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Technology Use of Online Instructors with High Self-Efficacy: A Multiple Case Study

Barbara L. Albee

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By  Barbara L. Albee

Entitled
Technology Use Of Online Instructors With High Self-Efficacy: A Multiple Case Study

For the degree of  Doctor of Philosophy

Is approved by the final examining committee:

Jennifer C. Richardson  
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Janet Alsup
Victoria Walker
Bill Watson

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TECHNOLOGY USE OF ONLINE INSTRUCTORS
WITH HIGH SELF-EFFICACY
A MULTIPLE CASE STUDY

A Dissertation
Submitted to the Faculty
of
Purdue University
by
Barbara L. Albee

In Partial Fulfillment of the
Requirements for the Degree
of
Doctor of Philosophy

May 2015
Purdue University
West Lafayette, Indiana
I dedicate this work to the memory of my father, William E. Albee, who always talked to me about the value of education. He instilled in me the love of reading, learning, and striving to always do my best. I also dedicate this work to his great grandchildren and my great nieces Nora, Madeleine, Fiona and great nephew, Liam Albee, who at the time of this study are not old enough to read and understand what is written here, but they are our future and I love them dearly and I know they will find their paths in life.

And to my husband, Christopher L. Kiess, you wholeheartedly supported my entering the doctoral program at Purdue and encouraged me during the course of my studies and research to accomplish my goal of completing the Ph.D.
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>LIST OF TABLES</th>
<th>vi</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>vii</td>
</tr>
<tr>
<td>CHAPTER 1: INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Background</td>
<td>1</td>
</tr>
<tr>
<td>Statement of Problem</td>
<td>8</td>
</tr>
<tr>
<td>Research Questions</td>
<td>10</td>
</tr>
<tr>
<td>Significance of Problem</td>
<td>10</td>
</tr>
<tr>
<td>CHAPTER 2: LITERATURE REVIEW</td>
<td>13</td>
</tr>
<tr>
<td>Introduction</td>
<td>13</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>13</td>
</tr>
<tr>
<td>Social Cognitive Theory</td>
<td>15</td>
</tr>
<tr>
<td>Self-Efficacy and Behavior</td>
<td>16</td>
</tr>
<tr>
<td>Self-Efficacy Assessment</td>
<td>21</td>
</tr>
<tr>
<td>Online Instruction</td>
<td>22</td>
</tr>
<tr>
<td>Online Instructors</td>
<td>24</td>
</tr>
<tr>
<td>Technology and Online Instruction</td>
<td>26</td>
</tr>
<tr>
<td>Best Practices for Online Instruction</td>
<td>31</td>
</tr>
<tr>
<td>Best Practices for Technology Use in Online Instruction</td>
<td>32</td>
</tr>
<tr>
<td>Summary</td>
<td>36</td>
</tr>
<tr>
<td>CHAPTER 3: RESEARCH METHOD</td>
<td>38</td>
</tr>
<tr>
<td>Introduction</td>
<td>38</td>
</tr>
<tr>
<td>Theoretical Framework</td>
<td>39</td>
</tr>
<tr>
<td>Research Design</td>
<td>40</td>
</tr>
<tr>
<td>Setting</td>
<td>42</td>
</tr>
<tr>
<td>Participants</td>
<td>43</td>
</tr>
<tr>
<td>Researchers Role</td>
<td>45</td>
</tr>
<tr>
<td>Procedures and Data Collection</td>
<td>46</td>
</tr>
<tr>
<td>Data Sources</td>
<td>49</td>
</tr>
<tr>
<td>Sense of Efficacy for Online Teaching Scale</td>
<td>49</td>
</tr>
<tr>
<td>Interviews</td>
<td>52</td>
</tr>
<tr>
<td>Observations</td>
<td>54</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>58</td>
</tr>
<tr>
<td>Trustworthiness</td>
<td>61</td>
</tr>
<tr>
<td>Ethical Considerations</td>
<td>62</td>
</tr>
</tbody>
</table>
Summary .......................................................................................................................... 64

CHAPTER 4: RESEARCH FINDINGS ............................................................................. 65
Overview .......................................................................................................................... 65
Case Studies ..................................................................................................................... 67
  Ambrose’s Profile .......................................................................................................... 68
  Brianna’s Profile ............................................................................................................ 75
  Carla’s Profile ............................................................................................................... 82
  Doc’s Profile .................................................................................................................. 90
Comparison of Case Studies ............................................................................................ 96
Themes From General Interview Questions .................................................................... 96
Themes From Interview Questions and Observations on Technology Use .................. 100
Themes From Interview Questions and Observations on Best Practices .................... 103
Instructor Based Innovation for Best Practices ............................................................. 107
Summary .......................................................................................................................... 108

CHAPTER 5: DISCUSSION ......................................................................................... 110
Introduction ..................................................................................................................... 110
  Discussion of Research Question 1 ............................................................................. 111
  Discussion of Research Question 2 ............................................................................. 115
  Discussion of Research Question 3 ............................................................................. 118
Implications of the Study ................................................................................................. 119
  Implications of Self-Efficacy ....................................................................................... 119
  Implications for Higher Education Administration ................................................... 120
  Implications for Online Instructors ........................................................................... 122
Limitations ......................................................................................................................... 122
Directions for Future Research ....................................................................................... 124
Summary .......................................................................................................................... 126

BIBLIOGRAPHY .......................................................................................................... 129

APPENDICES
  Appendix A: Institutional Review Board Approval Memorandum ......................... 145
  Appendix B: Permission to Use the Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale .................................................................................................................. 148
  Appendix C: Sense of Efficacy for Online Teaching Scale ........................................ 150
  Appendix D: Interview Protocol .................................................................................. 157
  Appendix E: Observation Protocol .............................................................................. 160
  Appendix F: Participant Cover Letter and Consent Agreement .................................. 166
  Appendix G: Follow-Up Interview Questions ............................................................... 167
  Appendix H: Coding Samples ....................................................................................... 169
  Appendix I: Case Study Themes .................................................................................. 176
  Appendix J: Correspondence With Attardo ................................................................. 178

VITA ................................................................................................................................. 179
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1: Online Instructional Method and Tools Matrix (Southern Oregon University, 2009)</td>
<td>28</td>
</tr>
<tr>
<td>Table 2: Best Practices for Technology Use in Online Teaching</td>
<td>36</td>
</tr>
<tr>
<td>Table 3: Description of Case Study Participants</td>
<td>45</td>
</tr>
<tr>
<td>Table 4: Best Practices for Technology Use in Case Study Online Courses</td>
<td>104</td>
</tr>
</tbody>
</table>
ABSTRACT

Albee, Barbara L. Ph.D., Purdue University, May 2015. Technology Use Of Online Instructors With High Self-Efficacy: A Multiple Case Study. Major Professor: Jennifer C. Richardson.

The purpose of this qualitative multiple case study was to understand how online instructors with perceived high self-efficacy for online teaching use technology in the online class and how their use compares to a common list of best practices for use of technology with online instruction. One-on-one interviews with four case study participants were the main source of data collection along with direct observations of the participants' online courses. The case study participants were selected based on results from a Sense of Efficacy for Online Teaching Scale and willingness to move forward with the case study. Conventional data analysis was performed and codes were developed for each case. Data was compared for commonalities and theme development. Cases were individually described and the participants' viewpoints were captured.

Implications for this study suggested that online instructors with perceived high self-efficacy were following a set of standard best practices for teaching and use of technology in the online classroom. In addition, data suggested that
technology played a very important role in the online classroom and can be used in a variety of different ways. Research supported the idea that adherence to best practices was common among online higher education faculty. Continuing to explore online instructors’ practices in the classroom would benefit future online programs and become relevant to the online pedagogy in these classrooms.

*Keywords*: Online teaching, online instructors, self-efficacy, best practices, technology
CHAPTER 1: INTRODUCTION

Background

Chapter 1 provides an overview of why this research study is of interest to those in the field of education and how it contributes to the body of literature in the field of online instruction. Chapter 1 discusses the background for this study including the problem statement, research questions, and significance of the study.

The changing state of education today is readily evident from the current atmospheres on academic campuses across the United States. Online instruction is increasing at many levels of the American education system and in a wide variety of academic institutions and programs (Allen & Seaman, 2012; Conhaim, 2003). The numbers of higher education faculty teaching online courses continues to increase (McClen, 2005; Allen & Seaman, 2012, Mandernach, Mason, Forrest, & Hackathorn, 2012). Allen and Seaman (2012) revealed that the number of students taking at least one online course in 2012 surpassed 6.7 million. The growth in online education fosters a population of students who are accustomed to online classrooms (Brinkerhoff & Koroghlanian 2007). There are more online offerings than ever and higher education institutions have tasked more instructors to move their courses to an online
format. Consequently, many higher education instructors have added online teaching to their resumes to keep up with the demand for online courses (Watwood, Nugent, & Deihl, 2009).

Instructors making the transition from traditional classroom teaching have to develop new skill sets to teach online. Online instructors consider the experiences they have in the online environment as unique compared to face-to-face instruction (Redmond, 2011). Some differences from face-to-face can be found in the greater personal time commitment needed to design the online course, facilitating collaboration among online students, communication challenges with students, and navigating the technologies to deliver the content (Redmond, 2011; Signer, 2008). Smith and Ferguson (2002) discussed differences stemming from communication styles on the web due to bandwidth limitations, the asynchronous nature of the medium, and emphasis on the written word. The new skills that online instructors need to cultivate to meet these demands include knowing what technology is available to them and how to choose the best technology to adapt into their instructional design for the online classroom environment. The use of technology in teaching is part of the challenge and involves making decisions surrounding the many options with available technology to support instruction and learning. The online instructor faces challenges in many aspects of instructional design and delivery of their online courses (Ball & Levy, 2008). One of the challenges online instructors face includes finding and learning how to use communication tools to assist in interaction with students such as conducting a chat session. Another challenge is
determining the best ways to disseminate information to online students, which may include consideration of audio and or video presentations of course lectures. Online instructors need to learn how to navigate new interfaces and in some instances pioneer new products. The success of online instruction may partially lie in the instructor’s use of technology in the online classroom. Online course creation manifests itself in the need for new forms of content delivery and curriculum design of which technology will play a role.

For online instructors with motivation and confidence to foster successful online courses, technology is a tremendous asset. Choices made concerning technology use are a part of the success and learning outcomes of the course (Koller, Harvey, & Magnotta, 2006). A technology decision may be as simple as deciding to use a PowerPoint with voice over in place of a text-based Word document. Or, it can be as complicated as deciding what Course Management System (CMS) software to implement. Technology is part of the education equation in the online environment. Instructors require certain competencies with technology to be successful in their online classrooms (Bigatel, Ragan, Kennan, May, & Redmond, 2012).

In confronting these challenges, online instructors learn to adhere to a new set of best teaching practices for the online environment (Fish & Wickersham, 2009; Miller & King, 2003). Utilizing best practices for online teaching impacts on the organization and planning on the part of the instructor, the feedback on assignments, and the ongoing evaluation of the course itself (Fish & Wickersham, 2009). A widely adapted set of best practices is exemplified
within the California State University, Chico’s Rubric for Online Instruction or ROI (Wilson, 2012). The ROI was assembled based on resources recommended by a university committee (California State University, Chico, 2011):

In order to draw from the expertise of the scholarly community, the committee first reviewed existing best practices, learning styles, and standards (e.g., Graf and Caines' WebCT Exemplary Course Rubric, Bloom’s Taxonomy, and Chickering & Gamson's 7 Good Teaching Practices in Undergraduate Education) (History section, para. 1).

The ROI is deployed to improve quality of online instructional design and for setting guidelines for the developers of online instruction.

The ROI addresses six categories to consider when doing a performance assessment for teaching in the online environment. The ROI includes sections on general best practices for online teaching and a section on innovative teaching with technology. This section of the rubric contains four criteria in which a course can be deemed exemplary in terms of technology use. The four technology best practice areas include communication tool use, innovative teaching methods, multimedia use, and Internet resource access. In completing the ROI, the observer comments on whether the online instructor is doing anything with technology at baseline (using limited technology), at an affective level (using some technology), or exemplary level (using a variety of technology) based on best practices in the four areas.

Bates and Poole (2003) provided a source of best practices for effective teaching with technology and informed instructors how to best integrate
technology into teaching in higher education. Bates and Poole (2003) gave guidelines for instructors in non-traditional classrooms, such as distance education settings, for such things as organization of workload in the online environment so it is manageable by the student, student counseling via email for online office hours, and guidelines for discussion in the online environment for proper use of forums as a communication tool and means of participation. Boettcher (2011) discussed best practices for online teaching that include providing synchronous and asynchronous activities. It can be argued that technology must play some part in many best practices for online teaching. How can we achieve the best practice of communication if we do not use technology?

Administration is not to be forgotten in the role it plays in the evolution to online instruction. Smith and Ferguson (2002) reported “universities are often pressuring faculty to teach online courses” (p. 61). Higher education administration has a stake in providing quality education and faculty adherence to best practices helps promote effective teaching. One best practice for technology use is an institution’s willingness to invest in technology support including both hardware and software support with ongoing training and support for faculty so as to offer successful online courses (Fish & Wickersham, 2009; Signer, 2008). Amirault (2012) commented:

Online learning is providing higher education institutions with an entirely new modality for educating learners free from the constraints of time and location, but the transition these institutions must undergo to adapt to
online program delivery involves many complex issues, some with ramifications that are not yet fully understood (p. 253).

Boston, Ice, and Gibson (2011) stated administrators at institutions offering online courses are eager to promote student achievement and student retention is of utmost importance as it is connected to the success of the institution. Cole, Shelley, and Swartz (2014) reported that student satisfaction in the online classroom is directly related to student retention. Wojciechowski and Palmer (2005) reported administrators are concerned about retention of online students because there are higher drop out rates among online students than those students taking traditional classes. Administrators feared that this might be indicative that online courses are not suitable for all students. The factors influencing instructor performance in online courses may prove valuable to those involved with administering such programs. As the need for online courses and programs continue to grow, higher education administration will have a bigger stake in the success of their faculty in their online classrooms.

Many factors contribute to the successful teaching of online classes such as training, length of time in the classroom, appropriate use of technology, and one’s self-efficacy level (Morris & Usher, 2011; Hoy, 2000; Herrington, Oliver, Herrington, and Sparrow, 2000; Bandura, 1977). It has been theorized self-efficacy plays a role in online instructor choices in delivery strategies (Irizarrrry, 2002). The technology choices, how technology is used, and what technology is used by an instructor can relate to their self-efficacy level (Farah, 2011).
Positive teaching behaviors and positive teaching outcomes as they relate to the behavior of instructors are surrounded by the theory of self-efficacy (Henson, 2001). Self-efficacy is a person’s belief in his or her ability to succeed in a particular situation and one confidence identifier (Bandura, 1997). It is a contributor to educational development (Bandura, 1993). Bandura (2001) stated that self-efficacy influences choices. Self-efficacy can have an impact on everything from psychological states to behavior and motivation (Bandura, 1995). Since Bandura published his seminal 1977 paper, "Self-Efficacy: Toward a Unifying Theory of Behavioral Change," the subject of self-efficacy has become one of the most studied topics in psychology (Pajares, 2002). Pajares (2009) stated:

According to social cognitive theory, self-efficacy beliefs provide the foundation for human motivation, well-being, and personal accomplishment. Unless people believe that their actions can produce the outcomes they desire, they have little incentive to act or to persevere in the face of difficulties. These self-perceptions touch virtually every aspect of people's lives (para. 1)

Bandura's body of work includes the construct of teacher self-efficacy, which is the belief in one's ability to succeed in the classroom. Bandura created an instrument to measure teaching self-efficacy called the Teacher Self-Efficacy Scale to further understand how teachers construe their teaching abilities. The higher one's self-efficacy, the greater their effort, perseverance, and elasticity
might be (Bandura, 1986). Self-efficacy at the higher end of Bandura’s scale equates to ones willingness to take risks in the online environment to perhaps try new technologies such as Vodcasts, videos stored in digital form. Many researchers have used Bandura’s self-efficacy scale or modified it for their purposes (Pajares, 2009; Tschannen-Moran & Hoy, 2001). Robinia (2008) created the Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale. This scale was based on a scale created by Tschannen-Moran and Hoy (2001), the Teachers’ Sense of Self-Efficacy Scale, which is rooted in Bandura’s scale and is the first scale to address online instructor self-efficacy.

Statement of Problem

De Gagne (2009) stated educators who teach online face new challenges in the online environment because the concept is very different from the traditional classroom. Technology becomes an important component of course design and a necessary part of providing students the opportunity to interact with course content. Wilson, Varnhagen, Krupa, Kasprzak, Hunting, and Taylor (2003) stated “evaluation of online learning has emphasized the students' perspective and technology related issues but has provided less information on the experience of the instructors who undertake this new method of teaching” (pp. 1-2). While there is evidence that online education is growing (Allen & Seaman, 2012) and educators have to develop new skills to teach online (Ball & Levy, 2008), it is not clear how an instructor with a perceived sense of high self-efficacy for online teaching uses technology in the online classroom. To date, very little
work has been done to explore how an instructor, who perceives himself or herself with a high sense of self-efficacy for teaching online uses technology in the online classroom.

Previous studies of online instructor self-efficacy are largely quantitative studies in nature (Garmon, Wingard, & Reznik, 2001; Hemmings & Kay, 2009; Robinia, 2008) and the majority of studies on self-efficacy had been conducted with elementary and secondary education teachers not instructors in higher education (Milner & Hoy, 2003; Moseley & Taylor, 2011). Furthermore, many studies are published on the use of technology in education and of best practices for technology use in the online classroom (Bates & Poole, 2003; Koller et al., 2006) but few studies address how instructors with a perceived high sense of self-efficacy for online teaching use technology in the online environment.

Moreover, qualitative research is needed to fully understand how instructors in higher education and who have perceived high self-efficacy levels, use technology in the online classroom. This study seeks to understand these phenomena using a qualitative approach with the added benefit of identifying participants based on the Sense of Efficacy for Online Teaching Scale, an instrument modified from the Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale (Robinia, 2008). Further, this study applies a set of best practices for the use of technology while teaching online that are derived from two sources, the ROI discussed above and the Distance Learning Recognition Program Evaluation Form (Attardo, Senol, Benzigar and Khichadia, 2007) to account for instructor’s practices in the online classrooms.
By looking at similarities in practices of instructors with perceived high sense of self-efficacy for online teaching we can gain a better understanding of how they use technology in the online classroom. Thus, the purpose of this study is to (a) understand how higher education online instructors with perceived high self-efficacy use technology in the online classroom and (b) how the technology used compares to a set of best practices for technology use for online teaching using a multiple case study design. The goal in utilizing a qualitative method study design is to gain a holistic view of the online instructor’s use of technology in the online classroom.

Research Questions

This study explores the following research questions:

1. How do higher education online instructors with a perceived high sense of self-efficacy for online teaching use technology in the online classroom?
2. How is the technology use of higher education online instructors with perceived high self-efficacy comparable to best practices for use of technology in online teaching?
3. Are higher education online instructors following a set of common best practices for online teaching or are they creating their own best practices?

Significance of Problem

There is strong interest in studying online instructors due to the growth in online instruction and the need for better learning outcomes for online students. The success of the online instructor in the classroom is critical to university’s
mission. The significance of this study is that it helps current and future online instructors, and also the administrators of institutions with online programs.

The study adds to the knowledge of the online teaching environment to assist instructors who have never taught online and gives those currently teaching online some consideration of different choices for technology use in the online environment. Our ability to understand how higher education online instructors with perceived high self-efficacy use technology can lead us to identify those online instructors who excel and those that need additional resources and training in the art of teaching in online environments. The measurement of self-efficacy is a worthy variable in education research (Henson, 2001). Self-efficacy has the ability to influence choices in how one approaches a given situation (Bandura, 2001; Bandura, 2006). The ability to identify online instructors who would benefit from additional support from administration in developing expertise with technology as they approach their online curriculum could assist in positive learning outcomes for students and more successful online teaching practices for instructors.

It is critical to the mission of the institution as a whole to ensure that their instructors have proper training opportunities on technology and support for integration of technology in the online classroom for better use of the technologies. Outcomes of this study lead to a better understanding of technology use in the online classroom. This study assists university administrators who seek ways to achieve better integration of technology into the online teaching environment to foster improved student learning at their
institutions. The study points to situations where the online instructor needs training in using technology; and when educational leaders need to intervene to make positive adjustments to the integration of technology in the online classroom. If we understand how online instructors with a perceived high sense of self-efficacy for online teaching make better use of technology, programs of higher education could bridge some gaps in the support that these instructors might need to ensure positive learning outcomes for students.
CHAPTER 2: LITERATURE REVIEW

Introduction

The literature review begins with a discussion of self-efficacy and teacher self-efficacy including Bandura’s contribution to the theory of self-efficacy. It leads into a discussion on the many contexts of self-efficacy studied in the literature. In addition, Chapter 2 provides a review of the literature on online instruction and the online instructor. This chapter also covers the topic of technology in education and best practices for technology use in the online environment.

Self-Efficacy

Self-efficacy is “the belief in one’s capabilities to organize and execute the courses of action required to manage prospective situations” (Bandura, 1995, p. 2). Situated within social cognitive theory, self-efficacy is a form of self-evaluation that impacts choices about what behaviors to undertake, the amount of effort to put forth, and the mastery of a behavior (Bandura, 1997). That is, self-efficacy is a person’s belief in his or her ability to succeed in a particular situation. The most prominent voice on perspectives in self-efficacy is Albert Bandura (Pajares,
2002). Bandura (1994) described self-efficacy as determinants of how people think, behave, and feel. He stated “people differ in the areas in which they cultivate their efficacy and in the level to which they develop it even within their given pursuits” (p. 307). Eastin and LaRose (2006) stated self-efficacy is not a measure of skill, rather it reflects what individuals believe they can do with the skills they possess. Bandura (1997) also found previous personal experience with a given task is often a strong predictor of perceived self-efficacy.

Many factors affect one’s self-efficacy to include social, psychological, and environmental factors (Irizarry, 2002). Bandura (1994) determined people with a strong sense of self-efficacy exhibit the following traits. They view challenging problems as tasks to be mastered, develop deeper interest in the activities in which they participate, form a stronger sense of commitment to their interests and activities, and quickly recover from setbacks and disappointments. Bandura (1994) stated people with a weak sense of self-efficacy might do the following: “avoid challenging tasks, believe that difficult tasks and situations are beyond their capabilities, focus on personal failings and negative outcomes, and quickly lose confidence in personal abilities” (p. 71). Pajares (1999) described people having high self-efficacy as being more likely to select challenging tasks, persist at them, and successfully perform them. He stated that self-efficacy is related to confidence and the ability to understand what one knows and does not know so as to establish appropriate cognitive strategies to the tasks they performed. “Self-efficacious instructors typically plan and organize more effectively, are more likely to employ and seek out engaging instructional strategies, put forth greater
effort in motivating their students, and are more resilient when faced by obstacles than are teachers with lower self-efficacy” (Morris & Usher, 2011, p. 232).

Social Cognitive Theory

Self-efficacy has a theoretical foundation in social cognitive theory (Farah, 2011). The proposition of social learning was expanded upon and theorized by Canadian psychologist Albert Bandura (Social cognitive theory, 2013) as a model of behavior. Social cognitive theory states some part of an individual’s knowledge acquisition comes from observing others within the context of social interactions, experiences, and other outside influences. Survival of humanity is dependent on replicating others’ actions (Bandura, 2001). Bandura conducted several experiments on behavior and proposed that social cognitive theory (SCT) aligns more with the cognitive processes that mediate learning (Bandura, 1986). Many more studies were done with SCT as a basis since Bandura’s initial work and social cognitive theory expanded with regard to the work on self-efficacy (Social cognitive theory, 2013). Researchers apply it as a means to understand classroom motivation, learning, and achievement (Pajares, 1996). There are five core concepts associated with SCT: observational learning, outcome expectations, goal setting, self-regulation, and self-efficacy. Self-efficacy is a key element of social cognitive theory and plays a role in a demonstrated behavior (Farah, 2011). Self-efficacy is a variable of SCT because self-efficacy affects one’s motivation, self-regulation, and achievement (Bandura, 1977; Pajares & Urdon, 2006).
Self-Efficacy and Behavior

Joet, Usher, and Bressoux (2011) stated self-efficacy is studied by researchers interested in how self-processes influence human functioning and behavior. Given the central role that one’s beliefs play on personal efficacy as determinants of academic success, researchers began to focus on the mechanisms by which these beliefs are formed (Joet et al., 2011). Self-efficacy was found to be a construct in the explanation of behavior change (McNally & Foa, 1996).

