has the same amount of interaction as a correspondence course.” These three items were removed from the remaining analyses. The overall Kaiser-Meyer-Olkin (KMO) measure was .775. One additional item was removed due to low KMO measure, specifically, “Learning to teach online is
most effective when it is collaborative.” Three items were retained with low but acceptable KMO measures, specifically, (a) “If I know how to teach in a classroom, I already know how to teach online,” (b) “It is more convenient to teach online courses,” and (c) “After I began teaching online, I found myself questioning things I believed about teaching and learning.” The remaining individual KMO measures were all greater than 0.6, classifications of mediocre to meritorious according to Kaiser (1974). Bartlett's Test of Sphericity was statistically significant ($p < .0005$), indicating that the data was likely factorizable.

PCA revealed 13 components that had eigenvalues greater than 1, as shown in Table 3. These factors explained 72.97% of the variance, but many were single-item factors.

Table 3

<table>
<thead>
<tr>
<th>Component</th>
<th>Total</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10.549</td>
<td>24.532</td>
<td>24.532</td>
</tr>
<tr>
<td>2</td>
<td>4.417</td>
<td>10.273</td>
<td>34.805</td>
</tr>
<tr>
<td>3</td>
<td>2.780</td>
<td>6.464</td>
<td>41.269</td>
</tr>
<tr>
<td>4</td>
<td>2.187</td>
<td>5.087</td>
<td>46.356</td>
</tr>
<tr>
<td>5</td>
<td>1.894</td>
<td>4.404</td>
<td>50.760</td>
</tr>
<tr>
<td>6</td>
<td>1.646</td>
<td>3.828</td>
<td>54.588</td>
</tr>
<tr>
<td>7</td>
<td>1.455</td>
<td>3.384</td>
<td>57.972</td>
</tr>
<tr>
<td>8</td>
<td>1.295</td>
<td>3.011</td>
<td>60.983</td>
</tr>
<tr>
<td>9</td>
<td>1.162</td>
<td>2.703</td>
<td>63.686</td>
</tr>
<tr>
<td>10</td>
<td>1.056</td>
<td>2.456</td>
<td>66.143</td>
</tr>
<tr>
<td>11</td>
<td>1.017</td>
<td>2.365</td>
<td>68.507</td>
</tr>
<tr>
<td>12</td>
<td>1.005</td>
<td>2.337</td>
<td>70.844</td>
</tr>
<tr>
<td>13</td>
<td>.912</td>
<td>2.120</td>
<td>72.965</td>
</tr>
</tbody>
</table>

Visual inspection of the scree plot shown in Figure 5 indicated that four to five components should be retained (Cattell, 1966). Neither a four- nor a five-component solution met the interpretability criterion. Since the original instrument was modeled on four components, four components were retained.
The four-component solution explained 46.36% of the total variance. A Varimax orthogonal rotation was employed to aid interpretability. The rotated solution failed to exhibit “simple structure” (Thurstone, 1947). However, the interpretation of the data was consistent with the Transformative Learning Questionnaire, which was designed to measure with strong loadings of “transforming frames of reference through critical reflection of assumptions” items on Component 2, “validating contested beliefs through discourse” items on Component 3, “taking action on one’s reflective insight” items on Component 4, and “critical assessment” items on Component 1. Component loadings and communalities of the rotated solution are presented in Table 4.
### Table 4

**Rotated Structure Matrix for PCA with Varimax Rotation of a Four-Component Questionnaire**

<table>
<thead>
<tr>
<th>Items</th>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
<th>Component 4</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q40</td>
<td>.774</td>
<td>-.334</td>
<td>-.085</td>
<td>-.004</td>
<td>0.718</td>
</tr>
<tr>
<td>Q34</td>
<td>.740</td>
<td>-.355</td>
<td>.039</td>
<td>-.050</td>
<td>0.678</td>
</tr>
<tr>
<td>Q38</td>
<td>.693</td>
<td>-.056</td>
<td>.216</td>
<td>.194</td>
<td>0.568</td>
</tr>
<tr>
<td>Q18</td>
<td>.689</td>
<td>-.006</td>
<td>.183</td>
<td>.040</td>
<td>0.509</td>
</tr>
<tr>
<td>Q35</td>
<td>.671</td>
<td>-.078</td>
<td>.263</td>
<td>.220</td>
<td>0.574</td>
</tr>
<tr>
<td>Q37</td>
<td>.648</td>
<td>-.072</td>
<td>-.023</td>
<td>.359</td>
<td>0.554</td>
</tr>
<tr>
<td>Q33</td>
<td>.646</td>
<td>-.075</td>
<td>.401</td>
<td>-.094</td>
<td>0.592</td>
</tr>
<tr>
<td>Q32</td>
<td>.559</td>
<td>.015</td>
<td>.479</td>
<td>.023</td>
<td>0.543</td>
</tr>
<tr>
<td>Q42</td>
<td>.548</td>
<td>-.207</td>
<td>.513</td>
<td>.101</td>
<td>0.616</td>
</tr>
<tr>
<td>Q31</td>
<td>.521</td>
<td>-.236</td>
<td>-.077</td>
<td>.017</td>
<td>0.333</td>
</tr>
<tr>
<td>Q36</td>
<td>.492</td>
<td>-.043</td>
<td>.368</td>
<td>.218</td>
<td>0.426</td>
</tr>
<tr>
<td>Q39</td>
<td>.472</td>
<td>-.268</td>
<td>.329</td>
<td>.286</td>
<td>0.485</td>
</tr>
<tr>
<td>Q22</td>
<td>.406</td>
<td>-.062</td>
<td>-.108</td>
<td>.004</td>
<td>0.180</td>
</tr>
<tr>
<td>Q41</td>
<td>.387</td>
<td>-.299</td>
<td>.355</td>
<td>.148</td>
<td>0.387</td>
</tr>
<tr>
<td>Q2R</td>
<td>-.259</td>
<td>.787</td>
<td>-.019</td>
<td>-.064</td>
<td>0.691</td>
</tr>
<tr>
<td>Q3R</td>
<td>-.138</td>
<td>.743</td>
<td>-.014</td>
<td>-.028</td>
<td>0.572</td>
</tr>
<tr>
<td>Q5R</td>
<td>-.204</td>
<td>.730</td>
<td>.104</td>
<td>-.132</td>
<td>0.603</td>
</tr>
<tr>
<td>Q1R</td>
<td>-.227</td>
<td>.729</td>
<td>-.177</td>
<td>-.028</td>
<td>0.615</td>
</tr>
<tr>
<td>Q30</td>
<td>.372</td>
<td>-.704</td>
<td>.091</td>
<td>.021</td>
<td>0.642</td>
</tr>
<tr>
<td>Q4R</td>
<td>-.078</td>
<td>.653</td>
<td>-.010</td>
<td>.087</td>
<td>0.440</td>
</tr>
<tr>
<td>Q12</td>
<td>-.090</td>
<td>.608</td>
<td>-.116</td>
<td>-.265</td>
<td>0.461</td>
</tr>
<tr>
<td>Q8</td>
<td>.118</td>
<td>.538</td>
<td>-.213</td>
<td>.188</td>
<td>0.384</td>
</tr>
<tr>
<td>Q29</td>
<td>.100</td>
<td>-.528</td>
<td>.076</td>
<td>-.092</td>
<td>0.303</td>
</tr>
<tr>
<td>Q6</td>
<td>-.189</td>
<td>.427</td>
<td>-.067</td>
<td>.286</td>
<td>0.304</td>
</tr>
<tr>
<td>Q24</td>
<td>.305</td>
<td>-.410</td>
<td>.208</td>
<td>.293</td>
<td>0.390</td>
</tr>
<tr>
<td>Q15</td>
<td>-.144</td>
<td>-.322</td>
<td>.260</td>
<td>.184</td>
<td>0.226</td>
</tr>
<tr>
<td>Q19</td>
<td>.159</td>
<td>-.025</td>
<td>.816</td>
<td>-.004</td>
<td>0.692</td>
</tr>
<tr>
<td>Q13</td>
<td>-.038</td>
<td>-.013</td>
<td>-.764</td>
<td>-.019</td>
<td>0.586</td>
</tr>
<tr>
<td>Q20</td>
<td>.220</td>
<td>-.117</td>
<td>.764</td>
<td>-.036</td>
<td>0.647</td>
</tr>
<tr>
<td>Q16</td>
<td>-.042</td>
<td>.135</td>
<td>.750</td>
<td>.098</td>
<td>0.592</td>
</tr>
<tr>
<td>Q14</td>
<td>-.172</td>
<td>.234</td>
<td>-.561</td>
<td>.012</td>
<td>0.400</td>
</tr>
<tr>
<td>Q23</td>
<td>.086</td>
<td>.003</td>
<td>.486</td>
<td>.237</td>
<td>0.300</td>
</tr>
<tr>
<td>Q43</td>
<td>.352</td>
<td>-.284</td>
<td>.486</td>
<td>.176</td>
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</tr>
<tr>
<td>Q11</td>
<td>-.033</td>
<td>.172</td>
<td>-.387</td>
<td>-.289</td>
<td>0.264</td>
</tr>
</tbody>
</table>

*(table continues)*
Table 4 (continued)

<table>
<thead>
<tr>
<th>Items</th>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
<th>Component 4</th>
<th>Communalities</th>
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<tr>
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<td>-.170</td>
<td>.359</td>
<td>.062</td>
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<tr>
<td>Q7</td>
<td>.090</td>
<td>.063</td>
<td>-.317</td>
<td>-.104</td>
<td>0.124</td>
</tr>
<tr>
<td>Q25</td>
<td>.061</td>
<td>-.053</td>
<td>.147</td>
<td>.670</td>
<td>0.477</td>
</tr>
<tr>
<td>Q26</td>
<td>.141</td>
<td>.159</td>
<td>.074</td>
<td>.627</td>
<td>0.444</td>
</tr>
<tr>
<td>Q27</td>
<td>.104</td>
<td>.100</td>
<td>.307</td>
<td>.593</td>
<td>0.467</td>
</tr>
<tr>
<td>Q28</td>
<td>.128</td>
<td>.267</td>
<td>.296</td>
<td>.537</td>
<td>0.464</td>
</tr>
<tr>
<td>Q10</td>
<td>-.321</td>
<td>.340</td>
<td>-.084</td>
<td>-.415</td>
<td>0.397</td>
</tr>
<tr>
<td>Q21</td>
<td>-.069</td>
<td>-.337</td>
<td>-.051</td>
<td>.402</td>
<td>0.282</td>
</tr>
<tr>
<td>Q9</td>
<td>-.278</td>
<td>.207</td>
<td>.122</td>
<td>-.374</td>
<td>0.275</td>
</tr>
</tbody>
</table>

Note. Major items for each loading are bolded.

