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Innovation Adoption and Diffusion in Synchronous Tutoring Owls: A Cross-Contextual Case Study Using Diffusion of Innovations Theory

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INNOVATION ADOPTION AND DIFFUSION IN SYNCHRONOUS TUTORING OWLS: A CROSS-CONTEXTUAL CASE STUDY USING DIFFUSION OF INNOVATIONS THEORY

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ABSTRACT

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Synchronous online tutoring shares many attributes with face-to-face tutoring such as real-time, document collaboration, and conversational cues provided by audio and video, yet writing center professionals know seemingly little about synchronous tutoring OWLs due to the lack of formal publications about synchronous online tutoring coupled with the prevailing paradigm that seeks to transfer face-to-face tutoring practices to online synchronous tutoring, which overshadows the innovation processes taking place in synchronous OWLs. The purpose of this study was to document emergent practices in the use of two different synchronous tutoring technologies and the processes by which those practices were adopted and implemented in each OWL, using the theoretical framework of Diffusion of Innovations (DOI). A qualitative, case-study methodology was used to explore the contextual-based knowledge of tutors and writing center directors within each case. Several DOI principles emerged to explain the relationship between the prevailing face-to-face paradigm and the selection, reinvention, and adoption of each synchronous tutoring technology and its related tutoring practices. The findings suggest that writing center professionals could benefit from enhancing their understanding of DOI's social system concept and its symbiotic relationship with the established roles of metaphor and previous experience in synchronous tutoring innovations.

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CHAPTER I

INTRODUCTION

Background of the Problem

The growth of distance education has naturally led to increased attention paid to online writing instruction (OWI) and Online Writing Labs (OWLs). I am, quite frankly, the epitome of both of these traditions as a current online writing instructor and online writing tutor, who also happens to be a former online graduate student. The bulk of my own academic teaching experience—nearly ten years—has occurred within the realm of OWI. During this time, I taught online classes including computer literacy, introduction to web design, technical writing, general communications courses, English Composition, and survey of literature courses at over a dozen online institutions, many of which were proprietary or for-profit. Thinking back to the earliest of these years, I can recall participating with other online adjunct instructors in virtual "Faculty Lounges" housed within BlackBoard about the obvious missing writing support for online students. Our requests to the administrators and faculty managers went unanswered at the time, so we were limited to directing students to resources and handouts found at the Purdue OWL and other university websites. These resources were considered OWLs, but they did not involve the interactive one-on-one tutoring that students so desperately needed to improve their own writing processes (For a discussion of Koster's three OWL types see Chapter 2). While I felt that such information was a good start for assisting my online students, I still could not help but feeling like they were missing out. I often wondered, "Where can my online students go to receive help 'outside' of the classroom?" and "How can we assist online students in improving their individual writing process for the long-term?"

Since then, I have personally witnessed more interactive OWLs take flight at both traditional brick-and-mortar institutions as well as online institutions. Interactive tutoring was offered through asynchronous email tutoring where students submitted their assignments online through a drop box (either web-based or within a platform such as Blackboard) and receive guided feedback about the areas needing correction, and more importantly, how to apply that knowledge to immediate assignments and beyond. At the online institutions where I taught, asynchronous email tutoring was usually offered through third-party services such as Smarthinking or eTutor. At traditional brick-and-mortar institutions, asynchronous email tutoring was usually provided in-house, as a major new undertaking for the physical writing center, if resources allowed. So, when I began my PhD studies at Old Dominion University (ODU) as an on-campus student in 2007, I was ecstatic to find out that ODU's Writing Center offered email tutoring to distance students, especially after my many years of OWI experience where individualized writing instruction was mostly limited to self-paced activities found at the bottom of handouts and worksheets (very few universities knew of and/or subscribed to Smarthinking). I also completed my entire master's degree online, so I had first-hand knowledge of what my online students were experiencing: they were actively seeking assistance with writing, math, and other academic-related concerns, and found that none was available.

ODU's writing center was a classic example of Koster's (2002) interactive OWL—we had an online presence, through a university webpage and occasional announcements for writing center services shared in the daily bulletin emailed to the entire university community, and offered asynchronous email tutoring to online students. We also made obvious attempts in our writing center to keep email or asynchronous tutoring practices fairly similar to face-to-face practices. In fact, email sessions received the same amount of time as was customary in face-to-

face sessions (approximately 50 minutes) and still focused on higher order concerns such as thesis, unity, and organization over that of lower-order grammatical concerns by training tutors to embed comments rather than over-writing or correcting the student's own text (DePew & Lettner-Rust, 2009). At last, I believed I had found a practical model to solve the problems from my OWI experiences—a model concerned with the collaborative long-term goal of "improving students and not just student writing," affectionately coined as the Burkean Parlor Model of tutoring (Lunsford, 1991). My fellow tutors, understandably, still preferred the face-to-face sessions with the live exchange of dialogue and conversation queues, which they believed were altogether missing from the less productive email tutoring method considered to be "at odds with the collaborative and dialogic flow associated with face-to-face consultations" (Neaderhiser & Wolfe, 2009, p. 61). Further research by Coogan (1995) and Anderson (2002) echoed this belief. Alternatively, I felt that any individualized feedback was better than none, so the online sessions became my specialty, as years of OWI experience made the process of embedding comments and asking open-ended questions a rather easy transition. I did not find my preference for email tutoring or my colleagues preference for face-to-face tutoring to be problematic, though, as I figured it had something to do with each tutor, including myself, working from a place of comfort and familiarity.

The preference for live, interactive sessions (predicated on the superiority of face-to-face tutoring practices) eventually led the Writing Center at ODU to develop another tutoring option for students: live, synchronous tutoring using Adobe Connect. The transition at ODU was a lengthy endeavor that took several months and the collaboration of the Writing Center, the English Department, and university technical support, but it is now the primary form of distance tutoring at ODU. As indicated in recent writing center conferences and journal publications,

there has been slow, but steady, growth in the area of live synchronous tutoring using programs such as Adobe Connect, Wimba, WebEx, SecondLife, and Elluminate among others (Chi Ng, 2007; Enders, 2001; Griffin, 2008). The common theme running through these recent studies is the appropriation of various software applications for use in a writing center context, paying special attention to audio, video, and document-sharing capabilities. This growth is still relatively small in comparison to asynchronous OWLs, as less than 10% of self-reported OWL institutions have actually explored the use of fully interactive synchronous communication for online tutoring (Neaderhiser & Wolfe, 2009). The few writing centers experimenting with synchronous tutoring at the time enacted an early shift into the third phase of Koster's (2002) OWLs—lives OWLs, which offered synchronous tutoring to replicate the face-to-face experience as closely as possible.

Indeed, the prevailing paradigm in writing centers is one of replication as we actively seek technology solutions and develop new tutoring practices and policies all in an attempt to mimic experiences found in face-to-face tutoring. Indeed, many writing center professionals view anything other than face-to-face tutoring as a problem needing correction. Such practices are thoroughly complicated by Beth Hewett's (2010) work entitled, *The Online Writing Conference: A Guide for Teachers and Tutors.* In this work, she interrogated the "borrowed" theories of face-to-face instructional practices that are uncritically applied to both OWI and the tutoring of writing from a distance. Where my fellow tutors had to be trained to not fall back to current-traditional-rhetoric (CTR) and "fixing errors" within online students' papers, I had to be trained to not take over the tutoring session, thereby silencing the student's own ideas (DePew et al., 2006), resulting in an obvious disconnect between what was expected of us as instructors and as tutors. Hewett (2010) would argue that such dissonance stems from the often implicit face-to-

face practices that are embedded in online practices, both for the teaching of writing and one-to-one conferencing with students, which often "choke" or "constrain" OWI and online conferencing from progressing in its own right. Though the arguments about the impact of existing practices play an undeniable role in the tutoring process, I also instinctively knew that the face-to-face tutoring paradigm was just one of several factors that impacted the tutoring processes used in writing centers. Specifically, I knew from the months of research and rounds of pilot testing at ODU, that every technology has its own set of affordances that impact the tutoring process in unique and challenging ways. And, even when the technology itself remains constant, it does not guarantee that the technology will be successful at a different writing center (i.e. able to be used for synchronous tutoring) or that it will be used in the same manner at a different writing center; take for example, the use of Adobe Connect at ODU and National University where the program is used for tutoring, online course meetings, and small group discussions. This led me to believe that there were a number of intangible factors related to using a new tutoring technology, which was not restricted solely to the technology itself or the face-to-face tutoring metaphor we were attempting to replicate.

Thus, I turned to the Diffusion of Innovation (DOI) theory, which is a stable research tradition that studies the communication and adoption process of a new innovation among members of a social system, including the various factors which affect the adoption, re-invention, or rejection of new innovations (Rogers, 2003). As writing center professionals, we have a passion to improve our writing centers and their services, which means that we are in a constant state of innovation, with several innovations taking place at any given time such as new technologies, filing procedures, and tutoring processes. According to Rogers (2003), an innovation is any "idea, practice, or object that is *perceived* as new by an individual or other unit

of adoption" (p. 12, emphasis my own). Take, for instance, a seemingly mainstream writing center process such as the implementation of a digital filing system for storing student papers; according to DOI theory, this process is still an *innovation* since it is taking place within a different context or *social system* for the first time, regardless of the number of other writing centers using the same or similar processes. In other words, placing the innovation into a new social system makes, or remakes, the innovation as new—since the experience itself is relative to the context. Though many innovations are technological in nature, innovations can and do include new (and modified) processes, standards, and practices as well, which is especially significant for English Studies and Writing Center professionals. Thus, the classification of something as an innovation and the measure of its success will vary based on a number of different factors.

As writing center professionals, we instinctively know when an innovation works well and when it does not. What we lack is the theoretical knowledge and language for unraveling the mystery behind *why* the innovation did or did not work for a particular writing center context, especially when an innovation is reported as a viable, working solution in a writing center other than our own. It is the entire innovation decision-making process—beginning with the initial decision to adopt an innovation and continuing all the way through its implementation, reinvention, or rejection—that often eludes us as writing center professionals. DOI theory can help answer questions such as, "What factors contributed to the successful adoption of a particular innovation?"; "What factors prevented a particular innovation from working in my writing center?"; and, "How well does a particular innovation align with the social system of my writing center and my institution?" DOI will allow English Studies and Writing Center professionals to better understand the nature of technological innovations while providing a

concrete vocabulary to document not only *what* is happening in our writing centers, but *why* it is happening and the *implications* of our decisions.

Statement of the Problem

There is a problem in the prevailing paradigm of writing centers wherein writing center professionals seek to transfer face-to-face tutoring practices to online synchronous tutoring with little examination of the relationship between those practices and the newly adopted tutoring software. This problem has negatively impacted writing center directors' understanding of the nature of technological innovations and the factors that might influence the successful adoption of a tutoring innovation. This study attempts to remedy the problem using the principles of DOI theory to investigate the role of metaphor and previous experience in innovation adoption along with other contributing factors that might influence the adoption, rejection, and reinvention of new innovations. Thus, I view the role of metaphor and previous experience as a component of DOI theory and the innovation-decision process, making them implicit to the research questions guiding this study.

One possible cause of this problem is the lack of formal publications documenting the complete innovation-decision process of writing center directors, from the knowledge stage all the way through confirmation. According to Rogers' DOI theory, the adoption process of an innovation is usually comprised of five stages including knowledge, persuasion, decision, implementation, and the final stage of confirmation (2003). Only when the confirmation stage of adoption is fulfilled, is the process of adoption complete. Currently, only a handful of studies have explored the use of interactive synchronous tutoring in OWLs that include document sharing capabilities and at least one other form of interactivity, such as audio or video (Benton Saunders, 2000; Carpenter, 2009; Chi Ng, 2007; Enders, 2001; Griffin, 2008; Melzer, 2005;

Mohrbacher, 2007). A number of conference presentations also exist, which serve as a kind of informal publication where writing center professionals detail their experiences using collaborative software for synchronous tutoring purposes, usually on a trial basis, with very few of these studies making it to formal, peer-reviewed publications. The unpublished nature of such innovations is not uncommon as writing center history has fully documented the nature of the writing center director whose primary duties typically do not include research (Balester & McDonald; 2001; Harris, 1990; Healy, 1995). The newness of an innovation is closely related to the stages of knowledge, persuasion, and decision, and these stages cannot be completed when there is a great deal of uncertainty about an innovation and its consequences. So, the lack of published research on writing centers using online synchronous tutoring obscures useful pedagogical experiences related to adopting synchronous tutoring technology and related practices, and particularly, impedes the flow of information from the knowledge stage to the final confirmation stage (Rogers, 2003).

A second possible cause of replicating face-to-face tutoring practices in online synchronous tutoring is the significant role that metaphor and previous experience play in the innovation-decision process. Roger's (2003) DOI theory explores how individuals interpret new innovations during the innovation-decision process based on what they already know so that old ideas, customs, or cultural practices become the mental maps that individuals use to assess new ideas. Lakoff and Johnson's (1980) theory of metaphor is a powerful complementary theory to leverage alongside DOI to further demonstrate the significance of mental maps, social network theory, and metaphors as a framing device, which further aids in understanding the connection between *previous experience* and *rate of adoption.* As Hewett (2010) insisted, online conferences do not have to be "isolating and impersonal," but the field will only evolve if we can

manage to "rethink our conventional, and possibly unfounded, understandings of online conferencing" (p. xi) by removing restrictive comparisons between new innovations and older, more familiar innovations and related practices. In other words, we must refrain from comparing synchronous tutoring to our previous experiences with face-to-face tutoring, and more importantly, we must refrain from blindly imposing those early experiences and practices onto synchronous tutoring based solely on its familiarity. As writing center professionals, we need to better understand the role of previous experience and working metaphors of our end users if we hope to truly understand the subtleties behind what makes an innovation successful and the various factors that influence the adoption, reinvention, and rejection of an innovation.

Due to the lack of formal publication of writing center studies focused on synchronous online tutoring and the significant role of metaphor and previous experience in new tutoring innovations, we know relatively little about synchronous tutoring OWLs. As a result, it is necessary to examine the innovation-decision process of writing center directors and the various factors that influence writing center director's overall decision to adopt the innovation.

Purpose of the Study

The purpose of this study was to investigate the diffusion of synchronous tutoring technology in OWLs by using the framework of diffusion to document emergent practices in its use and the process by which those practices were adopted and implemented. Based on the literature review and review of Roger's Theory of Diffusion of Innovation (2003), this study explored two different writing center social systems using collaborative software for the purposes of online tutoring: University of Northeast's use of Google Hangouts and University of Midwest's use of Skype (these are pseudonyms). I examine the relationship between each social system and the writing center directors' decision to adopt a particular innovation. The study also

identified various factors within each social system that may have increased or hindered the adoption of a particular innovation, including the adopter's previous experience. In addition, this study analyzes the perceived attributes and consequences of each innovation in connection with each writing center's social system to better understand the various factors that influenced the adoption, reinvention, and rejection of writing center innovations. Finally, I compare the overall innovation-decision process between each case or social system to highlight the adoption factors, which might prove more significant or relevant to tutors versus writing center directors.

An additional purpose of this study is to contribute to the limited knowledge about synchronous tutoring in writing centers and to provide writing center professionals with an established research paradigm and theory for exploring, articulating, and documenting writing center innovations. A study of synchronous tutoring innovations in writing centers from the perspectives of tutors and writing center directors helps examine attitudes about tutoring, in general, and computer-mediated tutoring such as online synchronous tutoring, specifically. This examination could provide guidance for writing center professionals looking to extend or replace existing tutoring options (and related practices) in their own institutional contexts.

Research Questions

Based on the purpose of this study, the research questions include:

1. *Why* are writing center administrators designing synchronous A/V live OWLs? How might DOI's *social system* concept help us to make sense of the perceived needs the new OWL was intended to address?
2. *What* OWL designs and related practices were adopted? How might DOI's *perceived attributes* help us to make sense of each writing center administrators' overall decision to adopt the innovation?

3. What are the *implications* of these new OWL designs and related practices? How might DOI's *consequences of innovations* help us to make sense of each writing center administrators' decision to continue or discontinue the adoption?

The first group of research questions consider the exigency or circumstances leading up the new synchronous tutoring OWL design by gathering data about each writing center's social system. To understand the knowledge and persuasion stages of the innovation-decision process, I conducted phone interviews with the writing center administrators at University of Northeast (UNE) and University of Midwest (UMW). I also relied on documentation review to answer this research question. This combined data collection method allowed me to understand the prior conditions necessary for adoption in each social system such as previous experience, level of innovativeness, needs and/or problems, and social system norms. I also noted the characteristics of each writing center's social system such as the number of tutors, demographics of the student population, and unique writing center philosophy which impacted tutoring practices and overall decision for adopting a specific synchronous tutoring software.

The second set of research questions address what OWL designs were adopted by each writing center social system. Answering this question required a discussion of both technology and practices and the ways they affected the decision-making process, so I conducted tutor surveys to gather specific data about the perceived attributes of the technology side of the innovation. This information was then paired with writing center directors' interview data and documentation review to better understand both aspects of the innovation adoption. Understanding both aspects of the innovation adoption in writing centers was vital because it allowed me to discuss the innovation-decision process stages of decision and implementation made by writing center directors which includes, in some cases, reinvention.

The third group of questions considered the implications of the OWL designs and practices. Guided by DOI theory's notion of the consequences of innovation, I analyzed the ways that perceived consequences, or outcomes, influence writing center administrators' decision-making process. I made use of several methods of data collection when answering this research question including tutor surveys, writing center director interviews, and documentation review. This research question informed the discussion of the final stage in writing center directors' innovation-decision process, the confirmation stage, which can further solidify the adoption of the innovation in the writing center social system or lead to its later discontinuance.

Significance of the Study

This study of synchronous tutoring OWLs using DOI theory advances current scholarship in the area of writing center innovations in several aspects. First, this study supports current research of using collaborative software for synchronous tutoring by attempting to document the entire innovation-decision process. The few scattered publications about online synchronous tutoring, including both formal and informal publications, fail to capture the entire innovation-decision process, including the selection and/or reinvention of the innovation, which are significant components of adoption for writing centers (see Carpenter, 2009; Enders 2000; Melzer, 2005; Mohrbacher, 2007). Furthermore, these publications often shy away from discussion of the consequences or rejection of innovations, since researchers who do not fully understand the nature of technological innovations and diffusion theory are more likely to report successes than failures, when the latter is often more instrumental to future adoptions since it forces technology adopters to come to terms with the various layers of the social system and its natural affordances and constraints (Rogers, 2003). By combining the perspectives of both end users through the framework of DOI theory, this study contributes to the body of knowledge

about the innovation-decision process and the various factors that impact this decision, something that is largely overlooked in current writing center research.

Second, this study can aid writing center directors in understanding the emergent practices that result from adopting a new innovation. This is especially important in the case of the adoption or adaptation of pre-existing innovations for the purposes of the writing center, as is the case with collaborate software, because the technology itself remains fixed or unchanged regardless of the social system. As a result, writing center directors must make a series of decisions about the tutoring practices and processes that will be implemented along with the new technology innovation in order for the innovation to be successfully adopted and integrated into the writing center social system. This makes innovation adoption in writing centers a two-step process: (1) the adoption of the technology itself, and (2) the adoption of the emergent practices. Rogers (2003) referred to this phenomenon as technology clusters, where a package or series of innovations diffuse through the social system at about the same time, making them connected and mutually dependent. As a result, writing center professionals must acquire knowledge of both aspects of the innovation-decision process in order to make informed decisions about their own writing centers in the future. This study contributes to the knowledge of innovation clusters in writing centers, placing special emphasis on the innovation-decision leading to the adoption of the innovation itself and its emergent practices.

Third, this study develops and extends the handful of writing center studies using DOI theory that are limited by geographical or institutional constraints. Tan (2011) used DOI to explore the overall design of both physical writing centers and OWLs in order to meet the needs of ESL students; the study included several writing centers in various institutional contexts, but each writing center was located outside of the U.S., which extends beyond the scope of this

study. Benton Saunders (1999) primarily focused on the technology-related aspects of FirstClass collaborative software for online tutoring to include the perceived attributes and rate of adoption whereas Inman's (2000) object of analysis was the collaborative decision making process in the series of previous interface designs of the OWL website. These last two OWL studies provided a useful starting point for this study, but they are limited to a single institutional context in the U.S., leaving room for this study to extend the discussion by investigating two different innovations across two different institutional contexts. Furthermore, this study focuses on the technology attributes and emergent tutoring practices, thus highlighting the significance of these two inter-related concepts for writing center professionals.

Finally, this study is significant to both the research traditions of writing centers and DOI because it makes use of DOI theory in two ways: 1) to determine *how* the principles of DOI theory might explain the technology adoption process and related practices *within* and *across* different writing center contexts and 2) to generate new theory, or expand DOI theory, if new patterns emerge that cannot be otherwise explained by DOI in its present form. As a result, this diffusion research study will help clarify the role of technological innovations in writing centers and the various factors that affect the adoption, reinvention, and rejection of new innovations.

Summary

Writing centers are charged with the important task of finding effective ways to improve students and student writing, and this task has led to a number of writing center innovations ranging from physical technology, such as iPads and interactive whiteboards, to online software such as subscription programs, instant messaging, web-based conferencing, and an established social media presence (Anderson, 2002; Benton Saunders, 1999; Carpenter, 2009; Enders, 2000; English, 2000; Hawkinson Melkun, 2010; Inman, 2000; Melzer, 2005; Mohrbacher, 2007;

Shewmake & Lambert, 2000; Tan, 2011; Thurber, 2000). Synchronous online tutoring is another part of the long history of writing center innovations, and the purpose of this research study was to investigate the prevailing paradigm in writing center theory to replicate and transfer face-to-face tutoring practices to online synchronous tutoring with little examination of its impact on the overall tutoring process.

In order to understand the factors that influence the online synchronous tutoring process, this study uses the DOI theoretical framework to explore the innovation-decision process of two synchronous tutoring technologies and related practices being diffused across two different writing centers. Specifically, the study explores the relationship between each social system and its decision to adopt each innovation, identifies the various factors affecting the innovation-decision process at each writing center including adopter's previous experience and tutoring metaphors, discusses the consequences of each innovation in connection with each writing center social system and available stakeholders, and compares the innovation-decision process between each case or writing center social system.

I designed a series of research questions to determine the innovation-decision process of writing center directors and the various factors that affect each director's decision to adopt the innovation. Specifically, I investigated DOI concepts of the social system, perceived attributes, and consequences of the innovation to determine what role each concept might play in each writing center director's innovation-decision process. Thus, the principles of DOI were used as a starting point in this study to guide the research questions and to craft the overall research design.

Organization of the Dissertation

This dissertation is organized into six chapters, including the introduction to the project above (Chapter 1).

Chapter 2 presents the literature that supports the research questions for this study. The literature review discusses relevant research studies, reviews major issues central to the study, and provides an overview of the theoretical foundations of this study, which include the theory of diffusion of innovation and the pedagogy of writing centers and OWLs. By demonstrating the nature of technological innovations in tutoring technologies and tutoring practices in OWLs, the literature review provides an understanding of the purposes behind the research study and the research questions being asked.

Chapter 3 presents and describes the methodology employed in this study. It describes the theoretical framework of DOI used to guide the research design, including the strategies built into the research design to overcome the three major criticisms of DOI. It outlines the planning, preparation, and data collection methods to include the design of the two research instruments, the tutor survey and writing center director interview protocol. The interview protocol was designed to capture the writing center directors' overall innovation-decision process and was used to answer each research question, though most heavily relied upon for research questions 1 (social system) and 3 (consequences of innovation). The tutor survey was designed to capture information for research question 2 about the perceived attributes, thus extending the discussion of the writing center director interviews. The chapter also introduces the two case studies and offers an explanation of the technological innovation each writing center adopted.

Chapter 4 presents the results of the study. The results are organized into three areas, which follow the research questions for the study: social system, innovation and attributes, and

consequences. The results integrate the data from three different methods: writing center director interviews, tutor surveys, and writing center documentation such as the OWL website and tutor handbooks.

Chapter 5 offers a detailed analysis and discussion of the results of the study and its implications for writing center professionals. A new perceived attribute, *residual value*, is introduced as a possible expansion of DOI theory for writing center professionals. The limitations of the study are also reviewed, as it relates to the research design and results of the study.

Chapter 6 reviews the most significant results of the study and recommends several areas of future research for writing centers and English Studies, with several deriving from the limitations of the study. The chapter concludes with a number of practical and pedagogical recommendations for writing center professionals interested in designing synchronous OWLs.

CHAPTER II

LITERATURE REVIEW

Introduction

This chapter provides an overview of the most important bodies of literature in online writing centers and adoption of tutoring innovations by writing center professionals, using the theoretical framework of Diffusion of Innovations as a foundation. The purpose of this literature review is to reframe the history of writing centers and OWLs through the lens of DOI theory by discussing the innovative changes in tutoring processes that take place after the adoption of a new technology and to explore the factors that sway writing center professionals in their eventual decision to adopt or reject collaborative software for the purposes of synchronous tutoring. This chapter is organized into four major sections: 1) the history and research tradition of diffusion of innovations; 2) the history of physical writing centers and adoption of several key tutoring innovations; 3) the history of OWLs and the role of technology innovation; and 4) the role of metaphor and previous experience in OWLs and how they shape perceptions and expectations of a new innovation (to include the eventual selection or adoption of the tutoring interface used to replicate the face-to-face experience), leading to the eventual adoption or rejection of an innovation. Furthermore, these four main sections of the literature review guide the research design, data collection, and analysis of this study.

History of Diffusion of Innovations

Growing out of research from the early 1900s, DOI research became a single, integrated body of concepts with both cross-cultural and interdisciplinary roots. Its use became widespread because it offered researchers valuable insights into the qualities that made an innovation spread successfully, the importance of the communication channel and network, and the different needs

of users towards an innovation. Tarde and Parsons (1903) first introduced the concept of diffusion by studying the role of imitation between people in psychological interactions. Tarde and Parsons found that the more similarity between an innovation and the adopters' previous adoption experiences, the easier the adoption process would be. Ryan and Gross (1943) used diffusion theory to conduct a study in Iowa to trace the adoption of hybrid corn seed used in farming. From the 1940s to 1960s, DOI was heavily used by rural sociologists to investigate the diffusion of agricultural innovations by farmers spanning from the United States to more impoverished nations (see study of mass media and interpersonal communication channels on agricultural innovation in Bangladesh by Rahim in 1961 and adoption of chemical fertilizer, new potato varieties, and pesticides in Columbia by Deutschmann & Fals-Borda in 1962). Other cross-cultural and interdisciplinary diffusion research can be found in the fields of anthropology, public health and medical sociology, communication, marketing and management, geography, and education to name a few.

Educational researchers are also partial to diffusion research as they study and investigate the spread of new teaching ideas and technology adoptions among institutional stakeholders whose studies can then be replicated or expanded for applied use in international institutions. Some recent examples of diffusion in educational research include Liao (2005) who investigated the adoption of a web-based course management system by New York college students; Samarawickrema and Stacey (2007) who studied the adoption of a web-based course management system by academics in an Australian university; Almobarraz (2007) who studied the adoption of the Internet in teaching and research by faculty at an Islamic university; Strudler and Wetzel (2005) who studied the adoption of electronic portfolios in teacher education program by faculty and students at an American institution; and Surry (1997) who conducted a

general study of the various uses of diffusion research in instructional technology, separating diffusion research into two different realms: adopter-based and developer-based. Such findings suggest that writing center researchers could learn a great deal from the application of diffusion theory in the field of education since it shares many of the same values and attempts to answer many of the same questions as the Writing Studies discipline, especially as related to student learning and literacy training.

DOI theory has a solid history and its empirical foundation is widely applicable to a number of academic disciplines. Each discipline employs DOI theory in different ways resulting in a strong research tradition with "a series of investigations on a similar topic in which successive studies are influenced by preceding inquiries" (Rogers, 2003, p.39). Specifically, a bulk of the research in diffusion theory has been on how to understand the decision-making process of adopting a new innovation, how to speed up the rate of diffusion, and how to understand the ways in which the social structure of a system affects the innovation's diffusion. Four main elements of DOI theory are identifiable in every diffusion research study, however, regardless of the academic discipline: *innovation*, *communication channels*, *time*, and the *social system*.

Rogers' Diffusion of Innovation Theory

According to Rogers (2003), "*Diffusion* is the process by which (1) an *innovation* (2) is *communicated* through certain *channels* (3) over *time* (4) among members of a *social system*. It is a special type of communication, in that the messages are concerned with new ideas" (p. 11). While it is possible for a diffusion study to focus more heavily on one or two of these elements, all four will still be easily recognizable in any diffusion study. The following sections provide a brief overview of each required diffusion element: 1) innovation, 2) communication channels, 3)

time, and 4) social system. These elements are reviewed here for the purposes of summarizing DOI theory, but they are also essential to understanding the results of this dissertation study, including the implications and future research where each element is referenced again (see Chapters 4, 5, and 6).

Innovation. According to Rogers (2003), an *innovation* is "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (p. 12), even though it may not be a new innovation, generally speaking. For example, when a writing center begins email tutoring for the very first time, the processes adopted for tutoring via email would become the new technological innovation for that writing center regardless of the fact that the technology itself has been in existence since the 1990s for general public use (and since the late 1990s for email tutoring). Similarly, real-time collaborative software has also been available for quite some time; however, researchers and educators have only recently begun exploring and evaluating the quality, benefits, and possibilities of applying this form of real-time collaborative software to writing centers for the purposes of online synchronous tutoring. This means that using real-time collaborative software to benefit writing centers and OWLs is still in its infancy. Taking place virtually, synchronous tutoring sessions are quite different from physical tutoring sessions or email asynchronous sessions, and their acceptance by writing center directors, tutors, and students need to be examined further. Diffusion of innovation theory is applicable to this examination of using real-time collaborative software in writing centers.

DOI theory also provides researchers with a way to study the innovation itself through the *perceived attributes* of the innovation, which are characteristics associated with a particular innovation as imagined by potential adopters. Rogers (2003) identified the five perceived attributes as relative advantage, compatibility, ease-of-use, trialability, and observability; these

five attributes were later expanded to eight attributes by Moore and Benbasat (1999) who added image, visibility, result demonstrability, and voluntariness (the last three categories replaced observability). Relative advantage explains the perceived advantage that a new innovation has over its predecessor, such as email tutoring. Compatibility is used to explain the consistency between the innovation and values and norms of the social system. Ease-of-use is the opposite of complexity and is essential to the successful adoption of the innovation. Trialability measures the level of experimentation allowed by an innovation to reduce the level of uncertainty. Image measures the status or social prestige of using an innovation in a social system, such as within the Writing Center, English Department, or within the larger university system. Visibility measures the ability for others to see the innovation being used in the social system, which results in faster adoption. Results demonstrability measures how easy it is to explain the results of the innovation to others. Voluntariness measures the level of free will associated with using or adopting the innovation; this attribute is especially important for writing centers since tutors are the main end users and often lack a voice regarding the adoption of tutoring technology and related practices. The perceived attributes are used to explain the innovation's rate of adoption across a social system, which explains why they are so heavily studied and analyzed in DOI research studies.

DOI theory reminds us that writing itself is an innovation just like the many tools or technologies used for writing, which has significant implications for writing center professionals. DOI Theory overlaps in many ways with Baron's (1999) seminal text in composition theory, "From Pencils to Pixels: The Stages of Literacy Technology," wherein he traced various technological inventions and their impact on literacy, from the pencil to the computer, while also demonstrating how new technologies initially start by sharing the traits of another, older

technology, only assuming its own personality after it is deemed accessible, useful, and trustworthy its own right before widespread adoption can occur. Writing, for example, had to first act as a record of oral culture and gain the trust of the masses before it could move onto the creation of new ideas. In short, Baron asserted that "new communications technologies, if they catch on, go through a number of strikingly similar stages" (p. 16). Even though Baron is not using DOI theory in this piece, per se, it can be used to illustrate DOI principles quite well because Baron clearly articulated how writing itself is a technology (and innovation) which restructured thought and related practices, by extension (see Plato's Socrates in Phaedrus and Ong in 1986 who both discussed the role of writing and its ability to restructure our thoughts and memories). Within the framework of DOI theory, one of the largest factors used to predict or determine the rate of adoption is that of the perceived attributes. DOI's perceived attributes of the innovation, especially *ease of use* and *relative advantage*, intersect in some interesting ways with Baron's (1999) concepts of *accessibility*, *function*, and *authentication*.

The easiest correlation to see is between that of *function*, mentioned in Baron's piece, and DOI's *ease-of-use* attribute. In other words, if the technology is too cumbersome, then it will likely not spread outside of the smaller community or area. Baron's next category, *accessibility,* is straightforward, as access to the technology will obviously affect its spread across a geographical location; if it is difficult to acquire, then its popularity will be hindered as a result. In "Pencils to Pixels," Baron used English pencils as an example to discuss the balance between cost and accessibility, but cost is only one of the many factors that affect access. In DOI theory, accessibility and cost are covered under the larger umbrella of *relative advantage*, but it can be measured in several different ways including low initial cost, the ability to save time and effort (i.e. accessibility), immediacy of reward, and economic profitability. To extend Baron's example

of the pencil, relative advantage simply means the use of the innovation, such as U.S. made pencils, must have an advantage over other options, such as its predecessor (i.e., British and French pencils). As a result, relative advantage is one of the strongest predictors of innovation adoption because it deals with the delicate balance between expected benefits and cost of innovation adoption, though it is much more inclusive than Baron's accessibility concept. Furthermore, while the relative advantage concept may appear quite broad on the surface, it is actually a rather accurate description of each subcategory within, which all are clearly suggestive of an *advantage* (for whatever reason) over a competing innovation or technology.

Finally, Baron's *authentication* concept deals with making the technology trustworthy, credible, or finding a way to validate it—he used examples of seals, watermarks, and even serial numbers as previous attempts of validation methods for newly-introduced technology. This concept most readily maps to DOI's attributes of *trialability, visibility*, and *results demonstrability.* Trialability measures the ability for an innovation to be tried and tested before use; visibility, which measures the ability of others to see the innovation being used; and results demonstrability measures how easy it is to explain the results of the innovation with others, including its observability and communicability. In other words, if the innovation can be used for a trial period and its use can be seen and easily explained by others, then the technology (and its stated benefits) will be deemed credible and authentic. There are many different aspects that determine the authenticity of an innovation, and it appears that Baron's concept of authenticity only scratches the surface—which obscures, by extension, several different factors of authentication that are made readily apparent with Roger's DOI Theory and perceived attributes (such as *image* and *voluntariness*). Baron (1999) and DOI theory combine to provide a powerful

reminder that the history of innovations in writing centers must include writing itself and other writing technologies that had a direct impact on writing center traditions.

Re-invention and, to a greater extent, *re-mediation* are also major aspects of DOI's innovation concept. According to Rogers (2003), re-invention is "the degree to which an innovation is changed or modified by a user in the process of adoption and implementation" (p. 17). In the case of this study, the adoption of new tutoring practices is actually the innovation, not the technology itself, though they are interdependent in the social system. The innovation resides in the tutoring process itself because it varies in each social system, where the technology itself is left unaltered. It is also possible, in the case of proprietary systems, for writing centers to actively customize an innovation to fit their unique social system in which case the technology itself could become more essential to the diffusion study, but the tutoring processes would still be essential to understanding the rate of adoption. Baron (1999) stated that the computer is a technology, and like any other technology, "we try it on, try it out, reject it, and then adapt it to our lives—and, of course, adapt our lives to it" (p. 16). Similarly, we must remember that tutoring software is also just a technology, not an innovation, which borrows from previous adoptions.

Bolter and Grusin (2000), whose work is widely referenced by composition and communication scholars, define *re-mediation* as a strategy that media uses to recreate itself by borrowing from and refashioning existing media. To draw on Ferguson's comments in the *Everything is a Remix* video series (2010), creation is a two-part process that first requires one to "stand on the shoulders of giants" and to then "transform the old into something (relatively) new." Synchronous tutoring borrows: 1) audio-video technology and document-sharing capability from collaborative software programs to replicate face-to-face practices, 2) face-to-

face tutoring practices such as the role of talk/conversation, the shared document, and marginal notes; and 3) email tutoring practices associated with the online submission form and meeting the unique needs of graduate and/or distance students. In other words, synchronous tutoring would not exist without its predecessors of face-to-face tutoring, email tutoring, and conferencing software, all of which it "remixes" to form something new. Bolter and Grusin (2000) went on to state that "each new medium is justified because it fills a lack or repairs a fault in its predecessor" (p. 60). Synchronous tutoring has two predecessors: 1) it appears to fix the issues associated with email tutoring by re-introducing the talk or conversation aspect of face-to-face tutoring, assuming that live audio and/or video is used; and 2) it appears to fill the void left by face-to-face tutoring by reaching a larger demographic of students and holding students more accountable in live participation, which can be recorded for later playback. Though writing center professionals may not realize it yet, new innovations necessarily challenge and transform existing innovations while creating their own identities, and this includes the path being forged by synchronous tutoring.

Communication Channels. Communication channels are the "means by which messages get from one individual to another" (Rogers, 2003, p.18), and communication channels can be mass media-oriented, interpersonal, or interactive. Mass media communication channels include newspapers and other forms of broadcasting such as radio and television; as a result, they are the fastest means of informing potential adopters about a new innovation. Interpersonal communication channels are less effective in terms of wide-spread distribution but are more effective at the individual level since they involve face-to-face exchange of ideas. Interactive communication makes use of internet-based communication programs such as Facebook and other social media platforms. Rahim (1961) found that interpersonal communication channels

were more important to the overall rate of adoption than mass media channels because potential adopters were more likely to accept a new idea from other individuals who resemble themselves, especially with regard to education or socioeconomic status. This speaks directly to the concept of *homophily*, or the degree to which two individuals are alike in certain attributes. Rogers (2003) went on to state: "However, when two individuals are identical regarding their technical grasp of an innovation, diffusion cannot occur as there is no new information to exchange" (p. 19), which simply means that the knowledge of the innovation itself is all that is needed to distinguish the two individuals from one another. In fact, it is ideal if individuals are *homophilous* with everything except the knowledge of the innovation (i.e. they are *heterophilous* in this area as one individual is aware of the innovation and the other is not).

In the case of writing centers, it is more likely that interpersonal and interactive communication channels play a strong part in the adoption process. As previously discussed, writing center directors are not tasked with publishing research as part of their normal academic duties, so the spread of many new ideas takes place on the writing center listserv maintained by the International Writing Center Association (IWCA). This can be classified as a form of interactive communication since it is web-based. Interpersonal communication also takes place among writing center professionals via face-to-face and streamed conference presentations. Finally, once the innovation has been adopted, many writing centers make use of more interactive communication channels to spread the word across the university campus using Twitter, Facebook, and the OWL website. Some writing centers also make use of YouTube, a hybrid form of mass media communication, to spread ideas about new innovations available in its writing center such as new online scheduling software, live grammar hotlines, and online

tutoring options. In short, as suggested by DOI scholarship, diffusion is a social process, which explains the importance of interpersonal communication relationships in the spread of new ideas.

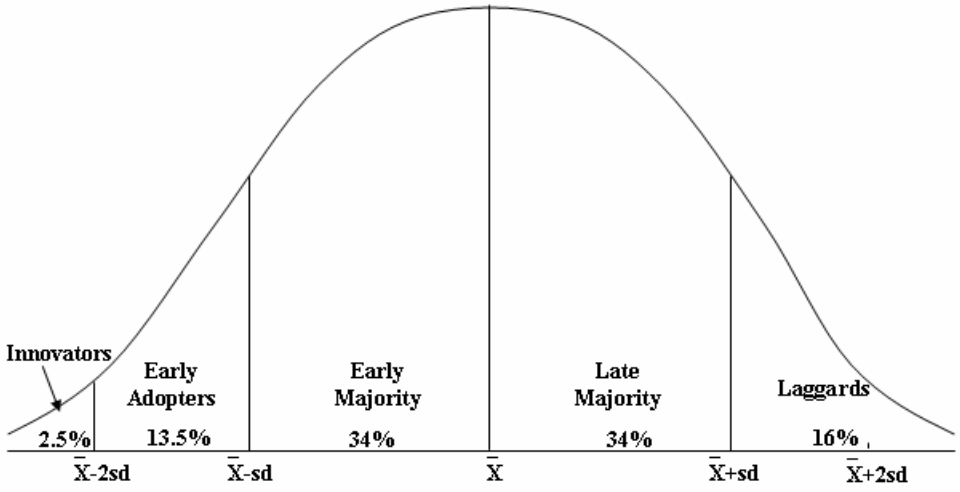
Time. There are three aspects of time in DOI research: the innovation-decision process, innovativeness and adopter categories, and the rate of adoption. Once a potential adopter is aware of a new innovation, he or she begins what is known as the *innovation-decision* process, which is "an information-seeking and information-processing activity in which an individual is motivated to reduce uncertainty about the advantages and disadvantages of the innovation" (Rogers, 2003, p.14). The innovation-decision process can be broken down into five main steps with each one covering an undetermined span of time: (1) knowledge is learning about the innovation's existence and how it works; (2) persuasion is forming a favorable or unfavorable attitude toward the innovation; (3) decision is engaging in evaluation activities while understanding advantages and disadvantages leading to a choice to adopt or reject innovation; (4) implementation is putting an innovation to use or possibly re-inventing it for certain contexts; and (5) confirmation is seeking reinforcement of the innovation-decision. The crucial point in the innovation-decision process is the decision to begin diffusing an innovation to potential adopters. Before any innovation comes into the public's view, it has to pass through the five stages to be accepted or rejected by individuals in the social system; thus it is necessary to understand how synchronous tutoring functions as an innovation in writing centers, what benefits synchronous tutoring can provide to users, and how synchronous tutoring options will be perceived during the innovation-decision process before they are accepted or rejected by writing center directors.