Rodebaugh (2006) studied self-efficacy and found that an individual’s self-estimation of their ability in a given situation influences decisions about what activities to attempt and what activities to avoid along with which activities to persist in and which to abandon. “People's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances” (Bandura, 1986, p. 391). Bandura (2006) stated people who score high on perceived self-efficacy differ in distinct ways from those with low scores who might avoid challenges and have less confidence in their abilities.

Self-Efficacy and Various Contexts

Bandura (1997) stated self-efficacy is not measured without context. “Self-efficacy measures judgments on capability that might vary across realms of activity, under different levels of task demands, and different situational circumstances” (Bandura, 1997, p. 42). Many contexts of self-efficacy were studied by Bandura and others proving the value of this construct (Bandura, 1994; Eastin & LaRose, 2006; Wright, 2010). Bandura (2006) gave an example:
A business executive may have a high sense of organizational self-efficacy, but low parenting efficacy. Thus, the efficacy belief system is not a global trait but a differentiated set of self-beliefs linked to distinct realms of functioning. Multidomain measures reveal the patterning and degree of generality of people’s sense of personal efficacy (p. 307).

Some of the contexts in which self-efficacy is studied in the literature include Internet self-efficacy (Kuo, 2010; Liang, Wu, & Tsai, 2011), computer self-efficacy (Kagima & Hausafus, 2000), online self-efficacy, technology self-efficacy (Farah, 2011), and teacher self-efficacy (Bandura, 1994; Bandura, 1997; Chang, McKeachie, & Lin, 2010; Miller & Hoy, 2003) to list a few.

Internet self-efficacy. Internet self-efficacy focuses on what people believe they can accomplish online. Someone exhibiting low Internet self-efficacy means they are dissatisfied with their Internet skills and have little confidence in ability to use the Internet (Eastin & LaRosa, 2006). Eastin and LaRosa (2006) measured the Internet self-efficacy of 171 undergraduate students and found previous Internet experience to be a factor in self-efficacy. Joo, Bong, and Choi (2000) studied Internet self-efficacy with students and reported similar results in that prior academic achievement is a factor in perceived positive self-efficacy along with a finding that those with strong Internet self-efficacy explored the Internet with more vigor.

Computer self-efficacy. Wilson et al. (2003) looked at how instructors adapt to online teaching using computers and the role self-efficacy plays in the positive experiences these instructors had in terms how of this mode of delivery
changed their cognitive, affective, and managerial roles. Ball and Levy (2008) found that computer self-efficacy has the greatest influence on intention to utilize technologies in the classroom. Celik and Yesilyurt (2013) stated perceived computer self-efficacy among teachers plays an important part in applying computer-supported education and achieving its goal. Computer self-efficacy affects individuals' interests toward computers and the desire to use a computer. Moos and Azevedo (2009) indicated behavioral and psychological factors are positively related to ones' computer self-efficacy.

Online self-efficacy. Huamao, Ying, and Ronghuai (2006) defined online self-efficacy as the capability to use the Internet and computer to complete online tasks. They found that online self-efficacy is a factor in the relationship between learning strategy and online performance. High online-efficacy among adult learners relates to positive learning strategies and improved online performance. Wright (2010) defined online self-efficacy as the ability to design, develop and deliver online courses. Wright (2010) studied university faculty perceptions of their online self-efficacy to see if there was a link between training and their ability to be successful online instructors and found “a significant factor for embracing new technologies was the faculty’s positive perceptions and attitudes toward distance learning” (p. 1).

Technology self-efficacy. Self-efficacy plays a role in the use of computers and technology. Farah (2011) studied technology self-efficacy and found that self-efficacy is among the factors that play a role in a teacher’s decision to integrate technology into their classroom. Farah (2011) discussed the concept of
technology self-efficacy as the ability to perform sophisticated technology tasks, and found reasons instructors do not use technology to be: unawareness of the different technologies, lack of availability at their institutions, no institutional support, lack of adequate training, and the need for a more positive mindset. Holden and Rada (2011) found technology self-efficacy has a relationship to users technology acceptance and the perceived ease of use.

Teacher self-efficacy. Bandura (1997) stated there is a relationship between the context of teaching and self-efficacy. Bandura developed a teacher self-efficacy scale to gain a better idea of difficulties teachers have in their school activities (Bandura, 2006). Much is written on the theory of teaching self-efficacy and the role it plays in achieving successful outcomes in the classroom (Bandura, 1994; Bandura, 1997; Miller & Hoy, 2003). Many factors contribute to teacher self-efficacy levels. Chang et al. (2010) defined teacher self-efficacy as “a judgement about capabilities to influence students’ engagement and learning” (p. 207). Garberoglio, Gobble, and Cawthon (2011) defined perceived teacher self-efficacy as “a relationship with the images that teachers hold of themselves, their teaching, and their students and that the teachers’ sense of efficacy is related to their orientation toward teaching, students, and instructional practice” (p. 367). Bandura (1994) stated those who have a high sense of self-efficacy about their teaching motivate students to learn.

The body of literature on teacher self-efficacy divulged many contributing factors to why teachers have self-efficacy or lack thereof. Chang et al. (2010) found one factor affecting teacher self-efficacy is directly related to the amount of
administrative support teachers receive. Garberoglio et al. (2012) found an unexplored construct for self-efficacy in deaf education settings, and stated “teachers’ years of experience [teaching] show a significant relationship with self-efficacy” (p. 367). Teacher efficacy beliefs make a difference in student outcomes and several correlations exist between low levels of self-efficacy and years of experience teaching (Garberoglio et al., 2012). Farah (2011) stated self-efficacy is identified in studies as one of several factors that play a role in a teacher’s decision to integrate technology into the classroom, but studies that “attempt to identify and explain how technology self-efficacy is constructed have not been conducted” (p. 3). Garmon et al. (2001) surveyed junior faculty about obstacles to career progress and success and found mentoring helped improve their self-confidence in teaching. After completing a seven-month mentoring experience, the 39 junior faculty in the study rated himself/herself significantly higher in self-confidence in all areas of professional academic skills.

Online teacher self-efficacy. The theory of self-efficacy is found in the research about the online teacher in distance education environments but the research is limited. Self-efficacy for online instructors involves having confidence to succeed in the online classroom. Gosselin (2009) looked for a better way to measure online teaching self-efficacy and discussed domain specificity of online education as related to online teacher self-efficacy stating how some characteristics of online education do not lend itself to certain instructor activities that typically can be measured on a self-efficacy scale, such as classroom management techniques (p. 39).
Pajares (2002) found instructors with high self-efficacy scores had higher motivation levels, were more interested in the topics they teach and were more committed to teaching. There is a correlation here between online instructors. The high correlation with self-efficacy related to the desire to take on challenges in the classroom environment and the feeling that nothing is beyond one’s capability as to the use of technology available to online instructors today (Pajares, 1999). Robinia and Anderson (2010) indicated high levels of self-efficacy for teaching online is related to the number of online teaching experiences and a significant rise in teaching self-efficacy is reported after three or more experiences in online instruction.

Self-Efficacy Assessment

"Self-efficacy scales measure judgments on capability that can vary across realms of activity, under different levels of task demands, and different situational circumstances" (Bandura, 1997, p. 42). Bandura (1997) stated “self-efficacy assessment includes both the affirmation of capability and the strength of that belief” (p. 382). Bandura created a teacher self-efficacy scale using seven subscales to measure teacher self-efficacy. Bandura’s efficacy scales generally ranged from 0 – 100. He assigned meaning to his self-efficacy scales and stated, “participants record the strengths of their beliefs on a 100 point scale ranging in 10-unit intervals from 0 (cannot do) to intermediate degrees of assurance, 50 (moderately certain can do), to complete assurance, 100 (highly certain can do)” (Bandura, 1997, pp. 43-44). Bandura (2006) discussed a simpler method to create a self-efficacy scale that retains the same structure and descriptors but
uses single unit intervals ranging from 0 to 10. Hoy (2000) referred to a Bandura scale that is based on 9 points and ranged from 1-9 so that “each item is measured on a 9-point scale anchored with the notations: “nothing (1), very little (2-3), some influence (4-6), quite a bit (7-8), a great deal (9)” (p. 12). Bandura’s seven subscales on the teacher self-efficacy scale are as follows: 1) influence on decision making, 2) influence on school resources, 3) instructional efficacy, 4) disciplinary efficacy, 5) enlisting parental involvement, 6) enlisting community involvement, and 7) creating a positive school climate. An individual could have a high level of self-efficacy in one activity domain and a low level in another. Bandura (1997) advised in order to achieve explanatory and predictive power for the scales, measures of self-efficacy must be tailored to the domain, for example, his teacher self-efficacy scale was created for the teaching domain. Bandura (1997) stated, “in developing self-efficacy scales, researchers must draw on conceptual analysis and expert knowledge of what it takes to succeed in a given pursuit”, (p. 43).

Online Instruction

Distance education in some form has existed for decades, for example, correspondence courses dated as far back as the 19th century, broadcasting courses via radio sprang up between 1918 and 1946, and interactive television in the mid 20th century (Skylar, Higgins, Boone, Jones, Pierce, & Gelfer, 2005). With the proliferation of new technology, online instruction is on the rise and gaining popularity (De Gagne, 2009). The expansion of the Internet as a course
delivery mechanism laid the groundwork for the university to develop online programs (Volery & Lord, 2000). Use of the Internet for online learning began in the early 1990’s. Students are introduced to the online classroom at an increasingly earlier age and thus lead to a population of undergraduate students who are accustomed to online classrooms (Irizarry, 2002). The 2012 Survey of Online Learning revealed the number of college students taking at least one online course had surpassed 6.7 million (para 1). Private and for-profit colleges and public institutions increasingly turn to online education (Jonas, 2013).

Online instruction is a very popular topic in the education literature. A relatively new mode of education, it is catching on at many levels and in a wide variety of programs. At the college and university levels, administrators look at online instruction as another source of income and a means to consider the needs of the distance learner. Some colleges are pressed for space and see online education as a solution (Pope, 2006). Other institutions see it as a way of responding to students’ needs without having to build expensive new facilities (Latham & Smith, 2003). Mellon and Kester (2004) stated, “over the last five years, considerable attention and resources have been directed to the development and delivery of Internet courses in higher education” (p. 45). Orr, Williams, and Pennington (2009) suggested that because of the jump in the numbers of distance education offerings, there is a gap in the institutions’ ability to meet the needs of the students and the faculty who teach the online courses. Kats (2013) reported “with the rapid proliferation of distance learning, academic stakeholders confront the task of choosing and managing an appropriate online
technology environment that fits their budgets, technical resources, curriculum, pedagogy and profile of learners” (p. xxii). De Gagne (2009) stated online education is gaining popularity for many reasons such as cost benefits to the institution, increases in enrollment possibilities, and as a means to revenue enhancement.

Online Instructors

It is clear from the literature that online instructors need technology skills to ensure a successful online course. Miller and King (2003) considered the key to the course’s success was the amount of training the instructor had with technology and their level of technical expertise or how well they used the technology. Webster and Hackley (1997) stated the online instructor’s ability to control the technology influences learning outcomes. Volery and Lord (2000) found the instructor plays a central role in the effectiveness of online delivery, “it is not the technology but the implementation of the technology that determines the effects on learning” (p. 218). Arbaugh (2001) discussed online instructor behaviors that enhance student satisfaction. These included providing personal examples, demonstrating a sense of humor, encouraging expression of ideas, and showing comfort with the online experience. Joo, Lim and Kim (2012) stated online teaching has pedagogical benefits such as learner control over pace and the learning path and the interaction between the learner and the instructor.

Many factors, including the instructor’s actions in the online classroom, make for a successful learning outcome. Boling, Hough, Krinsky, Saleem, and Stevens (2012) found a systemic lack of awareness exists for instructors in
appropriate uses of technology in the field of education. Instructors must be trained in proper use of technology and gain technical expertise. Instructors must consider many things when making technology use decisions, such as demographics of students and individual learning styles. Beaudoin (2013) stated “the role of the online instructor is undergoing continuous evolution since the advent of the Internet and the proliferation of Learning Management Systems to support teaching and learning” (p. 233). Success is dependent on how well the instructor uses the technology. Technology is a leading cause of student frustration in distance education (Miller & King, 2003). Bitner and Bitner (2002) stated teacher’s attitudes toward technology use are essential factors in successful technology integration.

Technology based teaching or teaching with technology creates a greater workload for the online instructor and creates a barrier to its use due to the amount of time needed to develop high quality materials (Dias & Diniz, 2012). The shift of an instructor’s time to a greater percentage of their time devoted to course design requires instructors to reorganize their teaching methods in order to gain any savings in time and effort. An online instructor might consider benefits of using technology to replace more traditional materials such as a text-based document turned into a Podcast. “Extensive use of technology in the classroom can be justified when it is used strategically to deal with major teaching issues and to make a significant advance in teaching” (Bates & Pool, 2003, p. 134). Orr et al. (2009) reported on barriers faculty face when teaching online to include lack of administrative support, technical expertise, and online infrastructure.
Finney (2004) stated fear of technology is another issue for online faculty and developing online courses require considerable effort with technology. Doing so required them to master the technology behind the distance delivery.

While technology is a necessary requirement for a successful online course, it provides its own set of issues to the online instructor. He or she develops additional skills to be able to maneuver through the online learning environment (O’Neil, Fisher, & Newbold, 2004).

Technology and Online Instruction

Rodriquez and Nash (2004) discussed how technology has totally changed how we teach online. Volery and Lord (2000) stated three variables affect online delivery, the instructors, students, and technology. Technology is a tool and should be matched to the course, not drive the course (Miller & King, 2003). O’Neil et al. (2004) described technology for online courses as:

Technology is used to convey information to students but moreover, technology can be used to support student knowledge construction.

Technology allows for sharing or knowledge and experiences. It allows access to information sources such as electronic databases. Technology supports real world problems by allowing students to learn by doing such in the use of simulations. And technology supports communication.

Students can now converse, discuss, and build consensus; which in turn supports synchronous environments (p. 21).

Types of Technology. Because this study addresses online instructors’ use of technology in the online classroom, it is necessary to understand what
types of technology are available, how technology is used, and to what advantage technology is to the online curriculum. Technology is used in online instruction to facilitate communication with students, to assist with the creation of course materials, to deliver the course itself, and to provide a means of assessing student performance. According to Bates and Poole (2003) more students are served by developing web-based applications or materials that were driven by technology. Newby et al. (2006) discussed the various types of technologies available for online instruction. These include audio conferencing technology to include chats and podcasts; video-based technologies including one way and two-way video; and computer-based technologies that included a wide variety of technology such as email, web based instruction, instant messaging, and computer instruction. “The key element is their ability to enhance communication between teacher and learner and among learners who may be at different locations” (Newby et al., 2006, p. 214). O’Neil et al. (2004) stated “the technologies employed in distance education fall into major categories of print, data, voice, and video” (p. 48).

Southern Oregon University (2009) gave many technology solutions for online teaching purposes. If the desired outcome was cooperative learning using multimedia presentations, they suggested online tools such as MovieMaker, PowerPoint, Audacity or Garage Band. Table 1 includes suggestions for specific technologies to achieve specific instructional goals in the online class.
Table 1: Online Instructional Method and Tools Matrix (Southern Oregon University, 2009)

<table>
<thead>
<tr>
<th>Instructional Method</th>
<th>Techniques</th>
<th>Online Tools/Resources Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative Learning</td>
<td>Multimedia Presentations</td>
<td>MovieMaker, PowerPoint, Audacity, Garage Band</td>
</tr>
<tr>
<td>Cooperative Learning</td>
<td>Research Project</td>
<td>Blog, Wikis, Group Pages</td>
</tr>
<tr>
<td>Cooperative Learning</td>
<td>Student-Led Instruction</td>
<td>Discussion Board, Web Conferencing</td>
</tr>
<tr>
<td>Demonstration</td>
<td>Video Clips</td>
<td>Streaming Video, YouTube</td>
</tr>
<tr>
<td>Demonstration</td>
<td>Text and Images</td>
<td>PowerPoint</td>
</tr>
<tr>
<td>Discovery</td>
<td>Research Projects</td>
<td>Internet Searching, Library database searching</td>
</tr>
<tr>
<td>Discovery</td>
<td>Web Quests</td>
<td>Blogs, Course email, Discussion Board</td>
</tr>
<tr>
<td>Discussion</td>
<td>Asynchronous</td>
<td>Chat, Web Conferencing</td>
</tr>
<tr>
<td>Drills</td>
<td>Exercises featuring multiple choices, fill in the blank, short answer questions</td>
<td>Hot Potatoes</td>
</tr>
<tr>
<td>Drills</td>
<td>Self-Tests</td>
<td>Quizzes, CMS built in functionality</td>
</tr>
<tr>
<td>Presentation or Lecture</td>
<td>Narrated Slides/Images</td>
<td>PowerPoint</td>
</tr>
<tr>
<td>Presentation or Lecture</td>
<td>Podcasts</td>
<td>Streaming Audio</td>
</tr>
<tr>
<td>Presentation or Lecture</td>
<td>Video Clips</td>
<td>YouTube Videos</td>
</tr>
<tr>
<td>Presentation or Lecture</td>
<td>Written lectures or notes</td>
<td>Word/Rich Text, HTML files (pdf docs)</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>Problem-Based Learning</td>
<td>Word/Rich Text, HTML files (pdf docs) Group Pages</td>
</tr>
<tr>
<td>Simulations and Tutorials</td>
<td>Animations</td>
<td>Flash</td>
</tr>
<tr>
<td>Simulations and Tutorials</td>
<td>Self-Paced Modules</td>
<td>HTML Files</td>
</tr>
<tr>
<td>Simulations and Tutorials</td>
<td>Video Clips</td>
<td>MERLOT, WIKI/Media, World Lecture Hall</td>
</tr>
</tbody>
</table>
CMS Technology. CMSs provide venues for the once easy to facilitate face-to-face classroom discourse and interaction for course management. CMSs are purchased from commercial providers such as Blackboard. There are also open source solutions, Desire2Learn and Moodle, and homegrown CMSs, for example Indiana University’s Oncourse. Current trends are geared toward cloud-based solutions such as MOOC, massive open online courses (Kats, 2013). In any event, CMSs are part of the online education equation and most universities have an investment in a CMS for their instructors to deliver and manage courses. These systems are another technology faculty need to master as students expect to have course materials online and easily accessible (Beaudoin, 2013). Kats (2013) reminded us “with the rapid proliferation of distance learning, academic stakeholders confront the difficult task of choosing and managing an appropriate technology environment that fits their budget, technical resources, curriculum, pedagogy, and profile of learners” (p. xxii).

O’Neil et al. (2004) discussed some of the common functionalities within course management systems such as Blackboard to include: communication features such as discussion boards, chat, email; assessment or automated testing; course management with Gradebook, rosters, and student tracking; and course information features such as syllabus, calendar, announcements and instructor home pages.

Advantages of Technology. The advantages of technology in online instruction are many. Technology allows access to materials otherwise only available on campus. Herrington et al. (2000) indicated a whole body of research
exists to prove that technology tools enable learning to be more effective than traditional instruction. The adoption of the Internet as an educational tool unleashed a new round of studies to help prove the use of technology for the delivery of units of study was better than a traditional approach. But Herrington et al. (2000) argued the technology had nothing to do with the quality of the learning; the pedagogical approach adopted by the designers of the course was what drove the quality.

Dias and Diniz (2012) found using technology is an innovative challenge to restructure the teaching-learning process to transform practices such as lectures. Technology allows students to learn anytime anywhere and permitted universities to center on global learning environments when used appropriately in the classroom. The learning environment is most favorable when the teachers are organized and motivated. Technology integration takes time. Dias and Diniz (2012) found training is necessary for efficient use of a CMS.

Volery and Lord (2000) discussed how the Internet has substantial advantages over traditional technologies such as offering collaborative tools to support interactions between students for enhancing communication and interactive tools such as simulations or self-paced quizzes to allow students to progress at their own pace. Collaboration and interaction can be synchronous, done in real time for example, with the use of chats and video conferencing. Or it can be asynchronous with saved chat dialog and recorded webinars. Fish and Wickersham (2009) stated the most successful online instruction develops
communities of learners established through active online participation and interaction between instructors and learners.

Best Practices for Online Instruction

Best practices for online instruction are an important part of this study and a review of best practices for online teaching and the use of technology in online instruction follows. Best practices for online instruction abound in the education literature (Kats, 2013; Newby, Stepich, Lehman, & Russell, 2006; Signer, 2008). Best practices for online teaching involve several key principles that are true to all instruction. Some examples of best practices for online instruction include guidelines for setting course expectations such as creating a syllabus so students know what to expect; support for technology, such as providing assistance and training for students on any technology used in the course (Signer, 2008); ensuring communication between student and instructor (Fish & Wickersham, 2009); and evaluation such as providing feedback on assignments (Miller & King, 2003). Smith and Ferguson (2002) stressed the successful online class requires learner to content interaction, learner to instructor and learner-to-learner interaction.

Fish and Wickersham (2009) described best practices for online instructors as a way to enhance quality in online classes and stated instructors must think differently about online teaching – online instruction is more than simple repackaging of traditional course content. Johns Hopkins University (n.d.) discussed how chunking course content allows large presentations to be broken into mini lectures for delivery in the online environment. Lam & Khare (2010)
stated online content might need to be sequentially and logically presented in some courses. For example, if a student does not get earlier concepts he or she may be lost with the rest of the course. O’Neil et al. (2004) discussed how teaching online is different and instructors must develop new competencies for the online classroom.

Instructional design for online courses is time consuming and the delivery of content may involve adapting materials into multimedia. Online instructors need to repurpose or convert content to digital formats (Johns Hopkins University, n.d.). Online instructors restructure how course content is delivered and how they communicate with students. The use of technology plays a role here and brings about the need for best practices in the use of technology in the online classroom.

Best Practices for Technology Use in Online Instruction

Aspects of best practices for the use of technology in the online classroom show up in most general best practices for teaching online. Fish and Wickersham (2009) stated best practices involving technology in higher education online courses must be restructured. Miller and King (2003) found four factors must be considered for best teaching practices in the online classroom, the technology, the learner, the instructor, and the pedagogy. Keegan, Schwenke, Fritsch, Kenny, Kismihó, Bíró, Gábor, O’Suilleabháin, and Nix (2005) collected data on best practices for online education. Some of their comments on the use of technology included preparing the course in consultation with students; students should know what they can expect, technically and interpersonally, and what is
expected of them in relation to interactivity. Keegan et al. (2005) stated all parties must make skillful use of technology and technical functionality must meet expectations of the course. This requires academic preparation for both the instructor and the students.

Boettcher (2011) provided best practices for anyone getting started teaching online. She suggested instructors keep a presence in the classroom, create a supporting online course community, and ask early in the course how things are going. She also encouraged the use of both synchronous and asynchronous activities and use of discussion forums. Warden, Stanworth, Ren, & Warden (2013) discussed the attributes of successful online courses when executing synchronous learning in online environments. McGee, Carmean, and Jafari (2005) spoke of the importance in using a course management system in higher education.

Signer (2008) wrote extensively on best practices for online education including key points for instructional technology professional development. She advised instructors when teaching online to link new technologies to practice, seek technology support, and provide technology training for students on how to navigate the course in regards to technology. Technology use in the online classroom covers such mundane tasks as how to handle email and repetitive questions. Best practices inform instructors to set expectations at the beginning of the course for answering email and to create a FAQ (Frequently Asked Questions) to collect questions over time (Hanover Research Council, 2009). Best practices in the use of technology for online teaching involve finding means
to conduct online discussion forums for student instructor interaction or the use of such forums for grading purposes to ensure students are reading materials (Boettcher, 2011; Hanover Research Council, 2009). Kats (2013) stated best practices inform instructors to provide students with clear goals for the discussion forums and to give them a useful framework for academic discourse. To create a successful discussion forum environment, the online instructor should be a part of the dialogue to provide guidance and feedback and put emphasis on active and collaborative learning, and personalized attention to students.