Confirmatory PCA was completed using the remaining half of the cases. Results were highly similar to the results found in exploratory PCA. These results further confirm the findings of the analysis.

Inter-item reliability was tested for each of the four components identified. Component 2, “transforming frames of reference through critical reflection of assumptions,” consisted of 12 items. A number of these items needed to be reversed before checking inter-item reliability scores. Items were removed one at a time using the “scale if item deleted” score until the following items remained (shown in the order they loaded): Q2r, Q3r, Q5r, Q4r, and Q6. This scale had a high level of internal consistency, as determined by a Cronbach’s alpha of 0.850.

Component 3, “validating contested beliefs through discourse,” consisted of 10 items. Items were removed one at a time using the “scale if item deleted” score until the following items remained: Q19, Q20, Q16, Q23, and Q13. This scale had a high level of internal consistency, as determined by a Cronbach’s alpha of 0.835.

Component 4, “taking action on one’s reflective insight,” consisted of seven items. Items were removed one at a time using the “scale if item deleted” score. When five items (Q25, Q26,
Q27, Q28, and Q21) remained in the scale, the alpha score indicated a questionable internal consistency, as indicated by a Cronbach’s alpha of 0.649. Removing Q21 improved the scale to an acceptable level of internal consistency, as determined by a Cronbach's alpha of 0.701. Since four items is a very small scale, analyses were conducted on this factor with both four and five items and the results are reported later in this document.

Component 1, “critical assessment,” consisted of 14 items. Items were removed one at a time using the “scale if item deleted” score until the following items remained: Q40, Q34, Q38, Q18, Q35, Q37, Q33, Q32, Q42, Q36, Q39, and Q41. This scale had a very high level of internal consistency, as determined by a Cronbach's alpha of 0.901.

Additional exploratory analyses were conducted using cluster analysis. A five-cluster solution produced similar groupings of variables to those produced by the four-factor solution to PCA; however, this was only true when Q21 was removed from the analysis. One noted difference was that item 6 clustered separately from other items in Component 1 as an outlier. There were also some discrepancies noted between similarities in answering patterns and the groupings determined by PCA. The results of the cluster analysis (with Q21 excluded) are shown in Table 5, with discrepancies from PCA indicated.

Table 5

<table>
<thead>
<tr>
<th>Items Grouped by Cluster Membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
</tr>
<tr>
<td>Q2R</td>
</tr>
<tr>
<td>Q3R</td>
</tr>
<tr>
<td>Q4R</td>
</tr>
<tr>
<td>Q5R</td>
</tr>
<tr>
<td>Q6 *</td>
</tr>
<tr>
<td>Q19 **</td>
</tr>
<tr>
<td>Q20 **</td>
</tr>
</tbody>
</table>

*(table continues)*
Table 5 (continued)

<table>
<thead>
<tr>
<th>Case</th>
<th>5 Clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q16 **</td>
<td>3</td>
</tr>
<tr>
<td>Q16 **</td>
<td>3</td>
</tr>
<tr>
<td>Q40</td>
<td>3</td>
</tr>
<tr>
<td>Q38</td>
<td>3</td>
</tr>
<tr>
<td>Q18</td>
<td>3</td>
</tr>
<tr>
<td>Q35</td>
<td>3</td>
</tr>
<tr>
<td>Q37</td>
<td>3</td>
</tr>
<tr>
<td>Q33</td>
<td>3</td>
</tr>
<tr>
<td>Q32</td>
<td>3</td>
</tr>
<tr>
<td>Q42</td>
<td>3</td>
</tr>
<tr>
<td>Q36</td>
<td>3</td>
</tr>
<tr>
<td>Q39</td>
<td>3</td>
</tr>
<tr>
<td>Q41</td>
<td>3</td>
</tr>
<tr>
<td>Q34</td>
<td>3</td>
</tr>
<tr>
<td>Q23</td>
<td>4</td>
</tr>
<tr>
<td>Q13</td>
<td>4</td>
</tr>
<tr>
<td>Q25</td>
<td>5</td>
</tr>
<tr>
<td>Q26</td>
<td>5</td>
</tr>
<tr>
<td>Q27</td>
<td>5</td>
</tr>
<tr>
<td>Q28</td>
<td>5</td>
</tr>
</tbody>
</table>

Note. * = Item is an outlier. ** = PCA identified these items with cluster 4.

Although there were some differences between PCA and cluster analysis, the analysis seems to confirm a four-factor solution. Additionally, examining the items by similarity in answering patterns forms groups of items that are roughly equivalent to those identified by PCA. The Dendrogram created by cluster analysis is shown in Figure 6.
A multiple regression was run to predict faculty perceptions indicating a transformation of frame of reference using years of online teaching experience, number of professional development sessions over online instruction, and gender. The dependent variable was normalized using the Box-Cox method (Box & Cox, 1964) to ensure linearity of the relationships. There was linearity as assessed by partial regression plots and a plot of studentized residuals against the predicted values. There was independence of residuals, as assessed by a Durbin-Watson statistic of 2.033. There was homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. There was no evidence
of multicollinearity, as assessed by tolerance values greater than 0.1. There were no studentized deleted residuals greater than ±3 standard deviations, no leverage values greater than 0.2, and values for Cook's distance greater than 1. The assumption of normality was met, as assessed by Q-Q Plot. The multiple regression model statistically significantly predicted transformation of frame of reference, $F(3, 111) = 3.247, p < .05$. Years of experience added statistically significantly to the prediction, $p < .05$; neither amount of professional development nor gender had a significant influence. $R^2$ for the overall model was 8.1% with an adjusted $R^2$ of 5.6%, a small effect size according to Cohen (1988). Regression coefficients and standard errors can be found in Table 6.

Table 6

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SE_B$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>2.936</td>
<td>.320</td>
<td></td>
</tr>
<tr>
<td>Faculty Development</td>
<td>-.100</td>
<td>.058</td>
<td>-.160</td>
</tr>
<tr>
<td>Online Experience</td>
<td>-.125</td>
<td>.055</td>
<td>-.214*</td>
</tr>
<tr>
<td>Gender</td>
<td>.171</td>
<td>.152</td>
<td>.105</td>
</tr>
</tbody>
</table>

*Note. *$p < .05$; $B =$ unstandardized regression coefficient; $SE_B =$ standard error of the coefficient; $\beta =$ standardized coefficient.

A multiple regression was run to predict faculty perceptions indicating examination of previously contested beliefs using years of online teaching experience, number of professional development sessions over online instruction, and gender. The dependent variable was normalized using the Box-Cox method (Box & Cox, 1964) to ensure linearity of the relationships. There was linearity as assessed by partial regression plots and a plot of studentized residuals against the predicted values. There was independence of residuals, as assessed by a Durbin-Watson statistic of 2.062. There was homoscedasticity, as assessed by visual inspection
of a plot of studentized residuals versus unstandardized predicted values. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. There were no studentized deleted residuals greater than ±3 standard deviations, no leverage values greater than 0.2, and values for Cook's distance greater than 1. The assumption of normality was met, as assessed by Q-Q Plot. The multiple regression model statistically significantly predicted examination of previously contested beliefs, \( F(3, 112) = 7.315, p < .001 \). Amount of professional development added statistically significantly to the prediction, \( p < .05 \); neither years of experience nor gender had a significant influence. \( R^2 \) for the overall model was 16.4% with an adjusted \( R^2 \) of 14.1%, a small effect size according to Cohen (1988). Regression coefficients and standard errors can be found in Table 7.

Table 7

<table>
<thead>
<tr>
<th>Variable</th>
<th>( B )</th>
<th>( SE_B )</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>3.727</td>
<td>.242</td>
<td></td>
</tr>
<tr>
<td>Faculty Development</td>
<td>.193</td>
<td>.044</td>
<td>.391**</td>
</tr>
<tr>
<td>Online Experience</td>
<td>-.076</td>
<td>.041</td>
<td>-.162</td>
</tr>
<tr>
<td>Gender</td>
<td>-.172</td>
<td>.115</td>
<td>-.133</td>
</tr>
</tbody>
</table>

Note. **\( p < .001 \); \( B \) = unstandardized regression coefficient; \( SE_B \) = standard error of the coefficient; \( \beta \) = standardized coefficient.

Two multiple regression analyses were run to predict faculty perceptions indicating taking action using years of online teaching experience, number of professional development sessions over online instruction, and gender. The first used the mean values from the five-item construct (which included Q21); however, this analysis violated the assumption of homoscedasticity, which was not corrected by transformation of the variable. Additionally, the model showed no statistically significant prediction for taking action, \( F(3, 112) = 1.42, p > .05 \).
Amount of professional development, years of experience, and gender had no significant influence. $R^2$ for the overall model was 3.6% with an adjusted $R^2$ of 1.1%, a small effect size according to Cohen (1988).

