An Exploration of Social Learning Behaviors Concerning University Faculty Members' Use of Learning Management Systems

by

Christopher Thomas Wyckoff

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Approved by

Jill Salisbury-Glennon, Chair, Associate Professor of
Educational Foundations, Leadership, and Technology
Paris Strom, Professor of Educational Foundations, Leadership, and Technology
Carey Andrzejewski, Associate Professor of
Educational Foundations, Leadership, and Technology
Sara Wolf, Associate Professor of Educational Foundations, Leadership, and Technology

Abstract

Formal training for faculty members who use Learning Management Systems (LMSs) plays an integral part in helping faculty members learn to use the LMS and its features, but unstructured interactions between faculty members with respect to the LMS have the potential to supplement formal LMS training (Buchanan et al., 2013; Samarawickrema & Stacey, 2007; Vaill & Testori, 2012). Through individual interviews with faculty members who seek out colleagues in informal settings beyond formal LMS training, this exploratory qualitative study described how faculty members form mutually beneficial learning relationships beyond the formal training environment, detailed the reasons for which faculty members seek these relationships, elucidated the processes by which faculty members learn from one another, and explored opportunities to capitalize on unstructured interactions between faculty members to strengthen the impact of classroom-based LMS training.

The data gathered from the interviews provided a deeper understanding of the situations where faculty members seek help outside the context of formal training, information about how and why faculty members seek one another for informal assistance, and detailed accounts of how they receive help and assistance in a low-stakes, collegial environment. With such information, it is possible to develop institutional- and departmental-level formal training in a way that spawns mentorships and encourages and facilitates interpersonal interaction.

The findings of this study give providers of formal training an avenue for capitalizing on the power of situated and reciprocal learning in the design of new LMS training curricula. Additionally, departments can assist with connecting novice users with experts, and include the discussion of LMS usage as a regular part of meetings. The details revealed by the participants of this study lend credence to the suggestion made by Cochrane et al. (2013) that the most effective faculty learning involves impromptu collaboration and mentorship. More importantly, this study helps fill a major gap in the literature identified by Bailey and Card (2009): it examined the details of interactions between faculty members who teach using an LMS in an effort to provide a basis for future studies on how such interactions can be encouraged in the context of formal training.

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CHAPTER 1: INTRODUCTION

The employment of technology to achieve educational objectives in the arena of college and university teaching is neither a new nor rare phenomenon. Prensky (2009, 2012) described today's students as part of the generation of "digital natives," or those whose childhood was replete with technology such as smartphones, tablets, and computerized toys programmed to teach the letters of the alphabet or simple mathematics. Digital natives expect technology to be present in all facets of life, including the post-secondary classroom. This expectation creates an environment where both students and institutional administrators expect that technology be integrated into faculty members' pedagogy and effectively deployed as an integral part of courses (Oblinger & Oblinger, 2005).

Increasingly, younger faculty members are digital natives themselves; but "digital immigrants," or those who must learn and adapt to new technology not available at the beginning of their teaching careers, also exist. Nevertheless, digital natives and digital immigrants alike must learn to use current educational technology to enhance teaching and meet student and institutional expectations. As with all new technology, users first experience it through exposure, determine its value and whether or not to use it, learn how to use it through formal (e.g. classroom-based) and informal training (e.g. independent or consultative), and - provided the user is satisfied with the usability of the technology and his or her level of proficiency - employ it in the context of the classroom (Oblinger & Oblinger, 2005).

On a personal note, I've been a user of educational technology from early childhood through my adult years, and for over 15 years as an educator in a university setting. Over my lifetime - and as a digital native - I developed a love for learning about how people learn, specifically with respect to technology. I have both attended and provided formal training sessions on a multitude of technologies and platforms, and frequently consulted with colleagues in informal settings regarding their decisions whether and how to use technology in their classrooms. For those reasons, I chose to pursue this study.