The innovation-decision process necessarily differs for each individual based on a number of factors such as previous knowledge, risk, and cost. These concepts relate to Rogers' (2003) second aspect of time, where he identified several categories of adopters to trace the level

of innovativeness in adopters based on the amount of time that an innovation has been present in a social system. Innovativeness is "the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system" (Rogers, 2003, p. 280). As the definition implies, innovativeness is a relative, continuous dimension that can be associated with one person or it can be a characteristic of the team, unit, organization, or society; therefore, analysis of the level of innovativeness is critical. The categories of adopters include innovators, early adopters, early majority, late majority, and laggards. Figure 1 below identifies the five adopter categories along with their influence on the rate of adoption.

Figure 1

Rate of Adoption and Point of Critical Mass



Note: Figure 1 is drawn from Rogers' Adopter Categorization on the Basis of Innovativeness (2003, p. 281).

Innovators (2.5%) are risk takers and able to cope with a high degree of uncertainty about an innovation; innovators communicate with a very small group of individuals, thus placing them on the fringes of the social system, but the news of their early ventures (failures or successes) makes them essential in the early stages of diffusion. Early adopters (13.5%) serve as role models for the rest of the system since they refrain from adopting too early, like innovators, and are known for making strong innovation-decisions. As a result, their approval and use of an innovation can be instrumental to the success and speedy adoption of an innovation. The early majority adopters (34%) are quite deliberate in their innovation-decision and are important in bridging the link between early and late adopters. There is a point at which an innovation reaches critical mass, which is represented by the orange line, but the innovation must be widely adopted in order to become self-sustaining further solidifying the role of early majority adopters in the overall rate of adoption.

The late majority adopters (34%) are often skeptical of new innovations, forced to adopt out of necessity or peer pressure, for example, purchasing a home computer and/or creating a personal email account. In the case of synchronous tutoring, the ambivalence and/or lack of knowledge about live synchronous tutoring options due to lack of publishing and reliance on face-to-face tutoring practices, could have possibly resulted in non-action on the part of potential adopters, thereby explaining the slow rate of adoption for live synchronous tutoring compared to the stable, continued use of asynchronous email tutoring. The laggards (16%) are considered traditional in values and innovations are heavily weighted according to past references, thus making laggards skeptical of new innovations. This could also be a factor in writing centers with institutional cultures that reject technology innovations in general or within writing centers

whose directors' privilege and/or prefer face-to-face tutoring practices to alternatives that may exist for students.

The last aspect of time is the rate of adoption, defined as "the relative speed with which an innovation is adopted by members of a social system" and it is measured by the length of *time* required for a certain percentage of the members of a social system to adopt an innovation (Rogers, 2003, p. 221). There are five variables that affect the rate of adoption of an innovation including the type of *innovation-decision* (voluntary, collective, or authoritative), the type of *communication channel* that increased awareness of the innovation among a group, the *perceived attributes* of the innovation, the extent of *promotion efforts* by the change agent, and the nature of the *social system*. Each of these variables impacts the amount of time it takes to diffuse an innovation across a social system, but the perceived attributes are believed by Rogers to account for 49 to 87 percent of variance when measuring the rate of adoption for a given innovation. In other words, innovations considered to have "greater relative advantage, compatibility, and the like, have a more rapid rate of adoption" (Rogers, 2003, p. 23). For instance, when an innovation is tested or implemented in a writing center context, the description and overall rating of the innovation can be mapped directly to the eight perceived attributes of Rogers, Moore, and Benbasat (see Chapter 3).

Time is an important aspect of innovation adoption, as the length of time that it takes to fully adopt and implement an innovation will vary from writing center to writing center. First, the *level of innovativeness* and the *rate of adoption* are important aspects to consider, especially since they might speak to the level of technology comfort or skill necessary for adoption or provide insight into how well-diffused an innovation might be within the social system given a certain set of conditions. Moreover, the *innovation-decision process* is a unique, individual

process made by writing center directors which can also vary drastically in length of time from the knowledge stage to the confirmation stage. An in-depth study of the innovation-decision process will prove useful to writing center scholarship by indicating the various factors which influenced the decision-making process, thus speeding up or impeding the total amount of time it took to fully adopt an innovation.

Social System. Diffusion takes place in a *social system*, which can be comprised of several discrete units, with each unit working together towards a common goal. DOI theory discusses the social system element in a number of different ways: the structure and norms of the system, style of opinion leadership, type of innovation decision, and consequences of the innovation.

The structure and norms of a social system can facilitate or impede diffusion of innovations because they both serve as a guide to members of the social system. The social structure can be hierarchical or informal in nature and is defined as "the patterned arrangements of the units in a system… [it] gives regularity and stability… [it] allows one to predict behavior with some degree of accuracy" (Rogers, 2003, p. 24). In a writing center, the formal top-down structure exists between writing center directors, tutors, and students where each member knows his or her role in the system. The informal structure makes use of interpersonal networks, which link members of the system to another, as in the case of tracing communication between tutors or between students. For example, in writing center settings the formal hierarchy flows downward from the Writing Center Director to the tutors and finally to the students, and if the Writing Center Director is either unwilling to innovate or uncomfortable with the innovation itself, then this reluctance will likely trickle down and even be absorbed by individuals lower in the system. Similarly, tutors collaborate and share information about their experiences via their interpersonal

network, so the perceived attributes of the innovation (informally discussed) might become the primary way that the innovation is perceived in the writing center social unit. In other words, if one innovation attempt goes awry, it could prevent other tutors from exploring the innovation for tutoring purposes. What this highlights is that the structure of a social system, from a DOI perspective, allows the system to provide a set of standards or "norms" for human behavior that are usually quite regular and dependable, including the types of user roles present in the system (i.e. writing center director, tutor, tutee, etc.) and overall perceptions of an innovation present in the system (i.e. face-to-face, email, synchronous tutoring).

The diffusion and adoption of the innovation also rests on Roger's (2003) definition of opinion leadership which is "the degree to which an individual is able to influence other individual's attitudes or overt behavior informally in a desired way with relative frequency" (p. 27). Opinion leaders are part of the social system, conveniently located at the center of the social system's communication network. In writing center research, writing center directors would likely take on the role of the opinion leader by training tutors in the new innovation and disseminating information about the innovation to their professional network (through publication) and interpersonal network (through the OWL website or other social media platforms). Opinion leaders must be careful to stay within the system norms, but they are usually in a position of great influence in the social system, which only aids in the diffusion and adoption of the new innovation.

Innovations can be adopted or rejected by an individual member of the social system or by the entire social system, so the type of innovation decision is also important in diffusion research. Optional innovation decisions are made individually, independent of other members of the social system. Collective innovation decisions are agreed upon by all members of the social

system before adoption; this decision process is arguably slower but could lead to faster overall adoption once consensus has been made. Authority innovation decisions are made by those members of the social system with power, status, or technical expertise. In writing centers, the decision to adopt an innovation is typically handled by the writing center director from an authoritative perspective, but collective innovation decisions are not uncommon when it comes to piloting or testing new software before adoption. It is also not uncommon to find a writing center where an innovation has been adopted for the entire center, such as Adobe Connect, but is not used by every tutor since the decision to adopt the new innovation was optional.

Finally, DOI theory posits that diffusion cannot occur without changes to the social system caused by *consequences of the innovation*. These are simply the outcomes of adopting the innovation as explained by three major categories: direct vs. indirect, desirable vs. undesirable, and anticipated vs. unanticipated. For instance, in a household that just adopted the Internet, an extended observation might find that the use of the Internet positively and/or negatively affects family interaction time and family routines such as scheduled outings and bedtimes., forcing the family to make on-going decisions about whether to continue use of the innovation, reject it, or modify it in some manner to better fit their unique social system (i.e. applying time restrictions or incorporating more family-centered elements such as family movie viewings or family online games). In this example, the outcomes of using the innovation were *direct*, *undesirable*, and likely *unanticipated,* which are all aspects of DOI's consequences of innovations. Diffusion, at its most basic level, then is a localized social change because alterations occur in both the structure and function of a social system (Rogers, 2003).

DOI's social system concept is as complex as the function of writing centers themselves. However, each of the four social system elements—the structure and norms of the system,

opinion leadership, types of innovation decisions, and consequences of the innovation—play a part in better understanding the role of technological innovations taking place in writing centers on a daily basis. The social system concept is also important to writing center professionals because writing centers often exist in between spaces at the university, not wholly part of the English Department, not wholly part of the Writing Program, but not entirely independent of either. In short, there are several overlapping, and often competing, social systems at play in and around writing centers, and the perceived needs of each social system inevitably influences the writing center director's innovation-decision process when a new innovation is being considered (including both internal and external pressures). As such, DOI theory and its social system aspect will prove useful to writing centers scholars by revealing the various components that make up each writing center's social system and how each layer of a writing center's social system can cause some innovations to be more compatible, and easier to adopt, than other innovations. Thus, writing center directors need to go further than simply understanding their relationship to the English Department and Writing Program; they need to understand how these relationships influence the larger social system of the writing center, thereby influencing the selection and successful adoption of future innovations.

History of Physical Writing Centers

The history of physical writing centers dates back to the 1930s with Carrie Stanley at the University of Iowa (North, 1984). In a seminal text entitled, "The Idea of a Writing Center" (1984), Stephen North, a prominent figure in writing center research studies, expressed his extreme displeasure and disappointment in his university colleagues for not recognizing "what does happen, what can happen, in a writing center" (p.70). In this piece, North shared his frustrations about the prevailing misunderstanding of the goals and purposes of campus writing

centers. He described, in rather specific detail, how his fellow colleagues—both inside and outside the walls of English Studies—describe the writing center as "skills centers" and "fix-it-shops," where writing center tutors sometimes operate as "miracle workers" to help correct the errant grammar of students that professors cannot seem to rectify.

From the 1930s to 1970s, writing centers were kept separate from English classroom instruction but still focused on correct grammar and current-traditional rhetoric where they were best known and understood as "fix it shops"—remediation centers used exclusively for diagnosing and removing language deficiencies (Murphy & Law, 1995). In this model, the writing *product* was brought into be diagnosed as a symptom of the "illness" of the student's illiteracy. As Ong (1986) stated in the opening to "Writing is a Technology that Restructures Thought," "The term 'illiterate' itself suggests that persons belonging to the class it designates are *deviants*, defined by something they lack, namely literacy" (p.23, emphasis my own). The clinic metaphor of the early writing centers was concerned with "converting the natives" (borrowed from Shaughnessy) because the general belief was that students would be successful *only* if they learned to write like the academic community (Carino 1992; Wysocki & Johnson-Eilola 1999). The focus on remediation marginalized writing centers by making them supplemental and expendable; they were called labs and clinics, often used interchangeably, to signify that anyone could remediate writing whether it was an instructor, university counselor, or writing center tutor.

According to Carino (1992), writing laboratory model of the late 1960s became just as marginalized as the clinic later on, but initially posed a strong counter-narrative to the clinical model. The major contributions of the laboratory model were the coordination between classroom instruction and the lab. Much like a biology lab or a math lab, the writing lab was used

for research, experimentation, asking questions, and posing solutions. But, as writing programs began to shift from the product to process model, writing labs became the place to do the dirty work of grammar, thus making writing centers supplemental to writing instruction once again. For example, during this time, jokes were being made about students being dissected in the lab or tutors creating Frankenstein monsters where the primary measurement of success was the level of grammatical correctness in their papers (Carino, 1992, p. 43). Writing labs were a transitional phase leading up to modern interpretations of writing centers which align much more closely with specific departmental writing programs and English Studies as a whole.

North argued that *skill centers* and *writing centers* are not interchangeable, even though the conflation seem to be an authentic reflection of the way students, professors, and tutors think about writing and teaching writing that still pervades many English departments today. North (1984) asserted that the "new" writing center metaphor encompassed the good aspects of labs while also being the physical locus or center of consciousness about writing on campus. For Carino (1992), the connotation of "center" was close to that of a convention center or community center, which evoked the communal aspect of the center as a *micro-culture* where the writing center space was central to all writers for the purposes of training teaching assistants, conducting faculty workshops for writing across the curriculum (WAC) and/or writing in the disciplines (WID), offering credit courses in ESL/writing/teaching/tutoring, offering grammar hotlines, and tutoring for standardized tests. The new writing center has a shorter history than its predecessors, only dating back to the early 1970s, but it represents the marriages of two powerful contemporary perspectives of teaching writing: (1) writing is a process and (2) writing curricula should be student-centered (North, 1984). Much like the pedagogy of writing in English

departments, writing centers shifted their focus to the use of peer groups and collaborative learning as effective ways to improve students *and* student writing.

The shift in the writing center philosophy to the *process* model of writing, from the *product* model used in earlier writing labs and clinics, was one of the greatest writing center innovations in recent decades, and it continues to affect our understanding of writing and tutoring. According to Bruffee (1984), writing centers shifted their internal practices to reflect the changing paradigm: writing is like *thought* that is temporally and functionally related to conversation because the peer tutor and tutee do not write, edit, or proofread; they *converse* about the subject and the assignment and "most of all they converse about and *pursuant* to writing" (p. 94). So, when students actively engage with the peer tutor by asking questions and making changes to their own authored work, they are more likely to improve their individual writing process while also learning valuable skills for proofreading and editing their own work (Anderson, 2006; Coogan, 1995; Kail & Trimbur, 1987; Lunsford, 1991; North, 1984). This new philosophy resulted in some major changes in the way that English Studies and Writing Center professionals approached writing and tutoring; indeed, it was an innovation that spread across the complex social systems of each writing center, English program, and wider academic community, forever altering the way we think about, talk about, and compose writing.

Another major innovation in writing centers focused on the "tutor as innovation" and *how* to train tutors in the Socratic Method, or variations thereof, in order to achieve the type of *conversation* that writing center directors envisioned (Bruffee, 1984; North, 1984). This desire drew interesting parallels to Plato's argument about how the written text means nothing except in relationship to the spoken word. Writing centers began to realize, as Coleman (1996) indicated, that written text is not more autonomous than oral text; it still needed interpretation just like oral

poetry because neither were explicit in meaning or intent. Extending this new oral tradition even further, writing centers began to encourage tutors to read texts aloud during the tutoring session, even more so for sessions with ESL or Second Language Learners (overlapping with Coleman's aurality concept of public readings). These new changes in tutoring practices—the Socratic Method and reading papers aloud—were innovations, as understood by DOI theory, because they were perceived as new ideas and practices by the writing center community, and they were reinvented specifically for the purposes of tutoring.

DOI Theory in Writing Centers

There are a few studies in writing centers that make use of DOI theory, though on a rather limited scale (Benton Saunders, 1999; Inman, 2000; Tan, 2011). For example, one study focused on several institutional writing centers albeit outside of North America (and thus beyond the scope of this dissertation) while the two remaining studies focused on understanding technology innovations in the writing center, but within the confines of a single institutional context. Tan (2011) studied innovations of writing centers and OWLs outside North America, including Asian and European writing centers, a relatively recent endeavor only dating back to the 1990s. This study used writing centers in North America as a baseline for measuring the design and effectiveness of writing centers and OWLs in Asia and Europe for meeting the needs of ESL students. The study explores concepts such as monolingual OWLs versus bilingual or multilingual, peer tutors versus academic/faculty tutors, and the absence of email or real-time tutoring in Asian and European OWLs. Some shared themes between American and Asian or European writing centers and OWLs included a focus on academic writing and a "no proofreading" policy, but the international focus, while interesting, extends beyond the scope of this study.

The DOI-related writing center studies published by Inman (2000) and Benton Saunders (1999) were relatively close in terms of time, but it was Inman who explicitly argued the case for the use of diffusion theory in writing center research whereas Benton Saunders simply used it as a theoretical framework for a master thesis. Both studies were centered on a single institutional context, leaving room for my study to extend that discussion by investigating several tutoring innovations across two different institutional contexts. Inman, who is a well-known scholar in writing center research, studied the innovations of "windows" for the University of Michigan's online writing lab website after the initial designers of the OWL moved on to other institutions (what Koster [2002] would call a basic information OWL). The OWL website evolved from focusing on intra-institutional responsibility to extra-institutional responsibility by creating outreach programs with local high schools. According to Inman, this process of changing the OWL website to reflect the current practices and values of the writing center and institution was one of multiple innovations, which, on a larger scale, "makes clear the key role the concept of innovation should play in the future as a broader way of understanding writing center practice" (p. 61) to include its social, cultural, political and historical contexts. Inman argued that a change or modification in the system will change the cultural practices—in this case, writing center practices—and thus, we need to do a much better job of understanding the full implication of those practices both in the smaller institutional context (i.e. local writing center) and the larger social system (i.e. the university itself and the broader writing center community). For the University of Michigan, the innovation was not the technology that makes the windows or new website iterations possible; instead, it was the design and collaboration process itself—among various stakeholders—that came to realization on the OWL website. The key to designing

effective writing centers and OWLs hinges on the collaborative decision-making process, which was the focus of Inman's study and that of Benton Saunders (1999).

Benton Saunders (1999) examined the adoption effort of FirstClass, a computer conferencing software, by writing center employees, students, and administrators. As a direct result of the growth of the distance education program offering, the Dean of the College of Liberal Arts and Sciences at Portland State University made an authoritative decision that distance students needed to have access to writing center services. Benton Saunders used a combination of interviews and surveys to report data on the progress being made, reactions to the new innovation, consequences of the innovation—expected and unexpected—and what changes to protocol might need to be made among other such considerations, with the ultimate goal being to discover *if* the innovation was being adopted, to *what degree*, and *why*. The results suggested that complexity, trialability, and relative advantage—diffusion theory concepts—directly affected the rate of adoption for students in a negative capacity: adoption was much slower than anticipated. Much like Inman's study, this study was also rooted within a single institutional context, but both provide a foundation for future research on diffusion within writing centers through their analysis of what can be accomplished, learned, and understood in terms of writing center pedagogy.

The pedagogical implications of applying diffusion theory to writing center research cannot be underestimated especially when one considers the sheer number of stakeholders involved in the process of adopting a new technology, including students, faculty, administrators, information technology specialists and help desk professionals. And, to make matters more complicated, these stakeholders each have different needs, goals, and interests which the writing

center administrator must take into account. This complexity was noted best by Inman (2000) who wrote:

> That is, too many writing center professionals are left to wade into the rapid and rocky stream of technological progress alone, with a sound grounding in pedagogical principles and strong writing center values, but with the uncomfortable and often uncertain influence of technology in motion all around. (p. 50)

What is presented here is just a brief overview of the rich history and research tradition of diffusion research, but it begins to paint a clearer picture of the value of diffusion research in studying pedagogical innovations, generally speaking, which has always been of great interest to Writing Studies and Writing Center Research. Writing centers are often underfunded, understaffed, and constantly searching for ways to make their services more useful for an increasingly diverse population; this means that innovations are a relatively common occurrence and necessary for writing centers to keep their services relevant.

Technological innovations, such as synchronous tutoring programs, are often met with resistance because they can be difficult and time-consuming to learn; in other words, individuals are more likely to shy away from what they do not know or understand and embrace that which is familiar. Therefore, fully-documented efforts by writing center directors to adopt collaborative A/V software applications for tutoring purposes could be of great benefit to future writing center professionals who are considering the shift from basic information, asynchronous, or text-based OWLs to that of fully-synchronous OWLs with all the bells and whistles. By drawing on the existing empirical research tradition of DOI theory, Writing Center Directors and English Studies scholars would gain a greater understanding of the nature of technological innovations and various factors which affect the adoption, re-invention, or rejection of new innovations.

History of Online Writing Labs or OWLs

The pedagogy and practices of online writing centers are linked to those of physically bound centers. As the rather brief history of OWLs clearly indicates, movement away from websites based on the previous "fix-it-shop" model of physical writing centers to increased interaction between tutors and students at various points of intersection is increasingly common. In fact, the growth of online writing labs or OWLs can be credited to this need to "recreate" the face-to-face experiences associated with physical writing center consultations. For example, in 1999, there were 278 online writing centers or labs listed on the National Writing Centers Association (NWCA) website (Leander, 2000). In 2002, this number had reached 300 (Koster, 2002). Even in online settings, writing center professionals seem to crave the feeling of face-to-face (F2F) interaction as demonstrated by the manipulation of existing technology in order to get us back to a place of comfort and familiarity. For writing center professionals, this place of comfort and familiarity is important because it not only reflects our comfort with face-to-face tutoring, but also our belief in the pedagogy associated with it.

It becomes difficult, however, to provide the same type of collaborative environment in a distance education or online setting, due to time and space contingencies. So, while OWLs are intertwined with the practices most closely associated with physical-bound writing centers, they do have a distinctive history and a unique set of problems to address in order to meet the best practice standards for online tutoring. This can be clearly demonstrated by several seminal texts in the fields such as Inman and Sewell's *Taking Flight with OWLs: Examining Electronic Writing Center Work* (2000) and Inman and Gardner's, *The OWL Construction and Maintenance Guide* (2002), both of which prompted writing center scholars to look inward in an attempt to make sense of itself as a field and profession. Ultimately, this kind of internal examination led to

Koster's (2002) classification of three main types of OWLs: (1) basic information OWLs, which often advertise the physical center while also acting as a storage and retrieval repository for handouts; (2) interactive OWLs, which offer asynchronous tutoring; and (3) live OWLs, which offer synchronous tutoring that simulates the face-to-face physical writing center experience. In the following sections, I provide an overview of each type of OWL and demonstrate how each OWL variation exists as both an innovation and a remediation of what has come before. I also extend Koster's third type of OWLs into first-generation and second-generation live OWLs since earlier synchronous OWLs were limited to chat-based interactions (which are still synchronous by definition) whereas second-generation live OWLs make use of audio and/or video, which is the focus of this study.

Basic Information OWLs

Recently, physical writing centers have been pressured into developing an online presence even if it is just for expository purposes, as stated by Koster (2002), which at a minimum includes letting "users know where to find it, how to reach its tutors, and what services it offers" (p. 10), but also usually includes a collection of resources such as handouts. Basic information OWLs are widely available to anyone with Internet access, including individuals who may or may not attend that particular institution. Many individuals, both students and instructors alike, are relatively familiar with basic information OWLs as defined by Koster (2002) with the most prevalent example being that of the Purdue OWL located at http://owl.english.purdue.edu/ where visitors can read or download handouts on writing activities ranging from grammar, organization, and research documentation. Other institutions with basic information OWLs include the University of Oregon's WORD (Writing Online Resource Directory), Rensselaer Polytechnic Institute's Writing Center (called the Center for

Communication Practices), and Michigan Technological University (Anderson-Inman, 1997). Many people do not realize, however, that the Purdue OWL is actually an interactive OWL because it also includes asynchronous tutoring where students can submit writing-related questions and brief excerpts of writing for feedback (Gardner, 2002; OWL Mail Tutors, 2012).

Interactive Asynchronous Tutoring OWLs

In addition to including the elements of basic information OWLs, asynchronous interactive OWLs also include frequently asked questions comment area, phone or email-based grammar hotline, or the ability for students to submit papers for review, generally requiring a 24-48 hours turnaround for feedback. A review of writing center research reveals four existing variations of interactive asynchronous distance tutoring: phone conferencing, gopher systems, digital drop boxes, and email tutoring (Castner, 2000; Coogan, 1995; Harris & Pemberton, 1995). Phone conferencing affords immediate audio feedback and eliminates some concern with differences between intended and interpreted communication messages; however, conference tutoring phone calls are more limited in time because they tie up the phone line and prevent other students from calling and making appointments and calls may cost off-campus students (or the university) additional money in long distance charges. Gopher systems are deceptively interactive because they provide "uniform and standardized" responses to students after paper submission (Harris & Pemberton, 1995). The gopher system is automated, so it cannot provide individualized support or teaching. For example, problem areas may be identified but these areas cannot be explained in such a way that every student will understand the suggested changes.

Digital drop boxes are the least expensive route for an OWL because students upload documents to a system, which notifies the tutor and the files can be retrieved later at the tutor's convenience; this is commonly used in conjunction with other forms of tutoring such as

telephone conferencing or email tutoring, but is also found in face-to-face tutoring. For example, before Old Dominion University transitioned to live synchronous tutoring, students who made tutoring appointments online were asked to upload their documents to the OWL website (which was actually emailed to the writing center as an attachment) and to then call The Writing Center to confirm receipt.

The most common technology of asynchronous tutoring OWLs is that of email tutoring. The study by Neaderhiser and Wolfe (2009) found that over 90% of IWCA OWL institutions who participated in the 2006 survey (N=115) still utilized email for distance tutoring. Both Bowling Green State University's Writime and the University of Arkansas Little Rock's cross-institutional collaborative project with a local community college, respond to student questions and paper submissions via email, usually within 24 hours (Anderson-Inman, 1997). A quick Google search of institutions still offering email tutoring on their OWL websites as of January 2012 included: Inver Hills Community College, Rockland Community College, Madison Area Technical College, Temple University, Arizona Western College, York College New York, and Prince George's Community College. The dominance of email tutoring in writing centers can be easily explained by the wide-spread use of email on university campuses, including university-based .email addresses (.edu); this factor alone makes the adoption decision-process for writing center professionals an easy one since it is already part of the institutional infrastructure. In other words, if the institution transitions to a university-wide email program, then the writing center director's innovation-decision process is noticeably influenced according to DOI theory.

Even without university email accounts, the use of email is pervasive and easily accessible for many, as indicated by the fact that ODU's Writing Center initially used Yahoo email services before Kevin DePew arrived and took over as Writing Center Director in 2006.

The transition to email tutoring—and the primary reason for why institutions are reluctant to move away from it—centers on the fact that it requires minimal training for both tutors and students. Tutors may need to be trained on how to address higher-order concerns, but there is virtually no learning curve associated with the technology itself. Email tutoring is also relatively "free" in terms of cost, since no additional expense is incurred by offering the service with the exception of possibly increasing the number of tutoring staff. The reasons for adopting email for asynchronous tutoring align directly with concepts central to DOI, such as the social system and perceived attributes of the innovation. To clarify, the selection of the tutoring innovation is impacted by the wider social system of the institution as well as the perceived attributes of innovation with regard to relative advantage, compatibility, and ease-of-use.

Even with the positive affordances of email tutoring, some writing center professionals believe that email tutoring is counter-intuitive to process-based center philosophy because it slows down the tutoring process and expands it over several days, which disrupts "the collaborative and dialogic flow associated with face-to-face consultations" (Neaderhiser & Wolfe, 2009, p. 61). Moreover, it takes us back to old writing center models where instruction took place after or apart from writing, often focusing on correction of textual problems (Anderson, 2002; Coogan, 1994; Coogan, 1995; Neaderhiser & Wolfe, 2009). Even if the writing center does not fall back on current-traditional rhetoric or the fix-it shop model of tutoring, email tutoring undeniably separates writing and its process from the collaborative act of talk or conversation that is most valued, and needed, during the tutoring session. When Shareen Grogan, Writing Center Director of National University—a fully online writing center serving several satellite campuses—was informally asked her thoughts on email tutoring during a phone conversation, she responded most adamantly, "We didn't want to open the door to asynchronous

tutoring because then you can never close it again. Email tutoring is more affordable but students don't learn as much. Instructors are already giving written feedback on papers—we wanted writing center feedback to be different, especially for students taking online courses who need to speak to someone in real time" (Personal Communication, December 2011). This statement rings true in my own personal experience too. For example, when ODU's Writing Center made the decision to eliminate email tutoring, it was a very difficult task to accomplish because of resistance from within the Writing Center itself, the English Studies Department, and the university at large. Even with these disadvantages, email tutoring remains the dominant form of distance or online tutoring (Anderson, 2002; Neaderhiser & Wolfe, 2009), but recent strides have been made by several universities who are willing to test out new solutions to better serve its population of students.

Live Synchronous Tutoring OWLs

Comparatively, only a handful of studies have explored the use of interactive synchronous communication for OWL tutoring with the earliest efforts being limited to relatively text-based software releases for collaboration. These earlier efforts will be referred to as first-generation synchronous tutoring because they are an important part of OWL history, yet were extremely limited in their ability to fully meet the needs of writing centers and their students. This generation of synchronous OWL tutoring included course management java chats, instant messaging, and MOOs (multi-user object-oriented) or MUDs (multi-user domains).

Course management Java chats were found in Blackboard and other learning management systems (LMS). Java chats seemed like a viable solution since such programs were embedded in the learning or course management system—where learning and interaction was taking place with students. Some institutions that have used Java system chats in the past

include SUNY Albany, Middle Tennessee State University, California State University Chico, and Utah State University. Java chats, however, could not be easily modified (even by system administrators), were known for slow response times, and typically did not allow recording of the chat conversation (Gardner, 2002). This led some institutions to experiment with instant messaging (IM) solutions.

With the rise of email use for personal business, there was a rise of IM use too. Consequently, instant messaging solutions became rather popular for writing centers in the 1990s due to their familiarity to both students and tutors, leading to the adoption of such programs as MSN Hotmail IM, AOL IM, or Yahoo Messaging for writing center purposes (Gardner, 2002). IM was another text-heavy solution since there was no audio capability at the time and all of the interaction took place in the IM text box, including the use of emoticons, which added a whole new level of interaction and communication mishaps to the tutoring process. One example of an institution that adopted IM communication for tutoring purposes was St. Cloud State University, which used WCOnline, a popular web-based solution developed by a former writing center director, which only offered a chat window and text box for sharing copy/pasted files at the time of the study (Mohrbacher, 2007). In addition, each session was limited to just one tutor and one student, which made it impossible to work with students involved in collaborative or group writing assignments; this also made it difficult to conduct formal observations of live tutoring sessions, which is used in writing centers for general training and continuing education of peer tutors. Finally, the file sharing options were rather rudimentary at the time as files could be emailed during the session or beforehand but not viewed in their entirely within the chat area, so tutors would often copy and paste sections of the student's work, such as a paragraph, into the chat area to be read in real-time. This was a rather slow process, though, making it nearly

impossible to get through an entire paper in a single tutoring session. These limitations sent writing center professionals searching for another viable solution.

In MOOs and MUDs, the interaction was slightly improved from IM as text-based conversations in a chat window were shown alongside a copy of the student's document. In addition, MOOs or MUDs sometimes included talk or phone features, further enhancing the interaction between student and tutor (English, 2000; Gardner, 2002; Shewmake & Lambert, 2000; Thurber, 2000). Some examples of such institutions employing these options include University of Central Florida, Indiana State University, and Tallahassee Community College. All of these institutions expanded their OWLs from their physical counterpart on campus, thus using face-to-face tutoring experiences as a baseline for online tutoring expectations. While each institution agreed that face-to-face tutoring could not be replicated exactly, they also made it clear that the goal was to find a solution that would get them as close as possible to this ideal. For example, Indiana State University used NetMeeting, which offers audio and video capability, but it was not used due to the cost of equipment, which was high at the time of the published study and may not have been feasible otherwise either (Enders, 2000). The University of Central Florida used KnightOWL, a phone and online chat space hosted by LivePerson.com (Carpenter, 2009). Tallahassee Community College developed its own proprietary online chat tutoring that included a separate text window for document collaboration rather than "talking" and "reviewing" the paper in the same IM window (Melzer, 2005). But each of these solutions were text-heavy, hindering their ability to foster the "talk and conversation model that takes place in a physical writing center.

Alternatively, some institutions recognized the benefits of offering synchronous tutoring but could not offer the services themselves, leading to the growth of outsourced options like

Smarthinking. SmartThinking.com has a comprehensive OWL with many different options to choose from ranging from interactive asynchronous tutoring via automated responses to synchronous tutoring via a chat window or whiteboard interface of some kind. Interaction is limited, however, to text-based exchanges using chat and whiteboard features (no audio or video) where small snippets of the essay or text can be shared between users, as documented in Hewett's (2006) study of Smarthinking.com's synchronous whiteboard interactions between undergraduate students and professional tutors. While many universities are turning to third-party outsourced options as a solution for offering tutoring to its students, the outcomes of such a turn are unclear and could be problematic with respect to *what* type of writing instruction might be provided to students and *how* the instruction might relate to instructor expectations or larger institutional objectives. The outsourced tutoring option may prove to be less personalized than resources provided internally by a university. However, the subject awaits further study as there is no published research on the outcomes or consequences of third party tutoring options. SmartThinking and the other institutions discussed above are all-text, first-generation synchronous solutions which only partially simulate the face-to-face tutoring environment that tutors, tutees, and writing center administrators seek to replicate.

New, Second-Generation Synchronous OWLs

In what I will call the second-generation of synchronous tutoring OWLs, the last decade of OWL history has witnessed various audio/video (A/V) software applications re-appropriated for use in a writing center context. These second-generation synchronous OWL solutions often include document-sharing capabilities, such as desktop or application sharing, which work to further bridge the gap between the face-to-face and online tutoring experiences. A preliminary Google search of online spaces that would qualify as second-generation synchronous OWLs fall

into four main categories: (1) corporate conferencing and training programs such as Adobe Connect, JoinMe, WebEx, and Elluminate; (2) social video conferencing programs such as Skype, Facetime, and now Google Hangouts; (3) real-time document collaboration programs such as Microsoft SharePoint, Huddle, and Google Docs combined with Google Chat; and (4) massive multiplayer online environments repurposed for virtual learning such as ActiveWorlds and Second Life.

Corporate Conferencing and Training Programs

For decades, corporate conferencing and training programs have allowed corporations, and now academic institutions, to save money associated with travel costs and hotel bookings by offering online training and online meetings to its employees. Some examples of software applications that fall under this umbrella include Adobe Connect, Elluminate, and NetMeeting. Enders (2000) initially used NetMeting at Indiana State University back in 1999 but found the audio and video capabilities to be too cumbersome at the time due to costs associated with the equipment; he later published a follow-up study in 2001 that detailed his great success with audio and video to conduct "true" synchronous conferencing sessions with students. Chi Ng (2007) piloted Interwise e-learning system components to conduct synchronous group tutoring for information technology students at The Open University of Hong Kong, which was well-received by students and tutors alike. Students would meet in small groups with a single tutor and "talk" through ideas rather than typing them, which Chi Ng considered especially important due to students' varying keyboarding skills and language proficiency.

Adobe Connect seems to be the most popular solution in re-appropriated corporate software due to its ability to include multiple participants (group tutoring, small class meetings, tutor observations, etc.) combined with audio, video, and document collaboration via desktop

sharing. This program is presently deployed at Old Dominion University, Texas State University San Marcos, National University, Florida International University, and Johns Hopkins University Carey. One published study of the use of Adobe Connect for synchronous tutoring was written by Griffin (2008), who piloted the program for online writing center tutorials, making use of both desktop and application sharing, and two-way audio. While the study focused primarily on the affordances of two different technology applications used to access Adobe Connect—a tablet PC and a non-tablet PC—it is still one of few published studies involving full functionality of appropriated conference software such as audio, video, and document sharing for the purposes of online tutoring.

Social Conferencing Programs

Software programs in this area include solutions that were developed initially for non-corporate use such as peer-to-peer calling or conferencing programs. The most popular social conferencing program to date is Skype, which has since evolved into a full-fledged peer-to-peer conferencing program that includes audio, video, and desktop sharing (for paid members). It is presently being used for synchronous tutoring at University of Georgia, Harvard University Extension School, University of Wisconsin Oshkosh, and University of Missouri Kansas City. None of these institutions have published formal studies documenting the adoption and implementation of this innovation for use in a writing center context.

Real-Time Document Collaboration Programs

Programs in this area include real-time document collaboration programs that allow multiple users to simultaneously edit and revise the same document in real-time; in other words, the changes being made by User A can be seen immediately—as they are being typed in real time—by User B. The primary program in this area is Google Docs, which combines document

collaboration features with Google Hangouts' audio and video capability. This solution is often used, or highly suggested, in academic settings for group writing assignments but is also used in corporate environments for group writing projects such as reports, technical documents, and marketing materials. It is also presently being used for online synchronous tutoring at West Chester University of Pennsylvania, Case Western Reserve University, Northern Michigan University, Ball State University, and University of Texas at San Antonio. There have been no formal publications by either of these institutions documenting the adoption and implementation of this innovation for use in a writing center context.

3D Virtual and Social Programs

3D virtual programs are online meeting and social programs, such as SecondLife, in which participants use their computers to transport or teleport themselves to a specific location in the virtual world. SecondLife is used by academic institutions to create replicas of their university campus—dorms, dining halls, buildings, etc.—so that the university exists in its physical form and virtual form; access can be restricted to university members only or can be open to the public. Corporations make use of SecondLife as well; Microsoft began conducting interviews of software engineers and other technology-related positions in SecondLife back in 2007 (Athavaley, 2007). Writing centers make use of SecondLife for synchronous tutoring where students and tutors interact using their avatars and audio, which serves as a close replication of the immersive qualities that would take place in a face-to-face tutoring session. SecondLife is presently being used for synchronous tutoring at Pikes Peak Community College, San Antonio College, and Michigan State University. Some recent features of SecondLife that makes it particularly useful for tutoring. For example, it includes a collaboration feature where flow charts and diagrams can be shared, illustrated, and marked up in real-time by conference

participants; this would be particularly useful for brainstorming and invention for new paper assignments or logically stepping through arguments that have already been written.

As highlighted, the adoption, re-appropriation, and consequences or outcomes of corporate and social software programs for use in synchronous OWL tutoring are often unpublished and most readily discovered through word-of-mouth at writing center conferences such as *Computers and Writing*, *International Writing Centers Association, and Southeastern Writing Center Association* (and other regional conferences) or through the basic information side of the writing center OWL which explains the services offered to its students, faculty, and surrounding community. If one considers the goals of a research tradition, the cyclical nature of theory and practice is broken because there is simply not a direct path or trail for newcomers to follow. Specifically, we are not able to systematically improve our pedagogical practices and critical understanding of adopting new technologies for use in a writing center context. In short, valuable time and resources are wasted attempting to implement a technology innovation that might have already been successfully, or unsuccessfully, attempted elsewhere.

The Role of Metaphor and Previous Experience in OWL Designs

This study began with an interrogation of the prevailing paradigm: that is, writing centers' insistence on replicating face-to-face interaction without knowing whether such a goal or philosophy was equally useful, commendable, or worthwhile for other tutoring interactions, such as synchronous tutoring. In other words, writing center professionals chiefly base their understanding of writing and tutoring, as well as their definition of a successful tutoring session on existing knowledge and how the application of these working metaphors—metaphors about writing centers, face-to-face tutoring, asynchronous email tutoring, conversation-style tutoring, and technology—can be leveraged to help student writers. Lakoff and Johnson's (1980) seminal

text, *Metaphors We Live By*, identified several useful examples of common metaphors such as time, money, and the conduit metaphor for understanding communication, each of which were used to argue that metaphors are not just matters of language but are instead used extensively in reasoning and understanding.

In the following sections, I explore the relationship between Lakoff and Johnson's notion of conceptual metaphors, DOI's concept of previous experience, and the arguably misguided innovation-decision process of writing center professionals to include the selection of the innovation and related tutoring practices. I also identify the few studies that push back against the prevailing paradigm to transfer or map face-to-face practices over to the online realm as a way to further demonstrate the pervasiveness of metaphor, previous experience, and uncertainty associated with new technologies and to better understand the factors that influence the innovation-decision process. Finally, I end with a discussion of interfaces and interactivity in OWLs since the technology interfaces adopted for synchronous tutoring are selected based on their ability to closely resemble the familiarity of face-to-face tutoring, specifically process-based, student-centered, interactive tutoring sessions. In other words, I view the tutoring interfaces themselves as yet another extension of the conceptual metaphors and previous experiences which presently cloud the synchronous tutoring landscape.

Conceptual Metaphors

Lakoff and Johnson's (1980) theory of "conceptual metaphor" extends beyond the rather limited application of metaphor to add flair to our writing. Instead, conceptual metaphors structure people's thoughts and actions, perceptions and understanding, expectations and view of life. To define and defend this new definition of metaphor, Lakoff and Johnson stated: "Metaphor is not just a matter of language, that is, of mere words. We shall argue that, on the

contrary, human thought processes are largely metaphorical" (p. 6). Metaphors help people understand and discuss the unfamiliar and abstract by "mapping" from the concrete experience of a "source domain" because they understand and experience "one kind of thing in terms of another" (p. 5). To say that life is a journey, for instance, allows the one crafting the metaphor to draw on past experiences to explain the present set of events unfolding. Similarly, to say that writing is a process allows the speaker or writer to draw on the definition of process as a series of overlapping steps combined with his or her own experience about the on-going, iterative nature of revision; in short, the process metaphor structures the way English Studies and Writing Center scholars think about, talk about, and respond to writing.