The second analysis used the mean values from the four-item construct (which excluded Q21). The dependent variable was normalized using the Box-Cox method (Box & Cox, 1964) to ensure linearity of the relationships. There was linearity as assessed by partial regression plots and a plot of studentized residuals against the predicted values. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.717. There was homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. There were no studentized deleted residuals greater than ±3 standard deviations, no leverage values greater than 0.2, and values for Cook’s distance greater than 1. The assumption of normality was met, as assessed by Q-Q Plot. The multiple regression model showed no statistically significant prediction for taking action, $F(3, 112) = 2.102$, $p > .05$. Amount of professional development did however add statistically significantly to the prediction, $p < .05$; neither years of experience nor gender had a significant influence. $R^2$ for the overall model was 5.3% with an adjusted $R^2$ of 2.8%, a small effect size according to Cohen (1988). Regression coefficients and standard errors for the second of these analyses can be found in Table 8.
Table 8

**Summary of Multiple Regression Analysis for Taking Action**

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE_B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>3.727</td>
<td>.242</td>
<td></td>
</tr>
<tr>
<td>Faculty Development</td>
<td>.193</td>
<td>.044</td>
<td>.391*</td>
</tr>
<tr>
<td>Online Experience</td>
<td>-.076</td>
<td>.041</td>
<td>-.162</td>
</tr>
<tr>
<td>Gender</td>
<td>-.172</td>
<td>.115</td>
<td>-.133</td>
</tr>
</tbody>
</table>

*Note. *p < .05; B = unstandardized regression coefficient; SE_B = standard error of the coefficient; β = standardized coefficient.

A multiple regression was run to predict faculty perceptions indicating critical assessment of action using years of online teaching experience, number of professional development sessions over online instruction, and gender. The dependent variable was normalized using the Box-Cox method (Box & Cox, 1964) to ensure linearity of the relationships. There was linearity as assessed by partial regression plots and a plot of studentized residuals against the predicted values. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.920. There was homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. There were no studentized deleted residuals greater than ±3 standard deviations, no leverage values greater than 0.2, and values for Cook's distance greater than 1. The assumption of normality was met, as assessed by Q-Q Plot. The multiple regression model statistically significantly predicted critical assessment of action, $F(3, 112) = 7.142$, $p < .001$. Amount of professional development added statistically significantly to the prediction, $p < .001$, and years of experience added statistically significantly to the prediction, $p < .05$; gender had no significant influence. $R^2$ for the overall model was 16.1% with an adjusted $R^2$ of
13.8%, a small effect size according to Cohen (1988). Regression coefficients and standard errors can be found in Table 9.

Table 9

Summary of Multiple Regression Analysis for Critical Assessment of Action

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE_B</th>
<th>β</th>
</tr>
</thead>
<tbody>
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<td>Intercept</td>
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</tr>
<tr>
<td>Faculty Development</td>
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<td>.035</td>
<td>.329**</td>
</tr>
<tr>
<td>Online Experience</td>
<td>.073</td>
<td>.033</td>
<td>.196*</td>
</tr>
<tr>
<td>Gender</td>
<td>-.138</td>
<td>.092</td>
<td>-.133</td>
</tr>
</tbody>
</table>

Note. *p < .05; **p < .001; B = unstandardized regression coefficient; SE_B = standard error of the coefficient; β = standardized coefficient.

There were no statistically significant differences in faculty perceptions for transformation of frame of reference, $F(4, 119) = 1.445, p = .223$, examination of previously contested beliefs, $F(4, 120) = .530, p = .714$, taking action, $F(4, 120) = 1.150, p = .336$, or critical assessment of action, $F(4, 120) = 1.032, p = .393$ by age.

There were no statistically significant differences in faculty perceptions for transformation of frame of reference, $F(5, 115) = 2.081, p = .073$, examination of previously contested beliefs, $F(5, 116) = 1.109, p = .359$, taking action, $F(5, 116) = 1.142, p = .343$, or critical assessment of action, $F(5, 116) = 1.095, p = .367$ by ethnicity.

There were no statistically significant differences in faculty perceptions for transformation of frame of reference, $F(1, 121) = .072, p = .789$, examination of previously contested beliefs, $F(1, 122) = .713, p = .400$, taking action, $F(1, 122) = .047, p = .830$, or critical assessment of action, $F(1, 122) = 2.149, p = .145$ by education level.

There were no statistically significant differences in faculty perceptions for transformation of frame of reference, $F(9, 114) = 1.549, p = .139$ by the university at which the faculty member is employed. There were no statistically significant differences in faculty
perceptions for examination of previously contested beliefs, $F(9, 115) = 1.611, p = .120$ by the university at which the faculty member is employed. There were no statistically significant differences in faculty perceptions for taking action, $F(9, 115) = 1.174, p = .318$ by the university at which the faculty member is employed. There were no statistically significant differences in faculty perceptions for critical assessment of action, $F(9, 115) = 1.519, p = .149$ by the university at which the faculty member is employed.
CHAPTER 5
SUMMARY OF FINDINGS, CONCLUSION, AND
IMPLICATIONS FOR FUTURE RESEARCH

Research and anecdotal evidence suggest that as faculty gain experience with online instruction, a paradigm shift may occur. This study examined that shift in thinking through the lens of transformative learning theory (TLT). Transformative learning may provide insight into when and how this shift in thinking occurs. The ability to measure transformative learning could be key in identifying the stage(s) at which faculty experience changes in perspective and changes in practice. A quantitative instrument that measures transformative learning could be a valuable tool for evaluating faculty readiness for online instruction and indicating areas where faculty need additional support and training.

Despite the growth of online instruction, faculty acceptance of this medium is still fairly low. Although effective faculty development in online instruction is seen as one possible solution to this issue, determining whether professional development is effective has historically been somewhat difficult to measure. Changes to faculty perspectives and behaviors often occur naturally as a result of experience with online instruction. An understanding of when and how faculty perspectives change in the course of their experience in the online environment may help identify faculty barriers to adoption of online instruction.

Prior to this study, the instruments available to measure transformative learning involved a lengthy qualitative process and were not suitable for a broad study of the learning process faculty undergo as they are exposed to online instruction. This study involved the design and validation of a new instrument to measure the relationship between the experience of a faculty member with online instruction and their stage of transformative learning. The purpose of the study was to develop and validate a purely quantitative instrument that could be used to
determine at which stage of transformative learning a faculty member was compared with their experience and training in online instruction. It also sought to relate the stages of transformative learning to faculty perceptions and application of best practices in online learning.

Three research questions were identified:

1. Can transformative learning theory constructs be used to identify potential barriers in faculty development and delivery of online instruction?
2. How does the stage of transformative learning of online faculty relate to their perceptions about online learning and their application of best practices?
3. Is there a correlation between stage of transformative learning and the amount of experience with online instruction a faculty member has?

This researcher developed quantitative questions designed to capture the essence of the 10 precursory steps of transformative learning identified by Mezirow. These questions were initially organized into four constructs based on the four stages of transformative learning explained by Mezirow. The instrument was analyzed for content validity and pilot-tested for understandability, clarity, brevity, initial factor reduction, and to obtain a baseline of time for completion. The instrument was then shortened and items were revised for clarity and to correct grammatical errors.

Following this revision stage, the instrument was administered to 156 faculty members from 10 regionally accredited comprehensive universities in Texas that offer at least some online courses. Validity and reliability testing was performed on the instrument using the survey results. Data analysis included a comparison of results by level of experience teaching online and extent of prior training, along with other demographical factors. Specific analyses included (a) exploratory and confirmatory factor analysis, (b) construct and item validity, (c) multiple regression analysis, (d) hierarchical cluster analysis, (e) Pearson’s r, and (f) analysis of variance.
Summary of Findings

The new instrument developed in this study factored into a four-component solution. Four factors were extracted by principle component analysis (PCA); however, this solution was not a perfect fit. A four-factor solution was further confirmed by cluster analysis, but an odd single-item fifth factor was identified. Excellent alpha scores were achieved for three of the four identified components, indicating a high degree of internal consistency for these three scales. However, for the component “taking action on one’s reflective insight,” reduction to four items was required to achieve an acceptable alpha score. Cluster analysis conducted that included the fifth item for the taking action construct (Q21) did not confirm PCA.

Multiple regression models significantly ($p < .05$) predict faculty perceptions in three of the four components based on number of years of online teaching experience and number of professional development workshops taken on online instruction. Specific components predicted were (a) transformation of frame of reference, (b) examination of previously contested beliefs, and (c) critical assessment of action. The results of the multiple regression analysis do not statistically predict faculty perceptions for taking action on one’s reflective insight, whether Q21 was included or excluded from this construct, further indicating that this scale is not well developed. The lack of significance of the findings for this construct is most likely due to the issues with the construct that were earlier identified, and not due to a lack of growth of faculty in this area. A review of the items in this scale indicates that the questions are focused on past action rather than future action. Since the concept on which this construct is founded is forward-facing, rewording some of these items and adding additional items to determine what a faculty member plans to do with the new ideas obtained during professional development and while teaching online may be a better measure. Additional studies following such a revision would be needed to support this.
No significant correlation was identified between the responses to any of these scales and gender, age, ethnicity, education level, or university at which the faculty member is employed. This result rules out many of the confounding factors that may otherwise explain these results.

This study sought to answer three research questions, namely:

1. Can transformative learning theory constructs be used to identify potential barriers in faculty development and delivery of online instruction?

2. How does the stage of transformative learning of online faculty relate to their perceptions about online learning and their application of best practices?

3. Is there a correlation between stage of transformative learning and the amount of experience with online instruction a faculty member has?

Each of the three research questions are addressed in turn.

**Research Question 1**

*Can transformative learning theory constructs be used to identify potential barriers in faculty development and delivery of online instruction?*

The newly developed instrument demonstrated some utility as a tool to identify associations between faculty development and experience with online instruction and stage of transformative learning. Since a correlation appears to exist, a fully validated tool could be used on a test-retest basis to identify faculty who are not progressing through TLT stages following additional training and/or experiences. Additional questions could be incorporated in future iterations of this instrument to identify possible causes for failure to progress through TLT stages, such as concerns over loss of interpersonal dealings, lack of necessary technology skills, and so forth. Identification of faculty who are making insufficient progress through transformative stages, coupled with an understanding of the barriers to online instruction perceived by those faculty members, would be a benefit to administrators and facilitators of
faculty development to find ways to overcome said barriers and help faculty more effectively embrace online instruction.