Two examples of best practice evaluation tools are found in a rubric and a form created by universities offering distance education programs. Attardo et al. (2007) created the Distance Learning Recognition Program Evaluation Form for Purdue University. California State University, Chico (2011) produced a Rubric for Online Instruction or the ROI. Both include a way to rank online instructors based on best practices for online instruction and each has a section on best practices for the use of technology.

Attardo et al. (2007) provided a framework for observing online instruction and the use of technology using a rating scale that ranged from (1) not evident: unable to locate examples specific to this criterion, (3) promising: good implementation, however, somewhat lacking in depth, and finally (5) accomplished: excellent implementation. Attardo et al. (2007) evaluated course design, innovation and effective use of technology tools, assessment of student learning and course content, and learner support when creating their form.
The ROI addresses key issues to be considered when performing an assessment for teaching in the online environment. It is used to evaluate and design fully online classes and uses a rating scale from baseline/limited, effective/some, to exemplary/variety. The categories include online learning and campus resources, online organization and design, instructional design and delivery, assessment and evaluation of student learning, innovative teaching with technology, and faculty use of student feedback. In the category of innovative teaching with technology, individual units include communication tool use, innovative teaching methods, multimedia use, and Internet resources (California State University, Chico, 2011). A table of best practices for use of technology for online teaching might look like the following, refer to Table 2.
### Table 2: Best Practices for Technology Use in Online Teaching

<table>
<thead>
<tr>
<th>Best Practice Examples (Attardo et al., 2007; California State University, Chico, 2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide goals and objectives (generally provide a syllabus)</td>
</tr>
<tr>
<td>Course design is functional</td>
</tr>
<tr>
<td>Ease of course navigation</td>
</tr>
<tr>
<td>Communication tools</td>
</tr>
<tr>
<td>Support for technology</td>
</tr>
<tr>
<td>Access to Internet resources</td>
</tr>
<tr>
<td>Multimedia for content delivery</td>
</tr>
<tr>
<td>Use a variety of technology tools</td>
</tr>
<tr>
<td>Assessment/feedback opportunities</td>
</tr>
<tr>
<td>Formal course evaluation</td>
</tr>
</tbody>
</table>

**Summary**

Existing literature provided foundations for this research in the area of the studies on self-efficacy, online teaching self-efficacy, online instruction and best practices for technology use in the online classroom, but none of these studies pulled all of the ideas together. There were a few studies on self-efficacy of online instructors that were similar to this study. There were many common factors that were shown to affect self-efficacy within the online classroom setting.
Some of these similar characteristics of self-efficacy included showing greater interest in your endeavors, improved performance, and positive attitudes. However, earlier research did not explore the aspects of how online instructors with perceived self-efficacy at high end of a self-efficacy scale used technology in the online environment.

The growth in online education necessitates a greater understanding of instructors needs in the online environment. Online education drives the need for a pedagogical shift (Boling et al., 2012). There is both a change in teaching and learning styles in the online environment. The instructor is key in this process. The role of the online instructor has undergone continuous evolution since the advent of the Internet and proliferation of Course Management Systems to support teaching and learning (Beaudoin, 2013) and as such more research needs to be done on the online instructor in their art. In this context, this study intends to fill a gap in the current literature on online instructors with perceived high self-efficacy levels and the choices they made in technology use.
CHAPTER 3: RESEARCH METHOD

Introduction

The theoretical framework, purpose statement, research methods, and processes to reach the goal of this study are described in this chapter. Methods of data collection and processes of data analysis are also described. The conclusion of this chapter includes an explanation of rigor and ethical considerations for this study.

The goal of this qualitative multiple case study was to understand how higher education online instructors with perceived high self-efficacy levels use technology in the online classroom and whether the use of technology compares to a set of best practices for technology use in the online classroom. Qualitative methodology was used to provide a means to describe the experiences of online instructors and gain an insight into their teaching experiences (Creswell, 2005). Case study methodology was employed to provide a clearly defined process for organizing and conducting research (Simons, 1980; Yin, 2009). The questions that guided this research were:

1. How do higher education online instructors with a perceived high sense of self-efficacy for online teaching use technology in the online classroom?
2. How is the technology use of higher education online instructors with perceived high self-efficacy comparable to best practices for use of technology in online teaching?

3. Are higher education online instructors following a set of common best practices for online teaching or are they creating their own best practices?

Theoretical Framework

The theoretical framework for this study is rooted in the theories of self-efficacy. The theoretical foundation of self-efficacy is founded in social cognitive theory, developed by the work of Albert Bandura (Bandura, 1977; Bandura, 1997). Social cognitive theory (SCT) assumes that people are capable of human agency, the intentional pursuit of courses of action that have the capacity to exercise control over the nature and quality of one's life (Bandura, 2001). Denler, Wolters, and Benzon (2014) stated SCT makes basic assumptions about behavior such as personal, behavioral, and environmental factors influence one another. A closely related assumption within SCT is that people have the ability to influence their own behavior and the environment in a purposeful, goal-directed fashion (Bandura, 2001).

Social cognitive theory is used as a framework for understanding academic motivation, achievement, and self-efficacy (Bandura, 1993). Self-efficacy is “the belief in one’s capabilities to organize and execute the courses of action required to manage prospective situations” (Bandura, 1995, p. 2). Bandura (1994) described these beliefs as determinants of how people think, behave, and
feel. He stated “people differ in the areas in which they cultivate their efficacy and at the level to which they develop it even within their given pursuits” (Bandura, 1994, p. 307). Many factors affect one’s self-efficacy to include social, psychological, and environmental factors (Irizarrry, 2002). Self-efficacy affects one’s motivation, self-regulation, and achievement (Bandura, 1977; Pajares, 2006). According to Bandura (2001, 2006) one’s beliefs about self-efficacy have the power to influence and govern their choices on how to approach a problem and how to change behavior to face obstacles and challenges.

Research Design

Qualitative methodology guided this study. In particular, a multiple case study design was used to study how online instructors with a perceived sense of high self-efficacy level for online teaching use technology in the online environment and how this use is comparable to best practices for use of technology in online teaching. Purposeful sampling was implemented to find case study participants. Data from a Likert style scale, the Sense of Efficacy for Online Teaching Scale, modified from the Michigan Nurse Education Sense of Efficacy for Online Teaching Scale (Robinia, 2008) was used. The scale was designed to measure online instructor perceived self-efficacy and was used to indicate which online instructors scores were at high levels as a means to identify appropriate participants for the case study. Participants for the scale were selected based on specific criteria; they had to be higher education instructors and have taught a fully online course in the past two years.
Qualitative methods were chosen for this study because they were uniquely suited to help understand the topic of how online instructors describe their experiences in the online classroom and the technology they use and how this relates to their perceived sense of self-efficacy level for online teaching (Creswell, 2007). Case study methods fit the context of understanding an online instructor’s environment (Denzin & Lincoln, 2011). The situations that were investigated here were unique to the individual. Case study design was used to gain insight into the world of the online instructor and to explore in depth the complexity of the online instructor’s classroom (Flyvbjerg, 2011). One benefit of case study was that it facilitated a thorough investigation of an online instructor’s perspectives and behaviors in the online classroom.

Case study methodology promoted the use of multiple sources for data collection (Robson, 2002). Patton (2002) identified many sources of data for case study research including interviews and observations. The qualitative data sources for the cases in this study were semi-structured one-on-one interviews with the higher education online instructors and direct observations of their online courses. Interviews permitted careful listening to what participants stated and the ability to engage with participants according to their individual personalities and styles (Denzin & Lincoln, 2011; Patton, 2002). Observations helped establish validity (Yin, 2009). The study produced data in the form of notes, word for word transcripts of the audio recordings from the interviews, and completion of an observation protocol designed for this study. The observation protocol used a set of best practices in technology use in online instruction pulled from known data
sources in the education literature. Analysis was in the form of a synthesis of the experiences of each online instructor. Outcomes included in-depth description of the experiences of the online instructor’s use of technology in the online classroom and any best practices that they followed. Further analysis included comparative profile narratives of commonalities and themes among the online instructors or case study participants.

Setting

The setting for this study was a major research university located in the Midwest, United States. Specifically, the College of Education, the College of Liberal Arts, and the College of Technology all of which had programs for undergraduate and graduate education degrees with online courses offered were the focus of this study. This setting was chosen due to familiarity and access with the context of the environment by the researcher. The College of Education had twenty-two full time instructors teaching in the online environment (James Lehman, personal communication, December 12, 2013; Course Schedules for 2013). Some instructors had joint appointments with other programs. At minimum ten online courses were offered each semester at the College of Education. The College of Liberal Arts had 7 either tenured or tenure track full time instructors teaching online courses during fall and spring semesters, 2013. Two online courses were offered during fall and two during spring semesters of 2013 at the College of Liberal Arts. An additional six courses were taught during the summer of 2013 by these instructors (Miller correspondence, December 18, 2013). The
College of Technology had 6 full time professors teaching online courses in 2013 academic year (College of Technology correspondence, December 19, 2013).

**Participants**

Sampling was purposeful for the selection of higher education instructors who teach online at a university. The sampling for this case study chose instructors who were at the high end of the results on a Sense of Efficacy for Online Teaching Scale (SEOTS) (Denzin & Lincoln, 2011; Johnson & Christensen, 2012). Instructors who designed an online course and taught online in the past two years and who were tenured, tenure-track faculty or lecturers were invited to complete the SEOTS (n=83).

Results from the SEOTS were used to identify the four participants appropriate for the case study (n=4). The participants for the case study were selected on the basis of their individual score on the Scale. Participants designed and taught one or more online courses in the last two years including the one being observed or at least one during the time of this study. The case study participants included four instructors who scored at the high level or between 5.5 and 9 on the 9-point Scale. Common characteristics of perceived high self-efficacy include confidence in abilities, greater interest in the task, willing to take risks, and positive attitudes (Bandura, 1994). Participants of the sense of self-efficacy scale for online teaching were given the option to volunteer to move forward with the case study and the researcher made the final decision as to which instructors participated based on the scores.
A total of 83 faculty members were contacted to participate in the Sense of Efficacy for Online Teaching Scale between April 18 and May 6, 2014 with each person receiving a reminder email to participate at a two-week interval from the initial email, refer to Appendix F. The survey was used only to find the four case study participants to participate later in the interviews and observations. Twenty-four faculty members participated in the survey, for a 29% return rate. The highest self-efficacy score was 8.030, followed by 7.909 on the ten-point scale and 4.758 and 5.424 at the lowest end. Four faculty emerged from this group with perceived high self-efficacy scores who also agreed to participate in the case study. Other instructors who participated in the SEOTS opted not to move forward with the full study. The case study participants fall within this range and are neither the highest nor the lowest scores in the group but exemplify high self-efficacy for teaching online since all of the scores of the participants are above 5.0. Refer to Table 3. To maintain confidentiality among the case study participants, pseudonyms were given to each participant.
Table 3: Description of Case Study Participants

<table>
<thead>
<tr>
<th>Case Study Participant Pseudonym and Title</th>
<th>Gender</th>
<th>Sense of Efficacy Scale Result</th>
<th>Years Teaching</th>
<th>Years Teaching Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambrose, Ph.D. Associate Professor</td>
<td>Male</td>
<td>7.6/10</td>
<td>8 years</td>
<td>4 years</td>
</tr>
<tr>
<td>Brianna, Ph.D. Assistant Professor</td>
<td>Female</td>
<td>6.0/10</td>
<td>8 years</td>
<td>2 years</td>
</tr>
<tr>
<td>Carla, Ph.D. Assistant Professor</td>
<td>Female</td>
<td>6.7/10</td>
<td>24 years</td>
<td>8 years</td>
</tr>
<tr>
<td>Doc, Ph.D. Associate Professor</td>
<td>Male</td>
<td>5.8/10</td>
<td>36 years</td>
<td>5 years</td>
</tr>
</tbody>
</table>

Researchers Role

For this qualitative study, I took on the role of interviewer and observer. I began this study with substantial experience teaching online and a keen interest in what constitutes a quality online class. The study fit my background and experiences as a faculty member at an institution of higher education. I taught in both the online and face-to-face classrooms and have over eight years teaching online with considerable experience using technologies for the online environment. My previous knowledge and experiences were useful to the study especially in communicating and observing case study participants because we spoke a common language.

In order to collect all data for this study, it was necessary to lead the one-on-one interviews with the four case study participants and observe their online class environments. I recorded the sessions and took field notes. A professional
transcription service was hired to do transcription. I checked the transcripts for accuracy and did the interpretive work of the coding, the naming and categorizing of the phenomenon under study for the final analysis. I conducted the direct observations of the online instructors’ online course environments. I observed the use of technology used for course set up, design, and curriculum delivery using an observation protocol based on best practices for online teaching.

Procedures and Data Collection

In order to conduct the multiple case studies, the Sense of Efficacy for Online Teaching Scale (Robinia, 2008) was used to find the four case study participants (see Appendix C for the scale). The scale was administered electronically using the Qualtrics survey software to a sample of higher education instructors who teach in the online environment. When participants received the scale, an immediate option out message was given to eliminate those who do not teach online. Participants’ responses on the scale were quantified according to scale specifications of a (0-9 points) response-rating format (Robinia and Anderson, 2010) and subsequently used in identifying the participants that became part of the case study. Once results were returned and analyzed in the survey software, four higher education online instructors were selected based on their perceived sense of self-efficacy for online teaching levels and prior agreement to participate in the multiple case study. Bandura (2005) considered the midpoint 5 (or 50) to be moderately high self-efficacy. This study selected participants scoring above 5 on the SEOTS.
Semi-structured one-on-one interviews were conducted with participants. All participants were asked the same questions while allowing for some flexibility for additional questions depending on the responses. Interview questions were grouped together with common intentions. Interview questions were included that asked for background information such as what courses do you teach, how long have you taught online, are you tenure track, full time, and are your courses at the undergraduate or graduate level. A set of interview questions focused on the participants online course and asked did you transition a face-to-face course to online, did you have instructional design help, do you have control over the technology you use, and did you seek any training for online instruction.

Other interview questions looked at technology use and asked what technology do you use in your online class and for what purpose, do you use a CMS, do you have a synchronous or asynchronous environment, and do you try new technologies in your class. A final set of interview questions focused on best practices. Sample questions included do you provide instructions for course navigation, is technical support available, do you adhere to the Americans with Disabilities Act or ADA requirements, and do you encourage interaction between instructor and student and student and student. Probes were used to encourage elaboration on the responses. The majority of the data for this multiple case study came from one-time interviews with each case study participant using open-ended questions.

Follow-up questions were elicited when additional information was needed after observations were completed and after compiling the data (see Appendix
G). Example follow-up questions asked what form does feedback take on assignments, do you use the Gradebook feature of your CMS, do you provide options for peer review or self-assessment, do you provide access to Internet resources, and is there a formal evaluation of the course and does it ask anything about feedback on the technology used in the course?

Observation techniques were used in this study to observe each participant’s online course. The researcher asked to be granted access to the online instructor’s live course when possible or an archived course, taught within the past two years and stored within their CMS. Three observations were made of the course. If it was a live course these observations were done once at the beginning, once at midterm and a third at the end of the semester. An observation protocol was completed during the observations. The observation protocol focused on several key concepts in best practices for teaching online and for the use of technology in the online classroom. The observation protocol included the following eight broad best practices areas for online instruction including best practice elements for technology use adapted from the Distance Learning Recognition Program Evaluation Form (Attardo et al., 2007) and the Rubric for Online Instruction (California State University, Chico, 2011).

Activities involving the use of technology in the online classroom were of particular interest for this study and noted during the direct observation. The observation data was used to verify interview responses for accuracy and discover what participants did in actual practice.
Data Sources

Following the selection of case study participants via the SEOTS, the main sources of data collection were the one-on-one interviews and observations. The two data sources, interviews and observations, together provided a variety of aspects as they corresponded to one another for the data analysis.

Sense of Efficacy for Online Teaching Scale

Robinia (2008) developed the Michigan Nurse Educators Sense of Efficacy for Online Teaching tool. It is one source used to quantify participants’ levels of self-efficacy and measures perceived capability. The instrument was originally modified from the Ohio State Teacher Efficacy Scale (OSTES) also called the Teacher Sense of Efficacy Scale or TSES developed by Tschannen-Moran and Hoy (1998) who developed it to find a way to effectively measure teacher efficacy. Tschannen-Moran and Hoy based their final scale on Bandura’s Teacher Self-Efficacy Scale but with an expanded list of teacher capabilities and 10 new items to reflect areas of teaching not represented on the Bandura Scale such as assessment of personal competence (Tschannen-Moran & Hoy, 2001). Tschannen-Moran and Hoy (2001) noted that the reliability and validity information about the measure in Bandura’s scale, although used by many researchers, had not been available and was in question and they assured that their scale was validated and reliable based on three separate studies. The 24-item instrument tested for efficacy in instructional strategies, efficacy for classroom management, and efficacy for student engagement. According to
Robinia and Anderson (2010), Tschannen-Moran & Hoy’s self-efficacy instrument, The Teacher Sense of Efficacy Teaching Scale, (TSETS) or because it was developed at Ohio State University, it is sometimes referred to at Ohio State Teacher Self-Efficacy Scale, (OSTES) was tested for construct and content reliability in a series of three studies surveying teachers and pre-service teachers.

Robinia and Anderson (2010) discussed the revision of the TSETS instrument to focus on nurse educators in higher education and their experiences in online teaching for their study with the philosophy that different skills are needed for designing and implementing online courses. Robinia (2008) added eight new items based on effective practices for online teaching and resulted in a 32 item instrument designed to survey online teaching efficacy beliefs in the areas of student engagement, instructional strategies, classroom management, and the use of technology and computers. Content validity of the Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale was confirmed by a panel of experts and a subsequent pilot study of nurse educators who had a varying number of years teaching online. Robinia (2008) stated three faculty members with online teaching experience were asked to review the surveys and provide feedback and suggestions to ensure the survey was clear and concise. The survey was slightly modified from this feedback to clarify some items.

Permission was received from the creator of the Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale to use the scale for this study (see Appendix B). For purposes of this study, the name of the scale was
shortened to Sense of Efficacy for Online Teaching Scale (dropping Michigan Nurse Educators) so as not to confuse the participants. The term nurse or nursing was removed from any question addressing this particular profession and was replaced when necessary by educators. The 32 original questions addressing self-efficacy issues were left unchanged for purposes of this study, however, the scale included several demographic questions at the end of the self-efficacy scale questions. Many of the demographic type questions were deleted as inappropriate to this study and because some demographic questions relating to this case study’s participants were asked in the one-on-one interviews with this case study participants.

Scale responses varied along a nine-point (1-9) scale defined by the categories “Nothing”, “Very little”, “Some Influence”, “Quite A Bit”, and “A Great Deal.” (1 though 9 respectively). Participants’ scores were totaled on the Scale and the four case study participants were selected based on the high scoring instructors who agreed to move forward with the case study. There was no data analysis on the scale data other than to find the highest scores among the instructors who completed the scale. The higher the cumulative score on the scale, the greater sense of efficacy for the aspect of online teaching (Robinia and Anderson, 2010). The higher scores were scores closer to nine. Similar to the format used by Bandura (1997) to measure self-efficacy, the efficacy strength scores in this study were summed and divided by the total number of items to indicate the strength of the perceived self-efficacy for this activity domain. Bandura (1997) told us “a measure of efficacy level can be extracted by selecting
a cut off value below which people would judge themselves incapable of executing the activities in question” (p. 44).

SEOTS was electronically distributed to the college faculties participating in this portion of the study using Qualtrics (see Appendix C for the scale). Results were collected and quantified within the survey software to determine various levels of the sense of self-efficacy for online teaching among online instructors ranging on the high end of the scale. One of the initial questions for all scale participants was to ask them if they were willing to move forward with the case study portion of the research if they were found to be within the parameters of the study. With pre-approval from the Sense of Efficacy for Online Teaching Scale participants, four online instructors were selected and asked to move forward with the full research study which is the case study portion of the research. An Excel spreadsheet was pulled from the Qualtrics software and used to analyze the survey data to find the case study participants to assure they met criteria of the study.

Interviews

When the four case study participants were identified, one-on-one semi-structured interviews were scheduled. Initial interviews were conducted during the spring 2014 semester and recorded using a telecommunication software application, Skype. Open-ended style interview questions were used to gather data from the participants of the case study. Interview questions were created using Patton’s (2002) ideas on how to develop beneficial interviews and interview
questions. The interview questions allowed for some direction and flexibility in the interview process. The interviews lasted approximately 1 hour and with the participant’s approval the session was recorded using the Skype recording feature and a back up in place using an audio recording device (see Appendix D for the full interview protocol). The recorded interviews were sent to a professional transcription service. Verbatim transcription was done in a timely manner by the Chicago based service and transcripts were verified with each participant to ensure accuracy. Participants were involved in checking the transcripts or member checking to provide validity of the data for any areas of miscommunication (Johnson & Christensen, 2012). A set of follow-up interview questions arose during review of the transcripts and following course observations and was forwarded to participants via email for clarifications (see Appendix G).

The semi-structured interview approach allowed for additional questions to be asked if prompted by a response. Gill, Stewart, Treasure, and Chadwick (2008) found open-ended questions, those requiring more than a yes or no answer, are best. The interview protocol for this study used the same questions for all participants and included 5 sets of questions with the first four types relating to general demographics about the instructor, participant focused questions, questions on attitudes toward teaching in the online environment, and questions about the instructor’s technology use. A final set of interview questions was designed around best practices for online teaching. Some examples of key
questions in the area of background or demographic information included: what is your title; how long have you been teaching online; are you full or part time; and what types of courses have you taught? Some sample questions for the attitude about online teaching type questions included: how successful do you feel about your online teaching; and what are your challenges for teaching online? In the area of technology use questions, examples of questions asked included: what technologies do you use; do you use multimedia; does your institution provide support for online classes; and are you willing to try new technologies? Questions relating to best practices included: do you encourage interaction with you the instructor; do you have technology support; and how do you handle office hours? The demographic set of questions were collected using email, while the remaining interview questions were completed with the individual Skype sessions with participants. The insertion of open-ended questions had the ability to evoke responses that were meaningful, unanticipated, rich, and explanatory in nature.

Observations

Direct observations of each instructor’s online course were conducted to collect data on how the instructors use technology in the online environment, observe what types of technology they choose, and to find evidence of best practice for the use of technology when teaching online. Direct observations were made of the participant’s live online course or a recent archived course. This allowed for observation of complete courses. The researcher received
permission to access the online classrooms to observe the instructors’ full
courses from the fall 2013 to fall 2014 semesters. It should be noted that
anything involving student activity, participation levels, assignments were not the
object of observation.

An observation protocol, Best Practices for Online Teaching Including
Technology Use in the Online Class was developed for this study and was
completed along with other notes taken during the observations (see Appendix
E). The emphasis for using the observations was to triangulate data with the
interviews by observing what was actually taking place in the classroom with
technology use. The observations served as a method of validating and
comparing participants’ responses from interviews with what was actually done in
the online classroom.

Immersion into the course itself allowed for observation of the technology
that the instructor was using and whether they were limited to what they could do
in their CMS and/or by what the university provided in terms of technology.
Observations afforded a better understanding of what the instructors actually do
in practice and allowed for the affirmation or refutation of their interview
responses. The observation protocol used in this study was selected in
consideration of best practices for technology used in online instruction and
derived from the Distance Learning Recognition Program Evaluation Form
(Attardo et al., 2007) and the ROI (California State University, Chico, 2011). The
Distance Learning Recognition Program Evaluation Form was used with written
permission from Attardo and her team who developed it for Purdue University.
See Appendix J. The ROI was available to educators through the Creative Commons License and was a tool that can be used to create or evaluate the design of a fully online or blended course (California State University, Chico, 2011). One example of a relevant category from the ROI used in this study was the “Innovative Teaching with Technology” category. Guidelines for creation of the ROI came from those writing about best practices in education (California State University, Chico, 2011).