Lakoff and Johnson cautioned that conceptual metaphors are silent and obscured by our daily practices, which cause people to think and act in response to them in an automatic way. This is similar in function to an individual's ideology about a given topic, which also structures thoughts and behavior. Writing centers, for example, attempt to replicate the face-to-face practices without really pausing to consider why they do it; it is an automatic response that reinforces what feels natural and familiar. Seitz (1991) argued that the "writing process," as it is typically imagined and taught, is a forgotten and worn-out metaphor, and so are the metaphors of objectivity and clarity, which are also central to traditional expectations of academic writing. The writing is a process metaphor, then, not only a conceptual metaphor; it is the dominant ideology of the academic community, especially the broader English Studies discourse community. Arrington (1986) offered a history of four primary writing process tropes used in composition theory. The metaphor trope views the writing process as dialogue and dramatic speech (a rhetorical perspective); the metonymy trope sees the writing process as a series of steps, taking the parts from the whole (cognitivist perspective); synecdoche views writing as

organic and holistic (romantic view of composing); and the irony trope views writing as a complex, never-ending process. Metaphors about the writing process have enjoyed a long-standing tradition, thus making their presence even more invisible and silent to the academic community. That would explain why, for example, writing center and English Studies scholars are able to identify metaphors about writing (e.g. writing is like kissing) and writing that makes use of metaphor but are less likely to recognize that the writing process itself is, by and large, a conceptual, ideologically-driven metaphor based on previous experience and existing ideological beliefs of the two respective discourse communities. This is very similar, in fact, to the influence that metaphor and previous experience have in writing centers with regard to the tutoring process and writing process.

The tutoring process used in writing centers derives directly from the dominant ideology and prevailing metaphor of the writing process, which uniquely blends each of Arrington's (1986) writing tropes. As previous discussed by Bruffee (1984) and North (1984), after the process model was adopted by English Studies, writing centers began to look beyond a specific writing assignment or project and see it as an occasion for addressing a larger issue—the growth and development of student writers—by incorporating more conversation between writers and tutors, using the Socratic method to prompt writers in discovery of new ideas. Even the metaphor of discovery is not without criticism, however, as Flower and Hayes (1980) claimed that, "Discovery carries an implicit suggestion that somewhere in the mind's recesses or in data outside the mind, there is something waiting to be discovered" (p. 21). Instead, Flowers and Hayes argued that "Writers don't find meanings, they make them," which is another example of how metaphor and ideology are intrinsically-linked and rarely criticized by writing center professionals (p. 21). Nonetheless, the metaphors of the writing process and discovery work to

inform the face-to-face tutoring process used in writing centers today, namely one that is 1) process-based, 2) student-centered (non-directive tutoring), and 3) highly interactive (by use of the Socratic method). For the purposes of this study, I am suggesting that the face-to-face tutoring process is yet another metaphor which structures our communication whether we notice it or not, and that its power resides in how it inevitably shapes, enables, and constrains discourse *about* and *pursuant* to writing. Writing center directors and tutors cannot avoid the kinds of metaphors identified by Arrington and Flowers and Hayes when they are enmeshed in the very practices that inform the innovation-decision process of adopting a new technology.

Previous Experience

DOI theory discusses the significance of adopters' previous experiences, as it is believed that individuals can only deal with new innovations based on what they already know, thus making old ideas or cultural practices the metaphors that individuals use when assessing new ideas. According to Rogers (2003), "The rate of adoption of a new idea is affected by the old idea that it supersedes" (p. 245). For writing center professionals, this means that face-to-face tutoring experiences naturally frame perceptions of tutoring, for better or worse. Furthermore, because of the invisible, ideological nature of conceptual metaphors, few writing center professionals question this prevailing practice because it is assumed that the face-to-face tutoring process is a) natural or authentic and b) superior to alternative methods. One of the primary objections to asynchronous email tutoring and text-based, first-generation synchronous tutoring is that they are not dialogic enough; in short, they lack the level of interactivity and immediacy of the face-to-face tutoring process which is more familiar territory for writing center professionals (Anderson, 2002; Chi Ng, 2007; Coogan, 1994; Coogan, 1995; Enders, 2001; Neaderhiser & Wolfe, 2009). More importantly, scholars are concerned with what might be lost

during the tutoring session and how it might impact the philosophical goal of process-oriented tutoring.

As such, the face-to-face tutoring process is rooted in several different metaphors based on previous experience, which have major implications for writing center professionals planning to adopt new tutoring platforms. Rogers (2003) stated that, "Compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters" (p. 15). So, a lack of compatibility with existing values and past experiences (such as a familiarity with and preference for face-to-face interaction) may negatively affect the individual's use of the innovation, which could explain the low adoption rates of email tutoring and online synchronous tutoring in writing centers reported by Neaderhiser and Wolfe (2009). On the other hand, if an innovation is compatible with an individual's needs, values, and past experiences, then uncertainty will decrease and the rate of adoption of the innovation will increase (Rogers, 2003). The slow rate of adoption for synchronous tutoring is most likely due to uncertainty about the innovation—in terms of how it will uphold the values of the writing center and English Studies community—as much as it is about the unique ways that synchronous tutoring challenges existing practices.

At the present moment, synchronous tutoring is bound to former tutoring metaphors of the writing center, namely face-to-face interaction. The ubiquitous presence of computers, minimal cost for equipment, and strong technology infrastructure (i.e. bandwidth, internet, etc.) has resulted in very little change in perceptions about synchronous tutoring or encouragement for its increased use in writing centers. Baron (1999) suggested that newer technologies must first adapt to familiar functions often associated with an older, accepted technology (such as face-to-face tutoring) before experiencing increased functionality. Then, the technology can evolve into

its own, no longer needing to imitate the acceptable objects and instead can create new forms and new possibilities for communication. However, synchronous tutoring may not be able to fully distance itself from the constant comparison to the previous, and supposedly superior, face-to-face tutoring due to a potential clashing with the embedded metaphors of process-based, student-centered, and interactive Socratic dialogue. Contrary to the prevailing belief in the superiority of face-to-face tutoring, several studies demonstrate how face-to-face tutors seize control of the session by interrupting, talking too much, and giving unsolicited advice (Drew & Heritage, 1992; Jones et al., 2006; Thonus, 1995), and one study by Jones et al. (2006) found online synchronous tutoring interactivity to be stronger, more student-centered, and less hierarchical (flowing from student to tutor, rather than the other way around) than face-to-face tutoring across several case studies. Just as Baron (2000) explained how the newest writing technology receives negative reactions from supporters of the "older, simpler, better, and more honest ways of writing," synchronous tutoring is also considered a less honest, less authentic way of tutoring regardless of evidence to the contrary.

Criticisms of the Existing Paradigm

There are a few scholars who argue for the critical examination of embedded face-to-face tutoring metaphors that are mapped over into new tutoring processes, such as synchronous tutoring. Hewett (2010) argued that online teaching and tutoring require eclectic approaches beyond the traditional collaborative, student-centered strategies embedded in face-to-face tutoring. While her study primarily focused on asynchronous online tutoring that occurs most often through email, her research findings are applicable to other forms of tutoring where face-to-face tutoring practices are embedded in the design and functionality of the tutoring session, such as with online synchronous tutoring. Indeed, Hewett asserted that online teaching and

tutoring strategies may need to be more direct, deliberate, and intervention-oriented in order to truly serve the student population, which is contrary to popular beliefs rooted in face-to-face teaching and tutoring practices. Hewett (2010) also used the term "semantic integrity" to describe how online interactions should be re-imagined for the special nature of online tutoring and online teaching:

> Ideally, online commentary that has semantic integrity does not hint or ask students to guess at what they are supposed to be learning; it is not evasive nor does it poorly address the subject matter. Rather, it demonstrates a respect for students' intellectual abilities by explicitly addressing a session's expectations and goals. (p. xviii)

In other words, Hewett's concept of semantic integrity critiques not only the Socratic method associated with normal face-to-face interactions but privileges the concepts of direct instruction and intervention, which widen the range of online instructor and tutor responses, thus liberating and empowering their voices while also better assisting students. In addition, the intervention and direct instruction is not limited to process, as is the case with face-to-face practices; semantic integrity encourages online teachers and tutors to respond to content, process, or product of student's writing "to intervene in their writing at the point of need" (p. xix). Ultimately, Hewett does not believe that face-to-face procedures serve as a fitting theoretical practice for online interactions, and she implores us to re-examine our assumptions and preferences for face-to-face procedures, beginning with the use of the Socratic Method.

Turrentine and MacDonald (2006) also discussed reasons why the Socratic Method might not be the best fit for online tutoring, based on the results of a two-part study of asynchronous email tutoring and synchronous email tutoring using NetTutor. They described a scenario in asynchronous email tutoring when the student sent a question to the tutor who responded with

additional questions instead of the answer, which understandably frustrated the student. The tutor had, in fact, followed the Socratic Method as trained, but the outcome of the tutoring session was less than useful for the student. While many writing center professionals would claim that it was a successful tutoring session, Turrentine and MacDonald assert that the back-and-forth method of interaction used in a typical face-to-face session is simply ill-fit for online interactions where direct instruction is often needed and desired by students. Even with synchronous tutoring, they suggest that the Socratic method may not be the best option and urge tutors to explain the process of Socratic dialogue to students before the session begins so students understand the purpose and goals of such an approach; this explanation should also reduce some of the frustration students experience when confronted with this method. There will still be moments, however, when tutors must shift to other methods of tutoring, which is something that is much less developed in writing center theory and practice—thus, writing center professionals must begin discussing alternative tutoring practices and metaphors beyond that of the Socratic Method due to the differing needs of students and varying goals of each tutoring session. Much like Hewett, these two scholars push for an approach to "pedagogy before technology" where the creation of a relevant and useful online tutoring process is given more emphasis than simply relying on the technology to replicate seemingly superior, but possibly ill-fitting, tutoring practices (Christ, 2002, as cited in Turrentine & MacDonald, 2006, p. 1).

Finally, Breuch and Rancine (2000) drew attention to the shared goals of face-to-face and online tutoring. They insisted that process-based, student-centered, interactive tutoring sessions are the goals for both face-to-face and online sessions; however, the means to achieving such goals can and should vary in the best interests of the students. The online tutoring practices should be separate as should the tutor training—which is an important distinction to make since

tutor training also continues to perpetuate the unmitigated transfer of face-to-face tutoring practices to the online realm. In order to shake free of the shackles of metaphor and previous experience, Breuch and Rancine (2000) urged online tutors to "focus on what virtual environments have to offer rather than what they lack when compared to face-to-face centers" (p. 247). Finally, they end with a couple of thought-provoking questions for writing center professionals who prefer face-to-face interactions: "What if students don't have both options? What if the only option available to students is an online tutoring session?" (p.247). Such questions serve to further interrogate the prevailing face-to-face tutoring metaphor applied to online synchronous tutoring, while also revealing the rather limited understanding of what synchronous tutoring can and does offer to students that fulfills the primary goals of the writing center.

The research of scholars explored in this chapter suggests that direct instruction is a useful and viable option for online synchronous tutoring, and that it is equally useful and viable for face-to-face tutoring as well, contrary to dominant Writing Center and Writing Studies theory and scholarship. This study extends this discussion in a meaningful way by adding to the limited number of publications that explore and interrogate the existing paradigm of face-to-face tutoring practices being used online. Futhermore, analysis of the role of metaphor and previous experience may provide English Studies and writing center scholars with insights into their own teaching, tutoring, and writing processes. Such an analysis will help to identify unquestioned assumptions and ideologies about tutoring and writing and the implications it has on the adoption of synchronous tutoring interfaces and the acceptance of synchronous tutoring as an authentic and trustworthy form of tutoring. Finally, it is important that writing center professionals critically examine the embedded metaphors that are mapped over from previous experiences into

new tutoring processes, such as synchronous tutoring, because they inevitably serve as deciding factors in the selection of the tutoring interface and the adoption, rejection, or reinvention process of related tutoring practices in OWLs.

Interface and Interactivity in OWLs

Interactivity is the hallmark of face-to-face tutoring, so the desire to replicate the experience online leads to the adoption of innovations with similar levels of interactivity built-in to the interface, for example, the live dialogue and document sharing capability of Skype and Google Hangouts. Whether consciously or unconsciously, writing center directors seek to adopt an interface that maps onto their preexisting comfort zone, face-to-face interactive tutoring. Therefore, interface design and interactivity are significant concepts in English Studies and Writing Centers because the teaching and tutoring of writing almost always occurs through a filter, space, or intermediary of some kind in an attempt to improve students' writing. Consider the following definitions of interface, which draws upon the fields of human-computer interaction (HCI), rhetoric and composition, and writing centers: Skjulstad and Morrison (2005) define interface as an "intermediary to communication"; Carpenter (2009) defines interface as a "communication boundary" between the user-system, user-systems, or system-system; Laurel and Mountford (1990) define interface as a "*place* where contact between two entities occurs" (p. 5, original emphasis); Turrentine and MacDonald (2006) define the online tutoring interface as an "environment" with a climate of transparency; and, Selfe and Selfe (1994) define computer interfaces as "cultural maps" with political and ideological underpinnings. At its most basic level, then, an interface serves as a type of communication bridge between two entities and exists as yet another factor that influences the innovation-decision process leading to the adoption, reinvention, or rejection of an innovation.

Interfaces exist in many different forms as indicated by recent English Studies and writing center scholarship. In the classroom, for instance, the interface is the actual layout of the classroom itself, as discussed by DePew and Lettner-Rust (2009) who compared three different classroom interface designs for a correspondence course, a modern face-to-face classroom with a traditional layout geared towards lecturing, and an online course using synchronous video and also discussed how each classroom interface affected the power dynamic between students and instructor. Furthermore, several physical writing centers have published studies regarding the space or layout of the writing center including the location of the desks or cubicles, open computer workstations, sofas, tables, bookcases, and even coffee stations (See Carpenter's *Cases on Higher Education Spaces* in 2013; Kinkead and Harris' *Writing Centers in Context: Twelve Case Studies* in 1993; and McKinney's "Leaving Home Sweet Home: Towards Readings of Critical Writing Center Spaces" in 2002). Our tutoring spaces and classroom spaces—the interfaces—are designed for the purpose of increasing interaction, engaging students, and improving student writing.

Other research studies provide insight into more technical interfaces, including those specific to writing centers and OWLs. Take, for example, the operating systems used to translate our inputs into readable code that can be executed by the computer (Selfe & Selfe, 1994), software programs such as MS Word used for composition and reflection among other tasks (Buck, 2008; Romberger, 2004), university websites that include departmental and program websites (Barrios, 2004; Hawisher & Sullivan, 1999; Knight, Rife, Alexander, Loncharich & DeVoss, 2009), OWL websites (Inman, 2000), and finally, email platforms in the case of asynchronous tutoring (Anderson, 2002; Jackson, 2000; Rilling, 2005) or web-based systems in the case of synchronous tutoring (Hewett, 2006; Jones, Garralda, Li, & Lock, 2006; Melzer,

2003). While interfaces are plentiful and pervasive, the aforementioned scholars have argued that interfaces are neither neutral or innocent in the exchange of ideas or meaning-making process; instead, it is important to explore how interfaces both enable and frame interactions between users (Carpenter, 2009), thereby influencing the synchronous tutoring experience especially when it comes to the perceived attributes and consequences of the innovation.

Synchronous tutoring takes place in a space that is always physically separate from the actual writing center for the student, which places a great deal of emphasis on the rhetoric of the interface and resultant power dynamics. This separation is becoming increasingly common for tutors as well, since the evolution of technology affords tutoring in a variety of locales and times of day, such as evening and weekend hours, not otherwise possible. Moreover, students seeking an online synchronous session are often filtered through several different interfaces as they are shuffled between the general OWL website, a web-based appointment system, the human interface of the tutor, and the actual tutoring program such as Skype or Google Hangouts. And, if the student uses MS Word to compose the writing then yet another interface needs to be considered. As Buck (2008) articulated in a study about the use of MS Word in the writing center, "...the MS Word interface affected the nature of the [tutoring] session itself" (p. 412), or the writing process, as well as the final piece of writing, or product. In addition, computer interfaces provide opportunities and challenges for writing center professionals which impact power dynamics, such as who controls the technical aspects of the session (i.e. scrolling, screen sharing, typing) (Buck, 2008). These same power dynamics are present in online synchronous tutoring sessions as well because the synchronous tutoring interface is a shared space where control must be negotiated.

According to DePew and Lettner-Rust (2009), interfaces are "culturally constructed" in two ways: 1) by initial design decisions made by programmers who built the system and 2) by the teaching, or tutoring, strategies developed to shape the user's experience (p. 175). Many synchronous tutoring interfaces are not designed by the writing center or institution (this is the case in both case studies in this dissertation and others that were researched), so there are some natural constraints inherent in that power dynamic that have been explored very little in existing literature. By studying the perceived attributes of the innovation, along with the consequences of the innovation, this study highlights both these aspects of culturally constructed interfaces, thereby interrogating existing teaching and tutoring practices associated with an interface. A deeper exploration of both aspects of the interface design might also prove useful in understanding the shifting power dynamics for both English Studies and writing center professionals. For example, the interface selected by a student for a writing center appointment shapes the power relationship between tutors and students, whether through face-to-face, asynchronous email, or online synchronous tutoring, as most scholars believe face-to-face tutoring to be the most interactive and student-centered of the tutoring interfaces, thereby placing the power in the hands of the student (Buck, 2008; Hewett, 2006; Jackson, 2000; Turrentine & MacDonald, 2006). In short, the interfaces designed (or repurposed) for online synchronous tutoring are being used in order mimic the face-to-face experience and level of interactivity; thus, the degree of interactivity afforded by the interface(s) selected to conduct the synchronous tutoring sessions is a fundamental part of the investigation of synchronous tutoring OWL designs and related practices in writing centers.

Carnegie (2009) developed three modes of interactivity for evaluating an interface: *multi-directionality*, *manipulability*, and *presence*. In either Skype or Google Docs, students can

function as both senders and receivers by responding to previous messages and referring back to specific content since the document is shared between all users, either in the document collaboration space as is the case with Google Docs or via screen sharing with Skype. Furthermore, the multi-directionality aspect of second-generation synchronous tutoring OWLs is also aided by the use of audio and video capability, which is essential to replicate the face-to-face tutoring experience. There are relatively few writing centers that have published in this area, as previously discussed, so this research study will aid in expanding our knowledge of the interactive aspects of these new, second-generation synchronous tutoring OWLs. Finally, Carnegie posited that interactivity is high in the area of *multi-directionality* if the communication exchange becomes an intertextual dialogue, which is also commonplace in synchronous writing center sessions.

The category of *manipulability* is also easily afforded in the second generation of synchronous tutoring interfaces, as participants possess some agency by arranging or resizing windows, selecting background colors, controlling audio levels to include the ability to mute oneself, recording sessions for future playback (either within the interface or through a different interface such as Camtasia), and modifying the shared document on the screen. In Skype, the screen sharing tool places the power and privilege in the hands of a single user who must share the desktop, or a particular window (if they are technically savvy) and will then control all of the changes made to the screen including scrolling, editing, etc. In Google Docs, power is more evenly distributed as both parties can scroll and modify the text independently of one another, if they so choose. The tutor has the option to just be an editor rather than author of the text, which means that changes are tracked, similar to MS Word, and the document is not permanently altered. Google Docs also allows for searching for sources and conducting research right inside

the interface, producing the highest level of interactivity in this area which is content-on-demand. In short, both interfaces allow users to *manipulate* the interface, though the level of new content creation varies drastically between interfaces, but Google Docs offers a higher level of interactivity in this area than Skype.

The final mode of interactivity is *presence*, in which a user has the "experience of interacting socially and of being in a particular place or space," even when they are not physically in the same place or time (Carnegie, 2009, p.169). Neither interface offers virtual reality where the idea of spatial presence is best achieved, but Skype and Google Hangouts do offer high levels of interactivity with regard to social presence, thereby collapsing "time and space into each other…space becomes something we simply work with/in, making creative connections and reconnections" (Wysocki & Johnson-Eilola, 1999, p.363-4). Indeed, the idea of social presence is constructed, in large part, by the interface itself which shapes expectations of the synchronous tutoring experience by sending messages to participants about the role they must play and the limitations of the interaction. In a study of email tutoring interfaces, Anderson (2002) identified three tutoring aspects that are constructed by the interface: 1) the nature of the relationship itself, such as what may be discussed in the tutoring session and what the student can expect from tutors; 2) the responsibility of the student, including the student's background information necessary for the specific tutoring event; and 3) the role of tutors including how tutors are represented in the interface, whether students can selected a preferred tutor before the session begins, and the actual name tutors are called which has important functional emphasis.

Anderson's (2002) study is applicable to synchronous tutoring interfaces as well since a large part of the interaction described by Anderson occurs before the tutoring session begins—through the OWL website—which is an interface used by writing center directors to delineate the

requirements for participating in a tutoring session, whether face-to-face, asynchronous or synchronous in nature. This list of rules often includes who may use the writing center services, such as only students or anyone in the university to include faculty and staff, what type of writing may be submitted to include both content and length, and the type of services offered such as the focus on process and higher-order concerns, rather than on product and lower-order concerns such as grammar and proof-reading services; in the case of synchronous tutoring sessions, additional language is often articulated on the OWL regarding who may use the service (are only distance students allowed?) and when the writing must be submitted to the tutor (beforehand or during the session?). Thus, the way that the OWL interface communicates the requirements for participating in online synchronous tutoring is what Anderson (2002) would call first-level representations; while second-level representations "refer to how an OWL interface characterizes both student and tutor roles" while simultaneously clarifying the overall goals of the tutoring session (p. 80). It is the combination of the first and second level messages communicated by the OWL interface that impact the social *presence* experienced by tutors and students, as well as the overall level of interactivity for all available tutoring experiences in the writing center.

This study will fill the gaps in literature regarding the connection between the replication of face-to-face tutoring practices and the selection of synchronous tutoring interfaces used to mimic such practices. This study will also provide greater insight into the rhetoric of the interface for writing center professionals by exposing the various layers of interfaces involved in the day-to-day writing center activities and how those interfaces invariably shape and constrain the tutoring experience. In short, the rhetoric of the interface is important for writing center professionals to understand because the interface, which often goes unnoticed, "resides behind

the scene while also functioning *as* the scene" of the tutoring interaction (Carpenter, 2009, p. 142, original emphasis), which means that the interface itself could be one of the factors that impact the adoption, reinvention, or rejection of innovations which is the primary focus of this study.

Summary

This chapter first demonstrated the theoretical framework of diffusion of innovation theory by Rogers (2003) and its supplement by Moore and Benbasat (1999), which I used to answer the primary research questions. Next, the history of physical writing centers was reviewed, emphasizing the role of innovation in writing centers. The historical and theoretical connection between physical writing centers and OWLs was also discussed, including the definition and features of each type of OWL; this section also provided a detailed review of second-generation live OWLs, which are the focus of this study. Finally, I concluded with a discussion of the role of metaphor and previous experience, paying particular attention to the way these two concepts influence the selection of the innovation (which is both a technology and an interface) and the related tutoring practices.

Chapter 3 discusses the research methodology and DOI's theoretical framework as it is incorporated in the overall research design. Participants include writing center directors and tutors at two different institutions who used collaborative software for online synchronous tutoring. The primary research instruments include the interview protocol for writing center directors and the modified-survey for tutors (borrowed heavily from Moore & Benbasat's survey instrument of perceived attributes). The data was coded and stored in MaxQDA, a qualitative data analysis software program used to conduct the within-case and cross-case analysis. The chapter ends with a brief discussion of the problems encountered and the limitations of the study.

CHAPTER III

METHODOLOGY

Introduction

This research study investigates the diffusion of synchronous A/V online tutoring innovations across two university writing centers or *social systems,* paying particular attention to the *perceived attributes* and *consequences* of the innovation. Developing such an understanding requires a framework that is grounded in empirical research and qualitative data, supported by Diffusion of Innovation (DOI) Theory. I selected an interpretive, multi-method case study methodology to explore the multiple and varied perspectives of writing center directors and tutors who create unique and contextual-based knowledge through trial and error and experiential learning. According to MacNealy (1999), empirical-based research "carefully describes and/or measures observable phenomenon in a systematic way planned in advance," producing a body of evidence that can be examined by others (p. 6). The underlying goal of the interview questions and survey instrument that I designed and administered to writing center administrators and tutors was to generate empirical, experiential data. This chapter describes the multi-method case study methodology using the *innovation-decision process* at each university writing center as the unit of analysis.

The chapter is organized as follows. First it describes the research questions that have guided this study. Second, it considers the role I played, as the researcher, in the research design and data collection. Third, it outlines the theoretical framework of the study. Fourth, it describes the parameters of the study, which include the participants, design of the research instruments, case study introductions, data collection procedures, the coding process, and the analytical

process. Finally, this chapter briefly describes the problems I encountered and the limitations of the study.

Research Questions

This research project developed out of several guiding questions regarding the need to more fully understand the relationship between writing centers and technology innovation, the role of previous experience in the evaluation and implementation of new technology innovations, and the nature of technological innovations including the various factors that aid in the success of some innovations and the failures of others. As Chapter 2 shows, the field has limited knowledge about synchronous tutoring innovations taking place in writing centers, including related practices, due to the small percentage of writing centers interested in synchronous tutoring combined with the lack of formal publications in the field as a whole. The current paradigm is to share stories of successful innovations or adoptions through conference presentations, which rarely make it into formal publications in journals or books to serve as a guide for future writing center innovations. This study fills the gap in existing writing center literature by formally documenting two synchronous tutoring innovations and related practices along with the various factors which affect the adoption, re-invention, or rejection of new innovations. In other words, this study explores and documents both successful and unsuccessful innovations, across two different writing centers, in order to expand writing center professionals' understanding of the nature of technological innovations.

The first research question asked why writing center administrators turned to synchronous A/V live OWLs in response to the needs of students and faculty. This question was intended to address the role of DOI's *social system* concept. The first research question relied most heavily on data from the interviews conducted with writing center directors to recreate the

context or problem, as perceived by the writing center director and the institution at large, which led to the decision to explore synchronous tutoring options as a solution. The interview data was also used to better understand the writing center philosophy ascribed to in each social system and how this philosophy impacted the *innovation-decision-process* and final selection of each innovation. Finally, the level of technology skill for tutors, directors, and the university at large was coded and analyzed as a means of further understanding the various layers of each social system; this data was obtained from writing center director interviews, tutor survey data, and documentation review. The first research question revealed the multi-layered complexity of a writing center's social system, which extends well beyond the obvious relationship between the writing center, writing program, and institution. In addition, the first research question provided a clearer understanding of the unique way that various social systems (within each case) affected the eventual adoption or rejection of the innovation.

Second, having assessed the intent behind the creation of synchronous A/V OWLs, it was important to determine what OWL designs and related practices were adopted and how DOI's *perceived attributes* ground writing center administrators' decision to adopt technology. The second research question used a combination of tutor surveys and writing center director interviews to understand the perceived attributes of each innovation from the perspective of both stakeholders. I coded and analyzed the answers for each perceived attribute within each case, or writing center social system, and across cases for comparison. I also reviewed university and platform specific needs and affordances, respectively, as a way to understand the choices administrators made regarding technology adoption (this issue dealt with both social system and perceived attributes). Finally, the related tutoring practices associated with each innovation were culled from interview data, survey data, and writing center documentation, which revealed both

implicit and explicit assumptions based upon previous experiences in tutoring and/or with the technology itself. Analysis of this data allowed a deeper understanding of the role of previous experience, or working metaphors, viewed as a baseline to guide the overall understanding and evaluation of a new innovation.

Third, once the adoption of each technology innovation was considered, it was important to understand the implications of the new OWL designs and related practices. DOI's *consequences of innovation* helped make sense of the ongoing process of adoption and/or transformation of the innovation for each particular social system. To answer the third question, I relied most heavily on interviews and documentation review. I coded and analyzed the data for each of the three areas of consequences, as identified by DOI theory: desirability, directness, and anticipation. The tutor surveys were mostly geared towards the perceived attributes, rather than consequences, but the open-ended responses provided additional insight into the three categories of innovation consequences. Analysis of such issues allowed for a better understanding of the intricate relationship between the *perceived attributes* and *consequences of the innovation* since the outcomes of adopting an innovation, for instance, can just as easily be *anticipated* and *desirable* as *unanticipated* and *undesirable*. To this end, tutor survey responses were used to connect the perceived attributes to the consequences of the innovation whenever possible. Thus, this research question forced an interplay between the innovation itself and its effect on writing center practices, policies, and procedures that are otherwise left unexplored.

Role of the Researcher

In qualitative research, the researcher becomes an instrument through which all data or observation is mediated. Cresswell (2013) argued that true understanding of the research process rests in the complex relationship between the "philosophical worldview assumptions that they

[researchers] bring to the study, the research design that is related to this worldview, and the specific methods or procedures of research that translate the approach into practice" (p. 42). As both a former online graduate student and current online writing instructor, I am doubly vested in this project and its long term implications. I also previously worked on an OWL Conversion Project with ODU to test and implement Adobe Connect for distance tutoring purposes, which gives me familiarity and background with this issue. In short, this study is close to everything I intimately know, understand, and love about distance education and OWI, which can be both an advantage and a disadvantage.

Furthermore, Cresswell and others stress the importance of being aware of knowledge claims, such as the epistemologies, paradigms, ontologies, and philosophical stances behind our research projects because they assist researchers in properly aligning their research to their ideological assumptions about knowledge and truth (Cresswell, 2013; Lauer & Asher, 1988; MacNealy, 1999; Sullivan & Porter, 1997). As such, I am aware that the lens through which I see events unfold are undeniably clouded by my own personal experiences, which is why I kept a separate journal of my thoughts throughout the data collection and analysis phases in order to make a clear distinction—as much as is humanly possible—between my own reflected thoughts and those of the participants. I have also tried to distance myself from my lens by attempting to not just find out *what* technologies are being adopted for online tutoring but to explore *why* they are being adopted in the first place. The *implications* of the technology adoption are also important not only in keeping my own biases at bay but should prove more useful to the writing center profession in the long run. My hope is that such attempts at reflexivity will at least temporarily suspend some of my own rather strong opinions on the topic so that I am more open and receptive to different perspectives or themes that may emerge from the data, while also

preventing the study from falling into common pitfalls of diffusion research such as “pro-innovation bias” or “technology is king” rhetoric.

In many ways, this project was an extension of an earlier ODU project where I studied the usability of Adobe Connect (formerly known as Macromedia Breeze) for online synchronous tutoring and synchronous class and/or group discussions. Since I am both an online student and an online writing instructor, I have a vested interest in expanding and developing *useful* and *usable* innovations for online students and writing centers and these projects afforded me several opportunities for doing so. In the case of ODU, I was able to conduct a usability study of an innovation while it was being piloted for use, and in the case of my own dissertation, I have been afforded the opportunity to explore and expand the philosophical, theoretical, and practical underpinnings of OWI and OWL research. In my mind, at least, I found myself drawing parallels to the earlier ODU project on several occasions, though the research questions, methodologies, and methods were different. Indeed, there is a connection between these two studies, and it is rooted in my own knowledge claims and intersecting roles as a student, tutor, and instructor. As such, Cresswell's emphasis on the role of the researcher and the “philosophical worldview assumptions that they [researchers] bring to the study” is applicable to this study, as my own vested interest in online synchronous tutoring, from the perspectives of student, tutor, and instructor, served as the foundation for the research design, to include the selection of the theoretical framework used to answer the research questions.

Theoretical Framework

In the following sections, I outline the three aspects of DOI theory referenced in the research questions, including how DOI was used to select the appropriate materials and procedures used to collect and analyze the data. I conclude this section with a summary of

several criticisms of DOI theory and a detailed discussion of the strategies implemented in this study to overcome these problems.

Nature of the Social System

I combined the terminology of Rogers (2003) and Inman (2000) to define a social system as a collaboration of various stakeholders who collectively work together to accomplish a common goal such as problem-solving, reflection, and expression. The structure and norms of a social system can facilitate or impede diffusion of innovations since they are often more influential than any one individual's characteristics of innovativeness, technology skill, or previous familiarity with the innovation.

According to Rogers (2003), the introduction of the innovation is generally handled by two user roles that reside within the structure of a social system: (1) opinion leaders and (2) change agents. Opinion leaders, often at the center of interpersonal communication networks, are able to influence other's attitudes with regard to a new innovation. According to Inman (2000), "In writing centers, opinion leaders could be any number of individuals: from respected tutors, to engaged administrators, and to reflective clients" (p. 57). For Rogers, change agents work for a change agency and their primary goal is to influence clients' decisions for the benefit of the change agency, but Inman adapts this definition in a more meaningful way for writing centers by simply stating that one becomes an agent in the *innovation-decision* process "when they imagine themselves as contributors to the innovation and when they locate ways that their influence has shaped outcomes associated with that innovation" (p.58). Agents must closely monitor the outcomes of the innovation to ensure that it aligns with the "norms" of the social system. If the system norms are ignored or deemed unimportant in some way, then introducing a

new innovation into the system could disrupt it if not done carefully (i.e. compatibility attribute) and lead to its eventual discontinuance.

Perceived Attributes of Innovation

This study combines Roger's (2003) five characteristics or perceived attributes of an innovation with three additional attributes from Moore and Benbasat (1991). Roger's (2003) original five perceived attributes include *relative advantage*, *compatibility*, *complexity*, *trialability*, and *observability*. In the Moore and Benbasat (1991) model, *image* was added as a separate category from relative advantage (instead of part of it as in Roger's model) and *observability*, the ability to view the innovation, was replaced or sub-divided into three new areas of *visibility*, *result demonstrability*, and *voluntariness*. The eight characteristics that this study focused on are outlined below:

1. *Relative advantage* means the use of the innovation must have an advantage over other options, such as its predecessor (i.e. email tutoring). This is one of the strongest predictions of innovation adoption as it deals with the delicate balance between expected benefits and cost of innovation adoption; it can be measured in several different ways including low initial cost of the innovation, the ability to save time and effort, immediacy of reward, and economic profitability. This attribute was selected for this study to capture responses regarding predecessors to synchronous tutoring such as asynchronous email tutoring and previously discarded synchronous tutoring options.
2. *Image* measures the status or social prestige associated with the innovation. It considers how one's status can be enhanced in the social system (formal and informal, in the case of writing centers) or organization through the use of the innovation. This attribute was selected to determine if the writing center director's decision to offer synchronous

tutoring was based upon a concern for how the writing center was viewed on campus and among writing centers across the nation.

3. *Compatibility* measures the consistency between using the innovation and the values, needs, and experiences of potential adopters. Innovations that are incompatible with the values or social norms will likely be adopted slower than other, more-compatible innovations. It is also believed that individuals can only deal with new innovations based on what they already know, so old ideas, customs, or cultural practices become the mental maps or metaphors that individuals use when assessing new ideas. This attribute was selected to capture the specific aspects that contributed to a synchronous tutoring innovation's success in one writing center context and its rejection in a different context.
4. *Ease-of-use*, the opposite of complexity, measures the user-friendliness of using the innovation; simple software solutions or ideas that are easier to understand will be adopted more quickly. This attribute was selected since ease-of-use plays a big part in any technology innovation, adoption, and implementation. It was important to capture how writing center directors and tutors felt about the usability of the technology used for synchronous tutoring and to determine what effect, if any, this attribute had on the innovation-decision process.
5. *Trialability* measures the ability for a new innovation to be tried and tested before use, which also results in faster adoption. Since many tutors are not given the opportunity to test an innovation before it is fully adopted by the writing center, this attribute was selected to determine its effect on the individual tutor's innovation-decision process and the innovation's overall rate of adoption.

6. *Voluntariness* measures the degree of free will associated with using or adopting the innovation. This attribute was selected to capture the amount of free will that writing center directors and tutors felt they had with regard to using or adopting the innovation. This is an important attribute for writing center scholarship since it speaks to system-wide constraints as well as personal preferences of end users.
7. *Results demonstrability* measures how easy it is to explain the results of the innovation to others, including its observability and communicability. This attribute was selected because of the essential role that observation plays in writing centers. Writing tutors are trained by observing others and tutors are periodically observed by the writing center director through a sort of evaluative process which suggest specific areas of improvement. In addition, writing center directors must explain what actually happens in a writing center and in a tutor session, which is readily captured by the results demonstrability attribute.
8. *Visibility* measures the ability of others to see the innovation being used. This attribute is important for writing center research because it captures the innovation's use in the writing center context as well as in the broader institutional social system. Visibility also addresses the innovation's rate of adoption in terms of how often and in which capacity end users are exposed to the innovation.

These eight characteristics served as a lens for analyzing the specifics of the diffusion and adoption process and were the primary themes or categories used for coding the data.

Consequences of Innovations

Consequences are defined as "the changes that occur to an individual or to a social system as a result of the adoption or rejection of an innovation," which means that consequences

are merely outcomes which can be deemed “good” or “bad” depending on the goals and perspectives of the system users (Rogers, 2003, p.157). Rogers describes three potential categories for consequences of innovations:

1. Desirable vs. Undesirable: the system change is desirable if the innovation is functional but undesirable if the innovation is dysfunctional
2. Direct vs. Indirect: changes that occur in immediate response to an innovation are direct changes whereas second-order responses are considered indirect
3. Anticipated vs. Unanticipated: changes that are recognized and intended are anticipated whereas changes that are not intended or planned for are considered unanticipated

As with any new implementation, technology or otherwise, innovations have expected goals or outcomes that are both *anticipated* and *desirable*. However, consequences of innovation adoptions are difficult to measure since they cannot be captured easily using survey data (which is usually how the perceived attributes are captured), but their importance should not to be overlooked because the study of consequences considers the effects of adopting innovations while providing contextual clues about the continuance or rejection of the innovation. In short, the language of DOI allows for closer exploration of the relationship between *intention* and *actuality* (Inman, 2000). Even with a strong research tradition, however, DOI still suffers from its own shortcomings, which were factored into the design of this study.

Criticisms of Diffusion Theory

The top three criticisms of DOI theory include the recall problem, individual blame bias, and pro-innovation bias. This study was designed with these criticisms in mind, which influenced the types of methods selected as well as the data collection and analysis procedures.

These criticisms also worked to further reinforce the need for triangulation of data between the tutors, writing center directors, and documentation.

Recall Problem. The *recall problem* addresses Diffusion theory's dependence on self-reported recall data from participants. This is fondly referred to as the "rear-view" reconstruction model that is not always accurate, which is what one generally gets with survey data because researchers are only provided with "snapshots" in time rather than a view of the entire diffusion "process." Rogers suggests a few alternative research designs to overcome the recall problem such as conducting field experiments, longitudinal panel studies, use of archival records, and/or case studies of the innovation process with data from multiple respondents (each of whom provides a validity check on the other's data). In other words, Rogers suggests a type of triangulation of data as the most holistic solution to the recall problem. This study used a case study methodology, multiple respondents, and documentation review to address the recall problem typically associated with DOI research. This triangulation method proved useful on several occasions and served to fill the gap when some memory or recall of events was missing or only partially provided by a single method.

Individual Blame Bias. The next criticism of diffusion research is *individual blame bias,* which deals with the tendency to value the change agency sponsoring or funding the research over that of the individuals using the innovation. As a result, the individual becomes the unit of analysis, instead of the system, and individuals are held responsible for his or her own problems rather than investigating the system the individual is a part of. Take recycling, for example: many agree that it helps the environment, but it may not be irrational for a household to refrain from recycling, especially if it is later discovered that recycling was financially prohibitive (i.e. "not free") as it is in some areas. In a situation like this, the problem is

determined to be with the system, in fact, and not the individual. According to Rogers (2003), researchers can avoid individual blame bias by asking questions about how adopters found out about the innovation (from whom) so that the network link becomes the unit of analysis instead of the individual (p. 125). Another solution is to involve all stakeholders in defining any diffusion problem rather than just change agents who are seeking to fix or alleviate the problem. In this dissertation study, I attempted to address the individual blame bias problem by involving writing center directors and tutors, and I made great efforts to understand the full set of circumstances leading up to the decision to adopt. I was unable to include students in the study, however, which is a limitation of the study discussed later in this chapter.

Pro-innovation Bias. *Pro-innovation bias*, on the other hand, is the largest criticism of diffusion research to date because it is often *assumed* and *implied*, making it more difficult to address. This problem was first identified by Rogers and Shoemaker in 1971 and is the belief that an innovation *should be* diffused and adopted by all members of a social system, that it *should be* diffused more rapidly, and/or that the innovation *should be* neither re-invented nor rejected (Rogers, 2003, p. 106). In other words, pro-innovation bias is predicated on the false assumption that any innovation, especially technological ones, are an improvement and always inherently good (i.e. technology is king rhetoric). As a result, diffusion researchers are more likely to underemphasize rejection or discontinuance of innovations, overlook re-invention, and ignore anti-diffusion programs designed to prevent the spread of "bad" innovations. In short, successful innovations, rather than rejected or discontinued ones, are easier to study because they are still in place, but innovation failures are also important and could sometimes be more valuable in an intellectual sense (Rogers, 2003). Roger's provides a number of solutions for addressing pro-innovation bias not all of which are relevant to this study (e.g. such as conducting

a comparative analysis of successful and unsuccessful innovations from members of the same social system over the same period of time). However, the last four suggestions are especially relevant to this study: (1) investigating while the diffusion is still on-going instead of using the rear-view model that makes it easier to only select rapidly diffused, successful innovations; (2) trying to understand the individual's perceptions of the innovation and context that led up to the rejection, discontinuance, or reinvention of an innovation; (3) understanding how the innovation is related to other innovations and to existing practices that it replaces (or replicates); and (4) using another form of data collection, in addition to survey data, asking the "why" questions in order to provide better insight into the actual motivations for adopting the innovation.