The question “Can transformative learning theory constructs be used to identify potential barriers in faculty development and delivery of online instruction?” was not effectively addressed by this doctoral dissertation. Issues with the “taking action” construct will require additional effort to produce a fully valid instrument. Once this issue has been overcome, additional studies directed at this question are suggested for future research.

**Research Question 2**

*How does the stage of transformative learning of online faculty relate to their perceptions about online learning and their application of best practices?*

The second question, relating the stage of transformative learning to the perceptions of faculty members about online learning and their application of best practices, was partially addressed. This research seems to indicate a direct relationship between a faculty member’s perspectives about online learning and their stage of transformative learning. However, no significant ($p > .05$) association was discovered between a faculty member’s stage of transformative learning and their application of best practices in online instruction. Identification of faculty application of best practices might be accomplished through the combined use of this tool and a secondary faculty survey, student evaluations, direct observation, and/or self- or peer-review of effective practices using a recognized rubric such as the OLC Quality Scorecard (Online Learning Consortium, 2014).

Because such a correlation requires direct comparison between the stage of transformative learning of a faculty member and his or her instructional practices, it would require additional research, which potentially involves disclosure of the identity of the faculty member completing the instrument. This research was by design anonymous in nature and
therefore unable to address fully this question. It is recommended that this question be revisited in future research.

**Research Question 3**

*Is there a correlation between stage of transformative learning and the amount of experience with online instruction a faculty member has?*

The final research question considered a possible correlation between the stage of transformation learning of a faculty member and how much experience that faculty member has with online instruction. The results of this study indicate a direct correlation between the stage of transformative learning and the amount of experience or training a faculty member has received. Faculty professional development correlated more strongly with earlier stages of TLT, while faculty experience better predicted the latter stages of transformative learning. Modification of the instrument to deal with issues related with the “taking action” construct may further strengthen this correlation.

**Conclusions**

The partial validation of this instrument supports the concept that faculty members go through the stages of transformative learning as they gain additional experience with online instruction. Faculty perspectives on items that address three of the four TLT stages are significantly related to either the amount of time the faculty has been teaching online, the number of professional development workshops a faculty member has attended related to online instruction, or both. This was expected and confirms both previous research into transformative learning as it pertains to faculty development and the researcher’s own anecdotal experiences facilitating faculty development for online instruction. The shift in thinking brought about by a move to online instruction is sufficient in nature to cause a disorienting event in faculty new to the experience, and the research indicates that faculty progress along Mezirow’s 10 precursory
steps and through his four stages of transformation as they learn about and gain experience with
teaching online.

Additionally, the results of this study suggest that faculty development is most useful in
assisting faculty through earlier stages of transformative learning. This would seem to indicate
that perspective transformation resulting from faculty professional development occurs at the
lowest stages of transformative learning. Conversely, actual experience with online instruction
appears to be related to the reflective stages of transformative learning in online faculty. It would
appear; therefore, that professional development needs to emulate actual online teaching
experiences to be most effective in stimulating critical reflection and helping faculty reach latter
stages of transformative learning. Mezirow (1997) suggested role play, case studies, simulations,
and other forms of discovery learning to help stimulate critical reflection in learners. These
elements could be added to faculty professional development as a way to assist faculty to move
to latter stages of transformative learning. Additionally, experienced faculty mentors could be
assigned to work alongside faculty new to online instruction to ensure online experiences result
in critical reflection so that transformative learning could occur.

Although this instrument needs further revision and testing before being useful to the
educational landscape at large, this research indicates that parts of this tool are both reliable and
valid. This research has made inroads into the development and validation of a completed
quantitative tool for the purpose of measuring faculty transformative learning as it pertains to
online instruction. Once it has been fully validated, the instrument could be useful in large-scale
evaluation of faculty progress toward critical reflection of online instruction. When fully
validated, this instrument may also be useful as a diagnostic tool to identify when faculty are
experiencing barriers. Additional questions added to the instrument could identify what those
barriers are to assist administrators and facilitators of faculty development to overcome these barriers.

In future iterations, this instrument could be modified with some rewording of the questions and be useful in measuring transformative learning in faculty in situations other than online instruction. TLT requires an inciting incident as the initial step in this process. A study in which this instrument is used in situations where an inciting event has not occurred would provide interesting information about the theory. Should significance be found in these situations, it may be necessary to revisit the theory.

Limitations of this study include a relatively low number of participants for an instrument of this size and a survey population identified and recruited largely based on availability of the population to this researcher. Future research should extend the study to universities outside Texas and include both public and private universities. Additionally, a larger population should be recruited to participate for further validation of the findings of this research. Finally, the “taking action” construct did not factor cleanly. Alpha scores indicate internal consistency reliability for this scale is not as strong as it is for the other three constructs. Regression analysis for this scale failed to produce significant results, indicating problems with validity of the scale. Additional revision to this scale is called for, followed by further studies to ensure the validity and reliability of the instrument as a whole.

Implications for Further Research

This study sought to connect transformative learning in online instruction to faculty barriers related to online instruction in hopes of identifying the types of experiences and/or professional development most beneficial for promoting transformative learning. Since the efforts of this research to do so were not completely successful, additional studies should be devised that accommodate this goal. One such study might include the adoption of the
instrument developed by Lloyd et al. (2012) as a second tool to identify perceived barriers to online instruction. The stage of transformative learning identified by the perceptions of a faculty member could be noted, and perceived barriers identified by this faculty member could be addressed. The faculty member could then be retested to see if the removal of barriers to adoption allows the faculty member to make progress along the stages of transformative learning.

The results of this study also raise questions that could be evaluated in further studies. For example, one question raised by the correlation identified between transformative learning and professional development might be whether the transformative experiences of a faculty member are influenced by length or authenticity of the learning activities in professional development opportunities. Do longer and more in-depth professional development experiences correlate to higher levels of transformative learning? Does inclusion of active, authentic learning experiences, such as case study, improve transformative learning or is actual online teaching experience necessary before faculty engage in the critical reflection necessary to reach the final stages of transformative learning?

Another question raised by this study is whether the transformative experiences of a faculty member are influenced by the availability of a faculty mentor. While faculty members are more likely to engage in critical reflection as they gain more experience with online teaching, does the availability of an experienced online instructor to serve as a mentor speed this process at all?

A third area for future study is to identify whether the transformative experiences of a faculty member are influenced by the way professional development is presented. For example, is it offered asynchronously or synchronously? Is it delivered fully online, in a face-to-face environment, or as a blended option? How does professional development relate to online
teaching experience? What mechanism is used to deliver the faculty development? Research into professional development in online instruction indicates that faculty experience a greater impact if they are given an opportunity to be an online student. Does this impact correlate to higher stages of transformative learning? Does it make a difference whether professional development is offered prior to beginning to teach online as opposed to in concert with it? Does the delivery mechanism for online instruction (learning management system, content management system, social media, etc.) influence the progression of a faculty member through the stages of transformative learning?

Finally, correlation with similar research could make for interesting future studies. One such example would be to see how the results of this instrument compare with faculty-reported scores on the Educators’ Sense of Efficacy for Online Teaching Scale (Robinia, 2008). Comparisons to technology acceptance models might also be interesting to see how well this instrument predicts the readiness of a faculty member to teach online.

Concluding Comments

Overall, the results of this study indicate that this instrument shows promise for being a valid means of identifying and even predicting faculty perceptions of transformative learning as faculty gain experience with and professional development in online instruction. Further research is needed to refine the scale for taking action on one’s reflective insight. The redeveloped scale should be further analyzed to determine if a true four-component solution could be identified. Internal scale consistency should be equally high for all four identified scales. Additional regression analyses should be conducted on the revised scales to ensure the instrument measures what it was designed to measure for all four components.
APPENDIX A

PREPILOT INSTRUMENT
Section 1:

1. How much faculty development have you received to prepare you to teach online?
   a. □ None
   b. □ 1 workshop or session
   c. □ 2-3 workshops or sessions
   d. □ 4-5 workshops or sessions
   e. □ 6 or more workshops or sessions

2. How many years’ experience teaching online courses at the college or university level?
   a. □ None
   b. □ 1 year or less
   c. □ 2-3 years
   d. □ 4-5 years
   e. □ 6-10 years
   f. □ 11-15 years
   g. □ 16 + years

If None to both questions 1 and 2, thank them for their time and terminate the survey.