The observation protocol assessment ranged from (1) not evident: unable to locate examples specific to this criterion, (3) promising: good implementation, however, somewhat lacking in depth, and finally (5) accomplished: excellent implementation. The elements of the protocol included:

1. Organization of the course. This included making the course workload manageable and organized for students, course design is functional, for example, incorporating the use of modules, and ease of course navigation. Blackboard, Inc. (2006) discussed online course organization as:

   Creating an online course where users spend their time engaged in learning and interaction relies on establishing a course structure where content is easy to identify, navigation is intuitive, and tool placement fits in logically with the course design. Organizing all the elements of an online course so that students and instructors consistently have a positive experience requires up-front planning and ongoing adjustments throughout the run of the course (para. 1).
2. Setting expectations, which involved setting course goals and objectives and the level of student participation required in the online course. This included providing students with a syllabus (with or without hyperlinks). Expectations included providing information about assignments and evaluation and grading criteria for student work and class participation, perhaps providing a rubric for guidance. Expectations were necessary to inform students of requirements in any discussion forums or blogs.

3. Communication as a best practice encouraged instructor to student, student to instructor, and student-to-student interaction. Examples of communication in the online environment included providing office hours, email, announcements, and use of discussion forums for many of the course activities such as student led discussion and peer assistance. Meeting this best practice involved using the many communication tools to make this happen. Some communication tools for office hours were chat sessions, email, or Skype.

4. Support such as providing campus, course, and content specific support along with technology support including the contact information to students. Technology support resources might be links to the Help function within the CMS, links to tutorials and other training tools.

5. Technology use as a best practice stressed the use of a variety of communication tools, multimedia use, use of both asynchronous and synchronous activities, and access to Internet resources to optimize and engage students in the learning process. The technology must provide the student with
the opportunity to interact with the course content, allow links to web content, and include multiple modes of delivering the same content.

6. Assessment emphasized the importance of feedback from the instructor on assignments, peer review, and self-assessment.

7. Accessibility, design the course so that all aspects of it are accessible to students with disabilities.

8. Evaluation, provide an opportunity for students to evaluate the course for future improvements on the part of the instructor.

Data Analysis

This multiple case study used structured focused comparison to analyze the data (George & Bennett 2004). The method was structured in that questions were asked that reflect the research objective and the questions were asked of each case under study to guide and standardize the data collection. The method was focused in that it dealt with only certain aspects of the cases examined, specifically those of the technology use in the online instructors’ classrooms and best practices. Interview data was coded and the online instructors with high sense of perceived self-efficacy were compared for similarities in their online teaching environments.

The primary focus of analysis was on the individual case using each instructor’s responses to the interview questions and the comments from direct observation of the online classroom environment they created. Data analysis for this study began after the first interview to look for themes or common elements
and to facilitate subsequent interview questions if needed. Multiple data sources were collected to corroborate results and were relied on to understand the cases and answer the research questions. The one-on-one interview transcript data was coded following procedures suggested by Creswell (2005). Creswell (2005) suggested general procedures for coding that included getting a sense of the data before breaking it into parts and then identifying text segments and identifying them with a code to form descriptions and broad themes in the data. Since there were four cases in this study, each case was examined individually first and then the cases were compared for any similarities and themes for the use of technology and also best practices for technology use in online teaching. Attempts were made to capture the online instructor's viewpoints existing in each case (Johnson & Christenson, 2012).

All data was organized and interview transcripts read in a first round to highlight excerpts and reread for clarity in order to look across the respondents’ data to get a good understanding of each online instructor. The information from the interviews was highlighted and coded from themes developed from the responses. Data was segmented, divided into meaningful units and coded. Words or phrases were fixed next to responses that were found in the transcript data that had significant meaning to the research. The codes were organized into coherent themes to summarize and bring meaning to the data. A master list was developed in Excel and the like themes were grouped together for interview questions. Coded data was placed in an excel spreadsheet using numerical coding, for example 1 equaled a yes response, 2 equaled a no response, and
short phrases and words such as technical support and CMS depending on the data. The researcher identified themes directly from the data itself (Creswell, 2005). Common themes were topics mentioned most often among the case study participants from the interview data. These themes were ideas, concepts, behaviors, and incidents that arose from the data of topics mentioned most often and considered the most important issues to the instructors (Johnson & Christensen, 2012).

Comments from observation data were compared against interview transcripts for consistencies or any inconsistencies. For example, if an instructor stated they are using new technologies effectively in their online class, the observation protocol looked at the online course to verify this comment.

Analysis took on a narrative profile to provide an understanding of how an online instructor with a perceived high sense of self-efficacy for online teaching used technology in the online classroom. This case study created profile narratives of the four case study participants with high sense of self-efficacy for online teaching. The final report was written in consideration of Bandura’s definitions of high self-efficacy levels and what they meant for the online instructor. For example, an instructor with a high sense of self-efficacy for online teaching might have more instances with new technologies than an instructor with low sense of self-efficacy for online teaching. Best practices for technology use in online education inform us of what an instructor should be doing in an online class. Evidence of best practices was found in the interview responses and noted during the online course observations. The final report took into
consideration best practices for technology use in online instruction to point out what the participants with a perceived sense of high self-efficacy for online teaching were doing with technology to meet best practices.

Trustworthiness

Krefting (1991) stated “aspects of trustworthiness (truth value, applicability, consistency and neutrality) are relevant to both quantitative and qualitative studies” (p. 215). These principles were basic to all research models and were essential to increasing rigor. The practice of applying the criteria of rigor was observed in this case study. Use of multiple data sources or triangulation to include an online teaching self-efficacy scale, one-on-one interviews and direct observations of the online course management systems were used to decrease the possibility of inaccuracy and inconsistency. The use of these multiple sources of data assisted in triangulation to ensure comprehensive results that accurately depict the participants’ input (Yin, 2009). To ensure rigor in study design, the observations were added as a secondary data source and to compensate for limitations of just one data source (Shenton, 2004). Data triangulation provided for varying points of view because the credibility of the interview data and observation data was critical.

Rigor was ensured with a systematic process for analyzing the qualitative data collected. Each piece of data was treated as equally valuable. Darke, Shanks, and Broadbent (1998) discussed importance of rigor in case study at some length for the research design, data collection and analysis stages pointing
out consistent content analysis was ensured within the constructs of internal validity and for reliability. Patton (2002) stated “analysis of the data can be made more reliable by setting checks in place such as having a section of data coded by another researcher or at least have a second researcher check the coding for consistency” (p. 19). A second person was consulted on the researcher’s coding and theme development from the interview data to determine the quality and effectiveness of the evaluation of the interview transcripts (Creswell, 2007) and to help alleviate any bias on the part of the researcher.

A provision to ensure the study’s credibility was the use of member checks. Transcripts were shared with the case study participants for an opportunity to validate findings and further clarify results (Eliot, 2011). Participants were asked to read the transcripts of the interview dialogues to consider that their words match what they intended to say (Shenton, 2004).

Ethical Considerations

Patton (2002) informed “all qualitative research involves ethical considerations and the reader should be convinced that every care was taken to protect the research participants” (p. 19). This research study was approved by a research ethics committee, or the university Institution Review Board or IRB Human Research Protection Program (see Appendix A). Verbal consent was received from each case study participant. In order to ensure confidentiality, all self-efficacy scale data, interview and observation data were carefully collected and saved in secure locations. Electronic files were password protected and
stored on a secure server. Paper files were stored in a secure office cabinet. Once the audio files of the interviews were transcribed, the audio was destroyed.

Participation in the study (both completion of the sense of self-efficacy scale and case study) was strictly voluntary. Pseudonyms were given to the four participants in the case study in place of their real names. Verbal consent was received at time of the interview. The participants’ courses were not identified in any way to further protect their anonymity. Course observations were done with the permission of the participant. Each case study participant had to manually insert the researcher as an observer into his or her course. The purpose of the study was fully explained to all respondents of the Sense of Efficacy for Online Teaching Scale and case study participants. An ethical decision was taken into consideration as to whether participants were advised as to their score on the sense of self-efficacy for online teaching scale.

Roberts (2010) discussed the importance of keeping bias out of research stating “writing must be free of implied or irrelevant evaluation of the group or groups being studied “(p. 41). Roberts (2010) gave guidelines to help eliminate bias in scholarly writing to include: “use of gender-neutral words and pronouns, do not identify by race or ethnic group unless relevant, avoid language that suggests evaluation or stereotypes, and do not make unsupported assumptions” (p. 41). My previous experiences posed problems for the potential of bias. I entered the study with the goal to discover data on the case study participants and remained open to finding data about the four online instructors in the study. I strived for a stance of neutrality and collected data that is reliable, factual and
able to be verified. I provided an outside view of the study as an objective observant. As an online instruction my personal biases were kept under check as to opinions on how to use technology in the classroom. I refrained from using biased language that implied subjectivity. Rajendran (2001) advised to constantly confront your opinions and prejudices with the data.

Summary

Patton (2002) stated “case study captures the complexity of a single case and assists in understanding the circumstances” (p. 297). Case study methodology helps to add evidence to what is already known about online teaching. This study used multiple case study methodology to uncover to how higher education online instructors with perceived sense of high self-efficacy for online teaching use of technology in the online classroom. Case studies were in essence stories about the phenomenon under study using situational analysis or real-life setting. Data collection included results from the Sense of Efficacy for Online Teaching Scale to find instructors at the high end of the scale, one-on-one interviews with the four case study participants, and direct observation of the online classes. This case study method, with its use of multiple data collection methods and analysis techniques provided opportunities to triangulate data in order to strengthen the research findings and conclusions.
CHAPTER 4: RESEARCH FINDINGS

Overview

The research findings are presented in this chapter with a focus on the specific cases as determined from responses to interview questions and observation data. A structured focused approach was used to analyze the data. A description of each individual case study participant is included along with a cross case comparison of the themes developed from the interview and observation data. Themes are presented for both technology use in the online classroom and best practices for the use of technology along with instructor data on their personal best practices.

Three questions framed this research:

Research question 1. How do higher education online instructors with a perceived high sense of self-efficacy for online teaching use technology in the online classroom? This was the primary research question and responses to this question can help other faculty and administration to understand the teaching practices of online faculty in regards to technology use. Course design was important and all participants provided opportunities for students to interact with their content. The findings for how online instructors use technology included the use of many CMS features for the overall organization and delivery of the course.
Instructors used email and announcements as a primary means to communicate with students and keep them on track with the course materials. The Gradebook feature was used to keep track of grades and disseminate this information to students. Discussion forums were another CMS technology tool used for many purposes. For example, discussion forums were used for communication, assignment submission through participation in the discussion, and a means for students to collaborate. Further findings for the use of technology can be found in the case study descriptions.

Research question 2. How is the technology use of higher education online instructors with perceived high self-efficacy comparable to best practices for use of technology in online teaching? By comparing teaching practices to a set of best practices for online instruction and technology use in the online classroom, we gain a better insight into how faculty use technology in the online classroom. Providing a means of communication is a component of best practices and the use of communication tools is a best practice for use of technology in online teaching. Communication tools were found to be a much-used component in the participants’ online courses. Communication was in the form of email, announcements, discussion forums, and providing online office hours. Use of multimedia is another best practice for technology use and most participants used multimedia to include audio and video. Additional findings are found in case study descriptions.

Research question 3. Are higher education online instructors following a set of common best practices for online teaching or are they creating their own
best practices? Best practices are the gold standard and all case study participants follow a basic set of known best practices. Answering this question can lead to additional best practices for using technology to teach in the online environment. Providing a means of communicating with students is high on the list of best practices for online teaching. Instructors tend to have unique ways of staying in touch with students and in the ways they communicate with students. Technology plays an important role here.

Case Studies

Case study participants were four university faculty who taught in online environments, Ambrose, Brianna, Carla, and Doc. Two were male and two were female. Each had perceived high self-efficacy results on the Sense of Efficacy for Online Teaching Scale and each volunteered to take part in the study. The interviews for the study began spring 2014 and the observations were completed during fall 2014. The interviews and observations provided rich data for the study. Reporting on the description of the case study participants, the following sections are included: a case study participant profile, an overview of technology used in their online course, and any evidence of adherence to best practices for online teaching and technology use in the online classroom. Illustrative quotes from the various participants are provided in the description of the results. Best practices for technology use in the online classroom abound in the literature (Attardo et al., 2007; California State University, Chico, 2011). Several examples
are represented in the data of how the case study participants follow best practices for technology use in their online classrooms.

Ambrose’s Profile

Out of a possible 9 points on the self-efficacy scale, Ambrose scored 7.606. This was the highest score of all four case study participants. Ambrose was an Associate Professor and had taught for 8 years, of which four of those years were online for both undergraduate and graduate level students. He had a Ph.D. and was tenure track; teaching full time. Ambrose taught face-to-face, online, and hybrid classes and received two university teaching awards. He worked with teaching assistants and an educational specialist for his online courses. The educational specialist helped with course design and delivery. The degree program in which he taught was completely online. Ambrose reviewed his transcript during member checking and made no changes.

Ambrose loved teaching online and a lot was due to the diversity of the students. He often asked the professional contacts he made in the classroom to talk with students for future learning experiences.

I love teaching online to the group that I do. They’re a lot of fun and they have a big impact in our industry, so they’re key contacts for me later. Whether we’re doing applied research or instruction in the undergrad classroom, we often invite them in (Ambrose Interview, p. 3).

Ambrose found that teaching online worked very well for particular audiences and not for others, stating, “some audiences present a big challenge” (Ambrose
Interview, p. 3). His “audience”, or the course observed for this case study, was made up of working professionals and he felt they were more committed. “I think that a big part of why we’re successful online, is because of the students’ commitment to learning” (Ambrose Interview, p. 3).

Ambrose’s Technology Use. Ambrose’s online course was a combination of both asynchronous and synchronous learning environments but tended to be more asynchronous. He hosted webinars and had students log into them at certain times for a synchronous component. The course was taught using a course management system called Angel that Ambrose felt absolutely met his needs but also stated that “we build a lot of the course outside of Angel and then just link through Angel to do it” (Ambrose Interview, p. 4).

The technology used in Ambrose’s course to support his curriculum came from the functionality of his CMS. Observation of Ambrose’s online course confirmed he primarily used the functionality built into Angel to include email, discussion forums, communication links, announcements, lessons, resources, modules, and Gradebook. Ambrose’s course was built using the modules feature found within Angel and Ambrose made available all content to his students all at once. Ambrose stated that he used more technology in his online classes than his face-to-face classes and had tried many new technologies since teaching online. He was very willing to try new technologies saying “I do like to take risks and try new technologies, the challenge there, is the long run pay off of that investment in trying those new technologies” (Ambrose Interview, p. 6). In other comments on the use of new technology, Ambrose said:
We won a distance education award last year, so we were pretty proud of that. I also think we’ve always got opportunities to improve. Voiceover PowerPoint is getting pretty dated now. I think when we started the program it was very innovative and people liked that, but for whatever reason, people seem to like a floating head or a person in front of the screen talking. And so I think we’ve got opportunities to think about how we have done well and do it better (Ambrose Interview, p. 3).

In addition, Ambrose’s online class had a synchronous component. “We do, on occasion, host a webinar and ask students to log on at a particular time” (Ambrose Interview, p. 4).

The biggest component of multimedia use in Ambrose’s online class included the voiceover recordings of PowerPoint presentations using the Camtasia software add-in. Observation found these presentations in all modules. Ambrose remarked “we convert it [Camtasia] into three different formats for students to access so they can listen to it on their iPods or watch it on their computers. Currently some students download the presentations and listen to them in the car” (Ambrose Interview, p. 5). Aside from the MP3 files or podcast versions of presentations and announcements for iPod use, Ambrose used hyperlinks to course content, Window media video, and webinars to deliver content. Ambrose discussed how important technology was to his course delivery: “technology is pretty important, students need to be able to adopt it easily and be comfortable with it because learning the material is uncomfortable.
We don’t want the delivery of that material to also be uncomfortable” (Ambrose Interview, p. 6).

Ambrose and Best Practices. In order to provide students with expectations of his online course, Ambrose provided a course syllabus. Upon review of the syllabus, it included course goals and learning objectives. Tips for using course materials were provided in the syllabus along with a grading scale. Observation of the course discovered Ambrose also provided an audio file stating the expected level of student participation in the course.

Ambrose designated an icebreaker in the form of an online discussion forum so that students could introduce themselves to one another and talk about their summer as one means of communication in his course. Here students uploaded images and brief biographical information about themselves. Ambrose uploaded one of his audio files to provide information about himself such as his contact information and encouraged students to contact him. This information was found both in the syllabus and on the audio file. He primarily used the CMS features for many of his communication efforts including the announcement tool in Angel to communicate directions or course information with students and the mail tool for more personal course issues. Observation of Ambrose’s online class verified these means of communication were frequent. Additionally, information about office hours was provided on the syllabus and email or phone calls with the instructor were strongly encouraged to talk to the instructor about any course issues.
Ambrose assigned study groups to promote collaboration and support among students. However, students were on their own to determine the means of technology to use for the collaboration and Ambrose left the decision up to student groups. Students prepared a team presentation for their final exam grade as a result of this collaboration. As he explained “the presentation is done as a conference call and the teams send PowerPoint presentations before the call” (Ambrose, personal communication, September 18, 2014).

Ambrose’s online class used a variety of multimedia. His multimedia included video using Windows media, audio using MP3, and IPod technology using M4V files, along with more traditional use of PowerPoint presentations with voiceover. These options were given to students for a variety of access modes to the same content with active hyperlinks to this content. For example, observation discovered a student would find course content with three options to review and the entry in the Angel content module looked like the following:

- Lecture 1A - Data Analysis and Descriptive Statistics: Types of Data Sets (14 min)   Windows Media Video / Audio Only / iPod

In addition, live webinars directly relating to course content were employed and login instructions and access information were provided to students.

Ambrose stated his course was organized and easy to navigate. He provided students with a paragraph in his syllabus stating the learning sequence of events in his course. Direct observation verified the course was organized into modules that were labeled by unit numbers and week numbers and were all made available to the students at the beginning of the term.
Ambrose’s assessments consisted of quizzes that were automated through his CMS, applied assignments, and a team project; which was the final exam. Ambrose used the Gradebook feature of his CMS to post grades and give students access to their individual grades. Ambrose provided feedback in the form of overall comments on the completed assignments for grade and he used track changes to add comments in the students’ MSWord files. He provided options for peer review as part of one of his assignments where he required students to peer review one another’s’ assignments.

End of semester course evaluations in the form of an online survey were provided to students and were initiated at the school level of his program. Ambrose sought constant improvement in his online courses and in doing so stated he used the course evaluations to enhance his class. The survey purposefully included questions about his technology use, which Ambrose used for course improvement in this area. Ambrose commented on evaluation:

We use Angel’s formal course evaluation system, but we also collect our own data here at the university. And we have, while they’re on campus for residency, another set of feedback forms tailored to us. And then the director of our program meets with the students in what has been termed a town hall meeting and they are open and free to say anything they want in that meeting, and the director filters that and uses it to improve the entire program, but makes sure that feedback is anonymous and not attached to a particular student (Ambrose Interview, p. 10).
Access issues for students with disabilities were not addressed in Ambrose’s course. When asked if he adhered to ADA requirements, Ambrose responded, “no, I know we don’t adhere to ADA and it’s really bad, but we are working on that” (Ambrose Interview, p. 8).

**Ambrose and Best Practices for Technology Use.** Ambrose provided goals and objectives for his students in his syllabus, which is a general best practice for teaching, but along with this he included an audio file of his course expectations for the expected level of student participation in the course. Ambrose stated his course design was functional and easy to navigate. Modules were created to distinguish content areas and were labeled for easy access and organization.

Ambrose used many communication tools as evidenced by observation of his online course. At the beginning of the semester he added an “Icebreaker” forum for students to introduce themselves and add pictures if they so desired. For other communication tools, Ambrose used the CMS announcements function, audio files, and the CMS discussion forum feature. Interactive office hours were available using email or phone calls.

Ambrose provided information for technology support with links to internal help for an Angel tutorial and other links to technology resources that are system supplied by this CMS such as Google Docs, Skype and Doodle. His content modules provided a note about whom to contact for technical assistance if needed.

Ambrose’s course showed evidence of use a variety of technology tools and multimedia for content delivery. Ambrose used automated quizzes in Angel,
Webinars, and iPod technology. He used multimedia in his course to include Microsoft products like PowerPoint, audio, and video options for his content. Student group work cumulated in a presentation done using conference call technology. He employed live webinars for some class sessions.

Assessment/feedback opportunities were given to students in the form of quizzes, a term project, and a final exam. To provide feedback Ambrose used track changes to enter comments on assignments. A formal course evaluation was available to students at the end of the semester.

Brianna’s Profile

Out of a possible 9 points, Brianna scored 6.060 on the self-efficacy survey. Brianna was an Assistant Professor and taught on and off at the graduate level since 2006, online since 2012. She had a Ph.D. and was tenure track; teaching full time at the time of this study. Brianna taught face-to-face, online, and hybrid classes. She occasionally worked with a teaching assistant for her courses. The assistant gave her input into her course design since the assistant was a Ph.D. student in education and sometimes helped with research. Brianna also worked with an instructional designer on the technical stuff in setting up her course. She stated, “There’s an instructional designer that we work with. I put together all the materials and then the instructional designer helped put them into Blackboard” (Brianna Interview, p. 2). Brianna reviewed her interview transcript and made slight changes to clarify acronyms LTL as limited term lecturer, a position she once held, and to correct an acronym HBT to HPT, Human Performance Technology. She also added a side comment to expand on
her response to whether her CMS met her needs stating there was some difficulty with the automated grading feature. Other changes were from beta phone to data phone and live guide to LibGuide. And finally Brianna provided a clarification on how she provided student feedback for graded discussion forum participation in that there was a place in her CMS to add comments.

Brianna enjoyed teaching online and was comfortable in the online setting. She stated, “I feel successful and doing a good job but there are some areas to improve and create a good balance with the workload” (Brianna Interview, p. 4). Brianna liked both face-to-face teaching and online instruction, preferring a mix of the two. She could not decide on which she preferred saying there were a lot of other factors involved in this decision. She liked the interaction with Ph.D. students in the face-to-face classes she taught because the Ph.D. program within her department is fully face-to-face but she also enjoyed online teaching.

Brianna’s Technology Use. Brianna’s course was primarily asynchronous but she included some sessions with invited speakers that made for a synchronous component. The webinars were also recorded for later use. The course was taught using the Blackboard course management system. Brianna felt Blackboard largely met her needs. She did find some minor things irritating about this CMS such as issues with the automated grading process stating, “it [Blackboard] makes us instructors jump through hoops a little bit but I am sure every CMS has its’ own quirks” (Brianna Interview, p. 6).
Observation of Brianna’s online course confirmed she primarily used the functionality built into Blackboard such as modules, discussion forums, announcements, wiki, blog, assignments, and Gradebook. Direct observation found that Brianna’s course was built with the module feature found within Blackboard and she made available all content to her students all at once. Modules were labeled by week number. Brianna stated “I open it [content] up all at once. It’s chunked into weeks, but they can go into those weeks if they want to and see what’s coming up” (Brianna Interview, p. 18).

A variety of technology was employed in Brianna’s online class. This included the use of a blog, discussion forums, Adobe Connect live and recorded sessions, webinars, LibGuides (a content management system used by the library for links to electronic texts used in the course), and a course wiki. Brianna also provided students with hyperlinks to content related to the course. One of her primary technologies was blogs. She commented on her use of blogs:

We are using blogs, and the really high level purpose of the blog is to get them to connect the material to their own life, and I thought a blog is a good vehicle for that. So we have a number of different blog posts during the weeks (Interview Brianna, p. 7).

Brianna’s online class had a synchronous component. The course incorporated live sessions with guest speakers that were recorded through the Adobe Connect web conferencing platform and observation confirmed that students had access to the sessions throughout the semester.
Brianna said “I like to kind of bounce off the real students in these sessions and record that” (Brianna Interview, p. 8).