Definition of Learning Management Systems (LMSs)

Most college and university campuses employ a computer-based system that serves as a nexus of educational technologies designed for course administration and the facilitation of teaching in an online environment. Watson and Watson (2007) identified multiple definitions of such systems, inconsistencies in the literature, and disagreement among scholars with regard to the required elements that constitute such a system. He suggested the establishment of a requisite set of features to qualify a technology as a learning management system. For the purposes of this study, a learning management system, or LMS, is defined as a computer-based system that assists with multiple aspects of the educational process and facilitates course administration tasks. A typical LMS enables content creation, storage and delivery; assignment and assessment development and administration; tracking, grading, and progress report capabilities; and report generation. Additionally, LMSs enable both instructor-student and student-student communication - often in the form of online messages and discussions ("Learning Management System," 2015; Watson & Watson, 2007).

Current Training Methods

Many institutions have models for training faculty members using both formal and informal means, and there are a multitude of training formats and techniques used to help faculty members become familiar with and learn how to use an LMS in a context that is pedagogically sound. Formal training methods include traditional classroom-based sessions and video-based synchronous meetings where trainers follow a prescribed curriculum primarily focused on teaching the technical aspects of the LMS. Several examples of training formats that include the participation of information technology (IT) and pedagogical experts exist, but results of studies frequently revealed that while faculty members learned about the LMS through formal training, they had to dedicate a substantial amount of time to training and did not have enough opportunities to interact with one another (Gonzalez, 2012; Irani & Telg, 2002; Schweizer, Whipp, & Hayslett, 2002; Visser, 2000; Walker & Johnson, 2008). Butler, Lauscher, Jarvis-Selinger, and Beckingham (2004) defined communities of practice as groups of faculty members who participate in classroom-based training, work together to learn best practices from one another, and report their findings to a larger group. This format partially addresses the issue of a lack of social interaction in a top-down classroom setting and is described in more detail in the review of literature (Butler et al., 2004; Reilly, Vandenhouten, Gallagher-Lepak, & Ralston-Berg, 2012; Sarsa & Soler, 2012).

Informal training methods, on the other hand, include more one-to-one interactions between faculty members in the forms of structured or semi-structured mentorships and informal or impromptu interactions. Mentorships might be arranged by an academic department or IT training program, or entered into informally by at least one expert and one novice faculty

member. Since formal training is not usually a part of the mentorship experience, the time spent working on learning about the LMS is at the discretion of the mentor and mentee, who work together to combine technological and pedagogical knowledge and create mutual meaning through discussion and the sharing of examples (McQuiggan, 2012; Puzziferro & Shelton, 2009; Samarawickrema & Stacey, 2007; Vaill & Testori, 2012). Impromptu interactions among faculty members - the least studied of all forms of training - serve the same functions as mentorships but are even more informal in nature. Simply stopping by a trusted colleague's office to ask a technical question, to see or show examples of work done on the LMS, to seek constructive criticism, or to discuss how one's pedagogy might transfer to the use of available LMS tools are all examples of impromptu interactions that have the potential to achieve the same educational ends as formal training (Buchanan, Sainter, & Saunders, 2013; Samarawickrema & Stacey, 2007; Vaill & Testori, 2012).

Statement of Problem

A review of current literature revealed that a limited amount of research focuses on social learning practices and the creation of support systems that enable faculty members to interact with one another during their mastery of LMS technologies. There is a dearth of research on the *content* and *quality* of such interactions between faculty members - especially concerning those that occur beyond the walls of a training facility. This study attempted to investigate and provide a detailed description of the aforementioned interpersonal interactions.

Significance of Problem

Buchanan et al. (2013), Samarawickrema and Stacey (2007), and Vaill and Testori (2012) identified that unstructured interactions between faculty members with respect to LMSs have the

potential to supplement formal LMS training, but no existing research addressed these possibilities. This study endeavored to explore the content and quality of interactions between faculty members concerning LMS technologies. Ideally, this study will address gaps in the existing body of literature and inform future studies by:

1. describing how faculty members form mutually beneficial learning relationships beyond the formal training environment,
2. detailing the reasons for which faculty members seek these relationships,
3. elucidating the processes by which faculty members learn from one another, and
4. exploring opportunities to foster and capitalize on unstructured interactions between faculty members to strengthen the impact of classroom-based LMS training.

Purpose of Study

LMSs are complex in nature and require some form of training and support for successful deployment (see McQuiggan, 2012). There is no shortage of research on how college- and university-level faculty members determine whether to use LMS technologies, their motivation to do so, and the structure and efficacy of formal training and support in a classroom-based context. This qualitative study employed interviews to explore and describe the situations in which college- and university-level faculty members who actively used LMS technologies as a part of their regular teaching practice interacted with one other outside the context of formal training.