3. Thinking about a time before you taught online, rate your level of agreement with these statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The thought of teaching online intimidated me.</td>
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<tr>
<td>I was eager to teach online.</td>
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<tr>
<td>I felt unprepared to teach online.</td>
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<tr>
<td>I was skeptical about the effectiveness of online instruction.</td>
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<tr>
<td>Being asked to teach online upset me.</td>
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<tr>
<td>Online courses are as effective as traditional courses.</td>
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<tr>
<td>It is more convenient to teach online courses.</td>
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<td>I have to be a technology expert to teach online.</td>
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<tr>
<td>lecture notes, tests, and assignments to digital format.</td>
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<tr>
<td>I won’t be able to interact with my students if I teach online.</td>
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<tr>
<td>If I know how to teach in a classroom, I already know how to teach online.</td>
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<tr>
<td>Some subjects should not be taught online.</td>
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<td>I have less value as an online instructor than I do in the traditional</td>
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<tr>
<td>classroom.</td>
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<tr>
<td>If I put my courses online, the university won’t really need me anymore.</td>
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<tr>
<td>Online coursework is less challenging for students than traditional coursework.</td>
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<td>Students are not engaged when learning online.</td>
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<tr>
<td>It is more convenient to take courses online.</td>
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<tr>
<td>Students can learn collaboratively in an online environment.</td>
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<tr>
<td>It is easier for students to cheat online.</td>
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<tr>
<td>Learning online has the same amount of interaction as a correspondence course.</td>
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<tr>
<td>Learning online is much easier than learning in a traditional classroom.</td>
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<tr>
<td>It is difficult for online students to accomplish group work.</td>
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</tbody>
</table>
Section 2:

4. Now that you have some experience with online instruction, rate your level of agreement with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>You can teach online if you know how to use the learning management system.</td>
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<tr>
<td>Teaching online inspired me to try new things.</td>
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<tr>
<td>Teaching online inspired me to change the way I teach my traditional classes.</td>
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<tr>
<td>After I began teaching online, I felt my role shift from imparter of knowledge to facilitator.</td>
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<tr>
<td>The more I learn about online instruction, the more I feel I need to learn.</td>
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<tr>
<td>After I began teaching online, I found myself questioning things I believed about teaching and learning.</td>
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<tr>
<td>After I began teaching online, I tended to try new methods of teaching.</td>
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<tr>
<td>I believe my role as an educator had to change to teach effectively online.</td>
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<tr>
<td>My peers do not understand my new perspectives since I started teaching online.</td>
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<tr>
<td>I seek out other online faculty members to share information about teaching online.</td>
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<tr>
<td>Learning to teach online is most effective when it is collaborative.</td>
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<tr>
<td>I have a mentor who assists me in learning to teach online.</td>
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<tr>
<td>I feel better about my struggle to teach online when I find out others have the same struggles.</td>
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</tbody>
</table>
5. Thinking about your experiences teaching online, rate your level of agreement with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have made improvements to my online course based on what I now know about online instruction.</td>
<td></td>
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<tr>
<td>I have added new technologies to my online course based on what I now know about online instruction.</td>
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<tr>
<td>I practice using techniques I have learned about online instruction.</td>
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<tr>
<td>I have made adjustments to my teaching practice based on what I now know about online instruction.</td>
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<tr>
<td>I read journal articles and blogs or watch training videos about what I’ve learned about online instruction.</td>
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<tr>
<td>I feel comfortable with changes to my role as facilitator rather than knowledge imparter as a result of what I’ve learned about online instruction.</td>
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<tr>
<td>I am getting more comfortable with the technology used to teach online.</td>
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<tr>
<td>I practice new skills learned about online instruction until I master them.</td>
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<tr>
<td>I am more comfortable with online instruction than I was when I first began teaching online.</td>
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<tr>
<td>I plan to incorporate the techniques I’ve learned into my online classroom.</td>
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<tr>
<td>I plan to get more information about what I’ve learned during faculty development in online instruction.</td>
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<tr>
<td>I plan to take additional faculty development in online instruction in online instruction.</td>
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<tr>
<td>I plan to examine other ways of teaching online.</td>
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<tr>
<td>I plan to take additional faculty development in online instruction on technologies or tools.</td>
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</tbody>
</table>
Section 4:

6. (This section skipped if the answer to number 2 is No.) Reflect on your experience with online instruction and rate your level of agreement with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I experience fewer problems with classroom management online as a result of the changes I’ve made to my online course(s).</td>
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<tr>
<td>I believe my students are more engaged as a result of the changes I’ve made to my online course(s).</td>
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<tr>
<td>I am evaluating the effects changes I have made to my online course(s) have had on my online students.</td>
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<td>I am mentoring others new to online instruction.</td>
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<tr>
<td>I am comfortable in my new role as an online educator.</td>
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<tr>
<td>I am applying what I’ve learned about online instruction to my traditional courses.</td>
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<tr>
<td>I feel confident about teaching online.</td>
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</tr>
</tbody>
</table>
1. What is your gender?
   a. □ Female
   b. □ Male
   c. □ Unspecified

2. What is your ethnicity?
   a. □ American Indian/Alaska Native
   b. □ Asian/Pacific Islander
   c. □ Black Non-Hispanic
   d. □ Hispanic
   e. □ Native American/Pacific Islander
   f. □ White Non-Hispanic
   g. □ Biracial
   h. □ Ethnicity not listed above

3. What is your current age?
   a. □ 20 to 24
   b. □ 25 to 34
   c. □ 35 to 44
   d. □ 45 to 54
   e. □ 55 to 64
   f. □ 65 or over

4. What is the highest level of education you have completed?
   a. □ 2-year college degree
   b. □ 4-year college degree
   c. □ Professional degree
   d. □ Master’s degree
   e. □ Doctoral degree

5. How many years have you been teaching at the college or university level?
   a. □ 0-1 years
   b. □ 2-3 years
   c. □ 4-5 years
   d. □ 6-10 years
   e. □ 11-15 years
   f. □ 16 + years

6. With which University System school are you affiliated?
   a. □ College Station
   b. □ Central Texas
   c. □ International
   d. □ West Texas
   e. □ Prairie View
   f. □ Commerce
   g. □ Texarkana
   h. □ Corpus Christi
   i. □ Kingsville
   j. □ Tarleton State
APPENDIX B

POSTPILOT INSTRUMENT
Section 1:

1. How much faculty development have you received to prepare you to teach online?
   a. None
   b. 1 workshop or session
   c. 2-3 workshops or sessions
   d. 4-5 workshops or sessions
   e. 6 or more workshops or sessions

2. How many years experience teaching online courses at the college or university level?
   a. None
   b. 1 year or less
   c. 2-3 years
   d. 4-5 years
   e. 6-10 years
   f. 11-15 years
   g. 16+ years

If None to both questions 1 and 2, thank them for their time and terminate the survey.

3. Thinking about a time before you taught online, rate your level of agreement with these statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students are not engaged when learning online compared to traditional classes.</td>
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<tr>
<td>I have less value as an online instructor than I do in the traditional classroom.</td>
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</tr>
<tr>
<td>I won’t be able to interact with my students if I teach online.</td>
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</tr>
<tr>
<td>If I put my courses online, the university won’t really need me anymore.</td>
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<tr>
<td>Online coursework is less challenging for students than traditional coursework.</td>
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<tr>
<td>Learning online is much easier than learning in a traditional classroom.</td>
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<tr>
<td>I have to be a technology expert to teach online.</td>
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<td>My peers do not understand my new perspectives since I started teaching online.</td>
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<td>I have a mentor who assists me in learning to teach online.</td>
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<tr>
<td>It is difficult for online students to accomplish group work.</td>
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</tr>
</tbody>
</table>
Learning to teach online is most effective when it is collaborative.

I experience fewer problems with classroom management online as a result of the changes I've made to my online course(s).

I believe my students are more engaged as a result of the changes I’ve made to my online course(s).

Learning online has the same amount of interaction as a correspondence course.

I seek out other online faculty members to share information about teaching online.

Students can learn collaboratively in an online environment.

I plan to take additional faculty development in on technologies or tools.

I read journal articles and blogs or watch training videos about what I’ve learned about online instruction.

Students are not engaged when learning online compared to traditional classes.

I have less value as an online instructor than I do in the traditional classroom.

I won’t be able to interact with my students if I teach online.

If I put my courses online, the university won’t really need me anymore.
### Section 2:

4. Now that you have some experience with online instruction, rate your level of agreement with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
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<tbody>
<tr>
<td>Developing an online course simply involves converting my face-to-face lecture notes, tests, and assignments to digital format.</td>
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<td>I plan to get more information about what I’ve learned during faculty development in online instruction.</td>
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<tr>
<td>I practice new skills learned about online instruction until I master them.</td>
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<td>I am getting more comfortable with the technology used to teach online.</td>
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<tr>
<td>I plan to take additional faculty development in online instruction.</td>
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<tr>
<td>I plan to examine other ways of teaching online.</td>
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<td>If I know how to teach in a classroom, I already know how to teach online.</td>
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<tr>
<td>It is more convenient to teach online courses.</td>
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<tr>
<td>The more I learn about online instruction, the more I feel I need to learn.</td>
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</tbody>
</table>
Section 3:

5. Thinking about your experiences teaching online, rate your level of agreement with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
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</tr>
</thead>
<tbody>
<tr>
<td>I feel comfortable with changes to my role as facilitator rather than knowledge imparter as a result of what I’ve learned about online instruction.</td>
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<tr>
<td>After I began teaching online, I felt my role shift from imparter of knowledge to facilitator.</td>
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<tr>
<td>I believe my role as an educator had to change to teach effectively online.</td>
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<tr>
<td>After I began teaching online, I found myself questioning things I believed about teaching and learning.</td>
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<tr>
<td>I feel better about my struggle to teach online when I find out others have the same struggles.</td>
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<tr>
<td>It is easier for students to cheat online.</td>
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<tr>
<td>I am skeptical about the effectiveness of online instruction.</td>
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<tr>
<td>I feel unprepared to teach online.</td>
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<tr>
<td>I feel comfortable with changes to my role as facilitator rather than knowledge imparter as a result of what I’ve learned about online instruction.</td>
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<tr>
<td>After I began teaching online, I felt my role shift from imparter of knowledge to facilitator.</td>
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<tr>
<td>It is easier for students to cheat online.</td>
<td></td>
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</tr>
</tbody>
</table>
Section 4:

6. Reflect on your experience with online instruction and rate your level of agreement with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I practice using techniques I have learned about online instruction.</td>
<td></td>
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<tr>
<td>I have added new technologies to my online course based on what I now know about online instruction.</td>
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<tr>
<td>I am comfortable in my new role as an online educator.</td>
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<tr>
<td>I have made adjustments to my teaching practice based on what I now know about online instruction.</td>
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<tr>
<td>After I began teaching online, I tended to try new methods of teaching.</td>
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<tr>
<td>I am more comfortable with online instruction than I was when I first began teaching online.</td>
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<tr>
<td>I have made improvements to my online course based on what I now know about online instruction.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 5: Demographics