In thinking about whether she used more technology in her online classes, Brianna responded that it was “different technology for different purposes” (Brianna Interview, p. 8). She tried new technologies in her online courses and stated she liked to try new technologies but did not like to take risks. Brianna stated:

I wouldn’t say I like to take risks necessarily with technology. Before I want to use something, I really spend some time. For instance, talking about this blog thing with the instructional designer and trying to make sure it would work the way I thought it would work, because especially with such short courses, if we make a mistake, we could really lose too big a proportion of the students’ time, so I want to make sure that we do—well, at least even if it’s a little bit quirky that it will do what we think it’s going to do (Brianna Interview, p. 9).

Brianna did not have a multimedia component such as audio and video to here course. However, Brianna felt technology was crucial to her course and her technology was set up in such a way so as to promote student learning. She said student engagement was also supported by her technology use. Brianna pointed out “my students are engaging constantly with the discussion forums and blogs, so without those the course would look very different” (Brianna Interview, p. 10). Brianna pointed out that her course “would be radically different without technology” (Brianna Interview, p. 9).
Brianna and Best Practices. In order to provide students with expectations of her online course, Brianna had a course syllabus, which included all assignments with their point values. The syllabus also contained an active participation statement to advise students how they should participate in the course activities. Detailed goals and objectives for the course were found in the syllabus. Brianna provided the syllabus as an MSWord doc with several hyperlinks to resources needed for the course.

One way Brianna communicated with her class was to provide a brief biography and an image of herself for students as a way of introducing herself. An introductory announcement was emailed to all students and a blog was available for students to introduce themselves to each other. Observation verified that Brianna had frequent communication with students. Announcements were sent throughout the semester. Virtual office hours were provided upon an email notification to the instructor. Blogs were used in Brianna’s online course as the primary tool for online discussion and as a graded assignment. Students were responsible to maintain a blog throughout the entire semester and blog posts were available to all students. Sample posting ranged from article reviews to personal inventories and reflections.

Collaboration is a valuable component of best practices. Brianna’s course made use of teamwork. There was a collaborative group assignment to create a wiki in her course. Blackboard has a wiki feature built in if the instructor chose to activate it. Students also participated in discussion forum activities for a grade and had to comment on other student posts.
Brianna’s stated that she did not use multimedia such as audio and video in her course with the exception of what Brianna considered a video recording. This was the use of recorded Adobe Connect sessions. Sessions were recorded live so that students could view and listen to guest speakers at the time of the live recording as a synchronous component or students could view the session at their own convenience. When asked if Brianna used video she responded that she considered these Adobe sessions as informal video sessions because she recorded the sessions live and used the Adobe sessions as video recordings.

Brianna stated her course was organized and there was evidence from the direct observation that it was. The course was organized into weekly content groupings. Instructions were given to students on how the course was organized and this helped with course navigation. Content was available in the weekly modules and available all at once to students at the beginning of the semester. Students could work ahead if they wanted.

Brianna had several assignments to assess students. Brianna gave feedback on everything her students were assigned, blogs, discussion forums and individual projects, which included a performance assessment and an evaluation plan. She provided feedback in two ways. The first was a completed grading rubric and the second was to add comments using track changes within the document file itself. Brianna included one discussion forum activity that involved student peer feedback on their plan assignment. Brianna used the Gradebook feature in Blackboard to give students access to their grades throughout the semester. She directed her students to an end of semester
course evaluation that was administered by her school. The survey purposefully included questions about her technology use, which she used for course improvement.

Brianna reported that she was not ADA compliant in her online courses and there was no evidence in her course that she was, however, she stated that if a student made her aware of the need she would figure out how to be compliant.

_Brianna and Best Practices for Technology Use._ Brianna provided goals and objectives for her students. Her syllabus included expectations on assignments and point values along with an active participation statement including etiquette for online discussion courses. Although a syllabus is a known best practice for teaching, Brianna’s syllabus contained several hyperlinks to pages relating to university policies and regulations and course reading materials. Brianna’s course design was functional and easy to navigate. Modules were created to distinguish content areas and were labeled by week number for easy access and organization. Brianna’s course was mostly asynchronous with some synchronous aspects.

Brianna used many communication tools. These included features of her CMS such as email, announcements, discussion forum, and blogs. Virtual office hours were available for individual students or for groups. Brianna used Adobe Connect to meet with students and recorded the session as a synchronous event to be shared with other students.
Brianna stated she did not make students aware of technology support. But support was built into her CMS if needed. Direct observation verified that Brianna’s course showed evidence of use a variety of technology tools but nothing in terms of multimedia for content delivery. Brianna used text based documents and PDF files. However, Brianna considered her Adobe recorded sessions as a kind of video she provided for her students.

Assessments were provided in Brianna’s class. These included individual written assignments, blog posts, and discussion forum participation. Feedback was given to students. To provide feedback Brianna used track changes and a grading rubric. A formal course evaluation was available to students at the end of the semester.

Carla’s Profile

Out of a possible 9 points on the self-efficacy scale, Carla scored 6.727. Carla was an Assistant Professor and had 8 years experience teaching online. The bulk of her teaching experience was 24 years in K-12 and 6 years as an adjunct in higher education teaching both undergraduate and graduate levels. She had a Ph.D. and her current position while full time was non-tenure track. Carla taught face-to-face, online, and hybrid classes. She had the benefit of a graduate student assistant if she needed help with her online class. She stated she consulted with her assistant pretty regularly as a technology mentor for her online course. Carla reviewed her transcript and made slight changes for clarification that some of her teaching experience was as an adjunct.
Carla was troubled at first when asked to teach online. It was mostly due to the complex content of her particular courses. But she found she liked teaching online and discovered benefits to providing more hybrid components. She felt she was successful because she created a course to be an online class and did not transition it from face-to-face. She was tempted to say she preferred online teaching because she was a techy person but stated she preferred face-to-face classroom teaching. If given a choice her class would be face-to-face again because of the nature and complexity of the content.

Carla’s Technology Use. Carla’s course was delivered via the course management system Blackboard. It was mostly asynchronous but had some synchronous components, for example, a required live chat session for a class activity. Carla viewed Blackboard as a portal to deliver content and an access tool. She took advantage of the Blackboard training at her university before her school year started. She stated she recently began to use Blackboard more interactively adding announcements, resources, and updates and found it to meet her needs.

Carla used the functionality built into Blackboard to include email, announcements, modules, calendar, discussion forums, Gradebook, and chat. (It should be noted that direct observation discovered that Carla found the Blackboard chat feature later in the semester and held only two chats. At the time of the interview she was not aware of the chat feature.) Direct observation of Carla’s online course showed it was arranged into modules and in relation to this she stated, “I had all the content based on modules populated into Blackboard,
and again I released that as we went” (Carla Interview, p. 9). She did not give her content to students all at once.

Carla spoke to her technology use in her online course in comparison to use in her face-to-face classes stating:

I can’t say that I’m using more technology devices. I mean, I’m using those devices with greater frequency and greater intensity, but I can’t say that I’m using more tools. Not yet, anyway, because I don’t know how to do VoiceStream yet (Carla Interview, p. 10).

Carla stated she absolutely liked to take risks and try new technologies. In fact, she mentioned “I probably tries something new every month or so” (Carla Interview, p. 11). There was evidence from observing Carla’s course that this was true, i.e., her use of the chat feature. She felt the upfront time put into learning new technologies such as automating testing was worth it. Carla discussed how she felt about trying new technologies and whether she was willing to try new technology in more detail:

New technologies…Yeah, the audio feedback was one that’s new. I’m learning about VoiceThread, but I’ve not used it yet. The Gradebook is new for me. To be able to do things in a grade book I took the test and put it online. That was really hard. It took a lot of time on the upfront getting that in there, but once it was in there it was wonderful, because I could just do it (Carla Interview, p. 11).

Observation of Carla’s course confirmed she used a variety of technologies in her course and she stated she used many of the same from her
face-to-face classes in her online course only with “greater intensity and greater frequency” (Carla Interview, p. 10). Some of these technologies, in addition to the features of the CMS which included assignment submission, discussion forums, chat, and Gradebook, were the weekly video updates that she created, YouTube video, and she made Podcasts to upload to her CMS content. Carla discussed her use of YouTube stating:

I used YouTube to upload my Camtasia videos. As soon as I captured the video, I deleted it and uploaded it to an unlisted YouTube spot. They are basically of me as a talking head with the PPT in the background. There were times when I used other YouTube videos to illustrate a point, but mostly, the YouTube was a portal for me to upload my content (Carla, personal communication, December 23, 2014).

Carla created Podcasts to use for audio feedback for her students. Carla described this technology use as:

I’m looking at their paper, and I would make commentary on their paper, like track changes, but then I would walk through, actually verbally discuss and give them feedback, and then also give them praise, and then I would give them their score, and then I would upload that Audacity file (Carla Interview, p. 10.)

Technology was very important to Carla’s course delivery in particular “having it be intelligible and work well, that it works consistently is important so if it is not working I am really irritated” (Carla Interview, p. 11). Carla discussed how the technology adds to student engagement in her course:
I think they have to be engaged. I think because it’s online and because there’s particular timelines, for instance, with forum postings they had to have their first posting up by Thursday of a given week, and they had to have their final responses in by Sunday at 1:00, and so I think they have to be engaged. (Carla Interview, pp. 12-13).

Carla and Best Practices. In adhering to the best practice of setting online course expectations, Carla had a syllabus that included course goals and objectives and grading rubrics. The course was described in the syllabus along with the national standards to support the subject area.

Communication as a best practice was evidenced in Carla's online course. Carla provided a few introductory pieces about herself and the course including information in the course syllabus and a bio and picture of herself in the main content area of Blackboard. She encouraged interaction and student introductions using the discussion forums for students to tell others three things about themselves. Carla used discussion forums for a few purposes. One purpose was to allow communication among members of the class; another was as an assignment to grade a discussion of a course topic. Carla frequently communicated with her students using audio and video formats.

Collaboration is a big part of best practices. Carla created student collaboration projects. She required students to work together in teams for an assigned discussion forum posting. She used a feature in Blackboard to facilitate this activity. Blackboard enabled the group to upload their work to one place. Her
requirement for the project also involved the use of technology for the final delivery of the assignment, posted for the entire class to view.

There was a good variety of multimedia used in Carla’s course. For example, Carla used imbedded video and audio in PowerPoint presentations of course content. She also required students to present group projects using multimedia such as a video. Carla used video and audio for feedback on assignments. Carla considered this use as one of her personal best practices.

Carla stated her course was organized and there was evidence from the observation that it was easy to navigate. The course was organized into modules with weekly content groupings and reminders were sent on a weekly basis, advising students of what was covered for that week. She had a message associated with content that stated, “begin here”, (Carla Course Observation).

Several assessments opportunities were given to students in Carla’s class. Carla used online discussions, a collaborative journal (which was a two way dialogue), chat room discussion, group project, and individual field based experience project to assess students in her class. Carla provided feedback on student discussion forum posts as an additional post to the original post. She commented that for graded assignments “I give them a score and then I give them audio feedback. The audio [feedback] is done in Audacity and I add it as a file to the comments” (Carla, personal communication, September 17, 2014).

Students had the opportunity to provide peer review of other students’ comments and another opportunity to give feedback to fellow students in a
live chat session. In addition, Carla used the Gradebook feature of her CMS and regularly updated it with grades so her students knew day to day how they were doing in the class.

Students were given the option to complete a formal end of semester course evaluation survey. The survey links were distributed by the university and included questions relating to the technology use in the online class at Carla’s request. Carla used the evaluation for future course improvements in all areas.

Carla reported that she was not ADA compliant in her online courses, however, she stated that if a student made her aware of the need she would figure out how to be compliant. After observing Carla’s course, there was evidence that she was compliant to some extent. For example, she had aspects of audio and video that included a text transcript of the same lectures.

Carla and Best Practices for Technology Use. Carla’s stated her course design was functional and easy to navigate. Modules were created to distinguish content areas and were labeled for easy access and organization. Carla provided links to Internet resources directly related her content area stating: “each week they [students] have readings. Some are online with an URL. I even show them how to get to the URL. Silly, but I do have some practicing teachers who are very novice at technology” (Carla, personal communication, December 23, 2014).

Carla used a variety of tools to communicate with her students. She posted a picture and short biography of herself and required students to introduce themselves in a discussion forum. Other means of communication...
included PowerPoint presentations with embedded audio and video, email, and announcements.

Aside from the support for technology provided in Blackboard for the available tools in Blackboard and how to use them, Carla provided additional assistance for the technology used in her class; for example, she included a link to a YouTube video to help students upload an assignment that required the creation of their own video.

Carla’s course showed evidence of use a variety of technology tools and multimedia for content delivery. In addition to the Blackboard technology, she used Camtasia to create a lot of videos. Carla used multimedia in her course to include audio and video options for her content, and YouTube video to build context for particular things covered in the course. Student group work cumulated in a presentation done using conference call technology. She employed live webinars for some class sessions.

Assessment and feedback opportunities were given to students. Carla used several student assessment methods in her class and when providing feedback, Carla prepared her review of the assignments as audio files and an assignment rubric was attached to all assignments receiving grades. Carla stated, “I provide [rubrics] for everything. I give [students] comments in each area so they have very specific feedback” (Carla, personal communication, December 23, 2014). A formal course evaluation was available to students at the end of the semester.
Doc’s Profile

Out of the 9-point potential score on the self-efficacy scale, Doc scored 5.787. Doc was an Associate Professor and taught for 36 years, 5 years of which were spent teaching online classes at the undergraduate level. He had a Ph.D. and was tenure track, teaching full time at his institution. Doc taught face-to-face and online classes. He did not work with a graduate assistant but occasionally had the assistance of Ph.D. students in his program with his courses. Since they were students in the Collection of Education specializing in technology related areas, Doc worked closer with the assistants when he developed his online course. Doc had received teaching awards in his tenure as an instructor. Doc reviewed his transcript during member checking and made no changes.

Doc had mixed feelings about teaching online. He liked the fact that he could teach from anywhere at anytime, even home, but he missed the face-to-face interaction with students. He found that most students had misconceptions about online classes due to all the advertisements they saw on TV that claimed that you only need one night a week to complete a course. He heard a lot of grumbling from students when they realized they had to work in his class more than one night a week and it was not an easy online course. Doc stated:

They expect it [the online course] to be very light reading; they expect it to be a lot of rote learning, that kind of thing. And that’s exacerbated by the fact that it’s a summer course, which they expect to be easy. And so the upshot of all of that is that when a course is not like that, you get some
grumbling students, you get a lot of drops, you get a lot of students that
don't perform well (Doc Interview, p. 3.)

On a scale of 1-10 for how successful he was with his online teaching,
Doc felt he was an 8 and was doing a good job but it could be better. If given a
choice he would teach online but he liked both face-to-face and online
instruction.

Doc’s Technology Use. Doc’s course was entirely asynchronous and
content was delivered through the course management system Blackboard. He
stated he moved his existing face-to-face class to the online environment and did
not use any technologies other than the features available in Blackboard. Doc
stated “technology was probably not that important, because I really don’t do
much what I think about as the fancy stuff” (Doc Interview, p. 7).

Doc’s course was built using the modules feature in Blackboard. Direct
observation of Doc’s course showed the modules were labeled by course specific
content areas and all content was available at the onset of the term. Doc
commented on his course content:

I give it to them all at once except for the study guide, which I post about a
week and a half before each exam. I don’t make the exams accessible
until that time, but other than that it’s all in front (Doc Interview, p. 12).

Doc stated that he did not use more technology teaching online than his
face-to-face courses but did begin to use the online assignment tool in
Blackboard as a result of teaching online. Doc added links to websites relating to his content. He was willing to try new technologies but mentioned:

> I routinely explore new things. I’m not sure I would say I’ve gotten as far as trying them, actually trying them in a course. But I fairly routinely meet with various tech people on campus, maybe three, four times a year if something new comes up and talk to them about it and get excited, and then end up really not implementing them (Doc Interview, p. 6).

The types of technology that Doc used in Blackboard included the calendar feature, modules, discussion forums, Gradebook, and the assignment tool. He felt strongly that Blackboard met his curriculum needs saying that he probably only used a small percentage of its functionality. Doc commented on his technology use:

> It's pretty bare bones, probably relatively speaking. I load the readings up, I load the lectures up. There’s a discussion board for each of the exams. There are writing assignments that I use the assignment tool for and then there’s the online exam. And I provide links to various websites, but that's kind of it (Doc Interview, p. 5).

Doc went on to state that technology was very important to his class, saying

> Clearly without the technology, it wouldn’t be a doable thing. I don’t know what I would do without the exam tool other than sending the students a file with the exam and then they would type into it and send it back to me as an attachment (Doc Interview, p. 7).
Doc and Best Practices. In order to provide students with expectations of his online course, Doc’s syllabus and a course agenda were distributed via the CMS content link. The syllabus was a text based MSWord document with one hyperlink to a website to purchase the course textbook. Course goals and expectations were stated here. Observation confirmed other course expectations were sent in the form of weekly announcements through the CMS announcement feature.

Following the best practice of communicating with online students, Doc sent a welcome message in the form of a course announcement. Email was used more for introductory announcements and directional information. Office hours were not fixed but Doc provided assistance on course related issues via email. Doc encouraged interaction and informed students they could contact him with questions. He sent several emails to students with various messages about the course and encouraged students to communicate with one another and stated this was the most used means of communication between students and the instructor. Discussion forums were used in Doc’s online course to allow students to talk to one another and ask questions about course content. The forums were not for a grade but rather a way in which students were encouraged to help one another with course content matters. Doc stated that these forums were the only place for students to communicate with one another.

There was not a great variety of multimedia used in Doc's online class. Content was text based MSWord documents and some PDF files. Doc stated that his course was “bare bones” and the observation of his class identified there
were many text-based lessons. All course content was loaded into Blackboard and made available to the students from the onset of the semester. As stated above, course content was mostly text-based and Doc provided something he called e-lectures to present content to students. He described these as “working much as his in-class lectures are designed to do”, (Doc, Course Observation).

Doc stated his course was organized and there was evidence from direct observation that it was indeed organized. The course was arranged in modules. Students were given a link on how to use Blackboard and where to go for Blackboard support. He also pointed his students to web content relating to the course.

Doc had several assignments to assess students in the course. He used the automated assignment tool in Blackboard to create exams and students had access to the Blackboard Gradebook to keep track of their course grade. Doc stated that the reason he began using Blackboard in the first place was for this very feature. For feedback on assignments Doc stated:

For editorial assignments, I provide feedback in several forms: in track changes (mostly for grammatical things), in comments, and an overall paragraph-long set of comments in the comment box of the assignment tool. For the “knowledge checks”, I not only provide a key comprising answers to the questions, but I also sometimes provide feedback to specific answers if I see a nasty pattern emerging (Doc, personal communication, September 17, 2014).
Doc distributed a final end of semester course evaluation using Qualtrics, a method of distributing online surveys. He said because he taught his course during the summer he had to distribute the survey himself. Doc did not include questions on technology use in his class.

Doc reported that he was not ADA compliant and there was no evidence in his course that he was, however, he stated that he had never had a need for it and would adhere to the standards if he was made aware of the need. In a comment about his course Doc said, “all told I guess I’m probably more old school than I typically like to think of myself as, but I try to provide a pretty good learning experience” (Doc Interview, p. 12).

**Doc and Best Practices for Technology Use.** Doc provided the goals and objectives for his course in his syllabus. Here he mentioned the amount of time students will need to devote to the course and included his grading scale and assignment descriptions. Doc stated his course design was functional and easy to navigate. He used the module format in his CMS to separate content by broad subject areas and also included a Table of Contents for each module. Doc provided links to Internet resources directly related his content area such as overviews and program evaluations for his subject area. For communication tools, Doc relied on course announcements that also generated email messages to his students. Doc provided opportunities for office hours and discussion forums were activated so students could interact with one another.

Observation of Doc’s course found the technology tools that Doc employed were all found in Blackboard and included the automated assignment
tool, announcements, discussion forums, Calendar, and Gradebook. Doc provided support for technology. Students had access to a “Student Help” link in Blackboard for support on common tasks in Blackboard.

As for multimedia use for content delivery, Doc uploaded text based MSWord documents and PDF files. Doc stated he did not use audio such as podcasts or any video in his class.

Assessment and feedback opportunities were given to students in Doc’s course. Doc assigned writing assignments and three short answer knowledge checks that were exams for a grade. To provide feedback Doc used track changes in the assignment documents and added comments to the Blackboard assignment tool itself. A formal course evaluation in the form of an online survey was available to students at the end of the semester.

Comparison of Case Studies

Themes developed from the various types of interview questions and observation data and are presented below. A sample of the theme development from the first pass at the data and the coding done using an Excel spreadsheet is found in Appendix H. Themes were created based on common elements in the participants’ coded responses, refer to Appendix I.

Themes From General Interview Questions

The second set of interview questions addressed the participants’ course description in general. The themes that emerged determined all case study participants had online teaching experiences in common. These included: prior
experience creating online classes, need for lead time to develop an online class, help from an instructional designer, self taught on technology, use of the university supported CMS, and technology support and training available for online teaching.

All case study participants had experience creating an online class. Three participants created a course for online only and one transitioned a face-to-face class to online. One participant took over an existing online class and heavily modified it. Lead-time was anywhere from several weeks to a full semester but all needed time to create their online class. Doc stated it took him a full semester. Carla stated “it only took her a month to create her online class because she was familiar with the content and the online tools” (Carla Interview, p. 1). Brianna worked on her course for two months saying:

I modified it last year and then I modified it again this year, and in both cases I spent, I mean, not full-time, but several weeks intensively going through all the materials, rewriting things, and readjusting the schedule. Then, as you probably know, in this program multiple people teach each course, so I got input from the LTL (Limited Term Lecturers), especially last year, and did further revisions, so it was over a period of, I mean, altogether probably a period of two months, obviously not working full-time on it (Brianna Interview, p. 1).

Ambrose also had previous experience with his course and stated:

I had a few months to prepare. Coincidentally, I had also TA'd the course before, so I was familiar with the content and what the learning objectives
were, so that helped reduce the amount of time required to prepare
(Ambrose Interview, p. 1).

Instructional design help was sought and used in all cases. Ambrose had
the benefit of an education specialist assigned to his program to help with
instructional design and delivery of online content. Brianna worked with a
professional instructional designer from outside the university and also had the
support of an instructional designer from her department to put things in her CMS
and to do a lot of the up front technical stuff to save time. Brianna stated:

There’s an instructional designer that we work with. Generally, I put
together all the materials and then the instructional designer
helped put them into Blackboard, and then I revised them further in
Blackboard. So I think she is doing a lot of the technical stuff which
I feel like I would be able to do, but it saves me time to have her do
it (Brianna Interview, p. 2).

Carla had the support of an instructional designer from her program and Doc had
assistance from two Ph.D. students from the College of Education who were
concentrating their degrees on instructional design to help with his course.

The availability of technical support for an online class was another
common theme. All participants had technology support when needed to trouble
shoot issues with their online class. This support was available to both instructors
and students. Carla mentioned that she was blown away by the amount of
technology support her institution had saying “we have a Dean that is connected
to us” (Carla Interview, p. 4). Carla said there is technical support for both the
faculty and students. Doc referred his students to IT support if they had technical issues. Brianna used her instructional designer for technical support and Ambrose stated that support was available when needed. All participants provided students with information about how to get technical support if needed particularly for Blackboard or Angel support. Instructions and links to campus technology support were available on syllabi and available in the CMS.

All participants stated they were self-taught on any technology used for their course and had no formal training on the technology for the CMS. They were aware of training for the CMS but jumped right into the system to set up their course without formal training with the exception of Carla who attended a Blackboard training session. Doc stated “other than a few workshops here and there, I’m pretty much self-taught” (Doc Interview, p. 1).

Another common theme that developed from the data from general interview questions was the use of a CMS. All case study participants used the CMS supported by their respective university programs. Ambrose spoke to this:

We’ve made the decision in our program to exclusively use Angel because we want to make it as easy on the students as possible. That way they only log into one place. They only have to worry about going to one place to do that. So for me as an instructor, that particular decision is out of my hands (Ambrose Interview, p. 2).