The diffusion was still on-going at both writing centers, which addresses the first solution of overcoming pro-innovation bias. The first case study had *fully implemented* Skype for tutoring (for several years) but had not *fully diffused* across the social system, as the number of Skype sessions still lagged behind previous tutoring innovations. The second case study had only recently selected Google Hangouts (in the same year of this study), so the innovation's diffusion *and* implementation was still on-going. The last three suggestions for overcoming pro-innovation bias were implemented in this study using a combination of interview and survey data. First, this study used the interviews with writing center directors to understand the failed innovations leading up to the decision to adopt the present innovation. This was especially the case in the first case study where several innovations were rejected before adopting Skype for synchronous tutoring purposes. With regard to the tutors, the open-ended question at the end of the survey was used to capture any lingering thoughts that might provide further insight into failed innovations that were discarded and/or consequences of innovations that were currently in use. Next, the combination of interview and survey data was also used to make connections

between tutoring practices (and related assumptions) with regard to face-to-face, email, and online tutoring. I was also able to use the documentation from both writing centers to further aid in this process. Finally, the "why" questions were answered using the interview data to understand the exigency of circumstances that led up to the decision to adopt each innovation for a particular *social system*, at a particular *time*.

Research Design

This is an empirical study that employs a case-study methodology to explore the multiple and varied perspectives of writing center tutors and directors who create unique and contextual-based knowledge through trial and error and experiential learning. The multi-method approach used in this study combined the theoretical framework of DOI theory developed by Rogers (2003), Moore and Benbasat (1991), and Inman (2000) to serve as a lens for analyzing the diffusion of synchronous A/V online tutoring innovations across different university writing centers or *social systems,* paying particular attention to the *perceived attributes* and *consequences* of the innovation. As a result, the unit of analysis included each writing center director's *innovation-decision process* to better understand the various factors influencing the final adoption. Thus, the research questions for this dissertation are closely tied to the theoretical framework of Diffusion of Innovation (DOI).

The principles of DOI were used as a starting point, making the use of theory two-fold: 1) to determine *how* the principles of DOI theory might explain the technology adoption process and related practices *within* and *across* different writing center contexts and 2) to generate new theory, or expand DOI theory, if new patterns emerge that could not be otherwise explained by DOI in its present form. The goal or outcome of this study was to provide a foundation for studying DOI in future writing center innovations, thus providing writing center professionals

with a guide for thinking about their own institutional context. As such, a case study methodology was selected in order to make comparisons within and across different writing centers.

The case study methodology was a good fit for this research project because it is interpretive, empirical, and context-specific. Because of the rich description that is afforded by the use of a case study, the results can be used to generate ideas for future research and/or exploration. In this study, the methodology needed to be flexible, allowing for an in-depth exploration of important events and participant experiences within each institution (or case). I also wanted to explore more than one institution in order to see *if* and *where* data might intersect, but I was not concerned with the data being generalized to a larger population, which also aligns well with case study methodology since that is one of its primary criticisms (Cresswell, 2013) (I did, however, begin to address this criticism with the triangulation of data). Furthermore, I sought to understand the different social systems at play using DOI theory, not only at the university-level, but also in connection to English Studies and Writing Centers as a whole, which necessarily places the various stakeholder groups at the forefront; in other words, I wanted to blend the personal, theoretical, and professional, and I felt that the case study methodology was the best fit for achieving that goal.

Participants

This study used a purposeful sample and participants were selected by internet searches and referral to represent a single institution in two of the four previously identified second-generation synchronous OWL tutoring categories: (1) corporate conferencing and training programs such as *Adobe Connect* or *Elluminate*; (2) social conferencing programs such as *Skype* and *Google Hangouts*; (3) real-time document collaboration programs such as *Huddle* and

Google Docs; (4) and massive multiplayer online environments such as *Second Life*. Initial key word searches of "writing center + online tutoring" on Google located nearly a dozen writing centers that discussed and/or marketed their use of synchronous A/V technology for online tutoring purposes using either Skype or Google Hangouts.

I selected Skype and Google Hangouts innovations due to their ubiquitous nature as I assumed that participants, including students being tutored, would already have some familiarity with Skype or Google Hangouts in social contexts outside of the writing center. Even if study participants had not personally used Skype or Google Hangouts, it was likely that they had knowledge of its existence through their social network, thus developing theories or metaphors about how the technology *can* and *should* work. Because the prevailing metaphor and overarching belief was that face-to-face tutoring is the most "natural" form of tutoring (see Chapter 2), I sought institutions that attempted to replicate this process as closely as possible using audio, video, and live document view capability since each of these elements is equally essential to face-to-face tutoring (the ability for tutors and students to see and hear each other, as well as view the document together). I incorporated these experiences and assumptions into the study to provide a solid baseline for discussing familiarity with the technology—whether in theory or in practice—both before and after its use in the writing center. This approach intersected with Lakoff and Johnson's (1980), *Metaphors We Live By*, with respect to conceptual and cognitive metaphors, and it also worked to address the problem of *pro-innovation bias* as identified in the previous section. Finally, I also hypothesized that the accessible and ubiquitous nature of these technology platforms would play a factor in the overall decision to adopt the software for tutoring purposes, especially with regard to the *perceived attributes* of the innovation as articulated by the primary research participants.

The primary research participants included the writing center directors and tutors, who had first-hand knowledge of the innovation adoption, its related practices, and consequences of the innovation, if any. As was the case with both case studies, only a single tutor was available to participate in the study due to a number of different issues ranging from staffing and budgeting to reluctance of tutors to participate in the synchronous tutoring process. This is a limitation of the study, but it was necessary that at least one tutor from each case participate to achieve suggestive triangulation of data and a clear understanding of the perceived attributes and consequences of each innovation. Finally, in order to retrace the steps leading up to the decision to adopt the innovation, it was necessary that the writing center director be the *same* individual responsible for spearheading and implementing the use of Skype or Google Hangouts for tutoring purposes; this was especially important to overcoming the *recall problem*, as previously identified, since second-hand interview data would have made data triangulation difficult, if not impossible, thus becoming a major limitation in the results of the study. Specifically, institutions had to meet the following selection criteria for inclusion in the study:

1. The synchronous collaborative technology being used for online writing tutorials must include, at a minimum:
    a. document sharing or mark-up capability
    b. at least one other form of interactivity, such as audio and/or video
2. The current writing center director must have had direct involvement in the design or decision-making process leading to the adoption the technology
3. There is at least one online tutor at each institution, presently using the innovation, who is willing to participate in the survey part of the data collection

I designed the pre-screen interview questions of my own accord, but the inclusion criteria were

developed in consultation with my Dissertation Chair, Dr. Kevin DePew. I conducted the pre-screen interviews using Skype and Google Hangout, as opposed to sending several email exchanges, as this approach provided an opportunity to share additional details of the study and helped build a rapport with the research participants. Table 1 displays the correlation between the inclusion criteria and the pre-screen interview questions.

Table 1

Correlation Between Inclusion Criteria and Pre-Screen Interview Questions

Criteria	**Inclusion Criteria**	**Pre-Screen Interview Questions**
1	The synchronous collaborative technology being used for online writing tutorials must include, at a minimum: (a) document sharing or mark-up capability and (b) at least one other form of interactivity, such as audio and/or video.	Please discuss the extent to which you are making use of the tools inside of the technology platform to conduct online synchronous tutoring. Are your tutors using the document sharing capability built into Skype or Google Hangout? Are your tutors using audio or video to conduct online synchronous sessions?
2	The current writing center director must have had direct involvement in the design or decision-making process leading to the adoption of the technology.	Please describe your role in the selection of the Skype or Google Hangout for tutoring purposes. Were you around when your institution started using Skype or Google Hangout for online tutoring? What role did you play in the overall decision to adopt?
3	There is at least one online tutor at each institution, presently using the innovation, who is willing to participate in the survey part of the data collection.	Please describe your staffing situation for the writing center, especially with regard to online tutors. Do you have at least one tutor that has tutored a synchronous session that might be willing to answer survey questions about the technology?

Source: Appendix A: Pre-Screen Interview Protocol for Writing Center Administrators.

I made a concerted effort to select different institutional types to better determine the role of the social system in the innovation-decision process (e.g. four-year state, four-year private, two-year teaching institutions,). Additionally, I made a conscious effort to select institutions with varying adoption timelines (i.e. established innovation vs. newly-adopted) and writing center philosophies so that the innovation-decision process could be studied in greater detail, especially in light of the perceived attributes of the innovation. In other words, the different cases were used to understand how the use of Google Hangouts or Skype came to be used for the purposes of synchronous tutoring and what influences the innovations had, if any, on the tutoring practices used at each institution.

Case Study Introductions

The following section introduces case studies, including the institutional makeup, student population, writing center hours and locations, and the role of the writing center director. I conclude each case study with a brief explanation of the significance and objective of each case.

Case Study #1: UMW. The first case study was a public research university located in the Midwestern part of the U.S, which will be referred to as UMW for short. As of Fall 2013, the institution enrolled just over fifteen-thousand students—55% undergraduate students, 35% graduate students, and 10% dual enrollment. There were also nearly 900 online students, which included combined totals for graduate and undergraduate. The writing center had two locations on campus and staffed fifteen tutors across both locations at ten hours per week, for a total of 150 contact hours each week. There are two Skype accounts, one for each writing center location, but almost all Skype tutoring occurred at the main writing center location. The writing center appointments were booked as 50 minute sessions for online and face-to-face tutoring. The writing center director did not participate in tutoring. This university case study was selected

because of its unique use of Skype and external document sharing programs such as JoinMe for synchronous tutoring. The objective of this university case study was to understand the events leading up to the decision to implement synchronous online tutoring and the reasons why some options were rejected before settling on Skype as the solution.

Case Study #2: UNE. The second case study was a public university located in the northeastern part of the U.S., called UNE from this point forward. UNE enrolled just over six-thousand undergraduate students spread out over nine different satellite campuses, as of Fall 2014. The university did not offer any graduate degrees, on-campus or on-line, but students were able to enroll in graduate degree programs with sister-institutions within the same UNE network. Over 90% of students take one or more online classes at UNE, and 40% of students take their entire course load online (UNE Pre-Screen Interview, 2013). The writing center had one location on campus and staffed four tutors during the year of this case study, each working twenty hours per week for a total of 80 contact hours each week; the writing center appointments, both online and face-to-face, were 60 minute sessions. The writing center director occasionally tutored but was not regularly scheduled or included in contact hours. The writing center had one dedicated online tutor, who was still scheduled for face-to-face sessions as well, thus limiting the number of available online sessions. This university case study was selected because of its use of Google Hangouts for synchronous tutoring, its smaller size in comparison to the other case study, the large interest in online or distance education, and its unique population of all undergraduate students. The objective of this university case study was to understand the infrastructure necessary to support such a homogenous student population with regard to online or distance education and the reasons leading up to the decision to adopt Google Hangouts for synchronous tutoring.

Research Instruments

Interviews and surveys were used to collect the data. Unlike the more general data methods used in this study (i.e. documentation review and field notes), these two instruments were specifically designed and crafted to answer the research questions identified at the start of this chapter; the design resulted in an interview protocol and modified DOI survey. According to Griffin (2013), the research methods are chiefly concerned with *how* the research design and methodology is carried out, which knowingly "shape both the research and its outcomes," so the proper selection of each method is crucial to the outcome of the research project (p. 5). The combined research instruments of the modified survey and interview protocol allowed me to use both open-ended and closed-ended questions, making it easier to record both qualitative and quantitative data essential to the results of the study (see Chapter 4). For example, some of the research questions were easier to capture using the primarily close-ended design of the survey instrument, such as the perceived attributes for RQ2, whereas other research questions relied heavily on deep, contextual commentary found most readily in the interview responses. The following sections identify the series of steps taken to design the two primary research instruments used in the study, the interview protocol and modified-DOI survey. Both research instruments were approved before the start of the study by the Dissertation Committee on December 6, 2012, and later, by ODU's Institutional Review Board on January 7, 2013.

Interview Protocol. I designed the interview protocol over a period of several weeks to closely align the research questions to the interview questions. The protocol was used to guide the interview process so that uniformity and consistency was assured in the data. Table 2 details the correlation between the three research questions and the interview protocol questions.

The open-ended design of the interview protocol was used to provide context regarding the exigency of the OWL designs and resultant changes made to tutoring practices as part of the adoption process. This information would not have been easy to gather using survey data alone, which is why two different research instruments were needed. The data generated from the interview protocol instrument was used to answer all three research questions.

Table 2

Correlation Between Research Questions and Interview Protocol Questions

Number	**Research Questions**	**Interview Protocol Questions**
RQ1	*Why* are writing center administrators designing synchronous A/V live OWLs? How might DOI's *social system* concept help us to make sense of the perceived needs that the new OWL was intended to address?	Could you act as a storyteller for me today and tell me the story of how distance delivery made its way into your university's Writing Center – the events, decisions, and actions that led up to it – to the best of your recollection?
RQ2	*What* OWL designs and related practices were adopted? How might DOI's *perceived attributes* help us to make sense of each writing center administrators' overall decision to adopt the innovation?	I know that you are currently offering synchronous A/V tutoring with screen-sharing capability through a program called _____. Can you tell me how you use it for online tutoring as if you were explaining it to someone who had no knowledge of it?
RQ3	What are the *implications* of these new OWL designs and related practices? How might DOI's *consequences of innovations* help us to make sense of each writing center administrators' decision to continue or discontinue the adoption?	Did you or your tutors experience any sort of advantages or challenges in dealing with the new synchronous tutoring OWL – to the best of your recollection? If so, can you describe what it was?

Source: Appendix B: Interview Protocol for Writing Center Administrators.

Modified DOI Survey. The survey instrument used for data collection in this study derived from Moore and Benbasat's (1991) scale measurements of personal work station (PWS). Moore and Benbasat (1991) developed a general survey instrument, based on Rogers' Innovation and Technology Acceptance Model (TAM), to measure the eight combined perceived attributes of voluntariness, relative advantage, compatibility, image, ease of use, result demonstrability, visibility, and trialability. Moore and Benbasat's instrument was previously tested with high reliability and validity by DOI researchers and was considered general enough to be applied to any particular innovation (see e-learning adoption among educational leaders by Jebeile & Reeve in 2003 and internet adoption among faculty members by Almobarraz in 2007). This study of adopting synchronous tutoring technology among writing center directors is also compatible with Moore and Benbasat's instrument, as both studies are aimed at addressing the perceived attributes of using an innovation to investigate how perceptions affect individuals' actual use of innovations. Thus, a pilot study was not performed prior to the distribution of the instrument.

To fit the present study, I modified the original instrument developed by Moore and Benbasat (1991) to have three primary parts: the opening background questions, the Likert-type scale questions to capture the perceived attributes, and the open-ended question at the end of the survey. In order to capture the necessary data for the context variables, I added four background questions to the start of the survey, which I have explained and justified below. The first two questions were used to establish the total years of tutoring experience, at the writing center and other locations, for each tutor who participated in the study. The first question asked, "How long have you been a writing tutor at this university?" which served as a baseline for understanding tutor experience at this particular social system, either at UMW or UNE. The second question asked, "How long have you been a writing tutor elsewhere?" and was used to capture any

tutoring experience from a different social system. Both questions asked tutors to rate their years of experience by circling one of the four categories: 0-1 year, 2-3 years, 4-6 years, more than 6 years. The first two questions were combined to get a better understanding of the tutor's experience and the role previous experience plays in evaluating the perceived attributes of the innovation.

The third and fourth questions were used to establish the role of technology at the individual and institutional level, as perceived by each tutor who participated in the study. The third question asked, "How would you rate your level of technology skill?" and tutors were asked to circle a single number from a list of categories: No skills or knowledge (0), Basic skills with room for improvement (1 or 2), Intermediate skills could use additional practice (3 or 4), Advanced skills with extensive knowledge (5, 6, or 7). The third question provided a clear understanding of the tutor's own self-rated level of technology skill. Writing center directors were also asked to rate their tutors' level of technology skill during each interview, and this data was combined and triangulated with documentation review to get a better understanding of tutor technology skill. The fourth question asked, "How would you rate the level of technology use at your institution?" and tutors were again asked to circle a single number from a list of four possible categories: No use with a fear of technology (0), Cautious with a little use of technology (1 or 2), Mostly-accepting with moderate technology use (3 or 4), Fully-accepting with cutting edge technology use (5, 6, or 7). I asked this question to understand the level of technology use at the institution, as perceived by the tutor. A similar question was asked of writing center directors during each interview, which allowed the data to be combined and triangulated with documentation review. These last two questions also provided insight into DOI's *social system*

attribute, as technology comfort (and assumptions about such comfort and/or skill) played an essential role in each writing center's selection and eventual adoption of the innovation.

The second part of the survey was used to capture the eight perceived attributes using a Likert-type scale (from 1-7). There were 45 questions in this section of the survey. For this entire section, tutors were asked to use the same scale covering four categories: Did not influence our decision (0), Slightly influenced our decision (1 or 2), Moderately influenced our decision (3 or 4), Strongly influenced our decision (5, 6, or 7). As with the previous questions, tutors were only permitted to circle one number (from 1-7) for each question.

Finally, I also added an open-ended question to the end of the survey, asking tutors to use the space to make any further comments or recommendations about the synchronous tutoring program being used in their writing center. This final question, which was answered by both participating tutors in the study, allowed tutor responses to be coded along with writing center directors in response to RQ1 (social system) and RQ3 (consequences of innovation). As a result, the data collected from the DOI-modified survey instrument was used, in some part, to answer all three research questions (See Appendix C for the full "Survey of Writing Center Tutors").

Data Collection Methods

The data collection process was intense and varied in this study to achieve a more holistic understanding of the multiple perspectives at play both *within* and *across* each case study. This multi-method approach aligns well with the goals of this research study, which are *pragmatic* and *constructivist* in nature, drawing on multiple worldviews to piece together each institution's unique image or representation of the world of writing centers and OWLs. At times, this information was used to uncover overlapping and sometimes competing lines of thought, which required the triangulation of multi-method data to patch together a "fluid and interconnected

sequence of events" (Denzin & Lincoln, 2003, p. 8). Toward achieving the goal of triangulation, several methods were used for uncovering the adoption process and related tutoring practices at each writing center: (1) documentation review, (2) web-based interviews, (3) emailed surveys, and (4) self-reflexive field notes. These four data collection methods blend qualitative and quantitative research approaches, and they collectively represent the process taken to answer the research questions. Each method will be discussed in the sections that follow.

Documentation Review. First, I arranged to visit or speak with the Writing Center Director of each institution and to ask for copies of the writing center's mission, tutor handbook or guidelines, online tutorial training guide or how-to manuals (for tutors, student tutees, or both), and any other written material describing the writing center context and its purpose. During the meeting, I reviewed the purpose of the study with each writing center director, scheduled individual interview times, identified the number of online tutors who will take part in the emailed survey, confirmed key contact data for writing center administrator and tutors, and requested that participating tutors respond to the electronic survey to be emailed later. Context variables examined include exigency for adopting the innovation, prior experience with face-to-face tutoring, and the university's existing infrastructure. The documentation review was also useful for understanding the writing center philosophy, especially regarding the role of tutors.

Web-based Interviews. The web-based interviews were structured around the research questions defined at the start of the case study, conducted using Skype and Google Hangouts, and limited to writing center administrators from each institution. Each interview was recorded in its entirety and transcribed. An open-ended interview strategy was used to capture context-specific information from all three research questions that could not be otherwise captured using survey data (See Table 2 for the relationship between interview questions and research

questions). The recall problem, typically associated with interview data, was first addressed by capturing the initial decision-making process, implementation, and evaluation of the innovation from the participant and then cross-referencing it with the emailed tutor surveys and documents to provide a richer, more in-depth understanding of the adoption process; however, the triangulated results were limited by the small number of tutors who were willing and able to participate in the study (see "Limitations of the Study" at the end of this chapter).

Emailed Surveys. After the approval of the survey instrument, I emailed surveys to all participating tutors with a requested return date, and periodic reminder emails were sent once each week before the requested return date in order to assist with faster response. The emailed surveys primarily assisted with answering the second research question about DOI's perceived attributes. However, the survey data was also useful for answering RQ1 about social system and RQ2 about consequences of the innovation, though not as thoroughly exposed in the survey data as in the interview data. The survey data was coded for the perceived attributes and any context variables, if applicable (see Appendix C: Survey for Writing Center Tutors).

Self-Reflexive Field Notes. The field notes were used to record impressions, questions, and concerns that might assist with the interpretation of the data and were relied upon as a source of data. I incorporated my own personal experiences as a researcher, tutor, student, and online instructor throughout the study, weaving in my own experiences as a sort-of reflexive ethnography. Ellis and Bochner (2000) discuss reflexive ethnography as a blending of the culture or subculture under investigation with that of the researcher's own experience in the culture, allowing the researcher's experience to illuminate the culture under investigation and reveal the interactions between the self and other. As a result, the field notes were a self-reflexive blending of descriptive content, observational content, and personal experience.

Finally, I also made note of personal stories told during open-ended interviews and flagged them for potential use in the final report and worked to weave in my own personal experiences in the opening and closing chapters of the dissertation. Deck (1990) specifically defines self-reflexive fieldwork as:

> Accounts in which the authors ground themselves in their field experiences, reference other social scientists who serve to validate the characters in their stories, keep the autobiographical components mainly in the introduction and epilogues, and focus personal revelations directly on the fieldwork at hand rather than on their own personal development. (Deck, 1990, quoted in Ellis & Bochner, 2000, p. 753)

My own experiences were essential to the underpinnings of this study, epistemologically speaking, as I blended constructivist, pragmatic, and transformative knowledge claims over the course of the dissertation project.

This reflection draws directly on Cresswell's (2013) identification of the four knowledge claims of post-positivism, constructivism, transformative, and pragmatism used by researchers to understand the world around them, thus shaping the research questions and overall direction of the research study. In the case of this study, my *constructivist* nature revealed itself through the two case studies, which were used to obtain the perspectives of many individuals to make inferences about the usability (and compatibility) of Skype and Google Hangouts for the purposes of online tutoring. Second, the technical skills associated with each innovation has *pragmatic*, real-world value beyond the walls of the university because it is purposeful for writing centers and in the personal and professional lives of tutors and students. This is especially important in a technology-rich culture where the distinction between work and home, private and personal is increasingly blurred. Lastly, my interest in the topic stemmed from a

desire to provide distance students with resources akin to on-campus students, which is undeniably *transformative* in nature. Furthermore, I self-identify as an online writing instructor, online writing tutor, and online graduate student, which made this project both a personal and professional endeavor. In this sense, the role of the researcher was not ancillary to the research study as much as it was embedded within the research design itself, thus providing meaningful insight into the shared experience with study participants, the formation of the research questions, and the interpretation of the data.

Data Analysis

This study used computer-assisted qualitative data analysis software (CAQDAS) to conduct within-case and cross-case examination of data. CAQDAS is believed to enhance the coding process by making it easier to locate useful quotations and multiple perspectives within a category or theme; this is especially useful when the database is large and diversified (Creswell, 2003). CAQDAS does not replace the research in any sense; in fact, such programs still require the same interpretive work since researchers must still read, select/highlight, and label certain pieces of data according to categories or codes. I tested several qualitative programs including HyperResearch, Atlas.ti, QDA Miner, and Coding Analysis Toolkit (CDA), before making the decision to use MaxQDA. Ultimately, the software was easier to use than the others, and the cost was reasonable, though not the least expensive option of the CAQDAS software options.

In the following sections, I have identified the steps taken to conduct the within-case and cross-case analysis of data using the MaxQDA software program. In this study, interview data, open-ended responses from surveys, reflexive field notes, and documentation artifacts were entered into MaxQDA, a CAQDAS database for coding and interpretation. This allowed the data to be used independently or in a convergent manner, such as with cross-case analysis.

Within-case Analysis. Within-case analysis was the first analysis technique used with each institution under study. First, I studied each institution's written documentation, web-based interviews, and survey response data as a separate case to identify unique patterns within the data for that single institution. By studying a combination of data results, I was able to cross-reference the writing administrator's responses with those of the writing center tutors, who are most likely to be involved in the day-to-day tutoring activities. Data was coded for Rogers' (2003) and Moore and Benbasat's (1991) theory of perceived attributes (relative advantage, compatibility, results demonstrability, ease of use, image, visibility, and voluntariness) to identify patterns that emerged from both tutors and writing center administrators' explanation of their OWL design. Throughout this process, I wrote field notes connecting the patterns found in the data to my own personal experiences; these field notes could range from mere summaries of that day's work to a series of questions generated by the most recent documentation review or interview session to dialogue based in and around the disciplines of English Studies, Writing Centers, and Online Writing Instruction. Next, I prepared a detailed case study write-up for each institution, categorizing interview questions and responses and examining the data for within-group similarities and differences.

Cross-case Analysis. Cross-case analysis was the second analysis technique used in the study. I examined the cases as a pair, categorizing the similarities and differences among and between them. The reflexive field notes were used to discuss, explore, and offer conjecture about the relevance of DOI attributes for each writing center social system. There were some shared experiences or similarities across the cases, but this was not always the case. Such analysis allowed for easier exploration of variations in program design and implementation (i.e. the rhetorical architecture of systems), including the selection process of the synchronous

tutoring innovation. Again, data was coded for Rogers' (2003) and Moore and Benbasat's (1991) theory of perceived attributes (relative advantage, compatibility, results demonstrability, ease of use, image, visibility, and voluntariness) to identify some "possible" issues that might cut across the adoption of different online tutoring software in different contexts. As patterns began to emerge, some evidence stood out as being in conflict with the patterns. In those cases, I conducted follow-up focused interviews to confirm or correct the initial data in order to tie the evidence to the findings and to state relationships in answer to the research questions. When the patterns could not be easily reconciled with the data, I sought to name and categorize those variables as an extension of DOI specific to writing center contexts. The cross-case analysis allowed me to discover a new perceived attribute for writing centers, referred to as *residual value*, in addition to arguing for the significance of previous experience or working metaphors as an essential code/construct for writing center research.

Problems Addressed During Study

In the following section, I identify the three problems addressed during the stages of data collection and analysis. The first problem involved securing enough institutions that met all of the inclusion criteria to participate in the study; the second problem addressed was that of my own technology, or pro-innovation, bias; the third problem addressed was my own decision to adopt a qualitative software program for the storage and analysis of data, which brought about a number of unintended and undesirable consequences.

The first problem was securing enough complete writing center case studies, as I had several writing centers that were unable to meet all of the inclusion criteria in order to participate in the study. For example, one writing center was unable to locate any prior tutors to complete the survey and another writing center completed the interviews and surveys but was unable to

produce documentation necessary to conduct triangulation of the data. Several writing centers declined to participate in the study, but only after hearing all the details because they "wanted to publish a similar study of their own writing center" (Personal Communication, 2011). This was a great disappointment because all of these issues resulted in less data for conducting cross-case analysis, which would have increased the overall value and contribution of the study to the research fields of Writing Centers and English Studies.

The second problem was my over exuberance for the topic itself, perhaps a *pro-innovation bias* even. Though it was not my intention, I often led participants into topics of conversations during the interviews that were not of relevance to the study due to my own vested interest in the topic and all things technology. For example, I learned about UMW's innovative use of a program called HootSuite, an online program that allows users to preload posts to a number of social media accounts, such as Twitter and Facebook, weeks out in advance. This information was interesting and was indeed an *innovation*, but it was not directly related to answering the research questions in this study; there are several other instances of innovation-discussions recorded and transcribed from the interview sessions similar to this example. In short, I struggled to find the proper balance between building a rapport and staying focused on the task at hand. In order to remain true and ethical to the goals of the study, I made sure to transcribe all interview data even if I could not foresee how it could be useful. I also maintained reflective field notes to separate my own thoughts from those of my participants as an attempt to use them as a guide, for later analysis, rather than as the final word on a specific topic addressed during the interview.

The third problem involved my own decision to adopt qualitative software for the data analysis stage. First and foremost, I spent a considerable amount of time researching various

qualitative software programs, installing, and testing them out when that time could have been better spent writing thick-description memos of the case study data. I did not find the learning curve of the MAXQDA software to be particularly steep, but it did impact the writing process in unintended and undesirable ways. Second, I was unfamiliar with the process behind the use of qualitative software for data analysis, so I had no point of reference to use with *when* or *how* often I should pause to write memos, field notes, etc. It was also unclear as to *where* I should store these uniquely different pieces of information since there were several methods of note taking available in the system. As a result, the use of qualitative software definitely disrupted the flow of writing and textual interpretation since it was not part of my normal or usual writing process. Finally, the research process, and the writing process by extension, became exponentially tied to a *single* computer, which led to some undesirable outcomes. On the positive side, I was able to work on the data analysis in any location, as long as I had my laptop since all of the documentation, interview, and survey data existed on my hard drive. On the other hand, the adoption of the qualitative software innovation made the physical, printed case study files virtually useless since all of the highlighting, tagging, memos, and notes now resided *inside* of the qualitative software database. When the computer failed (which it did), I was unable to remain on schedule until a new computer was purchased and the qualitative database was reinstalled, but only after receiving a new software key from the software company beforehand. This process made it quite clear that the ownership and control of my own research data was nothing more than an illusion; indeed, I was still beholden to the software company to grant access to my own data in a format that is both useful and usable. In hindsight, I would still recommend the use of qualitative software for data analysis; however, I would encourage a multi-computer license so that data backups are stored online (rather than manually, as I had to

do), allowing for multiple, secured computers to access the data. I believe such adjustments would have assisted a great deal with the overall speed of data analysis.

Methodological Limitations

I consider this study the first phase in a longer research study concerned with exploring the nature of technological innovations taking place in writing centers, namely synchronous audio-video innovations used in online tutoring, and the various factors which affect the adoption, re-invention, or rejection of new innovations. The variety of research methods used in the study improved the overall reliability of the data, but there are several features of the research design itself which may have affected the quality of the findings. The first limitation was the use of survey data to capture tutors' responses; the second limitation was the size of the sample data; the third limitation was the decision to omit students' perspectives in the study due to time and budgetary constraints; the fourth limitation was the complexity of the DOI social system attribute with regard to writing centers; and the fifth limitation was the duration of the study and its effect on the relevance of the literature review and other aspects.

The first limitation was the decision to capture tutor data exclusively through a survey method. The emailed tutor surveys were modified from an existing DOI perceived attributes survey, but the data gleaned from the surveys were not as rich as the interview data gleaned from the writing center directors. This limited the analysis of the data in many ways, as the survey responses made it more difficult to articulate the complex, puzzle-like relationship between the tutors, the writing center, the writing center director, and the overall social system. For example, interviews with tutors, either combined with surveys or in lieu of surveys, would have provided a more efficient way to study working metaphors, social norms, and other aspects needed to fully understand an individual's previous experience and the intersections with the social system as a

whole. In addition, the consequences of the innovation were not thoroughly captured using the survey data from the tutors, though it was gleaned from the interview data with writing center directors; as a result, the research findings for the third research question (on consequences of the innovation) were largely limited to that of the writing center directors, with only minimal input from the tutors as gleaned from the survey data. The addition of tutor interviews as another data collection method would have addressed each of these limitations and provided far greater clarity in the DOI aspects of the social system, perceived attributes, and consequences of the innovation. However, additional interviews would have resulted in an overwhelming amount of qualitative data, requiring more time and resources than were available for the first phase of the study.

The second limitation had to do with the size of the data sample. The data sample is rather small, with only two writing center directors and two tutors. Although a small sample size is not uncommon for a case study methodology, it still means that the findings cannot be extrapolated to other social systems or writing centers. It is also important to reiterate the fact that each writing center had only one tutor responsible for conducting the online synchronous tutoring appointments, but with such a high turnover of tutors (for synchronous sessions), this made it difficult to track down previous tutors and was only an option for one case study (UMW/Skype) because UNE was in its first season of using Google Hangouts for synchronous tutoring. The limited number of tutors available for online synchronous tutoring speaks to DOI theory directly with regard to the rate of adoption, and it also suggests another possible direction for future writing center research.

Furthermore, the experience of students or tutees were not included in the analysis of the perceived attributes, even though they are also end users. This was done intentionally to keep the amount of data to a manageable size and to save time since it was assumed that students

would be more difficult to track down. In hindsight, this information would have proved useful in answering the second and third research questions with regard to the perceived attributes and consequences of the innovation; additionally, data from this third participant group would have proved useful in overcoming the three criticisms of DOI research: recall problem, individual blame bias, and pro-innovation bias. This suggests a possible direction for future writing center research: studies that would incorporate usability theory from the student's perspective, rather than adopting innovations solely on the tutors' and administrators' perspective (Blythe, 1998; Harris, 1999; Johnson-Eilola & Selber, 2007; Myatt, 2010). (See Chapter 6 for further discussion on this potential avenue for future research.).

The documentation of a writing center's *social system*, within the framework of DOI theory, is a massive undertaking, and even with years of analysis and reflection at my disposal, the study results barely scratched the surface of that complexity, which is the fourth limitation. For example, the combined methods of interview and survey allowed me to use both open-ended and closed-ended questions to assist in laying the groundwork for the writing center context, philosophies of tutoring, and the exigency of the adoption process. In other words, I culled information about the nature of the social system from both groups of research participants, and I filled in the gaps with the documentation review. This information would not have been easy to gather using a single research method, which is why a combined approach was needed. Even with the triangulation of data, however, the social system concept was difficult to identify and even more difficult to articulate, partly due to the lack of focused interview questions and partly to the lack of student participant insight. In DOI theory, context is not just part of the case study overview; it is central to the *innovation-decision-making* process itself, and therefore, I would argue that the success or failure of an innovation rests in one's detailed knowledge of the

intricate relationship between the various layers of the social system. This limitation could be remedied with more tailored interview questions for the tutor, writing center director, and students (tutees), focused on questions related to working metaphors, level of technology skill, previous tutoring experiences (as tutor or tutee), level of technology use on campus, etc. Even with these shortcomings, the study provided some insight into the interconnected web of DOI's social system, especially considering how uniquely positioned or situated each writing center can be in relation to other departments on a university campus.

Due to the limitations of part-time doctoral study and full-time work, this study spanned a period of six years, with rather large blocks of time between the various phases of the study, the fifth limitation. As a result, some of the research from the literature review may appear outdated, so I did my best to update and extend those arguments. There were also some major overhauls made to the interface and functionality of Google Hangouts since the beginning of this study; specifically, the document collaboration feature is not as readily available or accessible as it was in previous iterations (i.e. Google Talk vs. Google Hangouts). Skype has also undergone a number of upgrades these past few years, with the document collaboration feature being more user-friendly in terms of easier accessibility from the main workspace. These time considerations must be taken into account when reviewing the research findings, discussion, and conclusion chapters.

Summary

This chapter offered a review of the research design, participants, instruments, procedures of data collecting, and data analysis procedures. Various elements of the data collection and data analysis were presented. Qualitative research was applied to this case study research, specifically in the form of interview and survey research methods. Moore and Benbasat's (1991)

instrument was selected for the survey instrument, with slight modifications, to address the perceived attributes of using Skype or Google Hangouts for tutoring. Email was used to distribute the questionnaires to the writing center tutors who participated in the study, while MaxQDA was the software package used for coding and data analysis.

The next chapter analyzes the data collected from the participants by applying the research methods identified in this chapter. The research findings are organized according to the three research questions and provide within-case and cross-case analysis. The findings provide insight into the reasons that led writing center directors to either accept or reject a specific technology innovation for the purposes of online synchronous tutoring. The findings also reveal connections between innovation adoption and the modified and/or newly developed tutoring practices and policies for online synchronous tutoring, when using Skype and Google Hangouts.

CHAPTER IV

RESEARCH FINDINGS

Introduction

This chapter presents the findings of data collected for the study of DOI theory in two writing center contexts by examining the innovation-decision process of each writing center director leading up to the adoption of the innovation and its emergent practices. Specifically, this chapter explores DOI attributes of the social system, perceived attributes, and consequences of the innovation. As a brief reminder, there were two case studies, or university writing centers, involved in the study, with two participants from each case—one writing center director and one online synchronous tutor. The first case study was a public university in the midwestern region of the United States (UMW) with 15,000 students (including graduate and undergraduate students), 900 of which were online students; at the time of this study, UMW had been using Skype for five years. The second case study was a public university in the northeastern United States (UNE) with 6,000 undergraduate students (no graduate students at this university), 40% of whom completed their entire degree online and 90% take at least one or more classes online (2,400 and 5,400 students respectively). UNE used Google Hangouts and was in the first semester of employing the innovation for online synchronous tutoring at the start of this study. It was also noteworthy that UNE's Interim Director had been in the position for one year, while, UMW's Director had been in the position for six years at the time of the study.

The research findings are presented in three sections, which align with the study's research questions. In the first section, *Social System*, I used DOI's social system concept to explain the needs of the social system and why the new OWL designs and practices were being adopted for the purpose of online synchronous tutoring. With the data collected from the

interviews with writing center directors and document review, the research findings explore the relationship between the social system and factors influencing the innovation-decision process such as metaphor and previous experience, user roles, leadership style, and type of innovation decision.

The second section, *Innovation and Attributes*, correlates with the second set of research questions and used DOI's perceived attributes to explain the relationship between the innovation's attributes and the innovation-decision process. To do so, it describes the concurrent innovation adoptions taking place in writing centers for online synchronous tutoring. With the survey data collected from online synchronous tutors, the research findings explore and compare the perceived attributes of each innovation as situated in each writing center's social system. This data was cross-referenced with interview responses from writing center directors.

The third section, *Consequences*, which matches the third research question, relied on DOI's consequences of the innovation to explore the implications of the new OWL designs and related practices. The data was culled from both survey and interview data since the consequences of the innovation integrates knowledge of the social system and overall goals of the writing center with each case's perceived attributes of the innovation.

Social System

Why are writing center administrators designing synchronous A/V live OWLs? How might DOI's *social system* concept help us to make sense of the perceived needs the new OWL was intended to address?

DOI theory discusses the social system element in number of different ways. In the following section, I describe the social system of each writing center case study including the

structure and norms of the system to include user roles, leadership styles, and types of innovation decisions. When applicable, I also make connections to the role of metaphor and previous experience, as it relates to the structure and/or norms of the social system.

Case #1: UMW and Skype

The UMW case study was selected because of its unique use of Skype and external document sharing programs, such as JoinMe, for synchronous tutoring. The writing center director did not participate in tutoring, and while there were 15 tutors on staff across both writing center locations, only one tutor conducted the online synchronous tutoring sessions at each location using Skype. When this study was conducted in the summer of 2013, however, only one tutor was available to conduct synchronous tutoring sessions and willing to participate in the study. Each tutor worked 10 hours a week, so UMW's writing center provided a total of 150 contact hours each week, with no more than 10 weekly hours available for online synchronous tutoring appointments. The structure of UMW's social system allowed face-to-face tutoring anywhere between 140-150 available contact hours each week for appointments.

The exigency or circumstances leading up to the initial design for the synchronous OWL appeared rather simple on the surface: UMW's Writing Center Director believed it was just the "right time" to begin offering synchronous tutoring because the university was headed in that direction. In fact, he later went on to say,

> We could see the writing on the wall, so to speak. In that a bachelor of liberal arts online degree completion program was being constructed. We knew that the nursing school was going to start operating a lot of their classes online. And, you know, there was a big push for professors to go through an online teaching certification program on campus. So, we would see that, you know, the campus was kind of going that direction and recognized

> well, the more we kind of position ourselves to work with these new parts of education the better. (UMW Interview, 3/1/2013)

This revelation suggests that the *social system* heavily influenced the director's innovation-decision, thereby encouraging the eventual selection, adoption, and implementation of Skype for synchronous tutoring. Consequently, one of the themes that emerged in this case was the parallel between expanded online course offerings taking place at the university level and the increased number of technology innovations adopted in the Writing Studio.

The Writing Center itself had also recently undergone a major name change, from Writing Center to Writing Studio. As discussed by North (1984), Carino (1992), and Bruffee (1984) in the review of literature, there is a great deal at stake in the name of the writing space—whether it is called a writing lab, writing clinic, or writing studio. If this research is considered alongside UMW's desire to re-brand itself, it suggests that the image or prestige of the writing center, as it exists in the larger university *social system*, plays a significant role in the innovation-decision process. The Writing Studio Director was chiefly responsible for the name change and the adoption of Skype; indeed, UMW has had the same writing center director since 2007, which provided great insight into the social system and his role as the director and opinion leader in the writing center.

User Roles. As is the custom in most writing centers, the writing center director was responsible for the administrative aspects of the writing center, such as advertising, budgeting and reporting, hiring and training tutors, and balancing the needs of the writing center with the needs of the larger university. One of the largest undertakings for the writing studio director at UMW was the planning of the annual faculty retreat "where we all get together and do some continuing education, or training, for the new hires" (UMW, Pre-Screen Interview, 2/1/2013); the

director explained that topics included mock tutoring sessions, problem solving, and other activities to reinforce the goals of the writing center. Another large part of the duties of the writing center director was the branding and advertising of the center. As noted above, UMW had recently changed its name from Writing Center to Writing Studio, a change that was directly organized by the writing center director. During that same time, the writing center transitioned from the Dean's Office in the College of Arts and Sciences to the Provost's Office, which resulted in a new physical writing center location and a larger budget. The writing center director played a significant role in shaping and influencing the norms of the writing center social system while also navigating the external social systems at play in the larger institution.