Research Questions

1. What situations cause faculty members to consult with one another outside the context of formal training regarding the pedagogical and technical issues surrounding the implementation of LMS technologies?
2. How do faculty members determine whom to consult with regard to LMS technical and pedagogical assistance?
3. How do faculty members experience learning from one another about LMS technologies outside the context of formal training?
4. How do faculty members use real-life examples to help each other learn about LMS technologies outside the context of formal training?

Brief History of LMSs

Today's computer-centric version of an LMS is the product of a technological evolution dating back to the 1920s. In 1924, an Ohio State University professor of educational psychology, Sidney Pressey, developed a mechanical device that provided drill-and-practice sessions in the form of multiple choice questions, where the learner received immediate feedback after pressing a typewriter-like key to indicate his or her answer ("History of Virtual Learning Environments," 2015). Behaviorist B.F. Skinner revised Pressey's machine in the late 1950s by adding the capability for the presentation of a simple item to be memorized before requiring a response - a format he termed "programmed instruction" (Skinner, 1958). Other mechanical systems for learning skills such as typing and simple arithmetic were developed with the intention of being able to adapt to one's learning abilities, but became outdated as the capability to transmit data

both to and from the learner revolutionized the means for spreading knowledge ("History of Virtual Learning Environments," 2015).

Research conducted at the University of Illinois at Urbana-Champaign led to the development of PLATO (Programmed Logic for Automated Teaching Operations) in 1960. PLATO is arguably the first networked learning tool, as teachers could create basic course materials for distribution and learners could complete simple assignments via a terminal and submit them for evaluation by the teacher. PLATO technology continued to be developed through the time of the deployment of ARPANET by the U.S. military in 1969, which ultimately evolved into what we recognize as today's internet (Van Meer, 2003; Walden, 2003).

The launch of the personal computer in the late 1970s brought microcomputers into people's homes, and after the standardization of the internet protocol TCP/IP formalized computer-to-computer connections via the internet in 1982, the World Wide Web began to grow exponentially ("History of Virtual Learning Environments," 2015). Balkovich, Lerman, and Parmelee (1985) described MIT's Project Athena, a well funded effort begun in 1983 and composed of over 60 projects that explored the use of computers to simulate (a) complex systems, (b) function as virtual laboratory instruments, (c) tutor in specific subject areas, (d) act as course textbooks, (e) draw complex graphics in real time, and (f) serve as an active means for communication between faculty and student.

LMSs became more visually oriented after the advent of graphical web browsers in the mid-1990s ("History of Virtual Learning Environments," 2015). Goldberg (2014) developed the first widely used and commercially available LMS in 1996: WebCT. The "CT" stood for "course tools" and represented an internet-based set of tools for course management and delivery that

were initially presented as an interactive website and, over time, grew to resemble what we now recognize as an LMS. Competing products appeared on the market during the following years, but all contained the same basic set of features such as course content delivery, curriculum management, skill and competency management and analysis, and reporting capabilities ("History of Virtual Learning Environments," 2015; "Learning Management System," 2015).

In 2000, the SCORM standard (Sharable Content Object Reference Manager) established a universal language by which LMS data could be transferred between systems. Additionally, SCORM enabled instructors to establish a learning path that required students to complete tasks in an established order, start and stop progress, and proceed to new sections of content and complete assessments based upon parameters established by the instructor (Bush, Walker, & Sorensen, 2011). Experience Application Programming Interface, or xAPI, was introduced in 2013 as a supplement to SCORM. xAPI modernized data storage and transferability, but most important to the educational process, it allowed greater flexibility for instructors to create individualized learning paths and track and respond to students' progress within the LMS environment (Murray & Silvers, 2013). Until recently, LMSs had to be hosted on servers physically located on individual college campuses, but current technology enables LMSs to exist in the cloud on clusters of servers scattered across the country. Cloud-based LMSs offer the benefit of redundancy, which reduces the risk of data loss and increases data security (Chambers, 2014).