Brianna stated “my understanding is that we need to use Blackboard” (Brianna Interview, p. 2). She did not seek other technology for her blogs but used this feature in Blackboard. Carla stated “I think I’d probably have to be bridled to
Blackboard, but if I wanted to branch out and use a different framework I think they’d [the department] be open to it. I’d just have to go back to them with evidence” (Carla Interview, p. 3). Doc was in agreement stating, “what they’ve done with Blackboard, my understanding is that we’re pretty much limited to that” (Doc Interview, p. 1). Related to this was the theme that the CMS met course needs. Ambrose went on to speak about this. He said, “Is it meeting the needs? Yes, absolutely. The students seem to be able to navigate it okay” (Ambrose Interview, p. 4).

Themes From Interview Questions and Observations on Technology Use

Common themes were found in the third set of interview questions on technology use in the participants’ online classes. These included asynchronous course format, CMS functions used, CMS for online course delivery meets needs, and prevalent use of discussion forums. Other common themes that resonated from the data were: willingness to try new technologies, technology importance to course, technology essential to student learning and enhanced student engagement, and not being cutting edge in their use of technology.

An asynchronous format was the most common course set up. If there was a synchronous component, it was with the use of webinars with invited speakers, live chat sessions and Adobe Connect sessions. Three case study participants used a combination of asynchronous and synchronous design.

All participants used the functionality of their CMS to deliver course content. This allowed the instructors to set up their courses with modules, provide an email component, and use the discussion forums, announcements,
and Gradebook features. All found their CMS to be sufficient for their course needs.

From a review of the questions on the types of technology used in the online courses, a common theme was the use of discussion forums. Discussion forums were used for a variety of reasons such as for communication to promote interaction, assignments to discuss the readings, and a place to post assignments. All participants required students to participate in online discussion forums for one of these uses. Discussion boards or forums were a common form of assessment tool for course content knowledge and also served as means for communication between students and instructor (e.g., “ask a question” forums). Most case study participants provided introductions about themselves and required students to introduce themselves using these forums.

All participants shared a willingness to try new technology when they perceived it to be beneficial to their course. Ambrose stated that he liked to take risks and try new technologies in his online class. Brianna said she liked to try new technologies but before she used something she would spend some time with it. For Doc the use of the automated assignment tool was new.

Another commonality among participants was the statement that technology was important and technology was essential to their course. Doc said that he did not use a lot of technology in his course so that it was not important to him but he did say “without technology the class would not be doable, for example, the online exam tool is indispensible” (Doc Interview, p. 7). Brianna said “technology is essential for student learning in my online class due to the
way the class is set up, the course would be radically different without
technology” Brianna Interview, p. 9). Carla said “technology is essential for
student learning in my online class” (Carla Interview, p. 12).

An interesting theme was that each participant felt they were not cutting
dge with the use of technology in their online course. Ambrose, for example,
said he was not cutting edge and went on to expand:

I think there are some folks out there that are doing more innovative things
than we are, but we're definitely ahead of the curve, if that makes any
sense. I don't dedicate the time to be on the cutting edge. Would rather
see others push the cutting edge and follow closely behind with those
technologies that have the greatest potential (Ambrose Interview, p. 7).

Brianna said she was not cutting edge and not an early adopter of new
technology. “I'm not afraid of technology but not rushing out to find the newest
thing” (Brianna Interview, p. 10). Carla said “cutting edge is not a good title for
me, there is more I have to learn” (Carla Interview, p. 13). Carla expanded on her
comments:

I still feel new to BB. I know how to use it, but sometimes, I have to think
twice about where to host something or begin a specific tool, so I don’t
have automaticity with BB yet. Also, I want to use VoiceThread and
although that was a hope for this term, it did not materialize. Also, in
looking at the technology surrounding MOOCs, I think there is so many
more slick things we can do with video capture (Carla, personal
communication, December 23, 2014).
Doc said:

Ha, in the context of my department and my faculty colleagues, yes, I am way beyond the edge. I may be the only guy out there at the moment teaching an online course. Most other folks (in my department) are not. Online courses are not really highly valued or thought very highly of among my colleagues. I suspect if we’re talking about faculty who teach online across the country, I would say I am way behind the curve (Doc Interview, p. 7).

Themes From Interview Questions and Observations on Best Practices

To further understand how higher education online instructors with perceived high self-efficacy use technology in the online classroom, a set of best practices for the use of technology in the classroom was employed, refer to Appendix E (California State University, Chico, 2011; Attardo et al., 2007). Interview questions were asked based on this list and the observation rubric was centered on this same set of best practices. Themes developed from the last set of interview questions on best practices in online instruction and technology use in the online classroom. Many commonalities were found among the case studies for known best practices such as online class was organized, syllabus provided, technology support available, office hours offered, communication through email, feedback given, and course evaluations required.

Most of the best practice standards added to the observation protocol were found in the participants’ online courses. Table 4 represents whether they were present in the participant’s course by the inclusion of an X.
Table 4: Best Practices for Technology Use in Case Study Online Courses

<table>
<thead>
<tr>
<th>Best Practice Element</th>
<th>Percentage</th>
<th>Ambrose</th>
<th>Brianna</th>
<th>Carla</th>
<th>Doc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide goals/objectives</td>
<td>100%</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Syllabus with Hyperlinks</td>
<td>25%</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Introduction of instructor (audio, video or image)</td>
<td>100%</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Organize into modules for ease of navigation</td>
<td>100%</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Provide means of communication</td>
<td>100%</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>x</td>
</tr>
<tr>
<td>Instructor presence in the course</td>
<td>100%</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Discussion forums/boards</td>
<td>100%</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Links to Internet Resources</td>
<td>50%</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Offer guidelines for technology support</td>
<td>100%</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Provide instructions on where to get tech support</td>
<td>100%</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>CMS</td>
<td>100%</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Multimedia for content delivery</td>
<td>50%</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Use asynchronous only</td>
<td>25%</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Use both asynchronous and synchronous activities</td>
<td>75%</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Feedback</td>
<td>100%</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ADA Compliant</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The theme of “my online class was organized” resounded from all participants. Organization was very much related to course navigation, ease of finding something, similar content in modules. All case study participants felt their online courses were organized. Organization of the course was achieved from the use of CMS features. The most common was the use of separate modules
for weekly content or topics. Modules were generally numbered with a week number (for example Week 1, Week 2) to keep them organized. Brianna stated:

I’m really hoping that it’s self-explanatory the way that the course is organized. I really worked on it this time and so far I’ve gotten some good feedback from the adjuncts [that teach the course] that said they thought it was well organized (Brianna Interview, p. 17).

Technology support was another common theme and available to all participants at their respective programs to both faculty and students. Ambrose, Carla and Doc said that they had technology support available to them. Brianna had technology support if she needed it but her first place to go was her instructional designer. All said that technology support was available to the students.

Availability for office hours resonated among the participants. All had a means to provide office hours such as by phone, Skype or by email. Adobe Connect was another option for office hours. Times varied and scheduling was important. Ambrose stated:

I do think in my syllabus I have some time set aside that I promise to be available by phone if they want to call, but I tell them that if they have a question I’m on email 18 hours a day. If they want a phone call, it’s probably best to schedule a time because I get pretty busy, but if they drop an email and give me a time that works for them, I’ll try and make it work for me, too (Ambrose Interview, p. 8).

Carla commented:
I post my office hours in the syllabus. I remind them that I will be here at this time. Because it’s an online class, what I do is we can talk on the phone, we can Skype, etc. I find that mostly we resolve our issues through email, if there are some (Carla Interview, p. 14).

A very common theme was the use of email as a communication tool. Communication was primarily done using email sent from within the CMS. Email was a technology tool used most often for participants to give directions, reminders, and general correspondence. Email was built into the CMS and allowed for all students to be copied in an email notification for many purposes.

Feedback was mentioned by all as something that was done regularly in their online courses. Feedback is another valued best practice. It was built into the online courses as a means of assessment and participants used various means to provide feedback on assignments for a grade. Some involved the use of technology to give audio feedback. All participants gave feedback on course assignments. Brianna said she gave some feedback in the form of personal comments on everything her students did. Brianna said that Blackboard had a place to give feedback. Doc gave detailed feedback on writing assignments through his CMS feature.

Course evaluations were required of students by all case study participants. Performing a course evaluation is a best practice. The online courses in the study had an end of semester course evaluation form for students to complete that was provided to them as a link to a survey tool. Two participants did mid semester evaluations in addition to end of the semester. All used the
electronic survey tools as a means of delivery and most were initiated at the school level. Doc stated “I distribute the end of semester course evaluation because I teach in the summer and the program only has a system for doing course evals in the main semesters” (Doc, personal communication, September 17, 2014).

Instructor Based Innovation for Best Practices

Case study participants were asked in the final set of interview questions to comment on whether they had their own set of best practices for teaching online. A set of best practice interview questions were asked of all participants but this question spoke to personal practices. Examples of best practices were given to help with the responses. Two participants did not have a response and felt they had to think about this question. Ambrose responded that he did not have a set of written best practices. Brianna responded similarly to Ambrose saying “I probably do, but I don’t have them written down. I think maybe they’re heuristics in my mind, but I don’t know; they’re not formalized” (Brianna Interview, p. 18).

Two participants did have their own best practices for their online courses. Carla said that her best practice was for her method of feedback to students stating:

I think probably one of them is the video update, where I do the synthesis and the praise. I think that’s a best practice. And I know that it’s a best practice based on the number of hits I get on the viewing of the videos, so
I love that feature of knowing that. I think another the audio feedback. I can't claim origin to that. That was something that was suggested to me. I think it's a way of extending my identity outside of the online course, is being able to give a voice and texture to my personality and my leadership as a professor. So I think the audio feedback is helpful and I think the written feedback along with that audio is helpful. (Carla Interview, p. 19.)

Doc had much to say about his own best practices. His thoughts follow:

I would like to think that I'm responsive to students’ needs and problems as they come up. I like to be as open and honest with students as I can be and I also try to be, within reason, fairly demanding of students. I try to make the course interesting, engaging but very demanding. So much so that they work so hard but they like the class. I try to provide a pretty good learning experience (Doc Interview, p. 12).

Summary

This study revealed that the case study instructors had similar backgrounds, all with Ph.Ds. teaching in higher education, and in online classrooms. They had many things in common with their technology use and adherence to best practices. The sample was an experienced group of higher education online instructors. The Sense of Efficacy for Online Teaching Scale ensured that they all had a perceived sense of high self-efficacy for online teaching. Cross case analysis confirmed common themes that developed from the data. All participants liked teaching online and adapted to the online
environment feeling that their courses were good but could be better. All participants used the CMS chosen by their respective programs to deliver their courses along with using a variety of the functionality that the CMS provided. The majority of the participants used multimedia such as audio and video to deliver content.

Among the cases were strong examples of best practices for online teaching and technology use. A common theme across all case studies was that technology was essential to student learning and engagement with course content. Participants strongly stated that their courses were organized and easy to navigate. The most common format was the asynchronous environment with all content given to the students at the onset of the course. All used the CMS module function to organize their course. In addition, data revealed that online instructors were willing to try new technologies in their online courses. Most provided options for technology support. All encouraged communication with the instructor and other students. The communication tools most widely used among all participants were email and the CMS feature for course announcements. All participants provided office hours and ways for students to interact. The most common form of interaction between students was the discussion forum.

The abundance of these common themes indicated that online instructors do indeed make good use of technology in their online classes to replicate similar experiences to traditional F2F teaching and online instructors follow a set of best practices for teaching with technology in the online classroom.
CHAPTER 5: DISCUSSION

Introduction

Higher education instructors must face the reality that online instruction is a steadfast component of academia today. Moreover, they may find themselves in the online teaching environment at some point in the near future. The pervasive nature of technology and online education is bringing widespread changes to education of all levels – especially higher education. In order to deliver effective instruction to online students, instructors have to navigate the many technology options available to them and follow a set of best practices for teaching online. This qualitative study explored how higher education instructors with perceived high self-efficacy for online teaching used technology in their classrooms and how the use was comparable to a set of best practices for technology use in online classes. The following research questions guided data collection and analysis in this study:

1. How do higher education online instructors with a perceived high sense of self-efficacy for online teaching use technology in the online classroom?
2. How is the technology use of higher education online instructors with perceived high self-efficacy comparable to best practices for use of technology in online teaching?
3. Are higher education online instructors following a set of common best practices for online teaching or are they creating their own best practices?

In answering the research questions, data ranged from not particularly interesting to significant. For example, common themes on the importance of the CMS functionality to online course delivery and on the use of discussion forums tended to be highly essential components of online teaching. Herrington et al. (2000) stated the benefits of using technology for delivering content in online classes outweighs the benefits of any traditional approach. Prior research agrees that it is essential for instructors to optimize technology and use a set of best practices for teaching online (Herrington et al., 2000; Bates and Poole, 2003; Boettcher, 2011). Further, evidence of common best practices was found in all case study courses. The concluding chapter that follows discusses results for each research question and offers implications of this study for self-efficacy, higher education administration, and online instructors. Limitations of the study are addressed and suggested areas of future research are recommended.

Discussion of Research Question 1

Successful online education emphasizes the use of technology (Koller et al., 2006; Bigatel et al., 2012). The use of a CMS supported by the university was common among all case study participants for course delivery. The CMS was used not only for course creation, delivery and management but also the many CMS’ features such as email for communication, modules for organization, discussion forums, and Gradebook were highly used. CMSs offer multiple
functions to meet the needs of most aspects of course delivery matching those of face-to-face environments.

CMSs are common at the university level and use of a CMS was an easy choice for case study participants. Universities offer training and support for the CMS for both faculty and students. Fish and Wickersham (2009) and Signer (2008) reported an institution’s willingness to invest in technology support and ongoing training is a key component in the successful online course. Universities have a large investment in the CMS and in the choice of the CMS. Thus they have a vested interest in ensuring instructors engage their courses through the use of “approved technologies.” Ideally, this provides a similar online experience for students and instructors as well as a familiar interface across the educational journey. All case study participants felt compelled to use the university supported CMS. But do these systems also restrict instructors? Skrabut (n.d.) stated CMS technology is limited and inflexible and restricts what the instructor can do in the classroom. This leads to a potentially unhealthy dependency where instructors who rarely venture beyond the use of the provided CMS tools are left to deal with the inefficiencies.

Case study participants utilized the functionality of their CMS to do many of the same things they did in traditional classrooms. If there were tools for communication built into the CMS, such as email and announcements, they were used by participants to interact with students. In some cases, discussion forums were used to recreate classroom discussion. However, some of the case study participants spoke to limitations and frustrations with their CMS. While
participants felt their CMS met their needs, they also alluded to it not being ideal. Ambrose stated, “I’ve tried to use discussion boards in Angel and haven’t been as successful as I want, but we’re going to keep on working on that” (Ambrose Interview, p. 8). He went on to say:

We actually build a lot of the course outside of Angel and then just link through Angel to do it. In the past our distance ed specialist created a course outline outside of Angel that was more clear in organization than Angel was capable of. Then we linked from Angel to that page. The page was an outline of the semester and had links to all relevant lectures, readings and assignments (Ambrose Interview, p. 4).

In this instance the CMS restricted the instructor and he had to devise a work around for his course.

The case study participants did not do a lot of work outside of the functionality built into the CMS and this could be a direct correlation to its restrictive nature. Outside technology must integrate with the CMS for ease of use. Brianna spoke about formatting issues in Blackboard, saying “when you paste something in all the formatting can get all messed up and you could spend really large amounts of time fixing minor things like that” (Brianna Interview p. 2). She stated “Blackboard does most of the things we want it to do, just sometimes you have to deal with its quirks” (Brianna Interview, p. 3). Carla mentioned:

There is not a chat feature in Blackboard as far as I know, and so that was very limiting, because I do have some awesome activities [where I could use chat]. So, having had that experience and then moving to a
Blackboard format and realizing that we can’t do that, that’s frustrating

(Carla Interview, p. 8).

Doc talked about students having trouble with Blackboard had to be referred to technical support. The ubiquitous nature of the CMS is enabling, but concurrently inhibiting. This can lead to a gap between the CMS and potentially innovative technologies beyond the CMS, which may be better suited for course objectives.

An analysis of the interview and observation data showed there are not a lot of differences between F2F and online classes as has been previously discussed in the education literature. Case study participants did not see a lot of differences between the two. The technologies employed in the online course are often the same technologies as F2F. F2F classes use CMS functionality as well to manage course content for example. The CMS is no longer limited to the online course. The technologies and multimedia employed in an online course are often the same technologies used in F2F courses. Thus the only difference is geographical (i.e., where the students and instructor are located in different places). The use of email, announcements, online Gradebook, and online course content are commonly employed in both online and F2F courses. Even interaction via discussion forums is a common occurrence in both types of courses. This leads to a question of the difference in the essence and quality between online and F2F courses. If the same technologies and teaching methods are used, is there truly a difference between the two types of courses aside from the time spent in a university physical classroom?
There were several technologies that were prevalent among the case study participants. Email technology was the primary means of communication among all case study participants and was the first option to communicate. Email is readily available as a CMS feature and is a common mode of direct contact with individual students or the entire class. Email is a well known form of communication technology and not surprising it was the chief way instructors communicated with their classes. The second most common method to communicate was the use of the announcement feature from within the CMS. Announcement messages were broadcast to the entire class as a means of sending important messages about the course. This CMS function was used, for example, to disseminate general course information and reminders about assignment due dates. Both uses of these technologies also met best practices for providing a means to communicate with students. These technologies facilitate the one to many type of communication making them simpler actions and a big time saving solution for instructors bringing online courses closer to the same experiences in F2F classes.

Discussion of Research Question 2

Best practice can also be verbalized as "this is the set of methods everyone else uses." All case study participants followed a commonly known set of best practices for online teaching. Boettcher (2011) provided a set of best practices guidelines for anyone teaching online. She encouraged the use of both synchronous and asynchronous activities. The majority of the case study participants used an asynchronous environment with some synchronous
activities where the course was organized in modules and all content was available at the beginning of the term. Asynchronous activities are described as taking a course on your own schedule (Newby et al., 2006). They require less human intervention in the sense that the course was on autopilot. No one had to be at any given place at any given time to work through course content. Online classes have been described as benefiting students who are juggling work and family (Brinkerhoff & Koroghlanian, 2007). Doc stated that he liked teaching from home. In fact, most case study participants enjoyed teaching online and perhaps are feeling some of the benefits of this asynchronous environment as well.

Kats (2013) stated it is a best practice for instructors to provide students with discussion forums to give them a useful framework for academic discourse. All case study participants used discussion forums. Although discussion forums were used for many different purposes, some case study participants used them for graded assignments, and others to allow for interaction between students as a study guide opportunity, all saw value in this tool and used it in their online courses to connect students. It is interesting to note the time commitment for an instructor on this activity can be high. The amount of time spent on an online course is often a difference pointed out between online teaching and F2F (Redmond, 2011), where online courses are described as taking more time. However, there was a heavy reliance on the discussion forums among case study participants and many would not teach their courses without them. How realistic is this time commitment if considerations are not given for the size of the
class and the level of participation given to the forums by the instructor themselves?

On the other hand, the time spent on discussion forums might have intrinsic benefits for online instructors. Forums take the place of the interaction that is the norm of a traditional F2F class. Online instructors want students to talk to one another although they are disconnected in the sense they do not meet in any one location. Discussion is different in the online environment because it requires the student to prepare a written response and forces them to think about what they say. In a F2F classroom most comments during discussion are spontaneous. In the online classroom, students need to think more about the written response so there is a potential for richer discussion. This benefit may outweigh the extra time an instructor must spend on monitoring discussion forums and thus one indication for the high use of such forums.

Another best practice employed by three of the case study participants was the use of multimedia tools. These included technology to enhance instruction through use of audio (such as Podcasts), video (Camtasia), web conferencing (Adobe Connect), blogs and wikis. Case study participants reported that these practices were not much different than their face-to-face classrooms. Perhaps in the online class, the multimedia was used more or differently, but they were the same technologies for the most part to assist in replacing what they did in the classroom. Although all case study participants said they did not adhere to ADA standards many of these multimedia elements had aspects of being ADA compliant.
Discussion of Research Question 3

The case study participants did not provide much data in their interviews in response to this research question of whether they had their own set of best practices. Those that did have a response took into consideration the needs of their students. It was obvious from the data that the instructors adhered to best practices whether they realized it or not. They could not articulate what best practices they followed perhaps because these elements were commonplace in their instruction and perhaps because the best practices are part of the functionality of the CMS. In addition, instructors are rarely asked to reflect on their teaching practices.

The discussion remains what are online instructors doing beyond best practices? What if best practices fail to integrate innovation in the classroom and instead simply enforce the norm? How do we move beyond best practice? How do we capture the innovation of instructors who "color outside the lines" and seek what is beyond the norm? Instructors may be doing things in the online classroom that they do not consider innovative but maybe they are. Carla’s comments on how she provides feedback for graded work comes to mind. She combined both audio and video to provide feedback to her students; which represents several best practice elements of communication, multimedia use, and feedback for assessments.
Implications of the Study

Results of this study offer many implications for self-efficacy, higher education administration, and online instructors. The analysis of the case studies identified many commonalities among higher education online instructors with perceived high self-efficacy. It revealed similarities in the types of technology being used in the online classroom. The results showed that all of the case study participants followed known best practices for technology use. Results of this study will assist higher education administration and online instructors to in turn create better online learning experiences for students.

Implications of Self-Efficacy

The definition and characteristics of high self-efficacy were considered in this study. Bandura (1994) described self-efficacy as determinants of how people think, behave, and feel. Bandura (2001, 2006) stated that self-efficacy influences choices. Characteristics of perceived high self-efficacy include confidence in abilities, greater interest, and the willingness to take risks. Pajares (1999) described people having high self-efficacy as being more likely to select challenging tasks, persist at them, and successfully perform them. Although self-efficacy was only used as a required characteristic of the case study participants, it also has implications for outcomes in this study. The higher one’s self-efficacy, the greater their effort, perseverance, and elasticity might be (Bandura, 1986). This study revealed that all participants with a perceived high self-efficacy score on the Sense of Self-Efficacy for Online Teaching Scale adhered to a high
percentage of the best practices for teaching online and best practices for use of technology in the online classroom. This implies that these instructors are striving for excellence and putting a lot of effort into their courses.

Morris and Usher (2011) stated highly self-efficacious instructors typically plan and effectively organize their classes. All case study participants stated their courses were organized and easy to navigate. Pajares (2002) said that self-efficacy is related to motivation and more commitment to teaching. All instructors felt they were successful in the online classroom and stated they were willing to try new technologies.

The high self-efficacy perception in these case study participants did not necessarily relate to their technology use but to the confidence these instructors had in their online courses as evidenced by participants reporting they were successful in their online classes. All believed their courses to function quite well and that they were doing a good job online. Directly related to a characteristic of high self-efficacy, all participants were willing to try new technologies and many stated they did so on a regular basis. Not all participants used the same technology or multimedia, but they all provided content through some medium and embraced technology to teach online.

Implications for Higher Education Administration

Higher education administrators have a financial stake in the success of their online education programs. It can benefit them to know that instructors in this study use the CMS supported by the university and adhere to a set of best practices for teaching online and in particular to best practices for technology use
in the online classroom. It is important to higher education administrators to play a meaningful role in the institution (Amirault, 2012). Provision of support for technology training is one of those roles. This study revealed that most of the participants did not seek formal training on technology for their course and all considered themselves self-taught on the technologies they employed in their online classes. Training support was generally offered at the university level but attendance depends on the stance that administrators take. Some universities require CMS training in a mock course for example or even test instructor’s abilities on the use of the CMS while others do not have any requirements of their teaching faculty (Palumbo, Becchi, & Way 2012). Higher education administrators might be interested to know that faculty are or are not taking advantage of training opportunities.

Most of the case study participants had the assistance of an instructional designer or an education specialist in Ambrose’s case to assist with the implementation of their online course. All but Doc worked with someone at varying stages of course development and or building the course in the CMS. This was an expense that these programs or institutions incur so it would be beneficial to higher education administrators to know this was a needed expense and widely used.

Finally, higher education administration played a big part in the selection of the CMS of the institution (Signer, 2008). A lot of time and money is invested in these systems. All of the participants of this study used the CMS of their respective institutions. While it was their most desirable option (all fully felt their
CMS met their needs) and the only option (all stated they had no other choice) these systems were highly customizable for their curriculum needs. For the most part, case study participants were happy with this course delivery mechanism and administrators again could benefit from this knowledge.