The tutors also played an important role in the social system, which was chiefly explained through the use of conceptual metaphors (see Lakoff & Johnson, 1980). There was an extensive use of metaphors throughout the *Tutor Handbook* to identify and explain the various components of a tutor's role in UMW's Writing Studio. The first collection of metaphors is abstract roles that a tutor may fulfill during a tutoring session such as a goalie, a chef, or gardener: "We are brainstorm chasers. We are goalies, waiting to catch the writer's slapshot. We are rubber and the writer is glue" (*Tutor Handbook*, p. 3). Along the same lines, "Writing Studio Chefs even prepare compliment sandwiches, where they put the problems in the middle of two soft, inviting pieces of feel-good bread" (*Tutor Handbook*, p. 6). This collection of metaphors describes the role of the tutor as an active participant and an engaged reader, both important tenets of the tutoring process.

The next collection of metaphors deals with the mysticism and awe of the tutor and the finished product or outcome of the tutoring session. As stated, "Subjective, open-ended questions are great because they remind the writer that you are peer tutor, not a supervisor or a

superhero or a supersecret agent" (*Tutor Handbook*, p. 8). In this excerpt, the Socratic Method is alluded to with the reliance on open-ended questions for tutoring, rather than direct instruction, but this excerpt also speaks to the normal, everyday tasks occurring in writing centers, which do not require special powers. The idea of magical tutoring powers is referenced again later:

> As tutors we are both students and university employees […] As with any good magic trick, there's some necessary preparation and personal comportment required for our position to stay the respected and sought after one that it is today. (*Tutor Handbook*, p. 13)

This metaphor refers to the sense of wonder associated with tutoring services provided in the writing center, where tutors are often considered saviors of student's writing, able to achieve the impossible. Similarly, it is stated, "[This] does not mean we are grammar gods and goddesses that diagram sentences in our spare time, but it does mean we occupy positions of power that should never be abused" (*Tutor Handbook*, p. 4). The tutoring-as-magical metaphor refers to the complexity of the power dynamic between student and tutor—as the peer tutor metaphor has been criticized as being conflicting and contradictory because tutors will always have more power than those being tutored (Bruffee, 1994). This power dynamic also speaks to the DOI's perceived attribute of *image*, which will be further addressed by research question 2.

The tutors also participated in a number of administrative tasks, in addition to tutoring, and many relied quite heavily on technology innovations. At UMW, tutors were expected to participate in the following duties as identified in the *Tutor Handbook*: respond to emails, record number of daily visits or sessions, schedule appointments, schedule workshops, and periodically serve as the office coordinator. The tutors at UMW also had a great deal of responsibility when it came to technology. Tutors checked out laptops daily, signed into several computer programs

at the start of each day (tutortrac and a chat system), and used iPads to conduct Skype synchronous tutoring sessions and contact tutors from satellite locations if problems occurred (e.g. confirming appointment locations for students, fielding questions about the scheduling platform, trading hours or shifts between tutors, assisting fellow tutors with locating important files or documents, etc.). Smartpens were also being tested out on a trial basis for tutoring where the session was recorded and later emailed to students to reference whenever needed. Tutors were also responsible for completing video sessions—not tutoring sessions—where they recorded what they had learned about tutoring so far and received feedback on their work from the Director. UMW tutors play several significant roles in the writing center social system, thus contributing to the norms of the social system. These findings suggest that the *social system* played a rather large role in the technology adoption and innovation process, as demonstrated by this writing studio's mixture of several innovations ranging from those being piloted to partially-adopted to fully-adopted.

Finally, the tutoring process itself is described using several different conceptual metaphors to prepare tutors for what to expect during their first tutoring session. According to the *Tutor Handbook*, "Tutoring is a very subjective, ineffable, human process—two minds, collision morphing. Gelatin in a V10 engine. It's harder to describe and harder to train for, and new tutors often feel like they're being thrown overboard for their first session" (p. 5). In this excerpt, the very act of tutoring is all of the following: a process, a collision, an engine, and an ominous feeling ("being thrown overboard"). Collectively, these metaphors indicate the delicate nature of the tutoring process which can be overwhelming (as indicated by the metaphor of being thrown overboard) and intellectually exhilarating (as indicated by the collision and engine metaphors). Thus, the role of metaphor is extensive in UMW's Writing Studio documentation,

influencing the overall tutoring process and innovation-adoption process since innovations are selected based on how well they agree with the tutor metaphors and user roles already established in the social system.

Leadership Style. Leadership styles and hierarchies are other important factors to consider, as the role or relationship between writing center directors and tutors can also help us better understand why some innovations are successfully adopted while others are not. According to Rogers (2003), opinion leaders are part of the social system and are often in a position of great influence, which only aids in the diffusion and adoption of the new innovation. The UMW Director, for example, was very flexible with his leadership role. He said, "Well...our handbook...was consultant written, you know; I helped with some of the writing, and giving them feedback and whatnot, but it was predominantly written by the consultants" (UMW Interview, 3/1/2013). This is significant because by having tutors document or outline procedures in the *Tutor Handbook* themselves, such practices will help to reinforce tutors' knowledge of the tutoring practices central to writing center pedagogy, namely the Socratic Method and process writing, and keep tutors invested in the goals of the writing center. This could be viewed as a trade-off since having the writing center director write the handbook does provide a certain authority to the tutoring handbook. However, the approach taken at UMW afforded tutors with a solid foundation for one of the basic tenets of writing center pedagogy: that writing is a collaborative, on-going process.

The UMW Director further extrapolated the cooperative and ongoing process, saying "We have annual—well we call it a faculty retreat just where we all get together and do some continuing ed., or training for the new hires" (UMW Interview, 3/1/2013). The writing tutors were primarily responsible for running the retreat and conducting presentations and small-group

breakout sessions led by experienced tutors. So, much like the creation of the *Tutor Handbook*, the tutors existed in a *social system* where partial "ownership" or "investment" in the development of writing center policies and community-building opportunities were extended, which could be a contributing factor in successfully implementing a new writing center innovation such as Skype for synchronous tutoring.

Type of Innovation Decision. UMW's Writing Studio Director was able to freely choose an innovation to use for online synchronous tutoring. In DOI theory, this would be considered an *optional* type of innovation-decision because the choice of adoption is independent of other members in the social system. As stated in the Pre-screen Interview:

> But there was no pressure from anyone on campus to really do it [Skype]; we just kind of *sensed* that it was the thing to do because there's more online learning happening at our campus, and we knew of more students that weren't able to come into the writing studio. So we've just been kind of doing it. (UMW, 2/1/2013, emphasis my own)

This transcript extract indicates that the UMW Writing Center Director had great autonomy in selecting the type of technology to implement, making the *optional* innovation-decision overlap with the perceived attribute of *voluntariness*. However, the Writing Center Director also freely admitted to an external awareness and significance of others, besides himself, in the decision-making process, by "sensing" that it was time to act—as the entire university was flexing and expanding to support and embrace online learning.

Hence, it is important to note that autonomy or *voluntariness* does not necessarily equate with a lack of indirect or unconscious influence in the decision-making process. Such outside influences seem to serve as enough encouragement for UNE's Writing Studio Director to begin exploring technology adoptions for synchronous tutoring. This exploration has a great deal of

overlap with the DOI perceived attribute of *image* too, since the intended result or outcome is that the Writing Center, and its Director, will be looked upon favorably in the institution, and possibly in the writing center community as well.

Furthermore, the Skype innovation was appealing to UMW's Writing Studio Director because it was easy to use, well-known, and free, which also overlaps with several perceived attributes. In this case study, the perceived attribute of *ease-of-use* was closely tied to metaphor and previous experience as the director felt that "a lot of students were already on Skype, so it wouldn't be something new or unfamiliar" (UMW Interview, 3/1/2013). This information suggests that the optional innovation-decision to adopt Skype was influenced by several social system factors such as the norms of the social system, previous experiences of end users, and the perceived needs that the innovation is intended to address.

Case #2: UNE and Google Hangouts

UNE was selected for its use of Google Hangouts (combined with Google Drive) for online synchronous tutoring. UNE's newly-appointed Interim Director had been in the position for the last year when I conducted this study. It was clear that the philosophical remnants of the recently-retired director still remained intact in certain places including the previous lack of technology innovations taking place in the writing center. The Interim Director occasionally tutored but was not regularly scheduled or included in contact hours. UNE had one writing center location on campus and staffed four tutors during the year of this case study, each working twenty hours per week for a total of 80 contact hours each week. UNE had one online tutor, who still conducted face-to-face sessions as well, thus further limiting the number of available online sessions. The structure of UNE's social system provided between 60-80 available contact hours

each week for face-to-face sessions and 20 or fewer contact hours each week for online synchronous sessions.

Much like UMW's situation where the university itself was expanding into the online realm, UNE had recently joined a larger network of other public universities in the state, where online classes were being heavily advertised and promoted to returning adult students and newly-graduated high school students alike. The network was also making use of Google Services for Education to include Gmail and Google Drive accounts for all students and faculty members. In turn, the institution encouraged the use of technology to reach more students, especially since 9 out of 10 UNE students take one or more online classes each term. This was indeed a distinctive demographic of students that required a different approach to promote student learning and retention. As a result, the perceived attribute of *image* also played a rather large role in the Interim Director's decision to adopt Google Hangouts for online synchronous tutoring in UNE's *social system*.

The name of UNE's writing center had fluctuated several times, running in parallel to the changing landscape of the institution, now comprised almost exclusively of online students. As stated in a follow-up chat message with UNE's director, "The acronym [of the center] has changed several times. [It's] still awkward, but we're working on it" (Chat Session, 7/28/2015). In the end, the writing center and the tutors were renamed with the word "virtual" in the title. The series of name changes, for both the writing lab and tutors, suggests a certain level of uncertainty in the university's landscape as a whole; DOI theory discusses the significance of the name of an innovation and how it can influence the eventual adoption or rejection of an innovation (Rogers, 2003). In addition, the Interim Director was also a new addition to social

systems of the university and writing lab, so the structure and norms of UNE's Virtual Lab was still in its earliest stages of development.

User Roles. Prior to the Interim Director's appointment, there was no synchronous online tutoring option offered to students, though asynchronous email tutoring had been in existence for five years. As previously stated, the social system was still being established in UNE's writing center, so UNE's Interim Director spent most of her time establishing a new presence and identity for the writing lab in the wider university social system which was shifting rapidly to distance education, by offering presentations, updating the OWL website, training tutors, and revising the *Tutor Policy Manual*. The Interim Director gave several presentations around campus to advertise the new synchronous tutoring option in light of the changing university landscape, as explained here: "We do it all for students. […] We've given a couple of presentations about the writing center now being able to offer this" (UNE Interview, 9/17/2013). The Interim Director also heavily revised the OWL website to include and advertise the new synchronous tutoring service using Google Hangouts. As stated by UNE's Director:

> You know I'm just writing up stuff about like what kind of feedback we give and what kind of feedback we don't give. So, it's more of like a document for the students, you know, like for the public than for the tutors. (UNE Interview, 9/17/2013)

The creation of the Interim Director position occurred almost simultaneously with the adoption of Google Hangouts for online synchronous tutoring, so there was a great deal of uncertainty about the process. Indeed, as established by Anderson (2002) and Carpenter (2009), the OWL website would be the first interface experienced by students (and other individuals outside of the writing center social system), so it was important for the Interim Director to establish the roles that students and tutors would play during the synchronous tutoring process.

The Interim Director clearly embraced the high-level of technology adoption taking place in the wider university social system, but her innovation-decision process was also influenced by the preference for face-to-face tutoring practices. She indicated the significance of previous experience when she stated,

> Well, my *best* [tutoring] experience was face-to-face, so I think—but, you know, I like working with students using technology and there's a huge population there that wants to learn in that way. So I—you know, I think that kind of accommodates both the way I *prefer* to work with people, and also the kind of growing needs of the people I'm working with. (UNE Interview, 9/17/2013, emphasis my own)

This comment provides insight into the selection and eventual adoption of Google Hangouts for online synchronous tutoring because it was believed to closely replicate the Interim Director's best tutoring experience. Alternatively, the pre-existing asynchronous email tutoring was not believed to achieve the best tutoring experience "because writing is so based in collaboration and communication" (UNE Interview, 9/17/2013), which only further highlights the significance of metaphor and previous experience in the overall innovation-decision process.

Metaphor was not explicitly used to describe the tutor's role in UNE's *Tutor Policy Manual*, when compared to the extensive use of tutor metaphors in UMW's handbook. Instead, UNE's tutor manual was written in a straight-forward manner (i.e. not as playful as UMW's handbook), clearly outlining the guidelines of face-to-face tutoring, email tutoring, and online synchronous tutoring. In fact, the guidelines for face-to-face and online synchronous tutoring were both discussed under the heading of "Live Sessions," so as to not distinguish between them. The tutors were instructed, of course, to consider writing as a process and to use the Socratic Method to guide the tutoring session—both previously identified by Turrentine and MacDonald

(2006) and Arrington (1986) as the two most significant, intertwined metaphors of writing and tutoring respectively.

UNE tutors were expected to assist with a number of tasks that would further aid the mission of the writing center. For example, tutors could make a presentation about anything related to writing; they could also design and publish videos through YouTube or other software; they could make postings to the Writing Lab Google Page or OWL website sharing writing-related information and/or resources; finally, tutors were also called upon to provide classroom presentations about writing center services and to offer group tutoring sessions for a classroom, when requested (UNE *Tutor Policy Manual*). Likewise, tutors were also expected to have a high aptitude for technology or a willingness to ask questions and learn from their peers, as indicated in the following excerpt,

> Within the writing center I would say the level [of technology use] is fairly high. My students seem to be, you know, learning how to use Google Drive, Twitter, Facebook, and Google Hangout is like the one frontier we haven't really worked out yet, but they're ready to take the next step. So their aptitude and their enthusiasm is high. (UNE Interview, 9/17/2013)

Technology use and innovation is steeped in the new culture or *social system* of UNE and tutors were being trained to develop those skills in support of the mission of the writing center. Furthermore, the rather tech-heavy future of the institutional social system made it relatively easy to demand such skills from the writing center tutors.

With regard to technology, UNE tutors were expected to be logged in to a variety of technology devices during their "virtual shift," including the writing lab website (to answer quick questions in the chat forum), the tutor's personal email and twitter account, the writing lab

Google community, and the Virtual Writing Center Community. Google Drive was used as a storage repository for both asynchronous email tutoring and synchronous Google tutoring, so a certain level of training or familiarity was needed for the successful use of this innovation as well. In addition, many of the non-tutoring tasks require high levels of technology aptitude such as the creation and publication of writing center presentations using YouTube, Prezi, or Google Presentations. The tendency to expose and train tutors to a plethora of online communication platforms is most likely a strategy to capture the distinctive student population, as this multi-platform technique is being employed by both UMW and UNE social systems.

Leadership Style. The leadership style of UNE's Interim Director was more authoritative than UMW. There is no mention of shared responsibilities or collaborative writing projects, as was the case with UMW's *Tutor Handbook*. Instead, UNE's Interim Director took charge of all administrative and structural changes of the writing lab from the revision of the *Tutor Policy Manual* to the revision of the OWL website—both requiring a detailed discussion of user roles and expectations for online synchronous tutoring using Google Hangouts.

Unlike UNE's previous director, the new Interim Director had to move swiftly to prepare the writing lab for the growing online student population, which likely influenced the direct, authoritative leadership style adopted. UNE's new Interim Director said:

> Well, I just mean that the person who preceded me, you know, had been in education for 40 years and is a lovely knowledgeable person, but was really just kind of a technophobe. [...] like I'd put a signup sheet on the [physical] bulletin board [outside the writing center] and that was an innovation. (UNE Interview, 9/17/2013)

And:

> So I guess it's both the university changing as a whole, and me just trying to like stay current and just having like strong beliefs myself that this sort of technology is going to be key to supporting distance learning if we're going to have successful student learners. (UNE Interview, 9/17/2013)

Both comments indicate that the needs of the *social system* played a large part in the decision to adopt Google Hangouts for synchronous tutoring, and more importantly, that those needs were immediate. As a result, a more collaborative leadership style would have slowed down the structural changes made to the writing center social system by the Interim Director in order to lay the necessary groundwork to support an entirely new student population in the near future.

This is not to say that *image* did not play a role in the *innovation-adoption-process*, however, as UNE's Interim Director was seeking to simultaneously serve the needs of its unique student population, while also desiring to make herself stand out among her peers. She stated,

> And I really felt like what would make a strong candidate *in the long run*, whomever—whoever ends up being like the fulltime director in the future...[should] think about being able to offer tutoring services, not only face-to-face traditionally, but online and to be a good resource for training other people to do that. (UNE Interview, 9/17/2013)

This quote demonstrates the same sort of *multi*-awareness taking place by UNE's Interim Writing Lab Director as was demonstrated by UMW's Studio Director, highlighting the delicate and intricate relationship of self-student-institution in the writing center social system.

Type of Innovation-Decision. Unlike UMW, UNE's Interim Director did not have a fully *optional* innovation-decision because the selection of Google Hangouts for online synchronous tutoring was not truly independent of the decisions made by other members of the university social system. The innovation-decision was not *collective* either since a consensus

was not reached by all members of the social system regarding the adoption of Google Services for education (and then the later adoption of Google Hangouts by the writing lab). According to Rogers (2003), an *authority* innovation-decision is made by relatively few individuals in a social system, but all employees must comply. This definition also fails to fully capture the type of innovation-decision that the Interim Writing Lab Director was faced with since she was not required to use Google Hangouts for tutoring, even if the entire university social system was using Google Services for Education. In fact, the authoritative aspect was limited to the use of Gmail for all university members, but other Google services were optional.

In other words, the Interim Director could have chosen Skype or any other technology solution for online synchronous tutoring, but she ultimately decided to adopt Google Hangouts. UNE's Interim Director stated, "So there were certain things that were like already in place it was just kind of *natural* to take these bigger steps, particularly now that UNE has really moved over to Google and…all of our email accounts are now Google accounts" (UNE Interview, 9/17/2013, emphasis my own). So, the innovation-decision appeared to have both an authoritative and optional aspect, though at different levels within the writing center hierarchy. In such circumstances, Rogers' (2003) DOI theory provides the framework for a fourth type of innovation-decision whenever a hybrid of innovation-decisions is at play in the social system. This hybrid type of innovation-decision is called a *contingent* innovation-decision, which is reliant on a prior innovation-decision having already taken place. For example, a contingent innovation-decision, such as the adoption of Google Hangouts for synchronous tutoring, can easily follow a collective or authoritative innovation-decision such as the institutional adoption of Google Services.

In the end, the solution to adopt Google Hangouts came rather easily since the wider university social system had already pushed to expand technology services and online infrastructure using Google Services. Furthermore, since asynchronous email tutoring had already been established for UNE's Writing Lab, the next step in the history of technological innovations in UNE's writing lab was to find a synchronous solution. The goal for UNE's Interim Director was to adopt a synchronous tutoring solution that would elevate the online student support to the same level as campus support, thus leading to the initial exploration and testing of Google Hangouts. She clarified, "And I guess…wanting to kind of contribute something important in terms of servicing distance learner's technological needs and sort of fitting in with the vision of the university is a social goal as much as it's a professional one" (UNE Interview, 9/17/2013). In short, Google Services was quickly becoming a part of the university system norms and was already supported by the existing technology infrastructure, making it highly visible, affordable, and hopefully, easier to use. This means that Google Hangouts had *relative advantage* over other synchronous tutoring options and was already *compatible* with the existing *social system* for the reasons stated above.

Innovation and Attributes

What OWL designs and related practices were adopted? How might DOI's *perceived attributes* help us to make sense of each writing center administrators' overall decision to adopt the innovation?

The next section presents an overview of each director's writing center philosophy regarding face-to-face, asynchronous email, and synchronous online tutoring, followed by a discussion of newly created or modified tutoring practices and procedures that were developed as

a result of adopting the new technology. The philosophy of each writing center was culled from both spoken interviews and written documentation such as tutor manuals, training guides, and each respective OWL website. The writing center philosophy and tutoring practices of each case study serve as the foundation for discussing the *perceived attributes* of each innovation in terms of how well the innovation meets the needs of the university and writing center/studio.

Case #1: UMW and Skype

UMW's philosophy will seem familiar to many writing centers, directors, and tutors, as it draws directly on writing center theory from Steven North's "The Idea of a Writing Center" (1984), with regard to making better writers, not just better products. UMW's *Tutor Handbook* stated:

> Our ultimate goal is writer empowerment. The shorthand is "We make better writers, not better papers." But even that phrase credits us with the making of better writers, as if they only got better through us, which is kind of hubristic. It's not that we can't make writers better; we can, and often do. We just need to remember that writers can also make themselves better, and often will, and we're really just around to help them realize it. ("Writing Studio Philosophy," p.2)

The process of making better writers is spelled out clearly over the next several pages of the Tutor Handbook through a section titled the "Hierarchy of Concerns" or what some writing center researchers reference as HOCS (higher order concerns) and LOCS (lower order concerns). Indeed, this philosophy is echoed on UMW's OWL website as well, which makes the philosophy clear to those outside of the writing center social system. According to the OWL website under the heading "What We Do," it stated: "Consultants at the Writing Studio help students improve both their papers and their ability as writers by focusing on the organization and content of ideas

within the paper over the less immediate details of grammar, mechanics, and spelling." This is essentially an order of operations for what issues should take precedence during tutoring sessions.

It is assumed that tutors will follow the same procedures of face-to-face sessions when tutoring online using Skype, but the Skype expectations or assumptions also rely heavily on established asynchronous email tutoring procedures. In the Appendix of the *Tutoring Handbook*, there is a half-page description of Skype tutoring which stated,

> All online tutoring is subject to the same rules that govern in-person sessions, though we currently do not accept online tutoring requests on a "walk-in" format. Sessions should be kept to 50 minutes and should be scheduled on a first-come, first-serve basis. We also limit submissions for online tutoring to 15 pages, or roughly 3,750 words. Below are the procedures for tutoring via Skype and via email. (p.66)

This excerpt provides general information regarding the technicalities of the session—but nothing about *in-session* tutoring practices. There is also some overlap of technicalities with email sessions too. As openly discussed during the interview, UMW made significant changes to tutoring practices related to the online scheduling form for email sessions, which were also adapted or modified for scheduling Skype sessions. The Director said:

> But, I think more than—even more than the training, it was the development of the process, the submission process, which kind of helps communicate both to writers and consultants the way they're going to work together. ...So we ask them questions like, you know, what do you like most about your project, what do you like least, what do you plan on revising, how can we help you, what would you like us to, you know, zero in on. So

> we're trying to communicate that it's, you know, much more than just a proofreading service that they're getting. (UMW, Interview, 3/1/2013)

For example, Skype and email sessions were both scheduled online by students using a webform, where they selected Skype or Email from the drop-down list under [Appointment Type]. After completing the webform, students were instructed to email their papers to the general writing studio email address before the start of the session, where tutors used the 50-minute session time to respond to the paper "just like you would in an in-person session" (*Tutor Handbook*, p.66). Tutors were provided with general information on how to access the general or shared email account, but there was still no significant difference made between Skype and email tutoring sessions in terms of preparation or planning for technical difficulties.

Furthermore, UMW's Studio Director clearly stated that the handbook focused almost exclusively on email tutoring practices, rather than synchronous practices, so there were not clear guidelines in place for tutors with regard to the newest, and arguably the most complex, of the three tutoring spaces. This oversight was discussed in the second interview with UMW's Writing Studio Director, who said:

> And that document has zero references to our Skype or synchronous, you know, sessions, but it shows what we do for email sessions, and I think that's what's really become apparent for me going back and trying to look for things for you, is that we spend most of our energies preparing for the email sessions...But honestly we haven't really added anything new for Skype. And, you know, you're making me think [*laughs*] about doing that. (UMW Interview, 3/1/2013)

The *Tutor Handbook* was well-organized, and even quite witty, but it did not allocate any space to discuss the inherent differences between face-to-face, Skype, and email sessions and how such

differences might impact the various facets of the tutoring session such as time management, for starters. As such, the different tutoring spaces appear to be treated as *equal* or *synonymous* to one another, which assumes that the aforementioned guidelines and tutoring practices will be applied in the same manner or fashion across all tutoring sessions, whether simulated by technology or not.

In addition to the lack of written documentation for Skype tutoring sessions, the hands-on training for Skype also appeared to be minimal, as recorded in the interview sessions. When asked to describe the Skype training process for new tutors, the UMW Director simply stated,

> Well, I'd probably take them through showing them where all the stuff is, you know, give them the webcam and the headphones and all that, and explain the login process, and just try to ease their worries about and let them know that it's really no different than what they do in person. (UMW Interview, 3/1/2013)

With additional prompting, the Director explained that the Writing Studio had a general email address accessed by all tutors, and student papers were filed into separate Outlook folders: Pending Email Sessions, Pending Skype Sessions, Completed Email Sessions, and Completed Skype Sessions. The use of folders was outlined for Email tutoring in the *Tutor Handbook*, but not for Skype tutoring at the time of this study which assumed a high level of technology skill for tutors and a clear understanding of email tutoring practices to use as a model. There was also a very large assumption that tutors—and by extension students—were familiar with Skype as a technology platform, and that they did not need direct training of Skype for tutoring purposes, as a result. This was confirmed by the Writing Studio Director when I asked him to rate the level of technology skill for tutors who handled the Skype sessions. Including himself, he said:

> Like to a scale of one to 10, or? [*Sure.*] [*laughs*] Yeah, I think most of us are probably eight or nine. We've really been developing our online social media presence, and there's definitely a core group of our consultants who are involved in that and they're very tech savvy and they've got us going on Twitter, and Facebook, and Tumbler, and Pinterest and all those sorts of things. (UMW Interview, 3/1/2013)

The assumption about technology skill being directly mapped to Skype tutoring knowledge is what ultimately caused Skype to receive consistently low or marginal scores in the tutor survey for the perceived attributes of *ease-of-use* and *trialability,* with very mixed and/or scattered responses for *compatibility* and *results demonstrability*. It is important to note that the survey results are only from one tutor, but the results might be representative of more. Table 3 shows the relevant scores.

Table 3

Summarized Results of UMW Tutor Survey

Perceived Attribute	**Tutor Survey Response**
Relative Advantage	There is a very high level of relative advantage over that of previous technology—all categories are a 7 in this area, except one 5 (using the innovation improves the quality of work I do).
Image	Skype will not give more prestige within institution or discipline (2 for each question), but will make others in discipline and institution see tutor as more valuable (5 for each question). The innovation had a powerful overall image on improving tutors image within institution (7) and improving tutor's image within discipline of study (5).
Compatibility	Tutor believes the technology is compatible with him on a personal level, but not for tutoring purposes. In other words, using the innovation fits into his work style well (7), but is only 'moderately' compatible with all aspects of work (4), 'moderately' fits in with culture of writing center (4), and 'moderately' fits with the way the tutor likes to work (3).
Ease-of-use	The innovation makes it easy to remember how to perform tasks, but still requires a lot of mental effort and can be frustrating (all 5's). Interaction with the innovation is only moderately clear and understandable, and the innovation does not always do/react the way the tutor wants, which makes the innovation less easy to use or more complicated (all 3's). Learning to operate the innovation was only moderately easy for tutor and therefore moderately cumbersome to use (all 4's).
Trialability	Tutor was given opportunity to try various tutoring applications (5) and knows where to go to try them out (5) and was given access to a computer with internet (6). This all seems to be in line with writing center director's comments about the tutors giving input on what technology to adopt. However, the tutor was not given any training of technology before trial period began (0) and was not given time to use technology on trial basis first, before live use with students (0).
Voluntariness	Tutor had no voluntariness with regard to technology, but is also not being forced to use it—could do email tutoring or face to face, if not comfortable with Skype.
Results Demonstrability	Tutor had no difficulty telling others about results of using the innovation because the results seem apparent to tutor (both 6's). Tutor is only moderately or somewhat confident with communicating the consequences of using innovation (4). Tutor was only slightly influenced by the fact that he may have difficulty explaining benefits of using the innovation.
Visibility	Visibility for this innovation is not very high, as others are not using the innovation yet in writing center (2), in other departments (1), or in the institution at large (3). But innovation has been seen in use outside the institution (5). This makes the observing aspect low but only having a moderate impact on tutor's decision to adopt innovation (3).

Source: Appendix C, Modified DOI-Survey for Tutors.

The lack of training seems to not only negatively impact *trialability* but also the *ease-of-use* attribute as well, since the tutor's frustration clearly shows through in both areas and carries over to further complicate the technology for its new intended use. The tutor confirmed these suppositions in the open-ended survey response: "It was assumed that I would know how to use Skype in online tutoring sessions. I didn't receive any prior training as a consequence. However, I figured it out after a bit of stress" (UMW Tutor Survey, 3/22/2013). This could easily impact the *compatibility* of the innovation too—in a writing center context—if a tutor believes a technology is too difficult to use because he/she was not given adequate time to play/test the innovation before working with students in a live tutoring session.

A writing center philosophy is in a constant state of revision, much like an individual writing process or even a teaching philosophy. For UMW, there were several times when the practices or policies were contradictory in nature, when it came to treating face-to-face sessions the same as online sessions. For example, for an online session, UMW's OWL Website stated that students must have a full, complete paper to schedule an appointment:

> When is an online consultation a best option? 1) You have internet access and basic computer knowledge. 2) You are taking an online class and live outside the local campus area. 3) You can't spare travel time to visit us on campus. 4) You are past the brainstorming stage and have a *product* to discuss with a tutor. 5) You are curious about online consultations and simply have questions! (FAQs, emphasis my own).

The fourth item in the list implies that a student cannot schedule a Skype session just to brainstorm, as one can with a face-to-face session, which seems to conflict with the very next item about scheduling a session to ask questions. This seems to be a clear contradiction between philosophy and the *policies* or *actions* used to implement the philosophy, adding to the rhetoric

or belief that the university writing center is merely correcting student's final work. The language used to describe the student's work is also problematic as the student's work is referred to as a *product*—in direct contradiction to principles and mission of the writing center, as directly stated by UMW's Writing Studio and as outlined in the *Tutor Handbook*. Similarly, UMW's Writing Studio has a grammar hotline, which also reaches back to the time of writing labs. The idea of a grammar hotline not only contradicts the overall mission of the Writing Studio, but it is also just one more thing on the long list of tutor roles and responsibilities to keep up with. If the end goal is to improve student's writing *process* over time, then the grammar hotline should likely be phased out while brainstorming options are widened to include Skype sessions (and email for that matter).

Case #2: UNE and Google Hangouts

UNE's writing center philosophy is much earlier in the development process than UMW's since the Writing Center Director was a newly-appointed Interim Director who only had the reins for a single academic year at the start of this research project. The overall philosophy was most clearly stated in response to what the tutors *will not do* for students:

> Our process is interactive and inductive: we ask lots of questions, and we prompt you to pursue your own ideas. We don't provide a suggested topic, if you're not sure what to write about. We won't change language or correct punctuation and mechanics for you. We *will* try to get you to figure out what interests you, what you believe in, and what you want to know more about. We want you to take ownership of your writing process: we won't forget about your voice. (Services, UNE OWL Website, "What kind of feedback don't we give?")

As indicated by this response, the philosophy of the writing center appears more like a center (or studio) than of a lab-mentality, but there is very little direct instruction to tutors regarding the *actual* process itself, such as what areas to focus on (HOCs vs. LOCs) or why it is important to avoid grammar checking or proofreading services. Some of it hints at writing center philosophy, in an indirect manner, but there is not a dedicated section for the types of comments and explicit connection to writing center and/or tutoring theory and practices. On the other hand, the *Tutor Policy Manual* does an excellent job of outlining the policies and procedures for scheduling appointments, inserting comments (specifically, how and where to place comments), uploading and sharing files in Google Drive, and so on. Essentially, it focuses on the mechanics of tutoring practice instead of the philosophy underlying it.

The tutoring practices appeared to be fairly consistent across all three tutoring spaces (face-to-face, email, and Google Hangouts). Tutors were extensively trained to avoid adding comments, editing, and/or any writing to the text of the document itself in all three tutoring spaces, and to instead focus on asking questions to draw attention to areas that need work or development. In face-to-face sessions, tutors were encouraged to write in the side-margins or on a different sheet of paper. During email sessions (which take place in Google Drive) and Google Hangouts sessions, tutors made comments or notes in the side margins of the document, rather than within the document itself, similar to the way comments appear in a MS Word file, along the side-margin of the document. When asked to narrate the Google Hangouts tutoring process to someone unfamiliar with it, UNE's Interim Director simply responded that the Google Hangouts sessions were a "synchronous experience that is happening in a digital environment" and that the experience was the same as a face-to-face session, in terms of what the student gets

out of it (UNE, Interview, 9/17/2013). This was further explained in the following two excerpts from the UNE *Tutor Policy Manual*:

> This is *the* most important function to Google Docs that you will use: Comments. Instead of writing in the document or changing anything the Google Doc will allow you to select text and make comments on the side of the page! (original emphasis, p.6)

And:

> When you are making comments to a document make sure that you are asking questions, drawing their attention to parts that could use work, and that you aren't making them feel stupid as many of them already feel like they are (be careful with your wording). (p.6-7)

These excerpts reveal the consistency of policies and procedures used for email and online sessions. This is somewhat similar to UMW, where Outlook email folders were used consistently for both email and Skype sessions, but the "work" was taking place in a different space or environment. With UNE, on the other hand, Google Drive (formerly Google Docs) served as the storage repository for all student papers, whether for asynchronous email or synchronous Google Hangouts sessions. Or, in other words, the tutors complete their "work" in the same space or environment for both types of tutoring sessions; there was no need for the tutor to login to yet another system to complete a Google Hangouts synchronous session, for example.

As such, the overall tutoring process began the same way for both session types: 1) retrieve the paper from the writing center email account and 2) upload to Google Docs/Drive for shared access. For Google Hangouts sessions, the document was shared with the student before the session began so the tutor and student had access to the document at the same time, but all written notes/comments were highlighted and inserted as comments as already discussed. For email sessions, the document was shared with the student after side-margin comments were

completed. When the document was marked to be shared, the tutor entered the student's email address and inserted global/overall comments in the "share email message" to the student, rather than inside the document itself. The information contained in the "share email" was further explained in the "Follow Up" section of the *Tutor Policy Manual*:

> This is where you want to send them an email with the Google Doc attached at the bottom...In your email you should make a few notes on the big things that you saw, address any other things that they wanted feedback on, and make sure that they know that they can contact you for further assistance or with any questions/concerns about the feedback. Make sure that you add some praise for their work (they've worked hard) and if they haven't sent you any teacher requirements/assignment details let them know that if they send you the information you are willing to look over it again with the assignment details in mind. ("Follow Up," p.7)

The external commenting process combined with the externally-located global paragraph response approaches the "conversation" atmosphere that many writing centers seek to foster. It is also worth noting that UNE's policy was to allow Google Hangouts and email sessions for all students, not just distance education students, which is *compatible* with UNE's culture or *social system* since the university has such a large percentage of the student population enrolled in online classes. Indeed, these policies suggest a consistency across all three tutoring spaces, as students are encouraged to take ownership of their writing process and to find their own voice as an author.

Along the same lines, there seemed to be good policy transfer with regard to service notes as well (also known as "session reports"), which are detailed reports written by tutors after each tutoring session, regardless of the type of session. Session reports or tutoring notes are not a new

activity for writing centers; in fact, it was required at Old Dominion University when I served as a Graduate Assistant to the Writing Center. They are commonly used as a way to record individual student progress since tutors can reference the session notes prior to subsequent appointments by the same student to become familiar with the students writing process, including areas of improvement of the weeks and/or years and areas still needing improvement. But, session reports can also assist the writing center with funding by pinpointing departments or disciplines making the most use of writing center services and proving the viability of the writing center as a student service to the university as a whole—via the recorded number of students served on a monthly or yearly basis. What is so distinctive about UNE's process, however, is that the service notes are completed for all interactions with a tutor, including chat sessions that take place on the Writing Center's website (similar to a grammar hotline), phone calls, walk-in appointments and questions, and even twitter or Facebook interactions where the tutor responded to a student's question of any kind. Additionally, the session reports are not internal to the writing center director and tutors, which is another unique policy of UNE. If the student's contact information was recorded or can be retrieved in any way, then the student is also emailed a copy of the session report which includes notes on the type of session, duration of session, follow-up or next steps, and whether the writing case or situation is closed or on-going. The *Tutor Policy Manual* explained the rationale behind such a unique policy thusly:

> After you've finished with all your feedback, permissions/sharing, and you've sent your email, it's time to do your Service Note... And finally press submit and you're done (it will email this information to you, the student, and the UNE group)! This is great for student to track his/her progress and for them to show it to a professor that might care to

> see it (for extra credit or just to see what type of feedback was given at center); definitely holds WC staff accountable to university for their work too. (p. 7-8)

This is a unique policy and one that many writing centers may consider adopting for their own centers. The service note policy is very in-tune with the *social system*, as it were, due to UNE's rather large online student population. As such, the current and revised tutoring practices seem to be well-aligned with the writing center philosophy, resulting in positive ratings of Google Hangouts in nearly every perceived attribute, especially *compatibility, ease-of-use* and *results demonstrability*. Table 4 illustrates the relevant scores.

Table 4

Summarized Results of UNE Tutor Survey

Perceived Attribute	**Tutor Survey Response**
Relative Advantage	There is a very high level of relative advantage over that of previous technology—all categories are between a 5 and 7 in this area. Tutor states that she likes the online tutoring better than email or face-to-face because you can look things up for the student while still discussing the paper, but she also admits that it is not just the technology that you have to worry about during the session.
Image	Image attribute is not a factor for this tutor even though she is an English Major, as all categories were in the 1-3 range. She comments that the writing center experience can improve image within her discipline of study, but maybe not synchronous tutoring.
Compatibility	This attribute received a perfect score. Tutor believes the technology is fully compatible with her personal style of work and the writing center culture (all 7's).
Ease-of-use	This attribute received a perfect score. The innovation is easy to use and operate, easy to remember the steps, and does not require a lot of mental effort (all 7's).
Trialability	This attribute did not receive a score. The tutor commented that she already knew how to use the innovation, so she did not need to test it out and did not require training (all 0's given, which means that trialability did not have *any* influence on the tutor's influence to adopt the innovation).
Voluntariness	Tutor admits to having no voluntariness with regard to technology, but is also not being forced to use it since other tutoring options are available. Google Drive is mandatory (which is clear from *Policy Handbook*) but not Google Hangouts.
Results Demonstrability	This attribute received a perfect score. Tutor would have no difficulty telling others about results of using the innovation because the results seem apparent to tutor (both 7s). Tutor is very confident with communicating the consequences of using innovation (7).
Visibility	Visibility for this innovation is high within the writing center (7) and moderate in other departments (4) and in the institution at large (5). But innovation has not been seen in use outside the institution (0). This makes the observing aspect low but had no impact on the tutor's decision to adopt innovation (3).

Source: Appendix C, Modified DOI-Survey for Tutors.

UNE's lack of *trialability* for Google Hangouts did not have any effect on the innovation's *ease-of-use* and *results demonstrability*; specifically, Google Hangouts scored perfectly in the area of *compatibility, ease-of-use,* and *results demonstrability* of the innovation, even with the absolute lack of *trialability*. This likely had to do with the tutor's prior knowledge of the technology outside of tutoring purposes, and that fact that tutors are trained in appropriate uses of Google Drive and Google Docs for tutorials (as indicated in the *Tutor Policy Manual*) and provided an opportunity to test the software and observe a live Google session with student permission, even though this tutor did not require training. The tutor further addresses the *compatibility* attribute in the open-ended response:

> I would definitely recommend it because it is useful because you can be making comments and marking things, while at the same time, chatting with them face-to-face. Because when you're online it's sometimes easier if someone's farther away so they don't have to drive all the way there. And if you are actually face-to-face, you can't—you're like—most of the time it's papers copy so it's hard to like go in and mark everything, and like make real comments on it because there's so little space on the page. So it's definitely a lot more useful. (UNE Survey, 10/18/2013)

These findings suggest that the perceived attributes are not created equal. In other words, some attributes are more significant to the successful adoption of an innovation than others, and in this case study *compatibility*, *ease-of-use* and *results demonstrability*, appear to be significantly more influential to the innovation-decision process and eventual adoption than other perceived attributes.

There are still situations when the philosophy, or theory, does not align well with the practices being deployed, which happens to be the case for UNE in several different instances.

In fact, UNE seems to be a bit of a hybrid center, philosophically speaking, as it blended both writing lab and writing center practices into its day-to-day activities. The written philosophy from the *Tutor Policy Manual* indicated this split identity as well, considering the avoidance of writing *inside* of a student's paper which suggests a writing center philosophy, in the Stephen North (1984) sense of the word, combined with the process-oriented focus present in the physical space, as students can freely make use of the computer workstations for composing and printing work for any class. On the other hand, there is a grammar hotline service which allows students to ask quick questions through the website, Twitter, or by calling the tutor directly. In addition, the actual *name* of the center still has the label of "lab" embedded in it, even after several name changes under the purview of the current Writing Center Director. So, it appears that remnants of a writing lab mentality exists alongside the innovative tutoring practices that are more closely aligned with a writing center philosophy. The availability of the technology itself could be a possible reason for the lab-center mixed philosophical model, but it is also likely a result of UNE's complex *social system* which is comprised of mostly online students.