7. What is your gender?
   a. □ Female
   b. □ Male
   c. □ Unspecified

8. What is your ethnicity?
   a. □ American Indian/Alaska Native
   b. □ Asian/Pacific Islander
   c. □ Black Non-Hispanic
   d. □ Hispanic
   e. □ Native American/Pacific Islander
   f. □ White Non-Hispanic
   g. □ Biracial
   h. □ Ethnicity not listed above

9. What is your current age?
   a. □ 20 to 24
   b. □ 25 to 34
   c. □ 35 to 44
   d. □ 45 to 54
   e. □ 55 to 64
   f. □ 65 or over

10. What is the highest level of education you have completed?
   a. □ 2-year college degree
   b. □ 4-year college degree
   c. □ Professional degree
   d. □ Master’s degree
   e. □ Doctoral degree

11. With which University System school are you affiliated?
   a. □ College Station
   b. □ Central Texas
   c. □ International
   d. □ West Texas
   e. □ Prairie View
   f. □ Commerce
   g. □ Texarkana
   h. □ Corpus Christi
   i. □ Kingsville
   j. □ Tarleton State
APPENDIX C

IRB APPROVALS
August 22, 2016

Dr. Gerald Krezek
Student Investigator: Julia Allen
Department of Learning Technologies
University of North Texas

RE: Human Subjects Application No. 16-334

Dear Dr. Krezek:

In accordance with 45 CFR Part 46 Section 46.101, your study titled "Transformative Learning Theory as a Basis For Identifying Barriers to Faculty Confidence in Online Instruction" has been determined to qualify for an exemption from further review by the UNT Institutional Review Board (IRB).

Enclosed are the consent documents with stamped IRB approval. Since you are conducting an online study, please copy the approved language and paste onto the first page of your online survey. You may also use the enclosed stamped document as the first page of your online survey.

No changes may be made to your study's procedures or forms without prior written approval from the UN-IRB. Please contact the Office of Research Integrity and Compliance at 940-565-4648 if you wish to make any such changes. Any changes to your procedures or forms after 3 years will require completion of a new IRB application.

We wish you success with your study.

Sincerely,

Chad Truax, Ph.D.
Professor
Chair, Institutional Review Board

CT:jm

1151 Union Circle #306979
940.565.4043

www.unt.edu
TAMUT IRB Screening Checklist & Standard Application Form

This document is intended to assist the TAMUT Institutional Review board (IRB) in determining which level of IRB oversight is required for your* project.

*If you are a student and your project is class-based (i.e., a course assignment) please complete the Classroom IRB Checklist first.

Section I. Check all boxes that apply to your research.

☐ The project involves collecting data from human participants.

☐ The researcher intends to produce generalizable knowledge or to disseminate the findings beyond the university.

If you checked both boxes, Please proceed to Section II.
If you checked neither box, or only one box, your project does not require IRB review and approval.

Section II. Check all boxes that apply to your research.

☐ The project involves vulnerable populations such as children, prisoners, pregnant women and mentally disabled persons.

☐ Public disclosure of any identifiable data you collect could place the participants at risk of criminal or civil liability or be damaging to the participants’ financial standing, employability or reputation.

☐ The study involves data collection procedures other than surveys, educational tests, interviews, or observation of public behavior.

☐ The project involves sensitive subject matters such as: abortion, criminal activity, sexual activity, sexually transmitted diseases, prior diagnosis for mental health disorders, or victims of violence.

☐ The study involves audio-recording or video-recording the participants.

☐ The project involves obtaining individually identifiable information from health care plans, health care clearances, or health care providers.

Please proceed to Section III.
Section III. General Information.

a. Title of Study: TRANSFORMATIVE LEARNING THEORY AS A BASIS FOR

b. Principle Investigator (must be affiliated with TAMUT)
   Name: Julia Allen
   Email address: jallen@tamut.edu
   College: Other
   Program: Other
   Address: 301 Lelia St, New Boston
   Phone: 903-223-3154
   Status: Staff / Ad

*(Student PIs must have a supervising faculty advisor)

c. Co-Principle Investigator (If applicable)
   Name: Gerald Knezek
   Email address: gknezek@gmail.com
   College: Other
   Program: Other
   Address: 3940 N. Elm, Suite G150
   Phone: (940) 565-4195
   Status: Faculty - other affiliation

d. Faculty Advisor (If applicable)
   Name:
   Email address:
   College: C-STEM
   Program: Accounting
   Address:
   Phone:

e. Additional Personnel (If applicable):

f. Ethics Certification. Have all investigators completed the NIH Protecting Human Research Participants training?

   Yes [ ] No [ ]

   If you answered “no”, you must complete training before submitting this application.
   If you answered “yes” please include proof of training with this application.
g. **Funding.** Is your project funded by an external source? Yes [ ] No [x]

*If you answered "yes", identify the funding source:*

Please proceed to Section IV.
Section IV: Description of Proposed Research.

a. Purpose of Research: In plain language, briefly state the purpose of the proposed project, including the research question/s you intend to answer.

This study seeks to relate the stages of transformative learning to faculty perceptions and application of best practices to online learning. Can Transformative Learning Theory (TLT) constructs be used to identify potential problems in faculty development and delivery of online instruction? How does the stage of transformative learning of online faculty relate to their perceptions about online learning and their application of best practices? Is there a correlation between stage of transformative learning and the amount of experience with online instruction a faculty member has? The goal of this study is to develop and validate a quantitative instrument for measuring transformative learning of faculty as it relates to their experience with online instruction. Such an instrument could be useful in determining if a faculty member's stage of transformative learning can help identify problems faced by faculty in various stages of proficiency in teaching in online environments, allowing facilitators, administrators, and learning technologists to provide timely support.

b. Benefits and Scholarly Contribution: Describe what you hope will come as a result of conducting this study.

TLT deals with how adults turn ideas into changes in behavior. The seminal work of Mezirow (1981, 1991) on TLT tracks the learner through a process of self-reflection which causes the learner to question and even change what he or she knows and believes. Mezirow discusses the role of a disorienting dilemma to force us to become conscious of why we think the way we do.

c. Location of Study: Identify all locations where the data will be collected.

Study participants will be recruited from some or all of the following members of the A&M University System: A&M Texarkana, A&M College Station, A&M Central Texas, A&M International, West Texas A&M, Prairie View, A&M Commerce, A&M Corpus Christi, A&M Kingsville, and Tarleton State. The researcher is a doctoral student at University of [+]

d. Participants/Sample Demographics: Identify about how many participants data will be collected from. Describe the demographics (sex, race/ethnic composition, age range) of the population from which the participants will be recruited.

Up to 250 online faculty from some or all of the above-listed institutions will be invited to participate in this study. These schools represent diverse student and faculty populations and all have online courses to one degree or another. The study will include tenure-track and non-tenure track full- and part-time faculty of all educational levels to be representative of the population. Gender, race, ethnicity, and age are not selection criteria for the study, but a stratified sample of the total available population of full- and part-time faculty members will be included to ensure these populations are represented in numbers similar to the faculty population. These individuals will be contacted via email [+]
e. **Sampling Procedure:** Describe how you will recruit participants. Provide documents (i.e., flyers, mailings,) if necessary.

The researcher will work with distance education contacts at each university to identify a sample population of online faculty representative of the faculty as a whole. Faculty identified through this process will be invited to participate in the study via email with a link to the survey. Invited faculty will be presented with a notice of informed consent both in the emailed invitation and prior to beginning the instrument. Those who do not wish to participate can end their participation at any time. Failure to complete the...

f. **Informed Consent:** Describe how you will obtain informed consent. Provide rationale and justification if you request to **not** obtain informed consent. Provide a copy of the informed consent form, if applicable.

Invited faculty will be presented with a notice of informed consent both in the emailed invitation and prior to beginning the instrument. Those who do not wish to participate can end their participation at any time. Failure to complete the survey within five days of beginning it will be considered withdrawal from the study.

g. **Method:** Describe the study’s methods and procedures. Include copies of any instruments, tests, surveys, etc. (attach additional documentation if necessary), as well as the expected duration of time participants’ involvement in the study.

The purpose of this study is to develop and validate a fully quantitative instrument to measure which state of transformative learning a faculty member is in relation to their experiences with online instruction. The researcher has developed questions designed to quantitatively capture the essence of Mezirow’s 10 precursory steps (1981). Additional questions determine the experience of the faculty with online instruction and the amount of training received in this area. A base set of questions has been developed and is attached. This initial survey has been reviewed by several instrumentation specialists for the purpose of content validity testing. The instrument will be pilot-tested by members of the researcher’s doctoral program for additional validity checking (understandability, clarity, brevity), initial factor reduction, and to obtain a baseline of time to complete. Following this revision stage, the instrument will be administered to a group of online faculty members. Validity and reliability testing will be performed on the instrument using the survey results. Data analysis will include a comparison of results by level of experience teaching online and extent of prior training, along with other demographic factors.

Current research on transformative learning theory posits that for learning to have a far-reaching impact on the learner’s behavior or cause a shift in the learner’s beliefs, the learner must go through four stages: “transforming frames of reference through critical reflection of assumptions, validating contested beliefs through discourse, taking action on one’s reflective insight, and critically assessing it” (Mezirow, 1997, p. 11). This suggested an initial breakdown of the survey into four potential constructs with questions relating to each of these stages. The instrument includes at least seven questions for each of these potential factors to ensure there are enough questions for factor analysis and tests for internal consistency both of the instrument as a whole and within factors. The number of items in the initial instrument will be reduced following pilot-testing by members of the researcher’s doctoral program.

The questions are formulated as statements with a five point Likert scale ranging from strongly disagree to strongly agree. Statements describe the potential feelings...
h. **Compensation**: Describe about how long a subject will be required to participate in the study and how participants will be compensated for participation.

As an incentive for study participation, faculty will be offered the option to enter in a drawing for a $25 Amazon gift card when they reach the end of the instrument. This will be accomplished by redirecting interested participants to a separate form where email addresses can be collected without being tied to survey data.

i. **Confidentiality**: Describe how you will ensure confidentiality of participants’ personally identifiable information.