Implications for Online Instructors

All case study participants had experience creating an online class. This is proof that online education is on the rise (Allen & Seaman, 2012). Whether explicit in the planning or not, a set of best practices for teaching and technology use for the online environment was evident in all case studies. One implication of this study for instructors is that other online instructors can read this study and make comparisons with their own online classes. In this respect, this study is valuable to those teaching online or considering teaching online. It provides a framework on which to draw comparisons and make adjustments to their courses. This study provides other online instructors with concepts of how to use technology in an online class and gives them an infrastructure of best practices for future online course development.

Limitations

One limitation of the study was that there were many factors that influenced self-efficacy that were not taken into consideration when selecting the sample (such as number of years teaching online, formal education of the instructor, age, gender, and administrative support levels that feed into instructor
self-efficacy levels). The only criterion used in this study was the required high self-efficacy score on the SEOTS.

A limitation was found in the observation of archived courses as opposed to the observation of live courses. The archived courses did not give the same sense of level of communication and interaction as the live courses. Observation of the live courses allowed for some best practices to be more fully experienced.

Another limitation of the study was that there were SEOTS participants who opted out of the case study. These participants potentially limited the options for case study participants because they opted out of the case study portion of the study. This left a limited number of case study participants who did agree to move forward with the full study.

In addition, the study used only a single university setting. While case study participants worked and taught in varying fields of higher education, and used different CMSs, all were from the same university.

Finally, the use of a survey instrument can be viewed as a limitation. Surveys are subject to respondent bias since some respondents were more comfortable with web-based surveys than others. The survey or the Sense of Efficacy for Online Teaching Scale, was a self-report instrument and cannot assure honest answers. Self-reported data is limited by the fact that it cannot be independently verified (Creswell, 2005).
Directions for Future Research

This case study reported on higher education instructors with perceived sense of self-efficacy for online teaching on the Sense of Efficacy for Online Teaching Scale as they perceived their own abilities. It is recommended that future research identify if disparities exist between the instructor’s self-perceptions of their sense of self-efficacy for online teaching and their actual ability.

This study adds to the research on distance education particularly in the area of technology use as instructors were compared to a set of best practices for technology use in online classrooms. It plays a part in laying the groundwork for future case studies in the area of online education. Repeating this study with a larger sample would be beneficial. In addition, this study did not consider age, gender, or ethnicity of the case study participants as factors or even criteria for the sample. Future studies could consider these variables. Adding various other factors can be used to determine to what degree they along with the other characteristic of case study participants impact technology use in the online environment.

High self-efficacy is indicative of taking risks and having self-confidence in the classroom. Future studies might examine online instructors with low self-efficacy in relation to instructors with high self-efficacy to compare practices for technology use. In doing so, self-efficacy would play a more visible role in the
research agenda of the study. Future research can focus on broader criteria for the sample to include a population of instructors with low scores on the scale.

This study examined how higher education instructors’ practices in the online classroom compared to a set of best practices for teaching not learning. The student was not considered in this study as to how they felt about the instructor’s teaching abilities. Future studies might include a survey for the students or a means to collect data from the students to consider learning outcomes. Further research would be indicated to determine whether instructors with high self-efficacy and adherence to best practices equates to any student satisfaction in the online learning experience. Can instructors with high self-efficacy motivate students to learn? We do not know how the student gauges his or her learning experience against another online course experience with instructors who do not follow best practices, for example.

Although technology was a focus of this study, technology self-efficacy itself was not addressed. Farah’s (2011) discussed the concept of technology self-efficacy as the ability to perform sophisticated technology tasks. This study only worked with instructors with a perceived high sense of self-efficacy for online teaching not technology self-efficacy. The use of technology in this study was discussed based on best practice for the use of technology in online education. Future research would be best to start with a base measure of the technology self-efficacy to gauge how the online instructor integrates technology into the classroom before interviews and observations were put in place.
Half of the instructors in this study were not aware of their own best practices, yet, they all followed a common set of best practices found in the education literature. Where did they learn these best practices? Related to the common use of a CMS, an interesting future study can look at whether the best practices are driven by the instructors that are innovative or are they more driven by the CMS functionality and what they can do with it.

Summary

Beaudoin (2013) informed that the role of the online instructor is undergoing continuous evolution since the advent of the Internet and the proliferation of CMSs to support teaching and learning. This study highlighted the technology use of online higher education instructors with perceived high self-efficacy for online teaching. Online instructors with high self-efficacy exhibit confidence in their abilities in the classroom. This research established a basic framework outlining methods of teaching in an online environment, adherence to best practice and the tools used to effectively communicate course content and reach primary course objectives. However, the case studies also revealed a number of future directions for further research surrounding not only current methods, but future methods. That is, this research not only provided a window into the current online course as it is taught, but also exposes a gap in what other methods should be employed.

Online education continues to grow (Allen & Seaman, 2012) giving way to more instructors teaching online and while the use of technology in the
classroom is not new, it takes on a critical role in the online teaching environment. Higher education administration has a stake in the technology used in the classroom along with the investment in the CMS. Technology use in the classroom is related to need whether it is to deliver content, communicate or assess students. Case study methodology was used to gain insight into the world of the online instructor and to explore in depth the complexity of the online instructor’s classroom. Case study allows for multiple sources of data and portrayal of differing viewpoints to allow others to learn from the experience. The four case study participants had similar teaching backgrounds. They were all higher education online instructors with a perceived sense of high self-efficacy.

The sources for data collection, interviews and observations, were used for theme development. There were many commonalities found among the case study participants.

The functionality built into the CMS is the prevalent technology used by higher education online instructors. The need to find the best uses of technology to integrate into the online classroom is critical to the success of the course and the learning experience of the student and the ease at which online instructors can implement the technology. There are many factors that are considered when looking at best practices for online instruction to include providing expectations and goals for students, fostering a means of communication between instructor and student and student and student, facilitating cooperation between students, use of multimedia components, and use of a variety of technology. The participants adhered to many of these best practices for the use of technology.
All felt their courses were navigate and provided students with opportunities for engagement with course content. Most used a combination of asynchronous and synchronous activities and multimedia. All offered communication tools and technical support.

Online instruction was put under a lens to understand the technology choices. This study adds to the education literature on online instruction and helps other online instructors and higher education administers by giving key insights into the choices online instructors make with regards to technology and compared to a common set of best practices for the use of technology in the online environment.
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APPENDICES
Appendix A: Institutional Review Board Approval Memorandum

To: Jennifer Richardson
From: Jeannie Diclementi, Chair
Social Science IRB
Date: 04/15/2014
Committee Action: Exemption Granted
IRB Action Date: 04/15/2014
Study Title: Online Instructor Self-Efficacy Relationship to Technology Choices A Multiple Case Study

The Institutional Review Board (IRB) has reviewed the above-referenced study application and has determined that it meets the criteria for exemption under 45 CFR 46.101(b)(2). If you wish to make changes to this study, please refer to our guidance “Minor Changes Not Requiring Review” located on our website at http://www.irb.purdue.edu/policies.php. For changes requiring IRB review, please submit an Amendment to Approved Study form or Personnel Amendment to Study form, whichever is applicable, located on the forms page of our website www.irb.purdue.edu/forms.php. Please contact our office if you have any questions.

Below is a list of best practices that we request you use when conducting your research. The list contains both general items as well as those specific to the different exemption categories.

General
• To recruit from Purdue University classrooms, the instructor and all others associated with conduct of the course (e.g., teaching assistants) must not be present during announcement of the research opportunity or any recruitment activity. This may be accomplished by announcing, in advance, that class will either start later than usual or end earlier than usual so this activity may occur. It should be emphasized that attendance at the announcement and recruitment are voluntary and the student’s attendance and enrollment decision will not be shared with those administering the course.

• If students earn extra credit towards their course grade through participation in a research project conducted by someone other than the course instructor(s), such as in the example above, the students’ participation should only be shared with the course instructor(s) at the end of the semester. Additionally, instructors who allow extra credit to be earned through participation in research must also provide an opportunity for students to earn comparable extra credit through a non-research activity requiring an amount of time and effort comparable to the research option.
• When conducting human subjects research at a non-Purdue college/university, investigators are urged to contact that institution’s IRB to determine requirements for conducting research at that institution.

• When human subjects research will be conducted in schools or places of business, investigators must obtain written permission from an appropriate authority within the organization. If the written permission was not submitted with the study application at the time of IRB review (e.g., the school would not issue the letter without proof of IRB approval, etc.), the investigator must submit the written permission to the IRB prior to engaging in the research activities (e.g., recruitment, study procedures, etc.). This is an institutional requirement.

Category 1
• When human subjects research will be conducted in schools or places of business, investigators must obtain written permission from an appropriate authority within the organization. If the written permission was not submitted with the study application at the time of IRB review (e.g., the school would not issue the letter without proof of IRB approval, etc.), the investigator must submit the written permission to the IRB prior to engaging in the research activities (e.g., recruitment, study procedures, etc.). This is an institutional requirement.

Categories 2 and 3
• Surveys and questionnaires should indicate
  ° only participants 18 years of age and over are eligible to participate in the research; and
  ° that participation is voluntary; and
  ° that any questions may be skipped; and
  ° include the investigator’s name and contact information.
• Investigators should explain to participants the amount of time required to participate. Additionally, they should explain to participants how confidentiality will be maintained or if it will not be maintained.
• When conducting focus group research, investigators cannot guarantee that all participants in the focus group will maintain the confidentiality of other group participants. The investigator should make participants aware of this potential for breach of confidentiality.
• When human subjects research will be conducted in schools or places of business, investigators must obtain written permission from an appropriate authority within the organization. If the written permission was not submitted with the study application at the time of IRB review (e.g., the school would not issue the letter without proof of IRB approval, etc.), the investigator must submit the written permission to the IRB prior to engaging in the research activities (e.g., recruitment, study procedures, etc.). This is an institutional requirement.

Category 6
• Surveys and data collection instruments should note that participation is voluntary.
• Surveys and data collection instruments should note that participants may skip any questions.
• When taste-testing foods which are highly allergenic (e.g., peanuts, milk, etc.) investigators should disclose the possibility of a reaction to potential subjects.
Appendix B: Permission to Use the Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale

From: Robinia, Kristi J
Sent: Monday, December 09, 2013 11:54 AM
To: Albee, Barbara
Subject: RE: Self-Efficacy inquiry

Dear Barbara:

You are very welcome to use the tool and modify it as necessary. It is based on Tschannen-Moran and Hoys (2001) tool entitled "Teachers' Sense of Efficacy Teaching Scale". The complete development of the tool is outlined in my dissertation entitled, "Online teaching self-efficacy of nurse faculty teaching in public, accredited nursing programs in the State of Michigan". The dissertation should be readily accessible in Proquest. (Date: June, 2008; UMI number 3316933)

The actual tool is the first 32 questions attached. I gathered demographic information for questions 33-60. Directions for scoring follow the demographic questions.

Good luck with your research, I would be very interested in reading your final product.

Sincerely,

Kristi Robinia PhD, CNE, RN
Professor, Nursing
Northern Michigan University
1401 Presque Isle
Marquette, MI 49855

-----Original Message-----
From: Albee, Barbara
Sent: Wednesday, December 4, 2013 1:52 PM
To: Kristi Robinia
Subject: Self-Efficacy inquiry

Dear Dr. Robinia,
I hope you are well. I am working on my dissertation at Purdue University in the area of online instructor self-efficacy as related to their use of technology in the online classroom. As a result I came across your work with Nurse educators. I am writing to ask if you would share your instrument with me, the Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale, and permit me to modify for my study if necessary? I have been working with Bandura’s Teacher Self-Efficacy Scale but feel your instrument is a much better fit for my study. I began this work many years ago when there was very little on online instructor self-efficacy in the literature and I am inspired by your work and others that are now researching in this area.

Thank you for this consideration in this matter.

Sincerely,

Barbara

Barbara Albee, MLS
Lecturer
School of Informatics and Computing
Department of Library and Information Science Indiana University, Indianapolis
755 W. Michigan St., UL 3115K
Indianapolis, IN  46202-5195
soic.iupui.edu
Appendix C: Sense of Efficacy for Online Teaching Scale

Instructions

You are invited to participate in this study because the institution at which you are employed has you on record as teaching an online course. If this is not true, please disregard this message and survey. You meet the parameters of the sample set for this study if you are indeed currently teaching an online course or have taught an online course in the past two years and you are responsible for the design and teaching of the online course.

This questionnaire is designed to help gain a better understanding of the current self-perceptions educators hold regarding their abilities to successfully teach in online environments. Please indicate your opinion about each of the statements below on a Likert scale of 1 – 9 (1 being nothing and 9 being a great deal). Your answers are confidential.

Questions 1-32 are concerned with understanding how educators judge their current capabilities for teaching online courses. A helpful prefix to each answer is, “I can do this….”

Questions 33-36 ask for background information about you the participant.

Thank you.
Sense of Efficacy for Online Teaching Scale (SEOTS)

1. How much can you do to help your students think critically in an online class?
   Nothing Very Little Some Quite a Bit A Great Deal
   1 2 3 4 5 6 7 8 9

2. How much can you do to get through to disengaged students in an online class?
   (E.g. passive learners who might lurk online, but fail to actively contribute to their own learning.)
   Nothing Very Little Some Quite a Bit A Great Deal
   1 2 3 4 5 6 7 8 9

3. How much can you do to control disruptive behavior (e.g. disrespectful posting or failure to adhere to outline policies for posting) in an online environment?
   Nothing Very Little Some Quite a Bit A Great Deal
   1 2 3 4 5 6 7 8 9

4. How much can you do to motivate students who show low interest in online work?
   Nothing Very Little Some Quite a Bit A Great Deal
   1 2 3 4 5 6 7 8 9

5. To what extent can you make your expectations clear about student behavior in an online class?
   Nothing Very Little Some Quite a Bit A Great Deal
   1 2 3 4 5 6 7 8 9

6. How much can you do to get students to believe that they can do well in an online class?
   Nothing Very Little Some Quite a Bit A Great Deal
   1 2 3 4 5 6 7 8 9

7. How well can you respond to difficult questions from online students?
8. How well can you establish routines (e.g. facilitate or moderate student participation) in coursework to keep online activities running smoothly?

9. How much can you do to help online students’ value learning?

10. How much can you gauge student comprehension of what you have taught in an online course?

11. How well can you craft questions or assignments that require students to think by relating ideas to previous knowledge and experience?

12. How much can you do to foster individual student creativity in an online course?

13. How much can you do to get students to follow the established rules for assignments and deadlines during an online class?

14. How much can you do to improve the understanding of a student who is failing
in an online class?

15. How much can you do to control students dominating online discussions?

16. How well can you establish an online course (e.g. convey expectations; standards; course rules)?

17. How much can you do to adjust your online lessons for different learning styles?

18. How much can you do to use a variety of assessment strategies for an online course?

19. How well can you develop an online course that facilitates student responsibility for online learning?

20. To what extent can you provide an alternative explanation or example when students in an online class seem to be confused?

21. How well can you respond to defiant students in an online setting?
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22. How well can you structure an online course that facilitates collaborative learning?

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23. How well can you structure an online course that provides good learning experiences for students?

<table>
<thead>
<tr>
<th>Nothing</th>
<th>Very Little</th>
<th>Some</th>
<th>Quite a Bit</th>
<th>A Great Deal</th>
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</table>

24. How well can you provide appropriate challenges for very capable students in an online environment?

<table>
<thead>
<tr>
<th>Nothing</th>
<th>Very Little</th>
<th>Some</th>
<th>Quite a Bit</th>
<th>A Great Deal</th>
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</table>

25. To what extent can you use knowledge of copyright law to provide resources for online students?

<table>
<thead>
<tr>
<th>Nothing</th>
<th>Very Little</th>
<th>Some</th>
<th>Quite a Bit</th>
<th>A Great Deal</th>
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</table>

26. How well can you navigate the technical infrastructure at your institution to successfully create an online course?

<table>
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<tr>
<th>Nothing</th>
<th>Very Little</th>
<th>Some</th>
<th>Quite a Bit</th>
<th>A Great Deal</th>
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27. How well can you navigate the technical infrastructure at your institution to successfully teach an established online course?

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<thead>
<tr>
<th>Nothing</th>
<th>Very Little</th>
<th>Some</th>
<th>Quite a Bit</th>
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</table>
28. To what extent can you use asynchronous discussions to maximize interactions between students in an online course? (Asynchronous means not online at the same time.)

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<thead>
<tr>
<th>Nothing</th>
<th>Very Little</th>
<th>Some</th>
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</table>

29. To what extent can you use synchronous discussions (e.g. same time chat rooms) to maximize interaction between students in an online course?

<table>
<thead>
<tr>
<th>Nothing</th>
<th>Very Little</th>
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<th>A Great Deal</th>
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</table>

30. How well can you use computers for word processing, Internet searching and e-mail communication?

<table>
<thead>
<tr>
<th>Nothing</th>
<th>Very Little</th>
<th>Some</th>
<th>Quite a Bit</th>
<th>A Great Deal</th>
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</table>

31. To what extent does your comfort level with computers facilitate your participation in online teaching?

<table>
<thead>
<tr>
<th>Nothing</th>
<th>Very Little</th>
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<th>Quite a Bit</th>
<th>A Great Deal</th>
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</table>

32. How well can you navigate the Internet to provide links and resources to students in an online course?

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<thead>
<tr>
<th>Nothing</th>
<th>Very Little</th>
<th>Some</th>
<th>Quite a Bit</th>
<th>A Great Deal</th>
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</table>

33. Have you taught an online course in the past two years, 2012 and 2013?

34. How many online courses do you teach?

35. Are a full time faculty person or part-time?
36. Please type in your contact information including email address if you wish to move forward with the case study portion of this study. Additional information concerning the case study can be found in the email introduction you received about the survey.

Thank you for your participation in this survey. All information collected is confidential.
Appendix D: Interview Protocol

Set 1) Participant demographic and background questions:

1. What is your title or position within your program?
2. What course(s) do you teach?
3. Which courses are online courses?
4. How long have you been teaching?
5. How long have you been teaching online classes?
6. What is your highest degree?
7. Is your position tenure track?
8. Do you teach full time or part time?
9. Do you teach undergraduates, graduate level (masters or doctoral students)?
10. Are your online course undergraduate or graduate level courses?
11. What types of classes have you taught?
   a. Face-to-face
   b. Online
   c. Hybrid
   d. Other
12. Do you have the assistance of a Graduate Assistant for any aspect of this course?
13. Have you received any teaching awards?

Set 2) Participant focused questions:

1. Have you transitioned your face-to-face class to online class?
2. Have you created the course for online classroom only.
3. How much time did you need to transition? How much time did you have?
4. Did you seek any training, or did you work with an instructional designer before teaching online? Have you been trained on the technologies or self taught? Have you taken seminars or courses focused on teaching in the online environment?
5. Do you have any control over the technology used at your institution? Are you limited to the technology that the university provides?
6. Does your institution and department provide support for your online class?
   a. Instructional design help
   b. Time off or course release time to prepare or migrate a face-to-face class
   c. Financial support
   d. Technology support (including purchase technologies)
   e. Training to teach online
Set 3) Participant attitude toward teaching online questions:

1. How do you feel about teaching in the online environment?
2. How successful do you feel about your online teaching? Are you doing a good job with the online class or could it be better?
3. Choose one of the following statements:
   a. I prefer to teach face-to-face
   b. I prefer to teach online
   c. I like both face-to-face and online teaching
4. If it were your choice would you teach online or face-to-face?

Set 4) Participant questions relating to technology use and knowledge in online class:

1. Describe your online environment? Is it asynchronous, synchronous or a combination of both?
2. Do you use a course management system? Which one? (i.e. Blackboard). Does it meet your needs?
3. When teaching face-to-face, what technology do you use in the classroom?
   a. Video
   b. Podcast or Vodcast
   c. Adobe Connect
   d. Chat
   e. Wiki
   f. electronic texts
   g. webinars
   h. Skype
   i. voice over presentations, transcripts
   j. other
4. What technologies do you use in your online class? Do you use any of the following and how and for what purpose? And have you been successful?
   a. Video - purpose -- successful
   b. Podcast or Vodcast - purpose -- successful
   c. Adobe Connect
   d. Chat
   e. Wiki
   f. electronic texts
   g. webinars
   h. Skype
   i. voice over presentations, transcripts
   j. other
5. Do you use more technology teaching online?
6. Have you tried new technologies since teaching online? Do you like to take risks and try new technologies?
7. Are you willing to try new technologies?
8. How often do you try new technologies?
9. How important is technology to your course delivery?
10. Have you met with IT support during an online teaching experience?
11. Is the technology essential for student learning in your class?
12. Does the technology add to student engagement with the course?
13. Do you consider yourself cutting edge?
14. Are you innovative?

Set 5) Participant Questions relating to Best Practices for Online Teaching:

1. Do you provide a electronic syllabus?
2. Do you provide instruction for students on the use of technology in your online class?
3. Do you provide instructions for course navigation?
4. Is technology support available to you?
5. Is technology support available to your students? Do you make students aware of this support?
6. Do you direct students to campus resources related to your course? Examples, Library, IT staff, writing center.
7. How do you handle office hours?
8. Do you adhere to ADA requirements? How? Examples: provide alternatives to audio and video (closed captioned.)
9. Do you encourage interaction with you the instructor?
10. Do you encourage interaction between students? How do they interact?
11. What communication tools do you use?
   a. email
   b. Skype
   c. Google products
12. Do you give your student group projects?
13. What technology do you use to facilitate group work?
14. Do you send reminders of due dates or other announcements?
15. Do you build in flexibility to the course design to allow for changes?
16. Do you illicit student input in course design?, goals?, assignments?
17. How do you manage feedback on graded work? When and how?
18. Do you evaluate the effectiveness of your course?
19. Do students have opportunities for feedback and input? (other than formal course evaluations?)
20. Do you make revisions to the course each semester?
21. Is the course well organized?
22. Is the course easy to access and navigate?
23. Do you chunk the content or do you give it all at once at the beginning of the semester?
24. Do you have your own set of best practices?

Note: advise participants there will be a potential for follow-up questions.
### General Information

<table>
<thead>
<tr>
<th>Evaluator Name:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Course:</td>
<td></td>
</tr>
<tr>
<td>Instructor Name:</td>
<td></td>
</tr>
<tr>
<td>CMS:</td>
<td></td>
</tr>
</tbody>
</table>

### Rubric Rating Scale:

5 – **Accomplished**: excellent implementation; comparable to other examples; exemplary  
4 - Effective – opportunities are there, good use  
3 – **Promising**: good implementation; however, somewhat lacking in depth or detail  
2 - Baseline – limited, some evidence  
1 – **Not evident**: unable to locate examples specific to this criterion  

Note: Best Practices directly related to Technology Use are tagged with a (T).