Cross-Case Perceived Attributes of Skype and Google Hangouts

As previously indicated, the first three attributes of *relative advantage*, *image*, and *compatibility* are easily identifiable in the data and appear to be inseparable from the study of the *social system* for each case study. *Relative advantage* means the use of the innovation must have an advantage over other options, and it is one of the strongest predictions of innovation adoption as it deals with the delicate balance between expected benefits and cost of innovation adoption. In both case studies, the innovations of Skype and Google Hangouts were adopted, by UMW and UNE respectively, because of the low initial cost of the innovation, the ability to save time and effort, and immediacy of reward (profitability did not apply in either case since writing center

services are free). UNE, under the guidance of a new writing center director, did not test any other platforms before adopting Google Hangouts due to the nature of the *social system*, built-in technical support, and university-wide transition to Google services; in this sense Google Hangouts had great *relative advantage* over testing other platforms that may not work and may not be fully-supported by university technical support. UMWs began its journey for a synchronous platform long before UNE, and they had an opportunity to test out at least three platforms (that can be completely recalled) before selecting Skype, due most readily to its *ease-of-use*, *relative advantage*, and *compatibility*.

UMW's earliest account of testing out technology for synchronous tutoring dates back to 2007, when they were provided webcams and headsets with microphones. The platform was built in to Blackboard, but the name of the system could not be recalled. The Blackboard System had *trialability*, since it could theoretically be tried and tested before use, but it was "clunky" in terms of *ease-of-use.* It also had low *visibility* and *results demonstrability* because it could only be accessed from within Blackboard making it difficult to advertise to students and difficult to "see" the technology being used. Furthermore, the Blackboard option had low *voluntariness* since the technology adoption was encouraged and initiated by members of the university's Information Services of Information Technology division rather than the Writing Center Director and ultimately lacked *compatibility* with the goals of the writing center and the needs of university students. These factors combined resulted in a failed innovation adoption as UMW director sadly reflected,

> So that was like a big downside of this first one that we tried way back in 2007, or whenever it was. It was just so clunky, there's software that had to be downloaded, and it really depended on having fast connections, which, you know, we have here at the

> university on our side, but most likely the folks using our services wouldn't, and just all the system requirements were high. So that kind of put us off that. And you know we gave it a whirl, but we had absolutely zero interest. We thought that a few people would take us up on it. In fact, we really tried to market it to like the dorms, people living on campus, we, you know, that they might really like that not having to walk across campus and they have high speed internet and a lot of technology so maybe they'd try it out, but they never did. We didn't have one taker, we never had the chance to have one online session. Yeah, can you tell the disappointment? (UMW Interview, 3/1/2013)

It took three years after this failed innovation for UMW to begin testing out other technology systems for online synchronous tutoring. So in 2010, UMW began a second attempt to find technology to assist with synchronous tutoring starting with Wimba, another built-in Blackboard platform, but they ran into similar issues regarding *ease-of-use* and *compatibility*. This can be seen in the following statements which clearly identified the importance of these two factors in a writing center context:

> I think it's Wimba is that module within Blackboard, and we tinkered around with that, and again it was the accessibility. We felt like it was just clunky. You had download stuff, and you had to do system checks, and seemed to be a lot of steps and then the *usability*, we weren't thrilled about that. And now that I've been thinking about it recently, I don't think I knew—I don't know that we really realized it or talked about it at the time, but looking back I have a hunch that one of the main reasons that we moved away from using that Wimba platform is the microphone control issue. And maybe I'm wrong on this, but it seems like there was [a] functionality aspect of that program that you had to click to talk, and you had to like pass the microphone back and forth virtually,

> you know, basically. And, you know, writing centers are all about dialog and talking [i.e. *compatibility*], and we don't take turns all the time, or pass a microphone, it's just more natural conversation. (UMW Interview, 3/1/2013, emphasis my own)

These two perceived attributes come up again in Tinychat, the next technology platform that was tested, along with the *image* attribute since the director knew of another writing center already using the technology. The Director stated,

> And we liked the ease of use, but, you know, looking at it we just felt it was maybe a little bit too social media oriented, you know, and concerned about kind of the randomness of who and what could use it. And I don't know, I think Salt Lake City Community College used Tiny Chat." (Interview, 3/1/2013)

For this technology option, *ease-of-use* was present, but the system was not *compatible* with the social system of UMW, even though the system had been a successful innovation in another writing center environment. This led to the final technology solution of Skype, which was fully adopted by UMW's writing center for the purpose of online synchronous tutoring.

In at least two of the prior innovations tested, UMW's writing center had support from the university's technology department, but they still ultimately selected an innovation that would not require assistance from university technical support because of its *ease-of-use.* Skype is web-based and does not require installations or plug-ins of any kind, which is exactly what UMW's Director was suggesting when he stated, "we've always wanted our online synchronous sessions to be very simple and accessible" (Interview, 3/1/2013). This was a determining factor for UMW, based on its previous experiences with technology platforms, which gave Skype *relative advantage* over other technology platforms available for synchronous tutoring at that

time (Google Hangouts had not been developed yet) because it is a no-cost solution with the ability to save time and effort for all stakeholders, students and tutors alike.

Google and Skype were also highly *visible* in both case studies, which I found to be closely tied to the social status or *image* of the university writing center. *Image* measures the status or social prestige associated with the innovation. It considers how one's status can be enhanced in the social system (formal and informal, in the case of writing centers) through the use of the innovation. I was able to locate each of the university case studies on the internet, using rather simple keyword searches in Google, where both case studies advertised their online synchronous tutoring practices and platform, further highlighting *image* and *visibility* as important considerations to the writing center director. As stated by UMW's Director, one of the primary goals was "To plan ways to improve the Writing Studio's services, visibility, and work environment during the upcoming academic year" (Interview, 3/1/2013). In both case studies, I found that the writing centers' *visibility* and *image* was closely tied to that of innovation's *visibility* and *image* attributes. If one is advertised well, then the other will be too.

The *visibility* of an innovation naturally leads to the attribute of *results demonstrability,* which measures how easy it is to explain the results of the innovation with others, including its observability and communicability. If the innovation has high *visibility* and people have a basic understanding of its operation, then it is much easier to communicate its effectiveness to others (i.e. *results demonstrability*), especially when the innovation can be easily observed, which happens to be the case with Skype and Google Hangouts. For both case studies, the tutors and writing center directors stated that it was easy to explain or communicate to others about the results of using Skype or Google Hangouts. In fact, each writing center recommended their respective innovation to others without hesitation. The results indicate that *visibility* and *results*

demonstrability are closely tied in the successful adoption of an innovation, especially within the context of writing centers where end users (students and tutors) are often expected to use an innovation involuntarily.

Voluntariness measures the degree of free will associated with using or adopting the innovation. Both writing center directors had a great level of autonomy in their respective positions, even though their innovation-decision-process had constraints to consider such as cost and technology support. Still, if the innovation was later determined to be less compatible or more complex than it appeared to be at the start, the writing center directors would have had the authority to select a new innovation for synchronous tutoring as was the case with the UMW Director. The tutors, on the other hand, were not provided the same level of free will or *voluntariness* and had to learn to use the innovation that was adopted prior to their arrival in the center, as indicated in the survey instruments; on the other hand, the tutors were not forced to use the synchronous tutoring innovation since they could tutor via face-to-face or asynchronous email instead (or work on other projects such as presentations, answering phone calls, etc.), if they were otherwise uncomfortable with the synchronous tutoring platform. In short, the writing center director had a great deal more *voluntariness* than the tutors, as would-be expected, but this did not impede the *rate of adoption* since tutors still had other ways to fulfill their tutoring obligations.

The familiarity of Skype and Google Hangouts, due to their ubiquitous nature, made *trialability* less of a factor in the innovation-adoption-process, at least in the way it was intended. In the case of UNE, *trialability* was even less of a factor since Google Services was a previously adopted innovation of the entire university social system, which made Google Hangouts seem like less of an innovation (even though it was being used for a purpose specific to synchronous

tutoring). *Trialability* measures the ability for a new innovation to be tried and tested before use, which is supposed to result in faster adoption. In both case studies, the tutors, students, and WC Directors were already familiar with the technology in a personal capacity, in most cases. As a result, the technology innovations were not tested or piloted specifically for tutoring purposes, though they had been tried and tested for other purposes beforehand; they were simply put to use as a tutoring platform, but this does not appear to have negatively affected the *adoption rate*. For UNE, for example, the *Tutor Policy Manual* completely outlined the process and procedures for tutoring in Google Hangouts, including how to upload and share documents with students. UMW's *Tutor Handbook* still had not been updated with instructions on Skype synchronous tutoring, and Skype instructions (from Skype creators) were relied on heavily for the technical aspects, but tutors still received extensive training and boot camps on where to focus their attention during the tutoring sessions. These results suggest that the trial or test period does not need to occur in the same capacity or manner that the system will be used; in other words, some familiarity with the innovation—even if in another setting or for an entirely different purpose—can still be counted as *trialability* in the eyes of the stakeholder, especially if it is paired with secondary ways of becoming familiar with the technology such as training sessions and tutor manuals.

The documentation from the training sessions and tutor handbooks provides great insight into the *ease-of-use* and *compatibility* of the two innovations, and the relationship between these two perceived attributes. In terms of ease-of-use, neither innovation requires complicated downloads, special user accounts, or VPN connections to the university technology system to operate; in fact, both innovations can be accessed from anywhere on just about any device. In the case of UMW, Skype directions are plentiful online, including help features and user forums

if technology issues arise. For UNE, technical support is handled by the university since the entire campus is part of the Google system, but public user forums are still an option for those who wish to seek it out. As discussed elsewhere, however, it is not enough for an innovation to be simple and *easy to use* (recall the UMW's use of TinyChat); the innovation must also be *compatible* with the entire *social system*. *Compatibility* measures the consistency between using the innovation and the values, needs, and experiences of potential adopters. For example, in the case of writing centers, an innovation must uphold the writing center philosophy in order to be fully or successfully adopted. Innovations that are incompatible with the values or social norms will likely be adopted slower than other, more compatible innovations. Indeed, the incompatibility of an innovation is not revealed until the innovation is already in use at the writing center, which means that an innovation that was once readily adopted might be discarded later when the innovations' affordances are fully realized within the social system.

As presented in the review of literature, Rogers (2003) and Johnson and Lakoff (1980) argued that individuals can only deal with new innovations based on what they already know, so old ideas, customs, and cultural practices become the mental maps or metaphors that individuals use when assessing new ideas. This can perhaps explain how the lack of *trialability*, in its intended form, did not slow down the *rate of adoption* for Skype and Google Hangouts since tutors and tutees were able to rely on their previous knowledge of these systems during the tutoring sessions. And, in the case of tutors, they were able to rely on their tutor training and experiences—even if based on face-to-face or email tutoring environments—and apply or map those "old" experiences onto the "new."

Consequences

What are the *implications* of these new OWL designs and related practices? How might DOI's *consequences of innovations* help us to make sense of each writing center administrators' decision to continue or discontinue the adoption?

As previously stated, consequences are neutral outcomes defined as "the *changes* that occur to an individual or to a social system as a result of the adoption or rejection of an innovation" (Rogers, 2003, p.157, emphasis my own). The consequences of an innovation can be desirable/undesirable, direct/indirect, and anticipated/unanticipated. According to DOI theory, the *desirable*, *direct*, and *anticipated* consequences go hand-in-hand when a new innovation is adopted; in other words, adopters are usually able to determine these outcomes because they align with the needs of the social system that the innovation was intended to address.

In this study, for instance, the *desirable*, *direct*, and *anticipated* consequences were clearly expressed in each writing center director's innovation-decision process as captured by the interview data. Both writing centers were preparing for an influx of online students, though for different reasons and at differing capacities, and each writing center director *desired* to offer a tutoring service for the new student population which was *anticipated* to be more aligned with the primary method of teaching and instruction, namely online services not constrained by one's geographic location. There were a few other desired outcomes of adoption Skype and Google Hangouts for synchronous tutoring too. The *desirable* and *anticipated* consequence of each innovation-decision, of course, was the assumption that students and tutors would use the new innovation, and in some cases prefer it to previous tutoring options, if the innovation was offered

and marketed in a certain way. Not all of these desirable and anticipated consequences of the innovation were achieved though, which is what DOI reveals for writing center professionals.

According to DOI theory, it is the *undesirable*, *indirect,* and *unanticipated* outcomes that are the most difficult to pinpoint and study due to pro-innovation bias, tacit assumptions made by adopters that "an innovation is needed…that its introduction [to the social system] will be desirable, and that adoption of the innovation represents 'success'" (Rogers, 2003, p. 440). In the case of this research study, the consequences of greatest importance are the changes made to the tutoring process as a result of adopting the Skype and Google Hangouts innovations. However, other consequences were also revealed as a result of adopting Skype or Google Hangouts for synchronous tutoring, such as the influential role of both student and tutor on the rate of adoption, the innovation itself, and the resultant change in the social structure of each writing center.

Case #1: UMW and Skype

To begin with, there were a number of *desirable*, *direct*, and *anticipated* consequences expressed by UMW's Writing Studio Director. As previously indicated, the Skype innovation was a desirable solution to meet the perceived needs of the institutional social system, which had expanded to include a number of online students and faculty; specifically, it was believed to be easy-to-use and highly accessible, giving it great relative advantage over previously adopted synchronous tutoring options, which were discontinued by UMW. Furthermore, Skype was anticipated to be another tutoring option for students, rather than a replacement of existing tutoring services; this means that students would be given three tutoring options: face-to-face, asynchronous email, and online synchronous. The *desirable*, *direct*, and *anticipated* consequences of adopting Skype for synchronous tutoring was that it would be used by students

and tutors. In other words, there would be a steady increase in the number of Skype tutoring sessions. However, only a few of these anticipated outcomes were realized as several factors were overlooked and unanticipated in the adoption of Skype.

Student Factor. The results indicate that the role of students in UMW's adoption of tutoring innovations was overlooked by the Writing Studio Director on more than one occasion. As a reminder, UMW adopted and discontinued several synchronous tutoring innovations prior to Skype; some innovations were discarded due to difficulty with the innovation itself, such as ease-of-use or compatibility, but other innovations were outright rejected by UMW's student population. That happened with the first internal Blackboard synchronous innovation when not one online session was ever booked (UMW Interview, 3/1/2013). With the Skype innovation, UMW's Writing Studio Director also admitted to a slower-than-expected adoption: "We've always hoped that the online video conferencing would be far bigger than the email submission because it's more like what we do in person… like I said we haven't had that many [Skype] sessions" (UMW Interview, 3/1/2013). He continued, "Yes, we offer both [email and Skype tutoring]. And the email sessions have definitely increased in popularity, that traffic, so to speak, keeps going up" (UMW Interview, 3/1/2013). These results indicate that the final adoption decision was influenced by students, not resulting solely from the writing center director's innovation-decision, and Skype had yet to be fully accepted by the student population. It could also be the case that the student's slow adoption of the innovation was influenced by the tutor's individual innovation-decision where many tutors opted not to participate in Skype tutoring, thus reducing the number of available Skype tutoring hours that students could choose from.

The reasons that are causing students to slowly adopt Skype for synchronous tutoring are unknown and cannot be fully captured by the design of this study, which focused on tutors and

writing center directors. However, UMW's Writing Studio Director suggested that it could have something to do with synchronous Skype sessions only being offered during regular tutoring hours. He explained, "So in some ways we haven't, I guess, fully reached those that our hours are missing" (UMW Interview, 3/1/2013). Though this could be one contributing factor to the slow adoption of Skype, it does not explain the steady rise in email tutoring sessions, which are also conducted during regular business hours. However, it is clear that the outcomes of the slow Skype adoption and comparatively steady growth in email tutoring adoption are *undesirable*, *indirect*, and *unanticipated* consequences of the Skype adoption. It would seem that students in UMW's institutional social system simply prefer asynchronous email tutoring to synchronous Skype tutoring (or previous synchronous tutoring innovations), and that appears to be an overlooked and under-considered attribute of the UMW social system in the director's innovation-decision process.

Tutor Factor. Similar to the low student involvement in the use of Skype, there was low tutor adoption of Skype as well. The low tutor involvement was sanctioned by UMW's Writing Studio Director, however, so such individual adoption was considered likely or *anticipated* even if *undesirable*. At each writing studio location, only one tutor was allocated to Skype synchronous sessions, which means no more than 15% of tutoring appointments could be synchronous in nature; tutors were given the power to adopt or reject the synchronous Skype innovation at the individual level, even though the entire social system had adopted the innovation on a wider scale. Furthermore, the low tutor adoption likely worked in tandem with the low student adoption of Skype since there were fewer available appointments for students to choose from that would fit their busy schedule, thus making the individual-adoption decision by

tutors one of the *undesirable*, *indirect*, and *unanticipated* consequences of the Skype innovation adoption.

Another *unanticipated* and *indirect* consequence of the tutor's role in the overall adoption of Skype for synchronous tutoring involved the social status of tutors. For Skype, the tutor believed that the innovation would make others in the discipline and institution see the tutor as more valuable (rated 5 for each survey question) and would improve the tutor's image within institution (rated 7) and within the discipline of study (rated 5) (UMW Tutor Survey, 3/22/2013). Since tutors were allowed to make individual-adoption decisions, this led to a stratification of tutor roles in the social system where some tutors were considered specialists in a particular tutoring innovation, thus making some tutors more valuable in the writing center's social system and wider institutional social system. As a result, the individual-adoption decision—now customary in many writing center social systems—has become a system norm, which has serious implications on the overall success of future innovation adoptions.

Innovation Itself. The introduction of the Skype innovation itself brought along some *undesirable*, *indirect*, and *unanticipated* consequences as well. As indicated in the tutor survey results, many of the unanticipated consequences of Skype stem from the lack of training or *trialability* of Skype, which was not made available to tutors before the first live tutoring session. Writing center administrators simply assumed that tutors were already familiar with the software so training was not provided, even though the uses of the software would be different for tutoring than for personal use (which is the only familiarity the tutors had of the technology). As a result, the tutor had an overall negative opinion of the innovation (at least for tutoring purposes), the tutor experienced lower levels of *ease-of-use*, and had a murkier understanding of the innovation's *results demonstrability* and level of *compatibility* with the social system. In short,

the tutor had to learn-on-the-job, thereby expending a great deal of energy figuring out how to use the technology for the new purpose of tutoring, which only further complicated the goal of tutoring. The tutor did not feel that Skype was *compatible* with the *social system*, specifically the writing center, in completing the goals of tutoring and he could not confidently see the positive results of Skype for tutoring purposes. In fact, the research findings suggest a strong connection between *results demonstrability* and *consequences* of the innovation because if it is not easy to see the positive results of adopting the innovation or if the results cannot be easily explained to others, then it is likely that the *consequences* of innovation will be *undesired*, *unanticipated*, and possibly *indirect* or secondary as well.

There are some *undesirable*, yet *anticipated*, consequences of adopting Skype too, since technology failure is always a concern. Technology failure can happen at any time so a back-up plan must be established for tutors to follow in such situations. The Writing Center Director at UMW stated,

> At the time where we've run into technology problems, you know, those have been the big challenges; I think when it's just not working. You know we're supposed to be having a session at 9:00 and either end can't get logged on, or keeps getting kicked off, or the connection is bad, or something like that, you know, those have been the big challenges. (UMW Interview, 3/1/2013)

To combat potential technology failures, the Director explained that tutors and students exchanged phone numbers. While back-up plans are essential to have in place, such last-minute changes still result in *unanticipated* and *indirect* consequences because there is less time to cover the essential goals of the tutoring session (HOCs vs. LOCs) and the phone solution loses the face-to-face aspect gained by synchronous video tutoring as well as the shared documentation

aspect, which are both so central to tutoring. In short, the tutoring session may continue, but the overall quality of the tutoring session will be severely affected.

Social System Structure. Finally, there were also several *unanticipated*, *indirect*, and *undesirable* consequences of the Skype adoption that impacted the structure of the social system. For starters, the introduction of synchronous Skype tutoring provided yet another option for everyone, forcing all system users—tutors, students, and the studio director alike—to choose the better option. As a result, the perceived attributes of the innovation differ for students, for tutors, and for the director, which potentially jeopardizes already established system norms.

DOI theory identifies three intrinsic elements of an innovation that can assist with understanding the consequences of an innovation: *form* (physical appearance and substance of innovation), *function* (innovation's contribution to way of life), and *meaning* (subjective and/or subconscious perception of the innovation). The primary adopters easily anticipate the form and function of an innovation but are often unable to anticipate the meaning that individuals within the social system attach to the new innovation, which helps to explain the *undesirable* and *unanticipated* consequences of innovations. In the case of UMW, students chose face-to-face and asynchronous email tutoring over Skype, which indicates that the perceived attributes of the innovation are an individual evaluation, first and foremost, and not limited to the innovation-decision of the writing center director. The same is the case for tutors, many of whom have made an individual innovation-decision not to adopt Skype for tutoring. In both instances, this speaks to the *undesirable* and *unanticipated* consequences of the *meaning* of the innovation, as it is perceived by other members of the UMW social system.

Additionally, the introduction of synchronous Skype tutoring also forced the Writing Studio Director to consider how this form of tutoring meets the needs of the social system. As

admitted by the Director, the Skype innovation had been adopted without any discussion of expected tutoring practices in the *Tutor Handbook*; indeed, time had been spent on the technical aspects such as how to login to the Skype account and where to store student papers, but no instruction was provided on the tutoring process itself, including how and where to give feedback. Wislocki (2003) posited that an OWL has the potential to both challenge and reinforce traditional writing center practices and values because it "both recalls and subverts the familiar" (p. 72), and we need to critically examine this duality or binary relationship in greater detail to better understand the embedded practices taking place in our writing centers. As a result, another *undesired* and *unanticipated* consequence of adopting Skype for synchronous tutoring is that it forced the Writing Studio Director to consider the tacit assumptions embedded in the use of Skype and to specifically articulate in the future *Tutor Handbook* exactly how Skype would mimic the interactive, conversation style of face-to-face tutoring.

Case #2: UNE and Google Hangouts

According to UNE's Interim Director, there were a number of *desirable*, *direct*, and *anticipated* consequences of Google Hangouts. Google Hangouts was adopted for synchronous tutoring to meet the needs of the UNE's majority-online student population; specifically, Google Hangouts had relative advantage and compatibility over other synchronous tutoring options because it was already part of the existing technology infrastructure, making Google Hangouts a contingent adoption based on the prior adoption of Google Services for Education. Furthermore, Google Hangouts was anticipated to be a replacement for email tutoring, leaving students with two tutoring options believed to be similar in nature (i.e. live and interactive): face-to-face and online synchronous. The *desirable*, *direct*, and *anticipated* consequences of adopting Google Hangouts for synchronous tutoring was that it would become a welcome replacement of

asynchronous email tutoring currently offered to distance students. At the time of this study, however, Google Hangouts was in the early stages of adoption so this anticipated outcome cannot be fully evaluated.

In fact, according to DOI, consequences or outcomes of a new innovation adoption are usually revealed over time—such as with indirect and undesirable consequences—which means that adopters are often not fully aware of all the consequences of their adoption, even if they are open-minded enough to recognize that non-beneficial outcomes exist when adopting a new innovation (Rogers, 2003). As a result, the following discussion of the consequences of Google Hangouts will not be as thorough as UMW's use of Skype because Google Hangouts had simply not been in existence as a tutoring option at UNE for as long as Skype was at UMW.

Student Factor. At the time of this study, not much was revealed as to the nature and preferences of the student in the adoption process. UNE's Interim Director intended to replace asynchronous email tutoring, even though the innovation had been existence for five years; in fact, the email tutoring procedures were being revised to adjust to the university-wide adoption of Google Drive (part of Google Services for Education) but that was seen as a temporary solution until the innovation could be discontinued.

The decision to discontinue email tutoring was a direct result of the incoming Freshman class figures, which estimated that nearly 40% of the incoming class would be online (UNE Pre-Screen Interview, 9/10/2013). She explained, "They don't get any services; they get very, very little. So, um, we're trying to get a system wide [tutoring] page off the ground and train tutors just to work virtually" (UNE Pre-Screen Interview, 9/10/2013). This system-wide effort was a major catalyst in the innovation-decision process to adopt Google Hangouts, but it does not otherwise explain the discontinuance of asynchronous email tutoring. The structure of the social

system will be immeasurably altered as a result of the discontinuation of asynchronous email tutoring, which is happening almost simultaneously with the adoption and diffusion of Google Hangouts for synchronous tutoring (which also has mostly unknown and undiscovered, *indirect* consequences).

It was too early to determine the *indirect* consequence of replacing email tutoring, but it is possible that students will prefer asynchronous email tutoring to synchronous tutoring using Google Hangouts, which was the case for UMW. Indeed, students may prefer email tutoring because of the lack of time and attention it requires on their part, as their papers can be dropped off to be corrected and they simply return to their email inboxes to pick them back up again, which is a metaphorical process coined by Boquet (1999) as the "tutorial-as-laundromat." Additionally, the large online percentage of the student population, limited online synchronous appointments, and external demands of online students make it increasingly difficult for students to commit to a specific day and time necessary for participating in a synchronous session. Thus, these two case studies indicate a pattern in the lack of consideration given to students during the innovation-decision process, which is surprising considering the innovation is being adopted to meet the needs of the very students whose wishes are systematically overlooked.

Tutor Factor. At the time of this study, UNE's Writing Lab was staffed by a total of only four tutors who were expected to serve the entire online student population of nearly 6,000 students. The ratio of 25% or fewer synchronous sessions available each week compared to 75% of face-to-face sessions will not adequately support the existing structure of UNE's social system. Much like UMW, UNE tutors were allowed to make an individual-innovation decision about whether or not to adopt Google Hangouts for synchronous tutoring. It was too early in the adoption process to review figures on the consequences of this social system norm, but such

practices will likely have *unintended* and *undesirable* consequences on the overall rate of Google Hangouts adoption. This is especially the case when 1) an overwhelming majority of the student population (90%) is taking one or more online classes and 2) online students do not have an alternative tutoring option (unlike UMW where students could simply schedule an asynchronous email session). A likely solution to serve the needs of the university social system would be if all tutors were trained and required to conduct online sessions using Google Hangouts since the majority of UNE's student population is online.

The findings suggest that the tutor played a significant role in the final confirmation stage of the Interim Director's innovation-decision, since the adoption of Google Hangouts for synchronous tutoring was already underway. The tutor believed that the technology was fully *compatible* with her personal style of work and the writing center culture (all 7s) and the innovation was *easy to use* and operate, easy to remember the steps, and did not require a lot of mental effort (all 7s) (UNE Tutor Survey, 10/8/2013). These results speak to the influence of the authoritative-innovation decision from the wider university social system and its *unanticipated* and *indirect* influence on the overall rate of adoption for various Google Services, which supersedes the student's own individual-innovation decision. The ratio between synchronous tutor hours versus the population of online students work to challenge the existing norms of the writing center social system, thus indicating that a more authoritative-innovation decision may be required of tutors (within the writing lab's social system) in order for Google Hangouts to adequately meet the needs of UNE's social system.

DOI theory confirms that authoritative-innovation decisions often result in faster innovation adoptions because the time it takes to progress through the innovation-decision process is essentially shortened from five stages to two: implementation and confirmation

(Rogers, 2003). As the Interim Director stated, "There's just a big push to kind of manage our workload and do what we need to do using Google" (UNE Interview, 9/17/2013), so it was unlikely that Google Hangouts for synchronous tutoring would be discontinued. However, the tutor feedback on the actual use of Google Hangouts for synchronous tutoring was useful in informing the Interim Director of the necessary changes to make in the tutoring process and tutor training to improve the overall tutoring experience while also meeting the needs of the university social system and writing center social system (i.e. the writing center philosophy which relies heavily on the metaphors of the Socratic Method and writing is a process).

Innovation Itself. The introduction of the Google Hangouts innovation itself brought along some *undesirable*, *indirect*, and *unanticipated* consequences as well. The most obvious consequences occur when the technology fails. Like UMW, UNE falls back on telephone conferencing whenever the technology fails for Google Hangouts. I experienced a number of such issues during the full interview with UNE's Interim Director, where our connections were dropped and we were forced to reconnect to Google Hangouts at least a half dozen times. When questioned about how such issues might be handled during a session, UNE's Interim Director stated,

> Yeah, I've tried to go slowly with adopting this because I know that it's going to be frustrating. I've done a couple of sessions on the phone while using Google Hangout until we can get it to work. So I think you have to sort of approach it as, you know, there's going to be a big learning curve with this and just kind of take it step by step. (UNE Interview, 9/17/2013)

She also mentioned glitches with Google Drive when documents were shared with students: sometimes documents were shared but the student could not see them and vice versa. These

findings indicate that the Interim Director experienced several *unanticipated* and *undesirable* consequences of using the innovation and was not fully aware of what the future *indirect* consequences might entail. Baron (2000) referred to this as an authentication problem, typically associated with new innovations, and he cautioned that full acceptance of an innovation cannot occur until the innovation is deemed reliable and dependent by its users, which Google Hangouts had yet to acquire.

Another *unanticipated* and *indirect* result of adopting Google Hangouts for synchronous tutoring is that it required a more organized document storage and retrieval system. As previously discussed, Google Drive is now used to store student papers from both asynchronous email and synchronous Google Hangouts sessions. As UNE's Interim Director stated:

> We're starting to incorporate Google Docs, so a student might email us and share a paper with us and we'll respond with it attached and also put it on the Google Drive and share it with the student. I'm encouraging my tutors to use more than one way of providing access to students. (UNE Pre-Screen Interview, 9/10/2013)

These results indicate the ways synchronous tutoring was influenced by predecessors (such as the live, interactive aspects of face-to-face tutoring) and the ways synchronous tutoring backtracks to influence its own predecessors, namely asynchronous email tutoring. In other words, the new OWL procedures were indeed recalling and subverting the familiar as Wislocki (2003) opined.

By and large, there appear to be few *unanticipated* and *undesirable* consequences of the innovation itself as indicated by the tutor survey. This could be a result of the relatively short time that the innovation had been adopted or the low number of tutor responses (there was only one tutor who had conducted a Google Hangouts sessions). In fact, the perceived attributes of

compatibility, *ease-of-use*, and *results demonstrability* received perfect scores even with the null score for *trialability*. In this case study, trialability did not have a large bearing on the outcome of the innovation adoption because training was offered to tutors; it just was not needed by this particular tutor. This is different from the approach used by UMW in the first case study where Skype training was not available to tutors at all. These results suggest that Google Hangouts' higher level of *compatibility* with the *social system* caused sweeping *desirable* and *direct* changes to the social system, which were likely *unanticipated* at such an early stage in the innovation-adoption process.

Social System Structure. Finally, there were a few *unanticipated*, *indirect*, and *undesirable* consequences of the Google Hangouts adoption that impacted the structure of the social system. As previously indicated, the introduction of Google Hangouts synchronous tutoring forced system users to choose between options, such as with UMW's Skype adoption. In this case study, however, the decision was ultimately made by UNE's Interim Director who decided to replace asynchronous email tutoring with Google Hangouts' synchronous tutoring.

Even with its stability in the social system, the Interim Director believed that the asynchronous email tutoring was 1) a left-over from her technophobe predecessor and 2) was inadequate in replicating the preferred face-to-face tutoring paradigm. She explained,

> Before we talked about using Google Hangouts more we already had feedback by just email established. And that has sort of led us—none of the tutors were doing it, so it was like one of the first things I changed. I trained the tutors to give comments and to use Google Drive. (UNE Interview, 9/17/2013)

And:

> Because writing is based in collaboration and communication. So I think it just—you know, Google Hangouts is part of this kind of Web 3.0…You know, it's just part of the vision, and I think …we're able to lead more effectively by honoring the role of social media and its connection to, you know, education media. (UNE Interview, 9/17/2013)

Google Hangouts was viewed by the Interim Director as a form of social media since it was accessed through the Google Circles feature, which indicates another structural change in the social system—an interface that socially connects participants inside and outside the realm of tutoring. Google Hangouts' relationship to other forms of social media as they relate to education went unremarked.

UNE's Interim Director was prepared to train tutors in the use of Google Circles and Google Hangouts for tutoring purposes, as opposed to assuming that prior knowledge of the innovation itself would be sufficient (as was the case with UMW). The Interim Director did, however, base her beliefs in the superiority of Google Hangouts for live, interactive tutoring over that of asynchronous email tutoring on the prevailing paradigm of face-to-face tutoring. This made the Interim Director's intentions of phasing out or eliminating asynchronous email tutoring an *indirect* and *unanticipated* consequence of adopting Google Hangouts for synchronous tutoring; it remains to be seen if such an action will be *undesirable* as well.

Finally, the elimination of asynchronous email tutoring could result in a favorable outcome with regard to tutors; an outcome that is *unanticipated*, *indirect*, and perhaps *desirable* as tutors are less stratified in the social system hierarchy. After UNE's Writing Lab transitions to every tutor being trained in synchronous tutoring, rather than just a few voluntary tutors as with UMW's system, then each tutor will have the same set of skills or specialties, thus decreasing the

digital divide in the writing lab social system between those tutors who have synchronous tutoring expertise and those that do not.

Summary

This chapter provided a review of the case study results. Data included excerpts from individual interviews with the writing center directors at both UMW and UNE, tutor surveys from tutors at both universities, and external documents such as tutor handbooks and OWL websites.

Three sets of research questions were answered including any association with metaphor and previous experience. First, this chapter identified the significance of DOI's social system attribute in understanding the needs of the writing center social system and wider university social system. Next, the perceived attributes of *relative advantage*, *image*, and *compatibility* were the most significant findings in the data of each case study. The *ease-of-use* attribute was interestingly complex, as it was understood and experienced differently by tutors than writing center directors. In addition, the results indicate that some perceived attributes are more relevant to tutors (*trialability* and *voluntariness)* than writing center directors (*results demonstrability* and *visibility)*. Finally, this chapter concluded with a discussion of *unanticipated*, *indirect*, and *undesirable* consequences of each innovation adoption especially with regard to the influential factors of the tutor and student roles and the changing nature of the social system.

In Chapter 5, the research findings are analyzed in greater detail in terms of its implications for adoption of synchronous tutoring OWLs. The limitations of this study are also discussed to assist future researchers in their examination of synchronous tutoring OWLs.

CHAPTER V

DISCUSSION AND IMPLICATIONS

Introduction

This chapter discusses and analyzes the findings from Chapter 4. I begin with a concise recapitulation of the purpose and findings of the study followed by a discussion of the most significant outcomes of this study, organized by research question. Next, I address the significance and implications of the study for Writing Center and English Studies professionals. I conclude with an acknowledgement of the limitations of the study.

Summary of the Study

Writing centers are charged with the important task of finding effective ways to improve students and student writing, and this task has led to the creation of a number of writing center innovations to supplement tutoring practices and, in some cases, replace them. Second generation synchronous tutoring OWLs—those that replicate the face-to-face tutoring experience using audio, video, and document sharing—are still relatively new to writing centers, so their implications on writing center research and pedagogy have yet to be fully comprehended. Indeed, there is a problem in the prevailing paradigm of writing centers that seeks to transfer face-to-face tutoring practices, namely the live exchange of dialogue and conversation queues, to online synchronous tutoring with little examination of the relationship between those practices and the newly adopted tutoring software. Due to the lack of formal publication of writing center studies focused on synchronous online tutoring and the significant role of metaphor and previous experience in new tutoring innovations, we know seemingly little about synchronous tutoring OWLs. This problem has negatively impacted writing center directors' understanding of the

nature of technological innovations and the factors that might influence the adoption, rejection, and reinvention of new innovations.

Diffusion of Innovation (DOI) theory is a stable research tradition that studies the communication and adoption process of a new innovation among members of a social system, including the various factors which affect the adoption, re-invention, or rejection of new innovations (Rogers, 2003). According to Rogers (2003), an innovation is any "idea, practice, or object that is *perceived* as new by an individual or other unit of adoption" (Rogers, p. 12, emphasis my own). In other words, placing an innovation into a new social system makes, or remakes, the innovation anew—since the experience itself is relative to the context. Thus, whether something is considered an innovation or not and how its success is measured within a given social system will vary based on a number of different factors. Though many innovations are technological in nature, innovations can and do include new (and modified) processes, standards, and practices. This is especially significant for English Studies and Writing Center professionals since the innovation is rarely limited to the technology itself; instead, the innovation often extends to modified teaching and/or tutoring processes that serve to accommodate and complement the technology.

The primary purpose of this study was to add to the existing literature on synchronous OWLs, which is arguably not as robust as it could be, by providing writing center professionals with a guide or set of heuristics for thinking about their own institutional context. The study provides a focused discussion on not just the technology, but the entire *innovation* that takes place in the writing center as a result of the technology—namely, how it challenges, disrupts, and rebuilds the existing tutoring practices, tutoring processes, and even our conceptualization of tutoring spaces and interfaces. In short, this study sought to document not only *what* is

happening in synchronous OWL designs but *why* it is happening and the *implications* of those decisions.

The secondary purpose of this study was to interrogate the tutoring metaphors used by writing center professionals to guide the innovations for synchronous tutoring OWLs. This metaphorical approach works alongside Beth Hewitt's critique of OWI and OWL practices in *Online Writing Conference* (2010), where she asked if the face-to-face model is the most *effective* or even the most *appropriate* model to determine the success of a live, synchronous tutoring session. It is important for writing center professionals to understand the complex philosophy and pedagogy of their own writing center since it invariably influences the selection of various tutoring technologies and the emergent tutoring practices that come about as a result of that selection; additionally, the pedagogy and philosophy of any given writing center is also responsible for developing the criteria by which a tutoring experience is deemed successful or not.

The final purpose of this research study stemmed from wanting to explore *if* and *how* DOI theory might aid writing center professionals in better understanding the intricate relationship between their *social system* and the *innovation-decision process*, which ultimately affects the level and *rate of adoption* for various innovations being tested and implemented in writing centers across the country. DOI theory can help writing center professionals by articulating the relationship between the technology adoption and emergent tutoring practices happening *within* our own writing center context and *across* different writing center contexts, thus making overlaps and intersections with regard to technology and tutoring practices readily visible in the writing center community. Furthermore, DOI theory offers writing center professionals a concrete vocabulary from an established research paradigm for exploring,

articulating, and documenting writing center innovations, thus making it easier for writing center professionals to communicate and learn from one another.

This study was designed to answer three broad sets of questions:

1. *Why* are writing center administrators designing synchronous A/V live OWLs? How might DOI's *social system* concept help us to make sense of the perceived needs the new OWL was intended to address?
2. *What* OWL designs and related practices were adopted? How might DOI's *perceived attributes* help us to make sense of each writing center administrators' overall decision to adopt the innovation?
3. What are the *implications* of these new OWL designs and related practices? How might DOI's *consequences of innovations* help us to make sense of each writing center administrators' decision to continue or discontinue the adoption?

As stated in the introduction to the previous chapter, I designed an empirical study that combined the theoretical frameworks of DOI's theory developed by Rogers (2003), Moore and Benbasat (1991), and Inman (2000) to serve as a lens for analyzing the diffusion of two synchronous A/V online tutoring innovations across different university writing centers or *social systems,* paying particular attention to the *perceived attributes* and *consequences* of the innovation. This study employed a case-study methodology to explore the *innovation-decision process* of each writing center director, which served as the unit of analysis for each case.

This study used a purposeful sample and participants were selected by internet searches and referral. The primary research participants included the writing center directors and tutors who had first-hand knowledge of the innovation adoption, its related practices, and the consequences of the innovation, if any. Thus, the case studies selected included University of

Northeast's use of Google Hangouts and University of Midwest's use of Skype; data from the respective writing center director and one tutor was collected for each case.

Sources of data included the writing center director interviews, tutor surveys, documentation review, and field notes. The primary research instruments included the interview protocol for writing center directors and the modified-survey for tutors. Unlike the more general data methods used in this study (i.e. documentation and field notes), these two instruments were specifically *designed* and *crafted* to answer the research questions identified at the start of this chapter resulting in an interview protocol and modified DOI survey. The combined research instruments of the modified survey and interview protocol allowed me to use both open-ended and closed-ended questions, making it easier to record both qualitative and quantitative data essential to the results of the study.

Interview data, open-ended responses from surveys, reflexive field notes, and documentation artifacts were entered into MaxQDA, which allowed the data to be used independently or in a convergent manner, such as with cross-case analysis. The first level of data was coded for context variables related to the exigency leading up to adoption, prior experience with face-to-face tutoring, level of technology comfort, and the university's existing infrastructure (to also include level of technology comfort). The second level of data was coded for Rogers' (2003) and Moore and Benbasat's (1991) theory of perceived attributes to identify patterns that emerged from both tutors and writing center administrators' explanation of their OWL design. I prepared a detailed case study write-up for each institution, categorizing interview questions and survey responses to examine the data for within-group similarities and differences. The case study reports allowed me to identify some potential issues that might cut across the adoption of different online tutoring software in different contexts for cross-case

analysis. When the patterns in the cross-case analysis could not be easily reconciled with the data, I sought to name and categorize those variables as an extension of DOI specific to writing center contexts.

DOI theory proved useful in understanding the nature of the innovations taking place in the two writing center contexts. Rogers (2003) proposed that four main elements influence the *rate of adoption*: the innovation itself, communication channels, time, and the social system (which includes the *type* of adopters). The research findings suggest that the length of *time* that an innovation has been in place has no direct bearing on its overall *compatibility* with the *social system,* which in turn influences the innovation's *rate of adoption*.