LMS technology development is a highly complex process, and most descriptions are technical to the point of being beyond the scope or propriety of a brief summary. LMSs are part of a rapidly evolving group of technologies and are becoming increasingly complex and flexible

in nature. Ultimately, a modern LMS functions as a tool that serves the interests of both faculty members and students by creating opportunities for improving the quality of teaching and learning in alignment with sound educational practices. Chickering and Gamson (1987) addressed serving the interests of both teachers and students when they proposed seven principles for improving undergraduate education. The principles, as described in the following section, may be applied to courses that employ LMS technologies (Chickering & Gamson, 1999).

Chickering's Seven Principles for Good Practice in Undergraduate Education

When Chickering and Gamson (1987), working in conjunction with the American Association for Higher Education, first proposed their seven principles, they did so in reaction to a growing sense of apathy among students and teachers with regard to teaching and learning quality. The principles are a product of a 1986 meeting of researchers and scholars on college-level experience and institutional policies and organization. Combined with a survey of over 50 years of research on teaching, Chickering and Gamson proposed that "good practice in undergraduate education:

- Encourages student-faculty contact.
- Encourages cooperation among students.
- Encourages active learning.
- Gives prompt feedback.
- Emphasizes time on task.
- Communicates high expectations.
- Respects diverse talents and ways of learning" (Chickering & Gamson, 1999, p. 76).

Though not originally intended to guide the development or adoption of LMS technologies or training, Chickering and Gamson's (1999) research described a survey conducted at George Mason University on how computer technology facilitated and encouraged communication between faculty members and students and between students in the same class. Nearly every one of the seven principles corresponded to issues brought forth in the descriptions of the initial acceptance of technology and the perception of distance between students and faculty members, a concept called transactional distance. Both technology acceptance and transactional distance are described in subsequent sections of this chapter and explored with more depth in the review of the literature.

Coldwell-Neilson, Beekhuyzen, and Craig (2012) conducted an in-depth qualitative study of Australian faculty members and discovered several trends that caused faculty members to consider adopting new classroom technologies. The trends corresponded to Chickering and Gamson's (1999) seven principles and included the use of technology to empower students to communicate with faculty members and other students, the encouragement of less formal and more autonomous learning, and the solicitation and provision of frequent feedback. Puzziferro and Shelton (2009) declared that such improvements in teaching quality and the encouragement of interaction via an LMS cannot occur in a vacuum. Rather, they found that plentiful training and consistent support are required in order for faculty members to find success with LMS adoption. This study explored the ways in which training and faculty support contribute to the improvements mentioned above, but faculty members must be open to learning about and adopting LMS technologies in the first place.

Brief Summary of Technology Acceptance Models

Davis (1989, 1993) studied technology adoption among the general population (i.e. not all participants in the study were educators) and concluded that the perceived usefulness of a particular technology was considerably more influential than the perceived ease-of-use of the same technology on peoples' attitudes by a four-to-one margin. Based on these findings, he created and later refined the technology acceptance model (TAM). Although his early research findings suggested that people might be willing to invest time learning how to use a system they perceived to be complicated but eventually useful, Davis conceded that there are likely more factors that influence people's adoption decisions.

Venkatesh, Morris, Davis, and Davis (2003) compared Davis's (1989, 1993) TAM model and seven other derivatives of the original model. Venkatesh et al. (2003) found that four factors - (a) performance expectancy (perception of how the technology could improve job performance), (b) effort expectancy (perception of ease-of-use of the technology), (c) social influence (perception of the importance others place on learning the technology), and (d) facilitation conditions (perception of the extent of institutional and technical support for the new technology) - emerged as being most highly correlated to eventual adoption. They named their all encompassing theory of acceptance the "unified theory of acceptance and use of technology," or UTAUT.

Bagozzi (2007) heavily criticized TAM for being overly simplistic and UTAUT for being overly complicated. An in-depth description of his research may be found in the review of literature. Most importantly, Bagozzi stressed that both models neglected to include the intra- and interpersonal elements involved in the decision-making process. Most important to this

study, Bagozzi mentioned the importance of considering individual and community goals that may be achieved through the use of technology, intrinsic and extrinsic motivation, and human emotion - all of which are critical social and psychological elements and discussed in the review of literature. The human elements unrecognized by TAM and UTAUT are, ironically, considered by an older but more recently refined concept and series of studies on the physical and social distance created by distance learning (now LMS) technologies: transactional distance.