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Rating</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Organization  
Course design is organized, i.e., use modules or a folder system and or file naming convention (T) | | |
| Organization  
Course design is consistent i.e., Fonts and color styles consistent | | |
| Organization  
Course design is functional i.e., web pages visually functional (T) | | |
| Organization  
Navigation - Course is easy to navigate (T) | | |
| Expectations  
Goals and learning objectives are defined and explained to students | | |
| Expectations  
Course contains information about being an online learner | | |
<table>
<thead>
<tr>
<th>Expectations</th>
<th>Levels of student participation in the course are clearly stated.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expectations</td>
<td>Syllabus provided (includes internal hyper-links where appropriate)</td>
</tr>
<tr>
<td>Expectations</td>
<td>Syllabus includes internal hyper-links where appropriate (T)</td>
</tr>
<tr>
<td>Communication</td>
<td>Instructor make attempts to get to know students, i.e., provides biographical information, pictures</td>
</tr>
<tr>
<td>Communication</td>
<td>Contact information for instructor, department and or program are provided for students</td>
</tr>
<tr>
<td>Communication</td>
<td>Encourages student to faculty interaction</td>
</tr>
<tr>
<td>Communication</td>
<td>Encourages student to student interaction</td>
</tr>
<tr>
<td>Communication</td>
<td>A variety of communication tools are used to facilitate communication and learning. i.e., course announcement tools, chats, email, discussion forums (T)</td>
</tr>
<tr>
<td>Communication</td>
<td>Technology tools that appropriately facilitate communication for student instructor interaction: (i.e., student counseling via email or other online office hours via Skype of similar tech) (T)</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td></td>
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<tr>
<td>---</td>
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</tr>
<tr>
<td>Technology tools to appropriately facilitate student to student interaction i.e. discussion forum, web conferencing, chat/whiteboard, blogs, wikis (T)</td>
<td></td>
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<table>
<thead>
<tr>
<th><strong>Support and Resources</strong></th>
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<tbody>
<tr>
<td>Course specific support, i.e., Support for Technology Tutorials (or at least links to tutorials) are available within the course about the various technology tools students are expected to use during the course.</td>
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<table>
<thead>
<tr>
<th><strong>Support and Resources</strong></th>
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<tbody>
<tr>
<td>Campus specific support</td>
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<thead>
<tr>
<th><strong>Support and Resources</strong></th>
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<tbody>
<tr>
<td>Content specific support</td>
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<thead>
<tr>
<th><strong>Technology</strong></th>
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<tbody>
<tr>
<td>Use of CMS as course delivery mechanism (T)</td>
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<table>
<thead>
<tr>
<th><strong>Technology</strong></th>
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<tbody>
<tr>
<td>Instructors shows signs they are skilled with the technology used in the course (T)</td>
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<table>
<thead>
<tr>
<th><strong>Technology</strong></th>
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<tbody>
<tr>
<td>Variety of Technology Tools used that works for the student, feasible audio files for example, .mp3; Hyperlinks work, see list (T)</td>
<td></td>
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<tr>
<td>See list to add types of Technology used to deliver content</td>
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<tr>
<th><strong>Technology</strong></th>
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<tr>
<td>Course content includes Multimedia is used to</td>
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</table>
promote learning objectives (visual, text, audio, kinesthetic (physical activity))
Materials are optimized for web delivery:
- PowerPoint, video and audio files are compressed
- graphics, photographs use web resolution standards
- files are maintained on web servers and links are active (T)

**Technology**
Course optimizes access to internet resources. (T)

**Technology**
Asynchronous access
Synchronous access
Both (T)

**Technology**
Asynchronous access (T)

**Technology**
Combination of both Asynchronous and Synchronous access (T)

**Technology**
Evidence of use of technology to automate chunking of course content (don’t give all content at one time) help with Organization of workload – manageable segments (T)

**Assessment/Feedback**
Instructor touches base periodically with students using email (engages often)

**Assessment/Feedback**
Instructor gives comments attached to assignments
<table>
<thead>
<tr>
<th><strong>Assessment/Feedback</strong></th>
<th><strong>Instructor provides feedback on course performance</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Assessment/Feedback</strong></td>
<td><strong>Provide options for peer review</strong></td>
</tr>
<tr>
<td><strong>Assessment/Feedback</strong></td>
<td><strong>Provide options for self-assessment</strong></td>
</tr>
<tr>
<td><strong>Assessment</strong></td>
<td><strong>Grades available to student online (use of a Gradebook) (T)</strong></td>
</tr>
<tr>
<td><strong>Assessment</strong></td>
<td><strong>Use of technology to automate assignments (T)</strong></td>
</tr>
<tr>
<td><strong>Assessment</strong></td>
<td><strong>Use of technology to provide feedback (T)</strong></td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
<td><strong>End of semester evaluation conducted</strong></td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
<td><strong>Online course evaluation distributed (T)</strong></td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
<td><strong>Instructor offers opportunities for students to give feedback on technology in the course. (Such as ease of use)</strong></td>
</tr>
</tbody>
</table>

**Other Areas**

<table>
<thead>
<tr>
<th><strong>Collaboration</strong></th>
<th><strong>Promote cooperation among students – i.e. discussion forum, web conferencing, chat/whiteboard, blogs, wikis etc.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Active Learning</strong></td>
<td><strong>Students present to class, create videos or audio for assignments</strong></td>
</tr>
</tbody>
</table>
Accessibility
Accessibility is addressed for students with disability
Some examples
Alternative text – CC - captions for video, transcripts for audio documents compatible with assistive tech
Labeled hyperlinks (not just URL)
Controls accessed with use of keyboard and mouse

Accessibility
Addressed throughout the course (designed to be accessible to users with disabilities)
Date: April 18, 2014

Dear Faculty,

My name is Barbara Albee and I am a doctoral candidate at Purdue University, College of Education. I am conducting a survey as part of my dissertation research under Dr. Jennifer Richardson. Below is the link to the survey.

https://purdue.qualtrics.com/SE/?SID=SV_0iwnVvYDmrbXw9f

You are invited to participate in this survey because the institution at which you are employed has you on record as teaching an online course or courses in the last two years. I am conducting a multi-case study to understand the experiences of higher education instructors and how they use technology in the online environment. The survey will require approximately 10 -15 minutes of your time to complete and will help me identify potential case study participants.

The attachment provides more detail about the full study participation if you are interested in working with me on the case study portion of my research based on results of this survey. Thank you for your time and consideration.

Sincerely,

Barbara Albee
Appendix G: Follow-Up Interview Questions

Additional Questions for All Participants After Observations

1. Do you give comments on or comments attached to graded assignments? In other words, do you give more feedback than just assign a grade? In what form does this feedback take? Text (Track changes), email, audio, other?

2. Other than posting to discussion forums or blogs (if applicable to your class) do you encourage students to use technology to present an assignment to the online class such as create a video or audio presentation or PowerPoint? For one class I am observing I do see a wiki assignment, but nothing else.

3. Do you use the Gradebook feature in your course management system? Do your students have access to their grades as the course progresses?

4. Do you provide options for peer review? Students reviewing other assignments. I understand you reserve the right for final grade.

4 a. Do you provide options for self-assessment (Student self assessment?)

5. And finally because I cannot see this, how is the formal end of semester course evaluation distributed? Do you send a link in an email to a survey? Does your school or department handle this?

5 a. On this formal course eval, does it ask anything about feedback on the technology used in the course?

Additional Questions After Observations for Individual Participants

Ambrose

1. Do you select the tools that are in the additional course tools area in Angel? Or are they system supplied?

2. Do you provide access to any Internet resources related to your course? How, with hyper links, URLs, or some other means?

3. You made a comment that you create stuff outside of Angel and then upload it there, what kind of things were you talking about?

4. Do you use any technology other than the functionality found in Angel?

5. Why do you not consider yourself cutting edge?
Brianna

1. How did you meet with students? Do you use Adobe Connect?

2. How do you decide what to record and share from these sessions?

3. Did you use any multimedia? Such as the integration of text with graphic, animation, sound or video? I know you consider your recorded sessions a video but I am talking about other use of video recordings? I see text and pdf files only.

4. Do you provide access to any Internet resources related to your course? How, with hyper links, or URL, or directing to a certain resource on the web?

5. Why do you not consider yourself cutting edge?

Carla

1. How did you use YouTube?

2. Do you have any exams/tests or quizzes?

3. Do you provide rubrics for all assignments? I see them in several places.

4. Do you provide access to any Internet resources related to your course? How, with hyper links, or URL, or directing to a certain resource on the web?

5. Why do you not consider yourself cutting edge?

Doc

1. You made a comment that online classes are thought of less highly in your dept. For what reason? Can you elaborate a little on this? It is an interesting point in general that I have heard about online courses.

2. Do you provide access to any Internet resources related to your course? And if so how, with hyper links, or URLs, or directing students to a certain resource on the web?

3. Did the discussion forums impact on the grade?

4. Were they only in place as a way for students to communicate about course work?
### Appendix H: Coding Samples

**First Pass**

**Section 4 Participant questions relating to technology use in online class**

A=Ambrose, B=Brianna, C=Carla, D=Doc

<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
<th>Theme</th>
</tr>
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<tbody>
<tr>
<td>Q1</td>
<td>Describe your online environment? Is it asynchronous, synchronous or a combination of both?</td>
<td>ASYNCHRONOUS FORMAT MOSTLY</td>
</tr>
<tr>
<td>A</td>
<td>Online class is combination of synchronous and asynchronous</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Course built into modules</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Webinars provide a synchronous component</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Students have flexibility</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Primarily asynchronous</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Webinars with invited speakers provide a synchronous component</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Scheduled office hours add a synchronous component</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Primarily asynchronous</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Mostly asynchronous</td>
<td></td>
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</table>

| Q2 | Do you use a course management system? Which one? | CMS FOR ONLINE CLASS DELIVERY |
| A | Use a CMS – Angel |  |
| B | Use a CMS – Blackboard |  |
| C | Use a CMS – Blackboard |  |
| D | Use a CMS – Blackboard |  |

| Q2a | Does your CMS meet your needs? |  |
| A | CMS meets needs of the course |  |
| A | Students navigate course easily |  |
| A | CMS could be more user friendly from an instructional standpoint |  |
| B | CMS meets the needs of the course |  |
| B | CMS has some quirks and things take too long to do |  |
| B | Minor irritating things with use of Blog feature |  |
| C | No response |  |
| D | CMS meets the needs of the course |  |
Q4 What technologies do you use in your online class?

- A PowerPoint with voice over
- A Podcasts
- A CMS features
- A Video (Camtasia)
- B CMS features
- B Discussion forums
- B Blogs
- B Adobe Connect
- B Recorded synchronous session
- C CMS features
- C Discussion forums
- C Chat
- C Podcasts – Audacity
- D CMS features
- D Discussion forum for exams
- D Links to websites
- D Online exam – Blackboard
- D Assignment tool

Q5 Do you use more technology teaching online?

- A Use more technology teaching online class
- B Use different technology teaching online class for different purposes
- C Can’t say I’m using more technology, using same technology with more frequency and greater intensity
- D Do not use more technology teaching online

Q6 Have you tried new technologies since teaching online?

- A Use new technology since teaching online
- B Use new technology since teaching online
- B Had to quickly learn Blackboard
- C Use new technology since teaching online
<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Have not gotten around to trying new technology since teaching online</td>
<td></td>
</tr>
<tr>
<td>Q6a</td>
<td>Do you like to take risks and try new technologies?</td>
<td>A  Like to take risks and try new technologies in online class</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B  Like to try new technologies, would say I like to take risks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B  Before I use something, I will spend some time with it</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B  A little more risk adverse</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C  Like to take risks and try new technologies in online class</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D  Like to take risks and try new technologies</td>
</tr>
<tr>
<td>Q7</td>
<td>Are you willing to try new technologies?</td>
<td>A  Will to try new technologies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A  New technologies are easy to figure out and adopt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B  Will try new technologies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C  Will try new technologies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D  Will try new technologies</td>
</tr>
<tr>
<td>Q8</td>
<td>How often do you try new technologies?</td>
<td>A  Integrate one new technology per year</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A  In order to improve course have to try new things</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B  Will try new technology each semester</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C  Will try new technology every month</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D  Routinely explore new things, routinely meet with tech people on campus 3 – 4 times a year is something new comes up to talk to them about it</td>
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<tr>
<td>Question</td>
<td>Text</td>
<td>Ambrose</td>
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<td>----------</td>
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<td>4B</td>
<td>Did you work with an instructional designer before teaching online?</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(0=No; 1=Yes)</td>
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<tr>
<td>6A</td>
<td>Do you have instructional design help?</td>
<td>1</td>
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<tr>
<td></td>
<td>List 1: educational specialist</td>
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<td></td>
<td>List 2: teaching assistants</td>
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<tr>
<td></td>
<td>List 3: Recruiting</td>
<td></td>
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<tr>
<td>12</td>
<td>Do you use a course management system?</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>List 1: Angel</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Have you used/tried new technologies since teaching online?</td>
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<tr>
<td></td>
<td>List 1: Camtasia</td>
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</tr>
<tr>
<td></td>
<td>List 2: Blackboard features:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>List 3: Course readings</td>
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<td></td>
<td>List 4: Videos</td>
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<tr>
<td>30</td>
<td>Do you direct students to campus resources related to your course?</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>List 1: Library's [live] guide</td>
<td></td>
</tr>
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<td></td>
<td>List 2:</td>
<td></td>
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<td></td>
<td>List 3:</td>
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<td></td>
<td>List 4:</td>
<td></td>
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<tr>
<td>Question</td>
<td>Do you encourage interaction with you, the instructor?</td>
<td></td>
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<td>------------------------------------------------------</td>
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</tr>
<tr>
<td>33</td>
<td>List 1 Phone</td>
<td></td>
</tr>
<tr>
<td></td>
<td>List 2 Email</td>
<td></td>
</tr>
<tr>
<td></td>
<td>List 3 Angel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>List 4 Face-to-face meeting</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Do you encourage interaction between students?</th>
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</thead>
<tbody>
<tr>
<td>34</td>
<td>List 1 Discussion forum</td>
</tr>
<tr>
<td></td>
<td>List 2 Blog post comments</td>
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</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Do you have your own set of best practices for teaching online?</th>
</tr>
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<tbody>
<tr>
<td>48</td>
<td>List 1</td>
</tr>
<tr>
<td></td>
<td>List 2</td>
</tr>
<tr>
<td></td>
<td>List 3</td>
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<table>
<thead>
<tr>
<th>Question</th>
<th>Did you work with an instructional designer before teaching online?</th>
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<tr>
<td>4B</td>
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<td>Ph.D. students (2)</td>
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<table>
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<th>Question</th>
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<td>List 1 local team</td>
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<td>Graduate assistants (2)</td>
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<tr>
<td></td>
<td>List 2</td>
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<td>List 3</td>
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<table>
<thead>
<tr>
<th>Question</th>
<th>Do you use a course management system?</th>
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<td>12</td>
<td>List 1</td>
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<table>
<thead>
<tr>
<th>Carla</th>
<th>Doc</th>
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<tr>
<td>6A</td>
<td></td>
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<td></td>
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<tr>
<td>Question</td>
<td>List 1</td>
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</tr>
<tr>
<td>16</td>
<td><strong>Have you used/tried new technologies since teaching online?</strong></td>
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<tr>
<td></td>
<td>List 1 Audio feedback</td>
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<td></td>
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</tr>
<tr>
<td>30</td>
<td><strong>Do you direct students to campus resources related to your course?</strong></td>
</tr>
<tr>
<td></td>
<td>List 1 IT</td>
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<td></td>
<td>List 2</td>
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<td></td>
<td>List 3</td>
</tr>
<tr>
<td></td>
<td>List 4</td>
</tr>
<tr>
<td>33</td>
<td><strong>Do you encourage interaction with you, the instructor?</strong></td>
</tr>
<tr>
<td></td>
<td>List 1 Email</td>
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<td></td>
<td>List 2</td>
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<td></td>
<td>List 3</td>
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<tr>
<td></td>
<td>List 4</td>
</tr>
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<td>34</td>
<td><strong>Do you encourage interaction between students?</strong></td>
</tr>
<tr>
<td></td>
<td>List 1 Discussion forums</td>
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<tr>
<td></td>
<td>List 2</td>
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<tr>
<td></td>
<td>List 3</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>48</td>
<td><strong>Do you have your own set of best practices for teaching online?</strong></td>
</tr>
<tr>
<td></td>
<td>List 1 Video updates</td>
</tr>
<tr>
<td></td>
<td>List 2 Praise</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>List 3</td>
<td>Audio feedback</td>
</tr>
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<td></td>
<td>Written feedback</td>
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## Appendix I: Case Study Themes

### Set 2 interview Questions Themes

<table>
<thead>
<tr>
<th>Themes</th>
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<tbody>
<tr>
<td>Experience creating online class</td>
</tr>
<tr>
<td>Need lead time to develop online class</td>
</tr>
<tr>
<td>Instructional design help</td>
</tr>
<tr>
<td>Self taught on technology</td>
</tr>
<tr>
<td>Must use university supported CMS</td>
</tr>
<tr>
<td>Instructional design support</td>
</tr>
<tr>
<td>No time off to develop online class</td>
</tr>
<tr>
<td>Some money available to create online class</td>
</tr>
<tr>
<td>Technology support available</td>
</tr>
<tr>
<td>Training support available</td>
</tr>
<tr>
<td>Set 4 interview questions</td>
</tr>
<tr>
<td>Asynchronous format</td>
</tr>
<tr>
<td>CMS for online class delivery</td>
</tr>
<tr>
<td>CMS meets course needs</td>
</tr>
<tr>
<td>Variety of technology used</td>
</tr>
<tr>
<td>Willing to try new technology for online teaching</td>
</tr>
<tr>
<td>Do try new technologies (explore new technologies)</td>
</tr>
<tr>
<td>Technology important – needs to be easy to use</td>
</tr>
<tr>
<td>Meet with it when needed</td>
</tr>
<tr>
<td>Technology essential to student learning</td>
</tr>
<tr>
<td>Exceptions for course with little tech use</td>
</tr>
<tr>
<td>Technology enhances student engagement</td>
</tr>
<tr>
<td>Not cutting edge</td>
</tr>
</tbody>
</table>

### Set 5 interview Questions Themes

<table>
<thead>
<tr>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syllabus provided</td>
</tr>
<tr>
<td>Instructions on course navigation available</td>
</tr>
<tr>
<td>Technology support available</td>
</tr>
<tr>
<td>Direct students to campus resources</td>
</tr>
<tr>
<td>Office hours offered</td>
</tr>
<tr>
<td>Student issues resolved by email</td>
</tr>
<tr>
<td>ADA not adhered to (unless there is a request)</td>
</tr>
<tr>
<td>Encourage interaction with instructor</td>
</tr>
<tr>
<td>Encourage interaction between students</td>
</tr>
<tr>
<td>Variety of communication tools used</td>
</tr>
<tr>
<td>Discussion forums</td>
</tr>
<tr>
<td>Group projects/no group projects</td>
</tr>
<tr>
<td>Reminders/announcements sent</td>
</tr>
<tr>
<td>Not a lot of flexibility</td>
</tr>
<tr>
<td>Flexible to student needs</td>
</tr>
<tr>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>Feedback on assignments given</td>
</tr>
<tr>
<td>Feedback in writing</td>
</tr>
<tr>
<td>Feedback in audio format</td>
</tr>
<tr>
<td>Course evaluations</td>
</tr>
<tr>
<td>Course revisions done every semester</td>
</tr>
<tr>
<td>Online class is organized</td>
</tr>
<tr>
<td>Online class is easy to access</td>
</tr>
<tr>
<td>Course is not chunked</td>
</tr>
<tr>
<td>All content given at once</td>
</tr>
</tbody>
</table>
From: Attardo, Donalee H.
Sent: Wednesday, February 05, 2014 7:09 PM
To: Albee, Barbara
Subject: Distance Learning Recognition Program Evaluation Form

Hi Barbara,

Sure, please go ahead and use it - with attribution would be nice, but I'm a little fuzzy on the time of origin. It was created by me, Sinem Senol, Sasi Benzigar, and Sangeetha Khichadia for use in our Distance Ed Incentives Award Program in the Instructional Development Center, ITaP (Information Technology at Purdue). Around 2006? Any other info you need?

Good luck with your work,

Donalee

-----Original Message-----
From: Albee, Barbara
Sent: Wednesday, January 29, 2014 3:02 PM
To: Attardo, Donalee H.
Subject: Distance Learning Recognition Program Evaluation Form

Hi Donalee,

I was given your name by Dr. Richardson, see below. I am a doctoral student working on my proposal and would like to use an eval form created at Purdue in my study. Do you have a citation for the Distance Learning Recognition Program Evaluation Form, see attached? It has no identifying info other than the title. Also, I probably should ask if it is free to use without permission and if not where do I seek permission to use this in my study? Thank you for any help with this endeavor.

Barbara
VITA

BARBARA L. ALBEE

Department of Library and Information Science
Indiana University School of Informatics and Computing
535 W. Michigan Street (IT), Suite 567
Indianapolis, IN 46202

EDUCATION

Ph.D., Learning Design & Technology, 2015
Purdue University, College of Education, West Lafayette, IN
Dissertation: Technology Use Of Online Instructors With High Self-Efficacy: A Multiple Case Study

M.L.S., Library Science
University of Pittsburgh, Pittsburgh, PA

B.A., French Language and Literature
Marquette University, Milwaukee, WI

ACADEMIC APPOINTMENTS

Indiana University, School of Informatics and Computing, Department of Library and Information Science, Indianapolis, IN

Lecturer, 2008-current

S502 Acquisitions and Management of Knowledge and Information (Online)
S503 Organization and Representation of Knowledge and Information (Online)
S504 Cataloging (Face-to-Face and Online)
S631 Advanced Cataloging (Face-to-Face, Online and Hybrid)
S632 Advanced Resource Management (Face-to-Face and Online)
S603 RDA Workshop (Face-to-Face and Online)
S601 Directed Readings
S602 Directed Research

Dominican University, Graduate School of Library & Information Science, River Forest, IL

Adjunct Professor, 2011

LIS 703 Organization of Knowledge (Hybrid)

Indiana University, School of Library and Information Science, Indianapolis, IN

Visiting Lecturer, 2004 - 2008

S504 Cataloging (Face-to-Face and Online)
S631 Advanced Cataloging (Face-to-Face)
S632 Technical Services (Face-to-Face)

Indiana University, School of Library and Information Science, Indianapolis, IN

Adjunct Associate Professor, 1995 – 2004

S505 Evaluation of Library Resources & Services (Face-to-Face)
S632 Technical Services (Face-to-Face)
S502 Collection Development and Management (Face-to-Face)

PROFESSIONAL APPOINTMENTS

Network Librarian, 2003 - 2004
INCOLSA Indiana Cooperative Library Services Authority, Indianapolis, IN

Manager, Electronic Resources, 1996 - 2002
divine inc./Faxon Library Services, Westwood, MA

Acquisitions Team Leader, 1993 - 1996
Indiana University Purdue University Indianapolis, University Library,
Indianapolis, IN

Public Services Librarian, 1992-1993
University of Pittsburgh, School of Library & Information Science, Pittsburgh, PA

GRANTS & AWARDS
Impact of the Evergreen Indiana Project on Public Libraries and Library Patrons [with Hsin-Liang Chen]
Library Service and Technology Act Grant January-December, 2010
Indiana State Library, $28,189

Impact of Open Source Library Automation System on Public Library Users [with Hsin-Liang Chen]
OCLC/ALISE Library and Information Science Research Grant January-December, 2010
OCLC, $14,250

Indiana University Trustee Teaching Award 2009/2010 Academic School Year

PUBLICATIONS


Albee, B., & Dingley, B. (2002). U.S. periodical prices—2002. American Libraries, 75 and http://www.ala.org/alcts/resources/collect/serials/ppi/02usppi (This was the 4th consecutive year that I co-authored this research in American Libraries.)


PRESENTATIONS AND POSTERS


PROFESSIONAL AFFILIATIONS

National Service

American Library Association, 1990-Present
  Association for Library Collections & Technical Services (ALCTS), 1993-Present
    Committees:
    Association for Library Collections & Technical Services. Cataloging and Classification Section. Competencies and Education for a Career in Cataloging Interest Group, 2008-Present

Association for Library and Information Science Education, 2004-Present

  Committees:
  Library Materials Price Index Committee, member and consultant, 1998-2002

State Service

Indiana Library Federation, 1993-Present.
  Committees:
  Technical Services Division, member, 2008-2010

  Committees:
  Scholarship Committee, 2009

University Service
Indiana University Purdue University Indianapolis, External Affairs Coordinating Council, 2008-2013
Indiana University Purdue University Indianapolis, Graduate Recruitment Council, 2010-2013
Indiana University, School of Informatics and Computing, Department of Library and Information Science, Indianapolis, Curriculum Committee, 2012-Present
Indiana University, School of Informatics and Computing, Scholarships & Awards Committee, 2013-Present

OTHER PROFESSIONAL ACTIVITIES

Reviewer: Serials Review, a peer-reviewed scholarly journal for the international serials community covering all aspects of serials librarianship, 2004-Present

Reviewer: The Electronic Library, a peer-reviewed scholarly journal highlighting the latest research and on-going developments in today's digital libraries, museums, and related information environments worldwide, 2015-Present.

Graduate Recruitment for the LIS program, 2004-2012.

Organizer: Library Career Expo, Indianapolis, IN, March 6, 2010