Despite using Skype since 2010, UMW would likely fall within DOI's first or second category of innovators or early adopters since the amount of *time* that Skype had been adopted did not improve the rate of adoption within the university social system. This stagnant growth was aided by students' rejection of the innovation coupled with tutor's individual-innovation decision (very few tutors opted to participate in Skye synchronous sessions). Additionally, the amount of *time* and assumed familiarity of the *innovation itself,* beyond writing center purposes, was unable to compensate for the relatively low-ranking perceived attributes of the *innovation* in the categories of ease-of-use, compatibility, trialability, and results demonstrability. Furthermore, the poor *communication channels,* including the limited promotion of the innovation within the university social system and lack of tutor training (specifically for the purposes of using Skype for online synchronous tutoring) also contributed to the slow rate of adoption within the university and writing center *social systems*.

UNE had been using Google Hangouts for less than one year at the time of the study and would also likely fall into DOI's first or second category of innovators or early adopters since the

technology had been in place for a short period of *time*, but the perceived attributes of the *innovation* itself are quite strong, the *communication channels* are present on both the Writing Lab's website helping students know what to expect during a tutoring session and in the *Tutor Manual*, which clearly trained tutors on how to use Google Drive and Google Hangouts for synchronous tutoring purposes. Moreover, the innovation is closely aligned with the *social system* since the university as a whole had adopted Google Services, which indicates that Google Hangouts will diffuse more rapidly through UNE's social system when compared to UMW's use of Skype as a result of the authoritative-innovation decision made at the university level, which had already pre-selected, implemented, and diffused Google Services for Education across the wider university social system.

Discussion

I organize and present the discussion and analysis of research findings by research question. The first research question investigated the role of the social system in the innovation-decision process for each case study. The second research question identified the new synchronous OWL design and related tutoring practices that were the result of the innovation-decision process for each case, paying particular attention to the influence of perceived attributes of the innovation on the innovation-decision process. The third research question explored the consequences of each innovation and its overall influence on the innovation-decision process.

Research Question 1: Social System

I initially began my exploration of the *social system* with a very limited mindset, as I really only discussed it superficially and mostly in direct connection to the perceived attributes of the innovation. However, the inclusion criteria for the cases provided a natural way to explore the intricate, multilevel, intersecting social systems in each writing center including: the culture

of the writing center, the culture of the university, technology culture of writing center vs. university, the nature of the student population, the location of the writing center in terms of organizational structure (i.e. the funding source), and even the relationship between the writing center and other departments on campus, such as the Writing Program.

The study of the internal social system, through the lens of DOI, played a major role in understanding the *innovation-decision process* leading up to the adoption of Skype and Google Hangouts for tutoring purposes. Both writing centers were in the market for synchronous tutoring technology, but the exigency leading up to the decision varied for each center as did the overall culture of each writing center. UMW's Writing Center Director had been established in the position for the last five years, and he had recently renamed the center, changing it to a writing *studio*. UNE had a newly-appointed Interim Director, and the website and marketing materials referred to the tutoring space a writing *lab*; both of these issues provide insight into the overall culture and philosophy of the writing center as well as the internal social system of each writing center as North (1984) and Carino (1992) posited. Furthermore, UMW had been using Skype for several years as a tutoring platform, whereas UNE was still in its infancy of using Google Hangouts for tutoring with only one semester of use. Even though the length of time that the innovation had been in place at each writing center was vastly different, both cases were at relatively similar points in DOI's *rate of adoption* due to Skype's slower rate of adoption within UMW's social system. In the case of both writing centers, DOI theory illustrated the many layers of the *social system* in ways that were not explicitly visible before I conducted this study.

The social system also had a major impact on the practices related to adopting the innovation such as tutor training, tutoring guidelines, and file storage procedures. At UMW, tutors were not provided with any formal training or advice on Skype, as a *technology* or as an

innovation because UMW's Studio Director reasoned that the Skype technology was familiar to tutors and students and the tutoring practices were similar to face-to-face tutoring. There was a substantial amount of documentation provided for asynchronous email tutoring, however; when questioned about this lack of balance, UMW's Writing Studio Director indicated that he did not feel that asynchronous email tutoring was inferior to face-to-face tutoring, and therefore did not see it as something needing to be reduced or eliminated from the writing center's services. In fact, asynchronous email tutoring experienced a steady increase in *rate of adoption* over the years at UMW, even when offered alongside Skype as a tutoring option. The Studio Director's philosophy about the positive aspects of email tutoring provides sufficient explanation for understanding why the *Tutor Handbook* was admittedly lacking in the area of synchronous tutoring but well documented with regard to asynchronous email tutoring practices and procedures—a realization that did not come to UMW's Studio Director until this study and the interviews were well underway. In other words, the norms of the social system had serious implications on the way *both* innovations were perceived in a given *social system*, including the innovation's rate of diffusion across the system.

The wider social system of the institutions themselves also played a large part in the innovation-decision-process of both writing centers, especially with regard to technology culture. For UMW, the university's wider social system encouraged technology innovators, as the university wanted to become more technology-enhanced, but the university did not provide the infrastructure, guidelines, or funding to achieve such goals. This explains the longer innovation-decision-process that took place at UMW, as different innovations were tested and ultimately rejected in the third stage of the innovation-decision process (i.e. the "decision" stage) either due to being a poor fit for the students based on a lack of scheduled synchronous tutoring sessions or

because the technology itself was perceived as too cumbersome by the writing center staff. Skype became a viable option for UMW because it was free to use and would not require the support of the university's technology infrastructure. This clearly demonstrates how the external or larger social system impacted the final decision on which innovation to adopt for the purposes of tutoring at UMW.

Similarly, the university social system also played a significant role in UNE's decision to adopt Google Hangouts for tutoring purposes. UNE was merging with several other regional universities in order to offer more online classes to its students, and the writing center was needed to serve this unique student population. Google Education Services were already in place at the institution; students had their own Gmail and Google Drive accounts, so UNE did not test other innovations beforehand. Google Hangouts had *relative advantage* and *compatibility* with UNE's entire social system as the tutors and students were already immersed in the system, willingly or not. On the one hand, this adoption may seem like an easy decision to make—particularly with regard to a zero cost tutoring solution and direct technology support from the university—but it was also a limiting decision, essentially reducing DOI's *voluntariness* attribute to null since the initial innovation-decision to adopt Google Services for Education was an authoritative one. On the other hand, the Google Hangouts adoption was a pretty seamless one in terms of DOI's compatibility attribute with the wider university social system. Ultimately, there is no denying the role that the changing university landscape, including its supporting infrastructure, played in UNE's *innovation-decision-process* and its overall decision to adopt Google Hangouts for synchronous tutoring purposes.

The social system has a solid and influential presence long before the innovation-decision-process takes place, which is why greater transparency of the processes and

stakeholders involved in the social system results in an easier, fluid, and longer-lasting adoption. For example, there are a number of different pedagogical and philosophical systems that inform each social system, especially within the walls of the writing center itself where visible (e.g. tutors and students) and invisible stakeholders (e.g. the writing program and provost) are at play. Indeed, it took delving into the data to realize the significance of the social system in understanding all of the intricate connections between the writing center and the innovation, the university and the innovation, and the new and old innovations. In short, the process of tutoring—its look and feel—changes when the technology changes, and DOI theory can assist writing center professionals with striking a proper balance between the goals or outcomes of the tutoring session and the affordances or constraints of the technology itself. While I selected DOI theory as a framework for this dissertation study to make the innovation itself and its processes more visible for future writing center innovations, one of the greatest contribution of DOI theory to writing center research is the nuanced way in which the technology innovations and related processes are interrogated, explored, and understood only within the context of a particular social system.

Research Question 2: Innovation and Attributes

The perceived attributes associated with this dissertation study include the following: relative advantage, image, compatibility, ease of use, trialability, voluntariness, results demonstrability, and visibility. This research study revealed that some of the perceived attributes are more relevant to tutors while other attributes are more applicable or relevant to writing center directors. This division is due to the unique social system of writing centers where the tutors are typically the end users of the innovation, but the decision-making (and thus the initial evaluation of the innovation) begins with the writing center director.

As such, the attributes that directly deal with regular use of the innovation were usually more applicable to tutors, and therefore easier to cull from the survey data; those attributes include ease-of-use, results demonstrability, compatibility, and relative advantage. *Ease-of-use* has the most obvious connection to tutors, as it measures the user-friendliness of using the innovation. As one of the primary end users, tutors are able to easily discuss or explain the *results* of the innovation with others, including how it operates or facilitates communication with students. Tutors can also provide a great deal of insight into *compatibility*, which measures the consistency between using the innovation and the needs/values/experiences of the adopters. Since tutors are tasked with the regular use of the innovation, they would best be able to discuss if the innovation disrupts the everyday practices or procedures of the writing center. The *relative advantage* attribute, which measures the balance between expected benefits and cost of innovation adoption, was only minimally realized by tutors. Specifically, since many tutors are short-timers in the writing center, they may not know of other writing center innovations to use as a point of comparison; it is also possible that tutors experience the innovation for the very first time at the writing center, or that it is being used in a way uniquely suited for the writing center, and therefore unfamiliar with the tutors (also making it difficult to discuss whether the innovation has an "advantage" over that of another). However, tutors can provide some insight into how the innovation compares to existing innovations in the writing center of which they are familiar, such as comparing face-to-face tutoring to email tutoring.

The work arrangement for tutors also explains why the attributes of *trialability* and *voluntariness* do not really apply to tutors in a positive, measurable manner. Tutors often have very little say in which innovations are adopted by the writing center and/or the innovations that are already in use when they begin employment, which leaves tutors with little "positive" insight

to provide with regard to *trialability* and *voluntariness*. The *visibility* of the innovation also proved to be elusive to tutors, since they are likely unfamiliar with the different layers of the social system in order to know if others can see the innovation being used. Finally, the *image* attribute seems to apply less to tutors typically because they are undergraduate students from varying disciplines and majors whose stay in the writing center will be rather brief; even the one tutor that was an English major stated that her image would not improve as a result of using the innovation.

On the other end of the spectrum, the writing center director can shed light on each of the perceived attributes to one extent or another, which allows some fruitful comparisons between tutor and director feedback in these areas: ease-of-use, results demonstrability, compatibility, and relative advantage. The first two attributes are tied more to end users and many writing center directors do not tutor, and if they do, it is often very limited. This does not mean that writing center directors cannot provide insight into the categories of *ease-of-use* and *results demonstrability*, however, since they can form opinions on these attributes based on feedback from tutors, students, and their own observations of the innovation in use. Due to the nature of their work, writing center directors can provide very detailed feedback on the remaining attributes of compatibility and relative advantage. The writing center director is more in touch with the local and wider social systems, so they would best know if an innovation is *compatible* or not. Along the same lines, the familiarity with the history of the writing center uniquely positions the director to provide meaningful insight on the *relative advantage* of an innovation as well, particularly if he/she was directly involved in the innovation-decision-process that resulted in the adoption of the innovation, as was the case in this study.

Finally, the remaining four attributes—image, visibility, trialability, and voluntariness—are also more relevant to writing center directors than tutors due to their position of authority within the writing center and the university. Writing center directors would know, for example, if an innovation is *visible* in the social system, since they are responsible for advertising the services offered by the writing center through the website or via other means such as Twitter or Facebook. If there is any prestige associated with using the innovation, then it would likely directly benefit the *image* of the writing center director since writing centers that innovate are considered cutting-edge which rewards writing center directors with awards, technology grants, and other prestige for their hard work. While writing center directors can share the success and prestige with the entire writing center family, which includes the tutors and other supporting staff, this will not likely influence the embedded cultural practices in academia which seems to privilege individual success over collaborative group efforts. And finally, since writing center directors are in positions of authority, they typically have more *voluntariness* in selecting various innovations or at least would have the opportunity for voluntariness whereas a tutor would not. Likewise, *trialability* is also more easily afforded to writing center directors than tutors since they have the power to try out an innovation before fully implementing it in the writing center, suspending it until a later date, or discontinuing the innovation altogether if it is determined that it no longer meets the needs of the social system.

What writing center professionals should remember is that the level or amount of authority afforded to each user of the innovation influences the individual perception of the perceived attributes of the innovation. It makes sense then that the writing center director, who is at the top of that power structure, can provide insight into all eight perceived attributes whereas the tutors are limited in their insight; however, the writing center director still lacks the

"man in field" or "woman on the front lines" insight, in most cases, so the perceived attributes are most complete when data is culled from both the writing center director and one or more tutors within the same social system. While it is possible to only interview or survey one group, the resulting data would not produce a full picture of the relationship between the *perceived attributes* and the *rate of adoption*. Likewise, since some categories will overlap between the two groups, the knowledge gained will be more representative and authentic of the true experience using the innovation.

Expanding DOI & Residual Value Attribute. The significant differences across the two case studies contributed to some major developments in the research project, especially with regard to how some of the *perceived attributes* might be re-imagined or adjusted for different writing center contexts. The perceived attributes have been significantly discussed in other areas of this paper, so I will not rehash them here, but I will advance a modification of the *relative advantage* attribute by expanding the way it is perceived and interpreted for writing center purposes by drawing on the overall affordances unique to face-to-face, asynchronous email, and synchronous live tutoring.

The *residual value* attribute was born from the explicit comments and implicit suggestions and strategies culled from the interview transcripts and writing center documentation. Residual value is most useful, and therefore most applicable, to writing center directors rather than tutors because it is chiefly concerned with an administrative task—reporting. Both writing center directors hinted at a concern over the ability to trace and document the innovations taking place in the writing center to ensure that student needs were being met. Reporting would also allow directors to defend their actions to other members of the social system with visible, quantifiable data. This type of data collection is also necessary to

secure funding in many university social systems, so it is essential that the innovation have lasting effects on the system that can recalled at a future date. Residual value is different than the *visibility* of innovation or even *results demonstrability* because those attributes are not concerned with the long term residual effects of the innovation for recordkeeping purposes. *Residual value*, then, measures the lasting effects of the innovation that are easily traceable in the social system, even after the innovation is no longer in use. This also relates to how easy it is for potential adopters to store and retrieve documentation regarding the use of the innovation and the cost of such storage devices. Consequently, the more of these lasting effects an innovation has on the social system, the greater its *residual value* to potential adopters.

As was the case at UMW and UNE, face-to-face tutoring has the obvious *relative advantage* of the real-time, real-life aspect of tutoring that is preferred by writing centers; it can also easily be seen by others (*visibility*) and explained to others (*results demonstrability*). In addition, the tutor and student are more likely to remember subtleties about the session (and one another), which is not easily afforded in live synchronous tutoring since the picture could be distorted, the sound could be incomprehensible, or the audio-video could be turned off altogether. Furthermore, a face-to-face tutoring session allows both individuals to "markup" the text, which has greater *compatibility* with the social system, even though some writing centers may recommend that tutors refrain from doing so. Such a policy does not change the fact that tutors *could* markup the text easily, if they felt the need. Thus, face-to-face tutoring awards both the tutor and tutee the power of markup, but it lacks *residual value* in the social system because it does not leave behind a distinguishable presence in the social system which can be retrieved at a future date. The residual value of face-to-face tutoring session are instead captured using tutor sessions reports, which log the interaction that takes place between the tutor and student.

Synchronous live tutoring shares some aspects of face-to-face tutoring such as real-time, but *only if* the audio-video capability is being used by both parties. Some students simply prefer to do without the live audio-video and others are just unable to get the technology to work. In addition, the power of markup varied considerably between both cases, which had a great impact on the residual value of the innovation for both social systems. Within UMW's synchronous live tutoring innovation, the power of markup resided with the student, since the paper had to be shared with the tutor via the desktop sharing feature. According to the interview transcript, this was almost always initiated by the student at the start of the session, which effectively created less *residual value* or evidence of the tutor's work. This power shift between tutor and tutee could also cause the tutor to feel that the session was less-than-successful, which could be one reason why email tutoring was decidedly more active in UMW's social system than Skype. On the other hand, UNE's decision to adopt Google Hangouts was intended to replace email tutoring entirely. The "live document" feature of Google Hangouts allowed both tutor and student to have markup capability, much like face-to-face tutoring. More importantly, Google Hangouts allowed the document to *reside* in both users' systems after the session has ended, so evidence of the tutor's work was easier to track down when needed. Furthermore, students uploaded documents to a web-based submission form before the start of their appointment, and the tutors then uploaded the document to Google Docs to share it with the students as editors (not authors), thereby increasing the *residual value* of the innovation. For synchronous tutoring, the tutor session reports become less of a requirement in the social system since the entire marked-up product of a synchronous tutoring session resides in the social system—allowing students, tutors, and writing center administrators to see the active process of writing and revision that is so central to the tenets of both Writing Centers and Writing Studies.

Asynchronous email tutoring does not have the real-life or real-time aspects of face-to-face or live synchronous tutoring innovations, but it leaves behind an archive of student papers, which assists with the innovation's *residual value*. The email archives give the tutor and the writing center by extension evidence of their work that can be easily traced and documented from semester to semester. There are also fewer encumbrances associated with email tutoring since the innovation itself is rather stable, well supported, easily accessible, and the storage of the data is cheap. Finally, email tutoring shifts the power back to the tutor, due to its asynchronous nature, so tutors feel more in control of the paper and the overall success of the tutoring session—thus improving the overall *residual value* of the innovation. These attributes did not seem to deter UNE from completely eliminating asynchronous email tutoring from the social system once the new Interim Director acquired the position; for UMW, however, these benefits were fully realized, which explains why all three innovations were in place at UMW's Writing Studio and why email tutoring continued to experience slight increases in the number of adoptions each year when compared to Skype tutoring. While this research study did not set out to explore the *rate of adoption* for asynchronous email tutoring, it is highly possible that email tutoring is more *diffused* and perhaps a more *compatible* innovation for UMW's *social system* than a synchronous tutoring innovation would be due to the innovation's *relative advantage* and *residual value*.

Within UNE's social system, Google Hangouts was found to share many of the same attributes as face-to-face tutoring including that of *residual value*, making it relatively easy to track and document how the innovation was used. These vastly different outcomes had a great deal to do with the residual value of the innovation, including the ability to store data at a low cost and its lasting effects on the social system. It is true that most writing centers have tutors

record session reports at the end of each tutoring session, but such reports are just snapshots of information that rarely tell the whole story of the type of work that went on during the session; the entire online session could also be recorded, as another option, but this option would 1) not be as easy to do for a minimal cost and 2) the storage of such records would become costly since audio-video files take up a great deal more storage space than something like emails or MS Word files. As a result, such files would not be able to be stored for as long, though such *residual value* is easy to achieve with email tutoring and synchronous live tutoring innovations where the writing center takes on the added responsibility of maintaining the student files. In cases like UNE, this provided even greater *residual value* because Google Docs does not count converted files towards storage capacity (a converted file is any file that is in Google format such as "docs" instead of MS Word .docx files or "sheets" instead of MS Excel or .xls files), which means that data needed for technology grants and future funding requests will potentially last for years to come.

Residual value is such an important attribute for writing center research that it could easily become the ninth perceived attribute, but it could also be imagined as a subcategory of *relative advantage*, which is how I chiefly see it operating. Relative advantage simply means the innovation must have an advantage over other options, particularly with regard to the delicate balance between expected *benefits* and *cost* of innovation adoption; this can be measured in several different ways including low initial cost of the innovation, the ability to save time and effort, immediacy of reward, and economic profitability. Therefore, *residual value* could be added to the list of strategies used to measure relative advantage, since residual value will most often be discussed and considered in comparison to other writing center innovations. Such was the case with the different tutoring options discussed above. As another overlap between the two

attributes, residual value also deals with benefits versus cost when it attempts to answer questions that describe the ways that documentation aids the different types of reporting; that asks about the cost to store the documentation; and wonders about data accessibility for future reporting.

Residual value is uniquely suited for writing center research as a way to store useful data regarding *how* and *why* certain practices or processes take place in our writing centers at any given time. However, the long-term residual value of an innovation need not be limited to writing center directors as tutors and students might also benefit from having future access of a tutoring log or record, if it can be easily stored and retrieved. In this sense, much like the other perceived attributes, such as relative advantage, the measure of the success or usefulness of the innovation's long-term benefits will understandably vary by stakeholder, which further exemplifies the power of DOI in revealing the complex relationship between the innovation, stakeholders, and the macro and micro social systems.

Furthermore, it is possible that residual value could be useful to other academic disciplines, outside of Writing Centers and Writing Studies, applying DOI theory as a framework for understanding innovations, perceived attributes, and diffusions across a social system. It could be especially useful, for example, for innovations that require tracking and reporting to determine the success and consequences of an innovation, since the success of an innovation is not solely determined by its continuance in the social system. The residual value attribute, along with other DOI concepts, urges researchers from all disciplines to consider how an innovation's success is measured and how it is defined (for whom and for what purpose).

Research Question 3: Consequences

Nearly every aspect or component of DOI theory is inextricably linked to the social system to include the selection of the innovation, the attributes of the innovation, its measurement of success, and even its evaluation in terms of outcomes or consequences. As stated by Rogers (2003), "A social system is involved in an innovation's consequences because some of these changes occur at the system level, in addition to those that affect the individual" (p. 30), thus making the study of consequences two-fold. The results of this study revealed this double aspect as well, as the role of students and tutors became prominent in the discussion of each innovation's consequences, which was especially significant for students who were not directly involved in the design of this study. An exploration of an innovation's consequences, then, is a more in-depth study of the social system since all experiences (and vocalizations of those experiences) are contextual in nature, suggesting a sort of cultural relativism for writing center professionals or other observers with an outside perspective.

According to DOI, the consequences of an innovation include the following: desirable and undesirable; direct and indirect; anticipated and unanticipated. The consequences of an innovation are difficult to study for three main reasons—pro-innovation bias, length of time, and user awareness—each of which became factors in this study when exploring the consequences of Skype and Google Hangouts at the system and individual level. Indeed, the results of this study revealed that the consequences of an innovation are tied to the social system in a similar manner with the perceived attributes of an innovation because 1) both are unique to the social system and 2) the understanding of each varies at the system and individual levels.

Pro-innovation bias is a common belief among adopters that an innovation is good and should, therefore, be adopted. New technologies bring hope and promise for advancements in

everyday life, and writing center professionals rely on such advancements in order to develop, and hopefully improve, the tutoring services and overall tutoring experiences offered to students. This results in very little exploration of the negative results of innovation adoption for an individual or social system, which is one of the primary goals of this dissertation study. Pro-innovation bias played a role in the adoption of Skype and Google Hangouts for synchronous tutoring since the adoptions took place without a concerted effort to understand the potential outcomes of the innovation-adoption beforehand. Rogers (2003) would insist that it is impossible to truly know or anticipate all consequences of an innovation adoption; however, the anticipation of the innovation's consequences at UMW and UNE did not extend beyond the technicalities of using the technology—related to the form and function of the Skype or Google Hangouts innovation. In both case studies, each writing center director discussed his or her anticipation of technical problems associated with dropped connections, bandwidth limitations, and student-related issues (not tutor-related), which included a secondary protocol for tutors to follow in the event that such situations arose. As is often the case in diffusion studies, the desirable, direct, and anticipated consequences are often experienced separately from the undesirable, indirect, and unanticipated consequences (Rogers, 2003). However, the technology or usability-oriented problems were undesirable, yet anticipated by both writing center directors, which is a rare occurrence according to DOI theory.

The anticipated consequences were limited to the technical aspects of the innovation, and did not include the indirect and unanticipated consequences of the Skype and Google Hangouts innovation on tutoring processes and practices. As previously discussed, the innovation-adoption process in each writing center social system was a two-part innovation including the technology (Skype and Google Hangout) and emergent practices. UMW's adoption of Skype resulted in

some changes to the filing and documentation process for asynchronous email and synchronous Skype sessions, which means that the adoption of Skype had unanticipated and indirect consequences on previously adopted tutoring innovations. In the end, however, the prevailing paradigm of face-to-face tutoring practices were used as the standard for synchronous Skype sessions, even though the tutor survey results indicated potential problems with the metaphors embedded in such practices. Thus, the pro-innovation bias simultaneously encouraged the adoption of Skype for synchronous tutoring and reinforced the existing face-to-face paradigm in the name of progress and convenience (based solely on the familiarity of the previously adopted face-to-face tutoring practices).

Pro-innovation bias played out similarly with UNE's use of Google Hangouts as well since the adoption of Google Hangouts for synchronous tutoring influenced its predecessors while being simultaneously constrained by them. Google Hangouts sessions and asynchronous email sessions shared filing procedures, and the tutoring procedures for Google Hangouts sessions were grouped in the same category as face-to-face sessions, under the label of Live Sessions in the *Tutor Policy Manual*. Additionally, pro-innovation bias was especially present in UNE's Writing Lab, as the Interim Director sought to entirely replace the older, less efficient email tutoring with the newer, better synchronous tutoring via Google Hangouts. This was a bold and eager move, in the name of technological progress, indicating that the decision was an indirect and unanticipated outcome of the Google Hangouts adoption (for students and tutors at least, if not also for the Director herself), but the implications of this decision have yet to be determined due to the length of time that the innovation has been in place.

The length of time that an innovation has been in place is also important in diffusion studies since the consequences of an innovation are only realized after an extended period of

time. As a reminder, UMW had been using Skype for nearly five years whereas UNE was only one semester into the use of Google Hangouts for synchronous tutoring. This explains why UMW's use of Skype revealed not only more indirect consequences of the innovation but also the various levels of such consequences on the system and its users. UNE's use of Google Hangouts, on the other hand, did not appear to have as many indirect consequences due to the length of time that the innovation had been in place. The preliminary results indicated that Google Hangouts was likely more compatible with UNE's social system than Skype was to UMW's social system, but such high levels of compatibility do not mean that unanticipated, indirect, and undesirable consequences will not reveal themselves at a later date.

It is also important to note that time seemed to reduce the level and intensity of pro-innovation bias as well since UMW's use of Skype for synchronous tutoring was not believed to be the superior method of online tutoring, but UNE's adoption of Google Hangouts was not only determined to be superior to email tutoring, but it was deemed as the only acceptable solution to online tutoring. This indicated that the newness of Google Hangouts, in terms of length of time, was somehow connected to the intensity of UNE Interim Director's pro-innovation bias because the director was so enchanted by the newness of the innovation. On the other hand, after five years of using the Skype innovation for synchronous tutoring, UMW's Director was no longer enchanted by the innovation and had come to realize some of its consequences (though not all of them). As a result, it is possible that as time goes on, individuals using an innovation become more aware of the innovation's consequences, thus reducing the intensity of the pro-innovation bias associated with the innovation.

The last complication for understanding the consequences of an innovation is the user's awareness that consequences exist in the first place. As previously mentioned, this is partly a

result of the pro-innovation bias associated with an innovation, which is also connected to, and supported by, the larger cultural narrative of "technology is progress" (Slack & Wise, 2007). One of the most obvious examples of this was the low individual adoption of the Skype innovation by both tutors and students at UMW. As a result of this combination, along with other factors, Skype was slow to diffuse across UMW's social system, which was an unanticipated, indirect, and undesirable consequence of ignoring the desires of students as end users and perhaps allowing tutors too much self-governance. At UNE, the tutors were being shifted from a more individual innovation-decision to an authoritative one with the replacement of email tutoring with Google Hangouts. According to DOI theory, this should diffuse the innovation across the social system at a faster rate, but only if students and tutors are willing to fully participate and embrace the director's innovation-decision process (Rogers, 2003). In other words, if there is resistance from one or both user groups, then the diffusion of the innovation resulting from the authoritative innovation-decision will be hindered. Thus, there could be a number of unanticipated, indirect, and undesirable consequences that result from decision to replace email tutoring with Google Hangouts synchronous tutoring, but it was too early to determine what consequences might derive from this decision, if any, due to the early status of the adoption in UNE's social system. What this does reiterate, however, is the fact that awareness of an innovation's consequences is not something easily anticipated by users of the innovation since it requires a rather negative outlook of the innovation-decision process, which works against the usual optimistic atmosphere of writing centers.

Finally, the awareness aspect became a factor in regard to the individual innovation decisions made by tutors and students in both case studies, which indicates that the meaning of the innovation was quite different for these two groups than anticipated. First, as a result of

tutors being given the option to decline or accept synchronous tutoring as a job function, tutors were no longer equal with their co-workers within the writing center social system which led to a stratification of tutor roles within each social system. While the perceived attribute of *image* did not resonate highly with the tutors in this study—since synchronous tutoring is not viewed as a high-quality or prestigious form of tutoring when compared to the preferred method of face-to-face tutoring—this does not dismiss the fact that synchronous tutors are viewed differently by co-workers and students in the social system, for better or worse.

Furthermore, the individual innovation-adoption decisions made by students indicate something about the perceived attributes of the innovation: the perceived attributes of the innovation vary from user to user and will not always match what the internal writing center social system feels about the innovation (or what the wider university social system feels about the innovation). This could also be extended to tutors who declined the opportunity to tutor using synchronous tutoring technology; they are essentially expressing different opinions about the meaning of the innovation and its perceived attributes, mostly likely that of *relative advantage* (i.e. how the innovation is not an improvement of its face-to-face predecessor). Therefore, the individual innovation decisions of tutors and students played a significant role in the results of this study, but their individual decisions were unanticipated, indirect, and most likely undesirable consequences of adopting Skype and Google Hangouts innovation. This further addresses each adopter's lack of awareness of consequences of the innovation, including how such consequences affect both the system and individual users.

It takes a great deal of time to assess the consequences of an innovation, and while such a discussion could have been further aided by more in-depth responses from tutors, for example. through interviews rather than exclusively through survey data, such contributions would have

still been limited in scope. Tutors have a high turnover rate in the writing center social system, often being replaced from semester to semester, so the most reliable source of information for understanding the social system—and the consequences of the innovation, by extension—is the writing center director, which supports the design of this study. Furthermore, because the consequences of an innovation occur over a longer period of time, the best understanding of this complex issue resides in the memory and detailed responses of the writing center director, the only individual who can speak to the long-term effects or implications of an innovation's adoption, even if mostly in an indirect or subconscious manner.

Implications

This study revealed three major aspects of technological innovations in writing centers: 1) innovation is integral to writing center work; 2) innovation is a process unique to each writing center social system; and 3) metaphor is integral to innovation.

First, I map the significance of technological innovations in writing centers because writing center professionals innovate various technologies and tutoring processes on a frequent, overlapping basis and then diffuse those innovations across a multi-faceted, complex social system. Second, I discuss how the process of innovation has no endpoint since innovations (the technologies and tutoring practices) are continuously reinvented and modified "to produce better writers, not better writing" (North, 1984, p. 438). Third, I demonstrate how metaphor is integral to writing center philosophy thereby extending the innovation-decision process of writing center directors.

Nature of Innovation in Writing Centers

In writing centers, there are several layers of innovations present which include the technology itself, the tutoring processes, and even the type and variation of OWLs present at any

given time. In Chapter 2: I overviewed several generations of OWLs, each one serving as a new writing center innovation in its own right. However, it is not uncommon to find multiple variations of OWLs in active play at most writing centers, which says a lot about the uncertainty and mistrust of technological innovations in writing centers (Anderson, 2002; Neaderhiser & Wolfe, 2009;). It is possible that so many variations of OWLs exist (even within the walls of the same writing center) because of a deeper need to feel that writing centers are making *progress*, with regard to both *technology* and *tutoring processes*; and whether writing center professionals are willing to acknowledge it or not, these concepts are rather intertwined in writing center research and the wider cultural narrative (Bolter & Grusin, 2000; Slack & Wise, 2007).

Slack and Wise (2007) echo this point by asserting that "Because it is much easier to count tangible things, it has become common to use the measure of more *things* as a measure of progress" (p.11, original emphasis). In writing centers, progress is defined by offering students more options and greater convenience when it comes to tutoring—flooding them with an OWL website loaded with handouts, several types of tutoring services (face-to-face, asynchronous, and synchronous), grammar hotlines, Twitter feeds, Facebook pages, and even virtual worlds located in SecondLife. All of these options beg the question: Where should our students go to seek information *about* writing? Exactly how are students to know that proofreading services are *not offered* when grammar hotlines (and even twitter feeds) primarily serve in this capacity? This has serious pedagogical implications for writing centers, as it becomes increasingly difficult to explain the culture and philosophy of a writing center with so many competing pedagogical and philosophical frameworks.

Furthermore, the ambivalence about which OWL to use in a writing center (and why) says a great deal about our conceptions of tutoring and how it has expanded to include a certain

amount of general technology skill or level of comfort. This is the case for both students and writing center tutors who are expected to have a number of word processing, web navigation, and other skills where technology becomes an apparatus or extension of the body (McLuhan, 1994). McLuhan would caution us to consider not only what is *extended* by the use of the medium or technology but what is made *obsolete* as a result. McLuhan provided a framework of four laws to consider regarding the extension of a new medium or technology, and he cautioned that every new technological extension also results in the amputation or modification of some other extension. In the case of synchronous tutoring, the body itself is *extended* in both time and space, and the speaker's voice exists in two dimensions: in real-time conversation and on the "printed" page. The printed page refers to the digital page that exists in front of the tutor and student, but written comments and notes can take place within the document itself, with highlighting and text, and outside of the document, through comments in the side margins and chat box. This was confirmed in the results of this study, as the use of Skype and Google Hangouts for synchronous tutoring extended the bodies of the tutor and student through the respective interface, though the tutoring experiences were drastically different.

According to McLuhan's theory, it is possible that email tutoring could be *amputated* and made *obsolete* as a result of synchronous tutoring. Indeed, the email tutoring process itself had been amputated and modified quite drastically in order to accommodate the new technology extension of synchronous tutoring at the two cases under study, which led me to investigate how and why these changes were being made. For UMW and UNE, changes were made to the asynchronous tutoring processes as a result of adopting Skype and Google Hangouts for synchronous tutoring. Such changes included the filing procedures for student papers and types and levels of feedback offered to students. At UNE, email tutoring sessions were sometimes

"talked through" and recorded rather than marked-up using side-comments and global paragraphs, which was later forwarded to the student as a video or audio file (UNE Interview, 9/17/2013). This new practice leveraged the recording aspects of synchronous tutoring by mapping that desirable feature over to asynchronous email tutoring. This indicates how the new innovation of synchronous tutoring modifies its predecessor, in this case email tutoring, by re-inventing it to share the more organic, conversation-based style of tutoring associated with face-to-face and now synchronous tutoring.

There is always the slight fear that synchronous tutoring will become so popular (and normalized) so as to begin amputating face-to-face tutoring, which is a quite reasonable concern with the advancements in technology coupled with the regular and consistent use of programs like Skype and Facetime for seemingly, normal everyday conversations. Indeed, many writing center professionals argue that synchronous tutoring brings participants closer to the face-to-face tutoring experience than that of email tutoring, *retrieving* the sense of dialogue and collaboration associated with face-to-face sessions (DePew & Lettner-Rust, 2009; Lunsford, 1991; Neaderhiser & Wolfe, 2009). This was indeed the case with UNE's use of Google Hangouts for synchronous tutoring, as nearly 90% of the student population takes one or more classes online with more students expected to transition to online classes over the next several years after the merger between other universities in the virtual system. Furthermore, UNE's Interim Director sought to amputate email tutoring by offering Google Hangouts as the only option for online students. Such concerns about the rise in popularity and usefulness of synchronous tutoring could, in fact, explain the stipulations that writing center administrators have traditionally imposed to restrict campus students from participating in online asynchronous or synchronous sessions. This has serious implications for writing center professionals as the gap continues to

close between face-to-face and synchronous tutoring due to advancements in technology, thus shifting synchronous tutoring from the primary task of replication to an authentic replacement. In the end, McLuhan's tetrad principle provides a solid framework for thinking about technology as an extension of the human body and mind and the nature of innovations in the writing center.

The role of the interface is another important consideration for writing center professionals (especially with regard to innovations in OWLs) since the extension of the mind/body in synchronous tutoring sessions occurs through several layers of the OWL interface. As stated by Slack and Wise (2007), the interface is a space where "the communicator/traveler can be everywhere at once without exertion" (p. 31). This is essentially the crux of synchronous tutoring OWLs because collaboration, or the meeting of the minds, now occurs in a space that is geographically distant from where the body physically resides which raises many questions about the tutoring process (or the tutoring pedagogy being used) and the attributes of the technology itself. In this research study, the technology is both an interface and a tutoring innovation. As cautioned by human-computer interaction (HCI) and rhetoric of interface scholars, the interface is not a neutral space, as it actively works to frame and shape its interactions with users (Carpenter, 2009; DePew & Lettner-Rust, 2009; Laurel & Mountford, 1990; Selfe & Selfe, 1994; Skjulstad & Morrison, 2005; Turrentine & MacDonald, 2005). This was confirmed by UMW and UNE's OWL websites, which served as a first-level interface to educate students about the goals of the writing center and the roles that tutors and students would play in the tutoring process. The second-level of the OWL interfaces was the scheduling system where students were asked to share information about themselves and their assignments. Finally, the third-level of the OWL interfaces was the synchronous technology itself where the collaborative session actually takes place.

Anderson (2002) discussed the first and second level representations of OWLs, which were readily apparent in this study. It is at the third level representations of OWLs that this study adds to Anderson's research, which is applicable to synchronous OWLs—a unique OWL where tutoring occurs in a separate online space. For UMW, the Skype interface was truly separate from the OWL interface, and arguably the university interface, which possibly contributed to its slow rate of adoption in the wider social system by students. At UNE, on the other hand, the Google Hangouts interface was more integrated with the OWL interface, as both were accessed through the Writing Lab's Google Circles Page. The rate of adoption of this interface/innovation was also favorably assisted by the university-side adoption of Google Services for Education. For synchronous tutoring sessions, students must encounter the OWL website on numerous levels and at different times (for information, scheduling, and access to the tutoring space). This study revealed the significance of the OWL website for synchronous tutoring innovations, and the representations of its various interface levels, making the OWL website arguably more important in the student's innovation-decision process of synchronous tutoring than its predecessors. This revelation has major implications for writing center professionals since a synchronous OWL adoption requires a number of revisions to tutoring practices (filing and record keeping), tutoring processes (Socratic Method vs. Direct Instruction vs. Blended Approach), and tutoring interfaces (including the three interface levels of the OWL website).

Social System & Innovation-Decision Process

This study illuminates this simple fact: *technology* and *innovation* are separate and distinct concepts, coexisting or merging only at the intersection of the *social system*. Thus, innovations are not solely tied to the newest, greatest technology, as our cultural obsession with progress and convenience would have us believe (Slack & Wise, 2007). Skype existed as a

technology long before UMW's Writing Studio decided to use of it for tutoring purposes; however, once the Skype technology was placed into a particular *social system* for a specific purpose, it became an innovation—imbued with a different set of attributes and affordances unique to the social system it was intended to serve. In both case studies, the writing center philosophy, tutoring processes, and even the scheduling procedures in a given social system were just as important to understanding synchronous tutoring's rate of adoption as the medium and technology itself.

As such, another major factor in synchronous OWLs is the *social system*, which can be quite useful in understanding *why* (and perhaps *how*) an innovation was reinvented to better fit the needs of the community or why it was rejected outright. There is a great deal of writing center scholarship about the competing interests of the university and the writing center, including how to navigate the relationship between the writing center, writing program, and the wider university (Carino, 1995; Harris, 1990; Kinkead & Harris, 1993; North, 1984); in fact, this intricate relationship has always been a part of the history of writing centers even if only implicit to writing center pedagogy and research, as North (1984) argued in the seminal text "The Idea of a Writing Center." However, writing center research has not made an explicit connection between how such relationships influence the innovation-decision process of writing center innovations. In other words, the scholarship often stops just short of identifying the relationship between the various communities or units in the social system—not identifying the role each discourse community plays in the everyday work of writing centers. DOI theory refers to each separate community as a *social system,* and it provides a number of tools, strategies, and concrete definitions for making readily visible the different layers of the social system by connecting the

social system to the innovation-decision process, which is not directly or explicitly identified in existing writing center scholarship.

DOI's social system concept is the most complex and comprehensive aspect of the theoretical framework with regard to studying the adoption and diffusion of writing center innovations because an innovation cannot be divorced from its social system. Baron (2000) explained the evolution of several writing technologies from pencils to computers, and his argument focused almost exclusively on the technology itself and its attributes (though not as robust as DOI's perceived attributes). Even though the social system played a part in the perception of each writing technology, Baron ultimately overlooked the structure and norms of the social system in the New World, such as the role of previous experience (with other writing and communication technologies) and the role of advertising and communication channels, which also influenced the individual innovation-decision process for consumers. This oversight happened, and continues to happen, because Writing Center and Writing Studies scholars have been conditioned to see the social system as a separate entity from the innovation-decision process, when both are essential to understanding the factors that influence the adoption, reinvention, or rejection of an innovation. This point was echoed by Selfe (1999), when she critically examined technology advertising, identifying three competing cultural narratives that link technological change to cultural change 1) global village vs. electronic colony, 2) land of equal opportunity vs. land of difference, and 3) ungendered utopia vs. same old gendered stuff. A number of contradictions were revealed within each cultural narrative ranging from optimism to conservatism, the latter of which was prominent in narratives that threatened to challenge or disrupt the dominant ideology and cultural beliefs in a meaningful way. Selfe's (1999) research speaks to the larger implications of this research study regarding the pertinent role that

technology advertising and promotion can have at the system level (which happened to be America in the case of Selfe's research) and at the individual level of technology adoption. DOI theory can further extend our knowledge of the competing cultural and technological narratives in Writing Centers by observing how the unique social system of writing centers—at the micro (individual writing centers) and macro levels (writing center discipline)—can simultaneously promote and hinder new writing and tutoring innovations.