Transactional Distance

After studying the perceptions of connectedness between students and teachers in a distance education setting over the course of a decade, Moore (1991, 1993) described how dialog (i.e. student-teacher interactions), programmatic structure, and learner autonomy combined to influence the meaningfulness of learners' experiences - a concept he termed "transactional distance." Specifically, he examined how high levels of dialog positively affected student attitudes and stressed the importance of maintaining strong student-teacher connections despite physical distance. Doing so helped avoid feelings of disconnectedness and apathy felt by students. Saba and Shearer (1994) verified Moore's (1993) report through empirical research, where they developed a method for reducing transactional distance through synchronous video lessons that simultaneously increased opportunities for student-teacher dialog and reduced course structure.

Boyd and Apps (1980) also described the phenomenon of transactional distance in reference to correspondence courses taken via synchronous and asynchronous video sessions. As technology matured, Garrison (1989) updated the original Boyd and Apps model and focused on relationships between learners, content, and instructors - specifically, the dynamics of interaction

between two of the same category (e.g. learner-learner). Garrison's study revealed that the interface between people and content was influential on learning, especially in cases where the system of learning provided more opportunities for interaction between learners and instructors.

Though LMSs as we know them were not present at the time of Garrison's (1989) research, Burge (1988) found the implications for improving pedagogy through the promotion of two- or three-way interactions versus one-way transmission to be readily evident. The concept of equivalency emerged as a way to explain how distance education methods could be equally as effective and of the same quality as face-to-face teaching so long as student-teacher, student-student, or student-content interactions existed at a high level (Anderson, 2003; Anderson & Kuskis, 2007). In a time where LMSs are more prolific and a modern view of transactional distance might be applied, Moore (2007) described how student satisfaction with their learning process and environment was positively impacted if more than one of the aforementioned types of interaction existed at a high level, but not at the expense of providing learners with a sense of autonomy. In other words, the LMS environment cannot be structured to the point where students do not have any degree of control over their learning or opportunities to explore their interests outside of the LMS environment. This study will explore the ways in which faculty members consult with one another and share ideas about real world best practices to create an environment conducive to high levels of student interaction and autonomy. The expertise to create such environments is frequently gained through a variety of means - most of which involve some degree of training, mentorship, or informal dialogue between faculty members.

Summary of Purpose

Mitra (2003) explored how people teach themselves about technology and share their knowledge with others without prompts or incentives. He conducted a series of experiments during which a computer was connected to the internet, placed in public area, turned on, and left unattended. The study began in 1999 with one computer placed in a hole in a public-facing wall located in a Delhi slum. The "hole-in-the-wall" project grew to include over 100 computers situated in the area surrounding Delhi and scattered among other Indian villages. Observations of computer usage and interactions between the users (primarily children, and increasingly balanced between girls and boys over the course of the study) revealed that basic functions such as using the mouse or keyboard through more complex tasks like making drawings, surfing the internet, or conducting searches for specific information were learned through experience and without intervention by others.

Mitra (2003) observed that children learned both on their own and in groups of peers, noting that children with more knowledge and experience than others modeled advanced tasks for those younger or less experienced. He postulated that the children observed in the study were not isolated cases. Instead, he believed that groups of people with similar levels of experience could learn together, without formal training and with minimal intervention by others. Furthermore, Mitra claimed that members of a group of learners who possess differing levels of expertise can learn from each other and are intrinsically motivated to do so in an effort to better themselves. Mitra stated that the results of his experiment did not suggest that formal education is without its place and purpose; rather, that the amount of formal instructional time could be reduced to allow for peer-to-peer interactions that result in skill mastery. These forms of learning

take place naturally and outside of the formal classroom context, but might also be effectively incorporated into the classroom environment (Mitra, 2003).