The instrument will be delivered anonymously via Survey Monkey an online survey tool, and all items will be evaluated in the aggregate.

j. **Risk-Benefit Ratio**: Describe any foreseeable risks to participating in the study and how you will minimize them, as well as the anticipated benefits to the participants (or to others) as a result of this work.

Risks are considered to be minimal and no greater than risks associated with normal daily activities. The instrument will not contain questions considered to be of a sensitive nature. The instrument will be delivered anonymously via Survey Monkey, an online survey tool, and all items will be evaluated in the aggregate. Anonymous instrument results will be stored online in the password protected account of the survey tool and retained for a period of one year following the end of this study. Electronic results downloaded for the purpose of instrument validity will be retained on the password secured hard drive of the researcher for a period of one year following the termination of the study. These results will contain no personally identifiable information. Access to this information will be available only to the researcher and her supervising professor. A fully-quantitative instrument would permit the measurement of transformative learning in larger scale studies. Such information is important to administrators, learning technologists, and professional development facilitators to determine the support and professional development a faculty member needs to be successful with online instruction. A quantitative instrument would enable formative as well as summative evaluation of training and other support, allowing support providers to adjust ongoing training and support to better meet the needs of faculty, potentially resulting in deeper learning, greater impact to faculty perceptions, and higher application of new knowledge to practice.

Please Proceed to Section V.
Section V: Signatures

Applicant Name: Julia Allen
Applicant Signature: 2016.07.25 10:54:25 -05'00'
Date: 07/25/16

Departmental / Peer Reviewer:
Departmental Signature: [Signature]
Date: [Date]

College Dean: [Signature]
Dean Signature: [Signature]
Date: [Date]

Your application is complete. Please email application to asikorski@tamu.edu

Section VI: IRB decision and level of oversight. This section is to be completed by the IRB.

Decision: [ ] Approved [ ] Not Approved*
*Provide reason for non-approval in notes section

IRB# JA08192016
Notes:
This is a project conducted by a TAMUT staff member who is a doctoral student at UNT. This project was approved by the UNT IRB (IRB 16-334).

IRB Chair or Designee: Angela Sikorski
IRB Signature: [Signature]
Date: 8/19/20
September 14, 2016

Julia Allen  
Gerald Knezek  
University of North Texas  

Dear Ms. Allen and Dr. Knezek,

We have reviewed your research study titled “Transformative Learning Theory as a Basis for Identifying Barriers to Faculty Confidence in Online Instruction.” We understand that the purpose of this research study is to develop and validate a fully quantitative instrument to measure which state of transformative learning a faculty member is in relation to their experiences with online instruction. You would like to recruit participants who are faculty that teach online courses at Texas A&M University. The information provided to the Texas A&M University distance education contact for distribution to possible participants clearly indicates potential risks and benefits to participants along with the voluntary nature of the study. With this said, we authorize you to conduct your research recruiting participants from the Texas A&M to complete an online survey as outlined in your protocol. If you have further questions regarding this authorization, please feel free to contact this office. Thanks for including Texas A&M University in your research endeavors.

Sincerely,

Aline Lovings, MA, CIP  
Interim Director, Human Research Protection Program
From: Russell Porter <porter@tamuct.edu>
Sent: Tuesday, September 13, 2016 1:01 PM
To: Julia Allen; Lisa Bunkowski; Chennamaneni, Anitha
Subject: Re: Request for permission to include sister schools in my dissertation research

Follow Up Flag: Follow up
Flag Status: Completed

Julia: With this email, you are approved to collect research data at Texas A&M University-Central Texas per the previous two IRB protocol approvals at UNT and TAMUCT. Please follow the requirements of the two previous IRB approvals.

Sincerely,

Russell Porter, Ph.D., Ed.D.
Vice President for Research & Economic Development
Chief Research Officer / Professor of Business, Texas A&M University-Central Texas
Regional Director for Central Texas - Texas A&M Engineering Experiment Station (TEES)
Co-Director, NSF Next Generation Photovoltaics (NGPV) Solar Research / UCRC Balance of System Site:
Texas A&M University / Texas A&M Engineering Experiment Station / Texas A&M University-Central Texas

Texas A&M University Central Texas Contact Information -
Founders Hall 418B, 1001 Leadership Place, Killeen TX 76549/P: 254-501-5823/E: porter@tamuct.edu

From: Julia Allen <jallen@tamuct.edu>
Sent: Friday, September 2, 2016 4:57 PM
To: Russell Porter; Lisa Bunkowski; Chennamaneni, Anitha
Subject: RE: Request for permission to include sister schools in my dissertation research

Hi, Dr. Porter,

The protocol should be nearly identical; UNT asked me to separate the recruitment email from the informed consent, and TAMUT indicated that having Dr. Knezek serve as principal investigator was appropriate under the circumstances. I’ve attached both protocols and both approval notices.

I very much appreciate the opportunity to work with TAMUCT and have your faculty participate in this research opportunity. I am truly blessed to belong to such a supportive system.

Thanks,
Julia

Julia Allen
Learning Technologist II
7101 University Ave
SCIT 311C
Texarkana, TX 75503
903.223.3154
903.314.0076
jallen@tamuct.edu
Julia Allen

From: Institutional Review Board <irb@tamiu.edu>
Sent: Monday, September 19, 2016 11:53 AM
To: Julia Allen
Cc: Institutional Review Board
Subject: IRB Protocol Application

Follow Up Flag: Follow up
Flag Status: Completed

Julia,

Thank you for submitting your project documents for review. Your documents have been reviewed and the project meets the criteria for being processed as exempt from full review by the Institutional Review Board (IRB). You may proceed with your project at this time.

Please notify the IRB before ANY changes are made to the project and all changes must be reviewed by the IRB prior to use.

If you have any questions, please let us know.

Regards,

The IRB
October 14, 2016

Julia Allen
711 University Ave
SCIT 311C
Texarkana, TX 75503

The West Texas A&M University Institutional Review Board is pleased to inform you that upon review, proposal #10-10-16 for your study titled, “Transformative Learning Theory as a Basis for Identifying Barriers to Faculty Confidence in Online Instruction” meets the requirements of the WTAMU Standard Operating Procedure (SOP) No. 15.99.05.W1.01AR Institutional Review Board (Human Subject Research). Approval is granted for one calendar year. This approval expires on October 14, 2017.

Principal investigators assume the following responsibilities:

1. **Continuing Review:** The protocol must be renewed on or before the expiration date if the research project requires more than one year for completion. A [Continuing Review form](#) along with required documents must be submitted on or before the stated deadline. Failure to do so will result in study termination and/or loss of funding.

2. **Completion Report:** At the conclusion of the research project (including data analysis and final written papers), a [Close out form](#) must be submitted to AR-EHS.

3. **Unanticipated Problems and Adverse Events:** Pursuant to [SOP No. 15.99.05.W1.13AR](#), unanticipated problems and serious adverse events must be reported to AR-EHS.

4. **Reports of Potential Non-Compliance:** Pursuant to [SOP No. 15.99.05.W1.05AR](#), potential non-compliance, including deviations from the protocol and violations, must be reported to the IRB office immediately.

5. **Amendments:** Changes to the protocol must be requested by submitting an [Amendment form](#) to AR-EHS for review by the IRB. The Amendment must be approved by the IRB before being implemented. Amendments do not extend time granted on the initial approval.

6. **Consent Forms:** When using a consent form, only the IRB approved form is allowed.

7. **Audit:** Any proposal may be subject to audit by the IRB Administrator during the life of the study. Investigators are responsible for maintaining complete and accurate records for five years and making them available for inspection upon request.
8. **Recruitment**: All recruitment materials must be approved by the IRB. Recruitment materials distributed to potential participants must use the approved text and include the study’s IRB number, approval date, and expiration dates in the following format: WTAMU IRB####-#### Approved: ####### Expiration Date: #######

9. **FERPA and PPRA**: Investigators conducting research with students must have appropriate approvals from the Family Education Rights and Privacy Act (FERPA) administrator at the institution where the research will be conducted in accordance with the Family Education Rights and Privacy Act (FERPA) if applicable to the research being proposed. The Protection of Pupil Rights Amendment (PPRA) protects the rights of parents in students ensuring that written parental consent is required for participation in surveys, analysis, or evaluation that ask questions falling into categories of protected information.

Sixty days prior to the expiration of this proposal, you will receive a notification of the approaching expiration date at which time you will need to submit an Amendment/Continuation/Close out form.

Thank you for your cooperation with the IRB and we wish you well with your research project.

Sincerely,

Dr. Gary Bingham
Chair, WTAMU IRB

Dr. Angela Spaulding
Vice President of Research and Compliance
University of North Texas (Institution A)
AND
Prairie View A&M University (Institution B)

PURPOSE:

Institution Providing IRB Review (Institution A):
University of North Texas
IORG0000417
IRB Registration #: IRB00000704
Federal Assurance #: FWA00007479

Institution Relying on the Designated IRB (Institution B):
Prairie View A&M University
Federal Assurance (FWA) #: FWA0000561

SCOPE:
The Officials signing below agree that Prairie View A&M University may rely on the UNT IRB for review and continuing oversight of research described below (check one)

☐ This agreement applies to all human subject's research covered by Institution B's FWA.
☐ This agreement is limited to the following specific protocol(s):
  Name of Research Project: Transformative Learning Theory as a Basis for Identifying Barriers to Faculty Confidence in Online Instruction
  Name of Principal Investigator: Gerald Knezek / Julia Allen
  Sponsor or Funding Agency: N/A
  Award Number, if any: N/A
☐ Other:

The review performed by Institution A will meet the human subject protection requirements of Institution B's OHRP-approved FWA. Institution A will follow written procedures for reporting its findings and actions to appropriate officials at Institution B. Relevant minutes of IRB meetings will be made available to Institution B upon request. Institution B remains responsible for ensuring compliance with UNT's IRB determinations and with the Terms of its OHRP-approved FWA. This document must be kept on file by both parties and provided to OHRP upon request.