DOI's social system concept is more than just understanding the context of a diffusion study; instead, it provides a more holistic and nuanced understanding of the complicated relationship between discourse communities and between stakeholders or system users—users that exist within the writing center social system, users that exist in the wider university social system, and users that exist in more than one social system. In the current study of synchronous tutoring technologies and related practices, the social system is obvious at some times, such as that of the writing center and the university at large. DOI theory also made visible some less explicit social systems (and stakeholders) such as the department where the writing center is housed, which is not always the English department; the online or distance learning division of the university (which might be a separate entity altogether); the campus-based community; the information technology department; and even the separate (sub) communities for graduate and undergraduate students. Each of these communities, or social systems, played a part in understanding why a particular synchronous tutoring innovation worked in one case study but failed in another and how both writing centers adapted or re-invented the innovation to better fit the needs of the rather intricate, web-like network of a *social system*.

Metaphor & Innovation-Decision Process

Within DOI theory, the aspect of metaphor and previous experience is broadly construed, along with values and needs, under the larger umbrella of *compatibility*. However, because each of these concepts tackles a very different aspect of compatibility, writing center professionals must pay much closer attention to *previous experience*, as a significant pre-existing condition with nearly as much bearing as the social system, perhaps even going so far as to separate it into its own perceived attribute. If the social system is the foundation for nearly every unit of analysis in DOI, then the role of previous experience is equally important to understanding the potential adopters in the system since it is yet another pre-existing condition that influences the innovation-decision process.

The perceived attributes are essentially the *characteristics* of an innovation, as perceived by members of the social system, which are used to measure the innovation's rate of adoption. This implies that the characteristics are easy to quantify and measure or at least, it is possible to describe them succinctly. This definition works rather well for relative advantage, image, ease of use, trialability, voluntariness, results demonstrability, and visibility; it even works well for needs and values, which fall under compatibility, because both can be easily scaled and measured on a Likert survey. In other words, an interview question or a survey can simply ask, "How well have your needs been met, on a scale of 1-5?" While a similar question could be designed to ask about previous experience, it is more difficult, of course, to assess or quantify the aspect of previous experience because it has to be recalled. This makes it messy, non-linear, unreliable, and therefore, difficult to capture in a single question, or even a series of questions. Much like the social system aspect, the previous experience component of DOI research is an intricate web of connections culled from both explicit statements and implicit meanings and allusions, laying

the foundation for how writing professionals interact with students, with tutors, with technology, and so on. For writing center professionals, especially, it is an attribute that is worth a great deal more attention than a sub-category.

At UMW the Director assumed that users in the social system, both tutors and students, already had familiarity with the technology of Skype along with a high level of skill to guide the students should any problems arise. In fact, students and tutors were directed to Skype's help pages and community resources for completing system checks, installation and setup of Skype accounts, and general troubleshooting. On the surface, this may seem like a good use of time and resources for a writing center, especially, when writing center directors are often working with limited budgets; however, such actions also highlight a tendency of writing centers to make assumptions regarding how existing knowledge *can* and *should* aid users in the understandings and workings of a new system or technology (a technology which is, in fact, being used for a different, or uniquely specific, purpose than originally intended). This borrows heavily from Lakoff and Johnson (1980) with regard to metaphor as a framing device, but it also intertwines with DOI theory since it serves as yet another example of the separate definitions of *technology* and *innovation*, namely how something evolves from mere technology to that of an innovation at the moment when it is 1) first introduced in a social system, 2) to serve a specific function or purpose, and 3) takes on a new set of attributes and affordances unique to that function or purpose.

Along the same lines, the tutors' existing knowledge of face-to-face tutoring practices were also assumed to be a sufficient working metaphor for conducting Skype tutoring sessions at UMW, particularly with regard to the dialogic aspect of tutoring. In other words, tutors were expected to utilize their knowledge of the face-to-face tutoring process and their knowledge of

the Skype-*technology* and blend them together to form an immediate, functioning, and viable process for the Skype-*innovation*, used for the specific purposes of tutoring. This rhetorical blending was further complicated by the fact that the tutors received no prior training on Skype as a technology, including its natural affordances and constraints, or on Skype as an innovation, such as how it should be used specifically for tutoring purposes with document sharing, video and audio capabilities, and so on. The lack of a formal training program on the technology or innovation side of Skype may have saved money in the short term, giving Skype *relative advantage* over other synchronous tutoring platforms, but the assumptions about the technology itself and the interactions it would foster between tutors and students had serious long-term consequences on the overall *compatibility* of Skype as an innovation. The reliance on existing knowledge frameworks appear logical and commonsensical, on the surface at least, but the UMW study reveals that a change in the *social system* requires some essential revisions to the metaphors, policies, and practices of tutoring. And this revision cannot take place if writing professionals do not have a rather firm grasp on the *previous experiences* of the potential adopters.

Thus, the role of *previous experience* is understudied and undervalued in writing centers. DOI theory, when paired with Lakoff and Johnson's (1980) theory of conceptual metaphors, can be leveraged to help writing center professionals understand the implications of metaphor and previous experience on writing center pedagogy, assumptions, and practices. Hewett's (2002) article on the theoretical underpinnings of OWLs stated as much when she identified how OWLs blend several practices associated with traditional writing centers—current-traditional, neo-classical, expressivist, and social constructivist—each serving as a conceptual metaphor for how the OWL should function. Additionally, DOI and metaphor are established research paradigms

that grapple with large, complex networks of ideas with a long pattern or history. These are all essential factors to be considered in the successful adoption of an innovation which can otherwise be difficult to identify and even easier to misinterpret, without DOI theory, thus leading writing center professionals astray of achieving the primary goal of improving their writing centers and its services.

This study revealed, through the lens of DOI theory, that when writing professionals take an existing technology, such as Skype or even Twitter, and ask tutors to use it for a different, or uniquely specific, purpose other than originally intended, then the metaphors for how that technology should work will no longer serve as a useful aid. This is important for writing center professionals because of the constant state of innovation in the writing center—technology, ideas, and processes—and the working metaphors of our end users need to be communicated more clearly if we hope to truly understand why an innovation was successful in another writing center but somehow failed to take shape in our own. Further, metaphor study is so essential to writing centers because of the pervasiveness of metaphors in our everyday professional lives—metaphors about writing, tutoring, technology, and so on. Writing center professionals cannot expect to use metaphors with (and about) tutors and tutees, if they are not proficient and knowledgeable about their source of origin, inherent power, and the final destination, especially with regard to innovation adoption.

Limitations

In the following section, I review the limitations of the study with regard to the research design (as previously discussed in Chapter 3) and the data or results of the study. Some of the limitations served as starting points for future research discussed in Chapter 6.

Limitations of Research Design

The first limitation was the decision to capture tutor data exclusively through a survey method. This data collection method provided solid results for the perceived attributes of the innovation, as intended, but limited the tutor's input on other important factors of the study such as metaphor/previous experience, social system, and consequences of the innovation.

The second limitation was the small number of participants or sample size, with only two writing center directors and two tutors who participated in the study. A small sample size is not uncommon for a case study methodology, but it makes the results less generalizable to other social systems or writing centers.

The third limitation was that the students or tutees' responses were not captured in the data collection process, even though they are also end users. This was done for practical reasons to reduce the amount of time needed for data collection and analysis, but this information would have proved useful in several instances and would have bolstered the triangulation of data.

The fourth limitation is regarding the limited amount of time allowed to conduct the study. Diffusion studies are often long-term, multi-year studies due to the complex nature of concepts such as the social system, which this study has only begun to reveal. As a result, this study is best understood as the first phase of a longer, multi-part research study.

Limitations of Data and Results

First, the results and related findings came from two public universities in the U.S. and the universities were located in different regions of the country. This added diversity and unique points of comparison to the results, but the results may not be generalizable to other institutional types or other regions in the U.S. Further there are many different types of colleges and universities with many areas of emphasis and focus and this study only involved mid-sized

institutions, further inhibiting the potential generalizability and widespread applicability of the results. Moreover, every institution has different needs and requirements for its writing centers, which will necessarily affect the writing centers social system and perceived attributes.

Second, the responses were limited by the participants' willingness to honestly self-report the data, and this depended upon their ability to accurately recall information. The comments provided by writing center directors and tutors were voluntary, which could aid writing center researchers looking to adopt synchronous tutoring OWLs. However, the participants' recollection may not be able to represent participants as a whole.

Third, the results are limited by the fact that only one tutor was responsible for conducting the online synchronous tutoring appointments at each writing center. This made the survey instrument less useful as a form of data collection, and it also limited the data since the perceived attributes of the innovation was unable to be compared across tutors within the same social system.

Fourth, UNE was new to Google Hangouts as a synchronous tutoring innovation, so there was not enough time, within the diffusion process, to draw firm conclusions from the data. The data was useful as a point of comparison with the Skype innovation and its related practices; in addition, it can aid writing center administrators in the persuasion stage of the innovation-decision process when considering synchronous OWLS in their own writing centers.

Fifth, there were no interview questions specifically related to the newly-created residual value concept, and few questions directly related to previous experience, which, upon analyzing the data, appear to be concepts of high importance to the study. This is perhaps one of the weaknesses in working with an interdisciplinary theoretical framework where knowledge maps are not always well-aligned, but these findings suggest a direction for future research.

Summary

This chapter discussed the major findings of this research study, including its implications for writing center professionals specifically and English Studies scholars generally. This study of synchronous tutoring OWLs using DOI theory advances current scholarship in the area of writing center innovations in several aspects. First, this study supports current research of using collaborative software for synchronous tutoring by documenting the innovation-decision process, rather than just the innovation itself (i.e. the product), to include the selection, consequences, rejection, and/or reinvention of the innovation. Next, it focused on the technology attributes and emergent tutoring practices that result from adopting a new innovation, thus highlighting the significance of these two inter-related concepts for writing center professionals. Finally, this study expands DOI theory for writing center professionals by introducing a new perceived attribute, residual value, and argues for more research into the role of metaphor and previous experience and their influence on the innovation-decision process.

Chapter 6 will draw conclusions based on significant results of the data and recommend areas of future research in the disciplinary fields of Writing Centers and English Studies.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

Introduction

In this dissertation, I explored two different synchronous OWLs and the various factors that influence a writing center director's innovation-decision process to adopt, reinvent, or reject a synchronous OWL innovation. The review of literature in Chapter 2 indicated that the adoption of collaborative software in second-generation synchronous OWLs had not reached critical mass in writing centers as a whole, and there were also external factors that influenced the adoption of synchronous tutoring OWLs in writing centers. By recognizing that all OWL designs are imbued with ideological influences to some degree, I designed the research study to investigate the role of metaphor and previous experience in synchronous OWL designs and to critique their unwavering presence in writing center pedagogy. This research study confirmed that Rogers' (2003) Diffusion of Innovations theory could be applied to writing center directors' adoption of collaborative software for synchronous tutoring with regard to the social system, perceived attributes, and consequences of the innovation.

In this final chapter, I identify the major conclusions drawn from this research study and note the implications of this research to the fields of writing centers and English studies. I also discuss the opportunities for future research that were revealed as a result of this study and conclude with a set of practical recommendations, or heuristics, to guide writing center professionals in designing and establishing future second-generation, synchronous OWLs.

Conclusions

With regard to the nature of technological innovations, this study revealed that writing center innovations are two-fold: the technology itself and its emergent practices. Each new

technology is imbued with a set of associated practices that are innovations in their own right so that the technology and emergent practices are intertwined adoptions, rather than separate acts, and writing center professionals must explore both aspects of the adoption process in order to improve the discipline's collective knowledge of technological innovations and its implications on writing center theory and pedagogy. Additionally, the innovation process, much like the writing process, is an on-going activity that does not cease after the innovation has been adopted. Instead, as new innovations and tutoring processes are adopted, previous innovations and tutoring processes are reinvented and sometimes rejected as part of the diffusion process in order to continue meeting the perceived needs of students.

The importance of metaphor and previous experience were also a large outcome of this study. Tutoring metaphors, such as the Socratic Method and writing process model which are inextricably linked to face-to-face tutoring practices, shape and influence the writing center director's innovation-decision process to include the selection of the synchronous tutoring software and its related tutoring practices. This study found that the synchronous OWL designs (i.e. its technology and related practices) are constructed and/or reinvented for the sole purpose of replicating the face-to-face tutoring process even when such efforts fail to meet the needs of students. Thus, the role of metaphor and previous experience are so essential to writing center professionals that it could possibly serve as a separate perceived attribute; at the very least, it deserves a great deal more study by writing center professionals if we continue to base our future writing center innovations on previous experiences, especially those associated with face-to-face tutoring and face-to-face writing instruction.

The first set of research questions relate to DOI's *social system* concept which proved extremely useful in 1) understanding the circumstances within the wider university system that

influenced the writing center director's innovation-decision process, 2) identifying each writing center's system norms and expectations, such as the role of tutors and the writing center philosophy, which informed the tutoring practices, and 3) explaining the level and *rate of adoption* for each synchronous OWL innovation (i.e. Skype and Google Hangout), which was influenced more by the type of innovation-decision than the length of *time* that the innovation had been in place (e.g. the authoritative-innovation decision of Google Hangouts led to a faster rate of adoption in UNE's social system than UMW's individual-innovation decisions of Skype by students and tutors alike).

The second set of research questions captured the innovation and perceived attributes. This study revealed that the perceived attributes can only be fully understood using data from both writing center directors and tutors since some attributes are more applicable to one group than the other. Tutor-specific perceived attributes tended to deal directly with the use of the innovation, which included *ease-of-use*, *results demonstrability*, *compatibility*, and *relative advantage*. Writing center directors can shed light on each of the perceived attributes, but their responses were more plentiful and meaningful for attributes tied to administrative concerns such as *image*, *visibility*, *trialability*, and *voluntariness*. This study expanded DOI theory to create a new perceived attribute called *residual value*, which was also more applicable to writing center directors than tutors due to its administrative aspects.

Residual value is concerned with the reporting aspects associated with adopting a new innovation, which is significant to writing center professionals who must be able to easily trace and document innovations to 1) ensure students' needs are being met, 2) defend their actions to other members of the social system, and 3) secure funding for future writing center innovations using quantifiable data. Residual value, then, measures the innovation's lasting or residual

effects in the social system using its record-keeping merits and level of permanence in the social system as factors in the innovation-decision process. Residual value was strong with the uses of Skype and Google Hangouts for synchronous tutoring because students' marked-up documents could be retrieved at a later date by tutors and the writing center director when needed (Google Drive does not limit storage on Google Documents), which served to reinforce the information found in tutoring session reports; furthermore, recorded sessions could also be stored for later viewing and/or shared with the student to further enhance the tutoring experience giving it even more residual value over other tutoring options.

With regard to the third set of research questions, the consequences of the innovation were discovered to be more related to the social system than the innovation itself since the experiences of the innovation cannot be separated from the values, norms, and customs of the social system. At UMW, the writing center director did not anticipate the influence of tutors' and students' own individual-adoption process, and the slow rate of adoption for Skype indicated the rejection of the Skype innovation by a large percentage of system users. This was not the first time that a synchronous tutoring innovation had been rejected by system users, which indicated a possible compatibility issue with both the university and writing center social systems. An unanticipated consequence of UNE's adoption of Google Hangouts was the decision to discontinue asynchronous email tutoring in the near future; this innovation-decision was not supported by the number of students and tutors actively using the innovation, so a follow up study could be used to determine if this system change will result in any undesirable consequences. Furthermore, what this study revealed is that the *meaning* of the innovation differed for each member of the social system as did the *perceived attributes* of the innovation; these were both unanticipated, indirect, and undesirable consequences of each innovation, thus

making it even more difficult to align the needs and expectations of the primary user groups in each university social system.

Finally, the role of the interface was found to be quite complex in synchronous OWLs as students negotiated with at least three different interface layers embedded in the OWL website: the general services information, the scheduling pages for the appointment, and the synchronous tutoring interface itself (which can be embedded or external to the OWL website). The preliminary results of this study suggest a strong connection between an innovation's rate of adoption and the location of the synchronous tutoring interface on the OWL website, though additional research in this area is needed. This increases the significance of the OWL interface design for writing center professionals seeking to adopt synchronous OWLs in the future.

Future Research

A longitudinal study of one or both institutions in this dissertation is one possible area for future research. This would allow the researcher to observe the on-going innovation-adoption process and to develop a structured timeline of the events that transpired after the adoption. As previously indicated, diffusion research is complex and best unraveled through longer, multi-year studies where various snapshots in time can be recorded and analyzed. The longitudinal study would also aid researchers in understanding the unanticipated, indirect, and undesirable consequences of innovations which are slowly revealed sometime after the innovation has been in place.

Another possible area of research would be to extend each case study by including student data, culled from interviews and surveys. The surveys could be distributed widely to students who participated in a synchronous tutoring session at each institution and would contribute to the triangulation of data on the perceived attributes of the Skype and Google

Hangouts innovations. A few select students could be interviewed as a follow-up to the survey to provide greater insight into DOI's social system concept for each writing center and institution involved in the study.

It might also be useful to use DOI theory to explore other types of collaborative software used for synchronous tutoring in the writing center context. At the time of this study, writing centers were using programs like GotoMeeting, Adobe Connect, and even SecondLife for the purposes of online synchronous tutoring. It would be a great benefit to writing center scholarship to investigate the social system, perceived attributes, and consequences of those new innovations to determine if any new connections or revelations come to light. Collaborative software with synchronous aspects has also made its way into online classrooms and virtual office hours, where professors regularly participate in a modified-form of tutoring when responding "in the context of formative, or draft-based, comments written in response to students' developing work" (Hewett, 2010, p. xvi). As such, the use of collaborative software in education has implications for English Studies professionals as well as the wider academic community.

A further exploration of synchronous OWL interfaces is needed, as a result of the added layers of complexity that synchronous tutoring adds to the regular OWL website. Interface design and interactivity are significant concepts in English Studies and Writing Centers because the teaching and tutoring of online writing always occurs through a filter, space, or intermediary of some kind which has implications for writing center directors, tutors, and students. For example, due to the complex nature of synchronous tutoring, students will likely rely more on the information provided on the OWL website than previous tutoring innovations in order to reduce the uncertainty associated with synchronous tutoring. The three levels of representations

in synchronous OWLs have yet to be explored as an integrated collection of sites that shape student's perceptions and expectations of the writing center, and such research is necessary to improve our knowledge of the information students require to aid them in their own innovation-decision process about online synchronous tutoring. Likewise, it is also important for tutors to understand how interfaces and interactivity impacts the online synchronous tutoring experience (Carpenter, 2009). This should also include a discussion of the natural affordances of the synchronous tutoring interface such as what is gained and lost as a result of the interface design (see Norman's affordances concept in *The Design of Everyday Things*, 2013), which often run counter to the expectations and norms of dominant, face-to-face tutoring practices.

It would also be fruitful to further explore the ways different tutoring innovations have influenced one another, including related tutoring processes. In *The OWL Construction and Maintenance Guide,* Kastman Breuch (2005) queried, "Why do so many versions of online writing centers exist?" (p. 12). To that I would add, "How much can OWLs vary from one another and still be considered an OWL?" In this study, Koster's (2002) three definitions of OWLs was expanded from three to four: 1) basic information OWLs, 2) interactive asynchronous OWLs, 3) live synchronous OWLs, and 4) the new, second-generation synchronous OWLs. This study revealed that the use of audio-video tutoring resulted in a new set of procedures for tutors to follow with regard to how student documents are filed and labeled, which was extended to email tutoring practices as well. In short, Koster's (2002) definition of live synchronous OWLs did not adequately cover the new synchronous tutoring experience, which has several new added layers of complexity due to advancements in technology. Email and online tutoring were also influenced by face-to-face tutoring practices, where tutors were discouraged from marking up student work unless it was in the margins of the page (or in a text-

box window, if online). This speaks to the role of previous experience in writing centers but also has serious implications for writing center professionals since such previous experiences influence the types and levels of interaction with each newly adopted innovation.

Another possible expansion of this study could be made by expanding the number and type of institutions represented. Both of the institutions in this study were mid-sized, public institutions. Writing center research would benefit from an exploration of synchronous OWLs in larger research institutions, private institutions, community colleges, and technical colleges or trade schools using the principles of DOI theory established in this study. Furthermore, the use of massive open online courses (MOOCs) by several prestigious university and colleges could have serious implications for writing center professionals with regard to how we perceive and evaluate interaction and collaboration in tutoring. The exploration and expansion of DOI research in varying institutional settings would place writing center professionals on the path to answering these questions.

Finally, this study revealed the increasing significance and attention paid to social media in writing centers, which could serve as another area of future research. In UNE's case, for instance, Google Hangouts was accessed through Google Circles, a type of social media space for the wider university social system. If Google Hangouts is re-conceptualized as a form of social media, it would be potentially illuminating to investigate how it is used in education, generally speaking, and for the specific purposes of synchronous tutoring. The same can be said of other social media platforms, such as Facebook and Twitter, many of which possess the live, interactive capabilities of second-generation synchronous tutoring. This also has implications for Writing Studies professionals too, as current scholarship in the field indicates a growing interest

in the use of Facebook Groups and Google Circles as extended classroom spaces and the use of Twitter, RSS feeds, and texting for quick class announcements.

Recommendations

In order to reduce the amount of uncertainty associated with synchronous tutoring OWL innovations (for tutors, students, and other writing center directors), writing center professionals must formally publish their pedagogical experiences with synchronous OWLs, thus aiding other writing centers professionals in the decision stage of the innovation-decision process. It is widely known that writing center directors typically do not have to publish to keep their positions, but this practice makes it is impossible to conduct in-depth analysis of pedagogical and practical experiences of synchronous OWL innovations. The regional and national conferences are popular venues of information-sharing in the writing center community, but such collaboration is limited to those who attend the conference because conference proceedings are rather difficult to locate online, usually only available in excerpts rather than complete transcripts of the speech or presentation. In the era of second-generation live synchronous OWLs, we need a more consistent, documented approach in order to fully understand the technological innovations and related practices taking place in our writing centers.

Next, it is important that writing center professionals carefully consider the tutoring practices and processes established for synchronous tutoring, including its underlying philosophical and theoretical underpinnings. This speaks to the several layers of metaphors identified in this research study—metaphors about writing, tutoring, and technology—that are embedded in daily writing center practices. As Hewett (2010) stated when discussing the intersections of OWI and online conferencing, “it is unfortunate that the act of teaching itself—of intervening into a student’s writing—may be interpreted as a negative, unkind, or

inappropriate act rather than a natural part of the conference process" (p. 79). Simply put, the existing face-to-face paradigm may not be the best, or most appropriate, model to use when establishing new synchronous tutoring methods, since the ultimate guide for the success of a tutoring session should reside with the student rather than being pre-determined by the philosophy and goals of the writing center. As previously discussed, several studies demonstrate how face-to-face sessions are not always student-centered and Socratic-based (Drew & Heritage, 1992; Thonus, 1995), and Jones et al. (2006) found online synchronous tutoring interactivity to be more student-centered than face-to-face tutoring across several case studies. These studies suggest that the face-to-face tutoring metaphors that comprise the existing tutoring paradigm can be used to explain some (and possibly most) tutoring that takes place in writing centers *under a certain set of conditions*, but not all forms of tutoring. As such, it is time for writing center professionals to imagine a complementary, rather than competing, set of metaphors specific to online synchronous tutoring.

Writing center professionals must acknowledge both parts of the innovation-adoption process for synchronous OWLs in their formal publications, to include the technology and emergent practices. When a new technology innovation is introduced to the writing center's social system, it coincides with a series of modified tutoring practices and policies, which are also innovations that affect the day-to-day functions, norms, and expectations of each writing center's social system. Writing center professionals have previously overlooked the significance of these inter-related innovations, but such connections will need to be acknowledged to fully understand the various factors that influence the adoption, reinvention, and rejection of synchronous OWL innovations. Likewise, tutor training must also be extended and revamped to include attention to the technology itself and its related practices. This was reinforced in a recent

study by Wolfe and Griffin (2012), who concluded that consultants and writers needed training on the technology tools themselves to support the text authoring roles. The study found that a considerable amount of time in synchronous sessions were devoted to technology related discussions between the consultant and writer, which also suggests that formal interface training is needed. This outcome was reinforced by my own dissertation as the writing center director in one case study made a conscious decision not to formally train tutors in Skype or provide their own written documentation on using the tutoring innovation, which resulted in low adoption levels of Skype, as a tutoring innovation, among tutors and students. Thus, it is important that writing center professionals document the technology and its related practices as part of the innovation process because of the implications it has on writing center theory, pedagogy, and practice.

Writing center professionals should also explore the reasons behind the limited number of contact hours for online synchronous tutoring, from an individual and system standpoint. As was the case in this study, there were significantly fewer synchronous tutoring appointments due to the lower number of tutors willing to participate in synchronous sessions; relatedly, there were significantly more face-to-face appointments due to tutors' availability and willingness to participate in face-to-face sessions. In this dissertation, the reason for the small number of synchronous tutoring sessions was a direct result of each tutors individual-innovation decision. In my own experiences, however, limitations to synchronous tutoring hours are sometimes imposed by the writing center director at the system level, which could be a reflection of the field's preference for face-to-face tutoring or simply a result of budgeting constraints. Whether the limitation or restriction is a result of the tutor or the writing center director, it still remains that fewer contact hours are available for synchronous tutoring, which only increases the

uncertainty surrounding this method of tutoring in each writing center's social system and within the wider writing center community.

Writing center professionals might also consider requiring tutor involvement in synchronous tutoring, rather than leaving the final adoption decision for tutors to make on an individual basis. The leadership style of most writing center directors is more collaborative in nature, where tutors and writing center directors openly negotiate policies, procedures, and even available days and hours that the writing center will serve its students. However, this leadership style has resulted in tutors' low adoption of synchronous tutoring (which then extends to students' low adoption) because writing center directors have made the task optional, rather than a required part of the tutor's job responsibility. As Michael Pemberton put it in the foreword for Hewett's *Online Writing Conference* text, "Online conferencing has always frightened me…I have been apprehensive about what gets lost in virtual environments. I like people. I like *being* with people in writing center conferences" (2010, p. ix-x). It is understandable that many tutors would feel this way about online conferencing as well, but such apprehension comes at the detriment of serving our students. Furthermore, synchronous tutoring must become a required part of a tutor's job responsibility for it to receive the necessary recognition as an authentic form of tutoring within each writing center's social system and within the wider writing center community.

Finally, writing center professionals should directly incorporate the needs and desires of students into the adoption of synchronous tutoring innovations through the use of interviews or focus groups, rather than relying on their own interpretation of students' perceived needs. This borrows heavily from the fields of usability studies and human-computer interaction, but it applies to the context of writing centers too since we are essentially innovating technologies and

related processes for end-users who may have different needs and desires than we have imagined for them. In short, this dissertation study revealed that the actual needs of students should be an important factor in the writing center director's innovation-decision process, especially since the adopted technology and its related practices are ultimately in place to serve the student population; however, students are rarely given input on the selection of the synchronous tutoring innovation which implies that the tutors and writing center director's perceived attributes of the innovation are somehow more important and authoritative than students. Some preliminary research has been done in this area by Salvo, Ren, Brizee, and Conard-Salvo (2009), but additional work is needed in the areas of tutoring, pedagogy, and writing centers. This raises some interesting questions not just for DOI theory, but for writing center pedagogy as well, as writing center directors are forced to reconcile the perceived and actual needs of students with a broader interpretation of the perceived attributes of the innovation from all system users.

By determining the rhetorical process used to construct the OWL interfaces and supporting tutoring processes, other educational institutions considering such an endeavor might be better equipped to align the actual needs of students and desires of writing center professionals with departmental and institutional constraints.

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APPENDIX A

PROTOCOL FOR PRE-SCREEN INTERVIEW

Script: Today, I'd like to tell you a little bit about my study and to see if you might be interested in helping me to complete my dissertation. It has always been an interest of mine to understand the way that writing centers are making use of technology for synchronous tutoring, and in my dissertation, I am looking at Skype and Google Hangouts, the way institutions are employing them, the circumstances that led up to the selection of the technology, and other factors that may have influenced that decision. There are a few things that I need to gather to determine if you meet the inclusion criteria for the study.

1. Please discuss the extent to which you are making use of the tools inside of the technology platform to conduct online synchronous tutoring. Are your tutors using the document sharing capability built into Skype or Google Hangout? Are your tutors using audio or video to conduct online synchronous sessions?
2. Please describe your role in the selection of the Skype or Google Hangout for tutoring purposes. Were you around when your institution started using Skype or Google Hangout for online tutoring? What role did you play in the overall decision to adopt?
3. Please describe your staffing situation for the writing center, especially with regard to online tutors. Do you have at least one tutor that has tutored a synchronous session that might be willing to answer survey questions about the technology?

APPENDIX B

INTERVIEW PROTOCOL FOR WRITING CENTER ADMINISTRATORS

Script: Today, I'd like to interview you as an administrator in the Writing Program at your university. I'm very interested in the institutional context and design considerations that were a part of the ultimate decision to bring _____ (Skype or Google Hangouts) into the Writing Center and add it to the services offered. Some of these questions may seem to you to have obvious answers – however, what is important here is not what I know, but what you know or can describe, and I'm interested in your perspective, your knowledge, and your recollections.

1. Could you act as a storyteller for me today and tell me the story of how distance delivery made its way into your university's Writing Center – the events, decisions, and actions that led up to it – to the best of your recollection?
    a. What type of prior tutoring experience do you have? What effect did it have on your decision-making process?
    b. What role did the administration (from the university, college, or department) or technical support (university or otherwise) play in the decision-making process?
    c. What role did image or improved social status (either in the department, institution, or writing center community) play in your decision-making process?
    d. What were the perceived needs of students and faculty that the new OWL was intended to address?
    e. Describe the level and types of technology use in your center, the writing program, and institution, generally speaking.
    f. Describe your level of autonomy or agency as the writing center director.
2. I know that you are currently offering synchronous A/V tutoring with screen-sharing capability through a program called _____. Can you tell me how you use it for online tutoring as if you were explaining it to someone who had no knowledge of it?
    a. How would you explain the online tutoring process to an administrator responsible for funding the project?
    b. How would you explain the online tutoring process to a new tutor recently added to your staff?
    c. How would you describe the features or characteristics of your online tutoring software?
    d. How would you rate your level of technology skill and those of your online tutors?
3. Did you or your tutors experience any sort of advantages or challenges in dealing with the new synchronous tutoring OWL – to the best of your recollection? If so, can you describe what it was?
    a. Did you have to change or modify any writing center practices as a result of adopting the new OWL? If so, what were the effects of these changes?
    b. Were any other tutoring programs tested before deciding to adopt this one? What was the outcome or result of that pilot test?
    c. Did you experience any problems with the software itself or in your revised tutoring practices? If so, how did you address it and mitigate it for the future?
    d. Would you recommend this program for tutoring to other similar institutions? Why or why not?

APPENDIX C

SURVEY FOR WRITING CENTER TUTORS

The purpose of this questionnaire is to determine what people are concerned about at various times, while either using or considering the use of a new innovation (i.e. online synchronous tutoring technology). Throughout the survey, the term "innovation" will be used, but you should consider the question in regards to your writing center's use of a particular online synchronous tutoring technology such as Skype or Google Hangouts. Please respond to the items in terms of your *present concerns* and *your own perceptions*, or how you feel about your involvement with the innovation. For the completely irrelevant items, please circle "0" on the scale. Other items will represent those concerns you do have, in varying degrees of intensity, and should be marked higher on the scale. Thank you for taking the time to complete this task.

1. How long have you been a writing tutor at this university?

0 – 1 year	2 – 3 years	4 – 6 years	More than 6 years

2. How long have you been a writing tutor elsewhere?

0 – 1 year	2 – 3 years	4 – 6 years	More than 6 years

3. How would you rate your level of technology skill?

0	1 2	3 4	5 6 7
No skills or knowledge	Basic skills with room for improvement	Intermediate skills could use additional practice	Advanced skills with extensive knowledge

4. How would you rate the level of technology use at your institution?

0	1 2	3 4	5 6 7
No use with a fear of technology	Cautious with a little use of technology	Mostly-accepting with moderate technology use	Fully-accepting with cutting edge technology use

5. What software are you presently using to conduct online synchronous writing tutorials?

0	1
Google Hangouts	Skype

For each of the remaining questions, please use the scale below. To what extent did the reasons below influence the decision to adopt the innovation?

0	1 2	3 4	5 6 7
Did not influence our decision	Slightly influenced our decision	Moderately influenced our decision	Strongly influenced our decision

Voluntariness

6. My superiors expect me to use the innovation.	0 1 2 3 4 5 6 7
7. My use of the innovation is voluntary.	0 1 2 3 4 5 6 7
8. My boss does not require me to use the innovation.	0 1 2 3 4 5 6 7
9. Although it might be helpful, using the innovation is certainly not compulsory in my job.	0 1 2 3 4 5 6 7

Relative Advantage

10. Using the innovation enables me to accomplish tasks more quickly.	0 1 2 3 4 5 6 7
11. Using the innovation improves the quality of work I do.	0 1 2 3 4 5 6 7
12. Using the innovation makes it easier to do my job.	0 1 2 3 4 5 6 7
13. The disadvantages of my using the innovation far outweigh the advantages.	0 1 2 3 4 5 6 7
14. Using the innovation improves my job performance.	0 1 2 3 4 5 6 7
15. Overall, I find using the innovation to be advantageous in my job.	0 1 2 3 4 5 6 7
16. Using the innovation enhances my effectiveness on the job.	0 1 2 3 4 5 6 7
17. Using the innovation gives me greater control over my work.	0 1 2 3 4 5 6 7
18. Using the innovation increases my productivity.	0 1 2 3 4 5 6 7

Compatibility

19. Using the innovation is compatible with all aspects of my work.	0 1 2 3 4 5 6 7
20. Using the innovation is completely compatible with the culture of my writing center.	0 1 2 3 4 5 6 7
21. I think that using the innovation fits well with the way I like to work.	0 1 2 3 4 5 6 7
22. Using the innovation fits into my work style.	0 1 2 3 4 5 6 7

Image

23. Using the innovation improves my image within the institution.	0 1 2 3 4 5 6 7
24. Using the innovation improves my image within my **discipline of study**. [Please share your discipline of study in question 51.]	
25. Because of my use of the innovation, others in my institution see me as a more valuable employee.	0 1 2 3 4 5 6 7
26. Because of my use of the innovation, others in my discipline of study see me as a more valuable researcher or practitioner.	0 1 2 3 4 5 6 7
27. People in my institution who use the innovation have more prestige than those who do not.	0 1 2 3 4 5 6 7

28. People in my discipline of study who use the innovation have more prestige than those who do not.	0	1	2	3	4	5	6	7
Ease of use								
29. I believe that the innovation is cumbersome to use.	0	1	2	3	4	5	6	7
30. It is easy for me to remember how to perform tasks using the innovation.	0	1	2	3	4	5	6	7
31. My using of the innovation requires a lot of mental effort.	0	1	2	3	4	5	6	7
32. Using the innovation is often frustrating.	0	1	2	3	4	5	6	7
33. My interaction with the innovation is clear and understandable.	0	1	2	3	4	5	6	7
34. I believe that it is easy to get the innovation to do what I want it to do.	0	1	2	3	4	5	6	7
35. Overall, I believe that the innovation is easy to use.	0	1	2	3	4	5	6	7
36. Learning to operate the innovation is easy for me.	0	1	2	3	4	5	6	7
Result Demonstrability								
37. I would have no difficulty telling others about the results of using the innovation.	0	1	2	3	4	5	6	7
38. I believe I could communicate to others the consequences of using the innovation.	0	1	2	3	4	5	6	7
39. The results of using the innovation are apparent to me.	0	1	2	3	4	5	6	7
40. I would have difficulty explaining why using the innovation may or may not be beneficial.	0	1	2	3	4	5	6	7
Visibility								
41. I have seen what others do using this same innovation.	0	1	2	3	4	5	6	7
42. In my institution, one sees this innovation being used in many departments.	0	1	2	3	4	5	6	7
43. I have seen this innovation in use outside my institution.	0	1	2	3	4	5	6	7
44. The use of this innovation is not very visible in my institution.	0	1	2	3	4	5	6	7
45. It is easy for me to observe others using this innovation in my institution.	0	1	2	3	4	5	6	7
Trialability								
46. I've had a great deal of opportunity to try various online tutoring applications.	0	1	2	3	4	5	6	7
47. I know where I can go to satisfactorily try out various uses of online tutoring applications.	0	1	2	3	4	5	6	7
48. A computer with internet connection was available to me to adequately test run various applications.	0	1	2	3	4	5	6	7
49. I was given adequate training of the online tutoring application before the trial period began.	0	1	2	3	4	5	6	7
50. I was permitted to use an online tutoring application on a trial basis long enough to see what it could do.	0	1	2	3	4	5	6	7

51. Please use this space to make any further comments or recommendations concerning any feature of the online synchronous tutoring technology used in your writing center. Also, it would be great if you would please share your discipline of study.

APPENDIX D

INFORMED CONSENT FOR TUTORS AND DIRECTORS

This is a research project which seeks to understand the effectiveness of Skype and Google Hangouts as a collaborative software tool suitable for online synchronous tutoring. The researcher is Cynthia Pengilly, English Doctoral Candidate in Old Dominion University's English PhD program and she can be reached at 910-257-0889.

My involvement in this research is entirely voluntary, and I have the right to not respond to this request and to withdraw from participation at any time. My involvement will be kept private as this research study will not include names of participants, students (to include tutors and tutees), or the educational institution (directly or indirectly) involved in the study.

If I consent to be a participant in this study, my participation as a member of the case study group may be analyzed. Documentation of online tutoring processes, such as writing center website marketing materials, the writing center handbook, and anything describing the online tutoring practices may be analyzed. I may be interviewed or asked to complete a survey sharing my experiences with the online synchronous tutoring program and its related tutoring practices. I am also granting permission to the researcher to record interview sessions and archive any and all of them, which may be used in a published study at a future date.

A copy of this form has been provided to me by the researcher. Any risks to me as a participant are minimal, and I accept full responsibility for any adverse consequences of my participation. I understand that if I have any questions about this research, I may ask the researcher about them at any time.

Participant's signature and printed name Date

Investigator's signature and printed name Date

APPENDIX E

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SIMON & SCHUSTER

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VIA EMAIL

October 27, 2016

Cynthia Pengilly
Old Dominion University
Department of Batten Arts and Letters
pengilly@uga.edu

Dear Cynthia Pengilly:

You have our permission to include Figure 7-3: "Adopter Categorization on the Basis of Innovativeness" on p. 281 of our book, DIFFUSION OF INNOVATIONS, FIFTH EDITION by Everett M. Rogers, in your doctoral dissertation entitled "Innovation Adoption and Diffusion in Synchronous Tutoring OWLs: A Cross-Contextual Case Study Using Diffusion of Innovations Theory."

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Sincerely,

Christine J. Lee

Christine J. Lee

AGREED TO AND ACCEPTED

Cynthia Pengilly

VITA

Cynthia Marie Pengilly
Old Dominion University, Department of English
5000 Batten Arts & Letters, Norfolk, VA 23529

Professional Experience

- August 2010 – Present, Full-Time English Instructor, First-Year Composition at University of Georgia, Athens, GA
- August 2007 – July 2009, Graduate Writing Assistant, Writing Tutorial Services at Old Dominion University, Norfolk, VA
- June 2006 – December 2006, Technical Writer, Harbor Payments/American Express, Atlanta, GA
- April 2005 – December 2005, Media and Technology Specialist, Center for Transportation & the Environment at North Carolina State University, Raleigh, NC
- November 2004 – April 2005, Training Specialist, Office of Training & Development at Georgia Dept. of Transportation, Atlanta, GA
- December 2003 – November 2004, Jr. Project Manager, Gwinnett County Department of Public Utilities, Storm Water Management, Duluth, GA

Education

- PhD English (Rhetoric and Textual Studies), 2016, Old Dominion University, Norfolk, VA
- M.S. Communication (Professional & Technical), 2006, N.J. Institute of Technology, Newark, NJ
- B.S. Information Technology (Software Development), 2004, Clayton College & State University, Morrow, GA

Publications

- Hustler Mentality and Entrepreneurship in the Creative Economy. (Autumn 2009). *Amsterdam International Journal for Cultural Narratology*, Issue 5 (2). http://cf.hum.uva.nl/narratology/a09_Pengilly.htm

Workshops and Presentations

- UNIV 1120: Documentary Filmmaking Workshop, with Spence Simrill. (2014-2015). UGA's Department of Academic Enhancement, Athens, GA. See course website @ http://documentary.uga.edu/
- Two-week Workshop on Beginning and Advanced Digital Filmmaking. (2013). Digital Media Academy, Atlanta, GA.
- Tutoring Student Writers from a Distance, with Kevin Depew. (2009). Computers and Writing Conference, Sacramento, CA.
- Writing About Computer/Video Games, with B.C. Wilson. (2008). ODU Annual Research Exposition, Norfolk, VA.