Contact for Institution A:
Jamie Penn
Director, Office of Research Integrity and Compliance
(940) 565-3041
jami.penn@unt.edu

Contact for Institution B:
Dwana J. Pulkrook, M.B.A., BLATG, CPIA, CIP
Director of Research Compliance
Phone #: 936-251-1588
Email Address: dpulkrook@pvamu.edu

Signatory Official (Institution A): Name: Dr. Thomas McCoy
Institutional Title: Vice President for Research and Economic Development
Signature: [Signature]
Date: 10/28/16

Signatory Official (Institution B): Name: Cajetan M. Alujuobi, M.B.A., Ph.D.E.E.
Institutional Title: Vice President for Research & Dean, Graduate Studies
Signature: [Signature]
Date: 1/28/16

University of North Texas
Office of Research Integrity and Compliance
IAA Form (as of 1/12/16)
October 30, 2016

Dear Dr. Knezek and Julia Allen:

On behalf of the Texas A&M University-Commerce Institutional Review Board, I have considered your proposal and have made a determination as listed below.

Title: R008_2016- TRANSFORMATIVE LEARNING THEORY AS A BASIS FOR IDENTIFYING BARRIERS TO FACULTY CONFIDENCE IN ONLINE INSTRUCTION

Type of Approval: Exempt-Reciprocal Agreement

Agency or Dept.: University of North Texas

Type of Review: Reciprocal

Deadline for resubmission: Original renewal date on UNT IRB approval letter

Do be mindful that this approval is good for one year, and that if your project extends beyond one year you must request a continuation. Additionally, should there be any sort of adverse event it is your duty to report that to the IRB immediately. Submit the Research Closure Form upon completion of your study to this office to document completion of your study.

If you have any further questions, please feel free to call or email me!

Sincerely,

[Signature]

Dr. Tara Tietjen-Smith
Professor and Head, Department of Health & Human Performance
Chair, IRB
903.886.5545
irb@tamuc.edu

Department of Health and Human Performance
Texas A&M University - Commerce, P.O. Box 3011, Commerce, Texas 75429; 903-886-5549
A Member of the Texas A&M University System
Julia Allen

From: Angela M Bingham <Angela.Bingham@tamuk.edu>
Sent: Tuesday, November 15, 2016 3:30 PM 
To: Patricia A Foster; Julia Allen
Cc: TAMUK Office of Research & Sponsored Programs
Subject: RE: Request for participation in my dissertation research
Attachments: image021.wmz; image022.wmz; image024.wmz; image025.wmz

Follow Up Flag: Follow up
Flag Status: Completed

Julia,

After speaking with you this afternoon, it seems that you are simply looking for someone to grant permission to recruit specific TAMUK faculty as human subjects. I believe that you’d simply need to ask permission from their department chair, much like a permission letter for a school district were your subjects public school teachers. In this case, I think Dr. Michelle Duran, the Director of Distance Learning and Instructional Technology could provide you with the permission you need.

If you don’t mind, we’d appreciate having any documentation of permission forwarded to our office, just so we can have it on file should anyone ask if we are aware of your project.

Thank you – let us know if you need any other information.

Angela M. Bingham
Research Compliance Officer
Office of Research & Sponsored Programs
Texas A&M University – Kingsville
700 University Blvd, MSC 201
College Hall Room 154
Kingsville, Texas 78363-8202
Office (361) 593-4764
angela.bingham@tamuk.edu
www.tamuk.edu/ors

From: Patricia A Foster
Sent: Monday, November 14, 2016 5:48 PM 
To: Julia Allen <jallen@tamut.edu>
Cc: Lori P Kupczynski <Lori.Kupczynski@tamuk.edu>; Angela M Bingham <Angela.Bingham@tamuk.edu>
Subject: RE: Request for participation in my dissertation research
Importance: High

Hello Ms. Allen,
Hi, Julia.

The only thing you’d need in order to include our faculty in your study would be obtaining individual informed consent in accordance with your own institution’s IRB requirements.

I’m happy to participate in the study, as I teach graduate-level courses online. In terms of obtaining a list of our faculty who teach online, I’d recommend you reach back out to Dr. Gentry in the CII. Their department assists with all online courses and faculty development.

Best,

~CB

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**Credence Baker, PhD**
Associate Professor, Educational Technology
Assistant Graduate Dean
Tarleton State University
T-0350 Stephenville, Texas 76402
(254) 968-9420
[http://faculty.tarleton.edu/cbaker/](http://faculty.tarleton.edu/cbaker/)
Twitter: @drcrbaker

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From: Julia Allen [mailto:jallen@tamut.edu]
Sent: Monday, November 14, 2016 2:09 PM
To: Baker, Dr. Credence <CBAKER@tarleton.edu>
Cc: Gentry, Dr. James <GENTRY@tarleton.edu>
Subject: Request for permission to include sister schools in my dissertation research

Good morning,

Dr. Gentry suggested you might be the right person to contact. I am an employee at Texas A&M University-Texarkana. I am beginning my dissertation research and need your help. I have received IRB approval for my study both at TAMUT and UNT, where I am enrolled. I am researching the correlation between the stages of transformative learning and a
Good Morning,

Thank you for your interest in our programs. IRB approvals for TAMUG go through the Human Research Protection Program in College Station. They have detailed information on their website at:

http://rch.tamu.edu/humansubjects

I have also emailed the Interim Director to let her know of your project.

Please let me know if you need additional assistance.

Tammy

Tammy Holliday, Ph.D. | Assoc. VP for Research Operations | TAMUG | hollidat@tamug.edu

From: Joan Mileski  
Sent: Sunday, September 11, 2016 2:38 PM  
To: Tammy Holliday  
Subject: FW: Request for permission to include sister schools in my dissertation research

I think this is you for permission but I am happy to help with our online experience.

Joan

From: Julia Allen  
Sent: Monday, August 29, 2016 9:27 AM  
Subject: Request for permission to include sister schools in my dissertation research

Good morning,

I am beginning my dissertation research and need your help. I have received IRB approval for my study both at TAMUT and UNT, where I am enrolled. I am researching the correlation between the stages of transformative learning and a faculty member's experience with online instruction. As there is currently not a quantitative method by which to identify a person's stage of transformative learning, I have developed an instrument to do this and would like to validate it, however, I need more faculty than are available to me at TAMUT. I would like to find out who at your institution is
University of North Texas (Institution A)
AND
Texas A & M University-Corpus Christi (Institution B)

PURPOSE:
This IRB Authorization Agreement (IAA) sets forth the express agreement between University of North Texas and Texas A & M University-Corpus Christi concerning the utilization of UNT’s Institutional Review Board.

Institution Providing IRB Review (Institution A):
University of North Texas

Institution Providing IRB Registration #:
IRB00000704
Federalwide Assurance#: FWA00007479

Institution Relying on the Designated IRB (Institution B):
Texas A & M University-Corpus Christi

Federalwide Assurance (FWA) #:
FWA00011281

SCOPE:
The Officials signing below agree that Texas A & M University-Corpus Christi may rely on the UNT IRB for review and continuing oversight of research described below: (check one)

| D | This agreement applies to all human subject’s research covered by Institution B’s FWA. |
| D | This agreement is limited to the following specific protocol(s): |
|   | Name of Research Project: Transformative Learning Theory as a Basis for Identifying Barriers to Faulty Confidence in Online Instruction |
|   | Name of Principal Investigator: Julia Allen, Dr. Gerald Knezek |
|   | Sponsor or Funding Agency: n/a |
|   | Award Number, if any: |
| D | Other: |

The review performed by Institution A will meet the human subject protection requirements of Institution B’s OHRP-approved FWA. Institution A will follow written procedures for reporting its findings and actions to appropriate officials at Institution B. Relevant minutes of IRB meetings will be made available to Institution 13 upon request. Institution B remains responsible for ensuring compliance with UNT’s IRB determinations and with the Terms of its OHRP-approved FWA. This document must kept on file by both parties and provided to OHRP upon request.

Contact for Institution A:
Janie Peno
Director, Office of Research Integrity and Compliance
(940) 565-3941
jamie.peno@unt.edu

Contact for Institution B:
Luis Cifuentes, Ph.D.
Vice President for Research, Commercialization and Outreach
(361) 825-3881
Luis.Cifuentes@tamucc.edu

Signatory Official (Institution A): Name: Dr. Thomas McCoy
Institutional Title: Vice President for Research and Economic Development

Signature: [Signature]
Date: [Date]
REFERENCES


Education Quarterly, 57(1), 26–45. https://doi.org/10.1177/1059601106292247


Dawes, J. (2008). Do data characteristics change according to the number of scale points used? An experiment using 5-point, 7-point and 10-point scales. International Journal of Market Research, 50(1), 61–77. https://doi.org/Article


Improvement, 46(5), 17–24. https://doi.org/10.1002/pfi.129


Jamlan, M. (2004). Faculty opinions towards introducing e-learning at the University of Bahrain. *International Review of Research in Open and Distance Learning, 5*(2), 1–14.


Venkatesh, V., & Davis, F. (2000). A theoretical extension of the technology acceptance model:
four longitudinal field studies. *Management Science, 46*(2). Retrieved from
http://libproxy.library.unt.edu:2069/media/pq/classic/doc/52438017/fmt/pi/rep/NONE?cit%3Aauth=Venkatesh%2C+Viswanath%3BDavis%2C+Fred+D%3Atitle=A+theoretical+extension+of+the+technology+acceptance+model%3A+four+longitudinal+field+studies&cit%3Apub=Mana


http://jolt.merlot.org/vol6no2/ward_0610.htm


https://doi.org/10.1177/1541344603259314


https://doi.org/10.1111/j.1467-8535.2011.01248.x