Similar in purpose to Mitra's (2003) "hole-in-the-wall" research on informal social learning concerning basic computer and internet functionalities, this study aimed to examine how faculty members learn about LMS technologies from one another outside of the formal training context. A deep investigation of the nature of situations in which faculty members seek help, how they determine whom to consult for advice, the content and quality of their interactions, and the methods by which they employ situated and reciprocal learning to improve their practices has great potential to describe a previously understudied phenomenon. Ideally, having a better understanding of these processes will enable the development of an evolved form of LMS training for faculty members that provides technical training but capitalizes upon the strength and power of interpersonal interaction both in and outside of the training room. The following chapter synthesizes and analyzes the literature base concerning the topics mentioned above, including descriptions of relevant learning theories and studies associated with the topics of faculty members' LMS adoption, use, and interpersonal learning practices.

CHAPTER 2: LITERATURE REVIEW

An extensive review of the existing literature surrounding the topics of technology acceptance, faculty member adoption of LMS technologies, formal and informal LMS training methodologies, and theoretical perspectives that undergird the processes by which faculty members learn about effective usage of LMS technologies will be provided in this chapter. Searches primarily conducted using Academic Search Premier, EBSCOHost, Education Research Complete, ERIC, PsychArticles, PsychInfo, and Google Scholar yielded results containing a plethora of both quantitative and qualitative studies from a multitude of peer-reviewed journals and books on the aforementioned subjects. The following sections provide a synthesis and analysis of those findings, identify weaknesses and gaps in the extant literature, and reinforce the need for this study.

Technology Acceptance Models

Proposals and Criticisms

Several studies based on Davis's (1989, 1993) proposal and refinement of the technology acceptance model (TAM) purported to link the combination of faculty members' perceived usefulness and ease-of-use of an LMS and its constituent features with attitude toward and adoption of LMS elements (see Brief Summary of Technology Acceptance Models in Chapter 1). Although his early research focused on technology adoption among the general population, Davis (1993) concluded that usefulness was considerably more influential than ease-of-use on

peoples' attitudes by a four-to-one margin. This finding suggested that people might be more inclined to spend more time learning about a more difficult or complex system due to its perceived usefulness, but Davis conceded that there may be more factors at play in one's decision to embrace technology. Venkatesh et al. (2003) further explored this possibility in a comparative study of eight acceptance models that emerged from further exploration Davis's (1989, 1993) original model of technology acceptance.

Venkatesh et al. (2003) undertook the task of assessing and comparing the models in a longitudinal study that included participants from a variety of business sectors - all of whom were exposed to and trained on technologies new to them as a part of their employment. The researchers surveyed participants before, during, and after training with an instrument that measured factors of each of the eight models. Next, Venkatesh et al. conducted an analysis to determine which factors had the greatest correlation to the intended and actual use of the new technology. Four factors emerged as being most highly correlated to actual use: (a) performance expectancy, or the perception of how the technology could improve job performance; (b) effort expectancy, or the perception of ease-of-use of the technology; (c) social influence, or the perception of the importance others place on learning the technology; and (d) facilitation conditions, or the perception of the extent of institutional and technical support for the new technology. Based on the results of their study, Venkatesh et al. proposed and claimed to have validated a unified theory of acceptance and use of technology, or UTAUT. Although it appeared to be a comprehensive way to view technology acceptance, UTAUT fell prey to criticism within a few years after its introduction.

One of the strongest criticisms of both TAM and UTAUT came from a commentary by Bagozzi (2007), who denounced TAM for being overly simplistic in its claim to have reduced the technology adoption decision to two variables (perceived usefulness and ease-of-use) without regard to the social and external elements of the decision-making process. Bagozzi stressed that most decisions regarding technology adoption are not made by an individual, but rather by administrative directives. Additionally, he declared that TAM failed to consider anything beyond technology adoption. He further asserted that TAM does not take into account whether individual or community goals are achieved through the use of technology, the motivation that drives adoption, or the emotions of adopters - critical social and psychological elements discussed later in this chapter. Bagozzi equally disparaged UTAUT, which he claimed was overly complicated in its attempt to condense over 40 independent variables down to four, and with equal disregard of the intra- and interpersonal elements mentioned above.

Application to Educational Settings

Both before and despite Bagozzi's (2007) criticism, models like TAM and UTAUT were and continue to be cited by researchers who study educators' decisions to adopt new technologies into their pedagogy and classroom practices. After a meta-analysis of literature based on technological acceptance theories applied to educational settings, Šumak, Heričko, and Pušnik (2011) suggested that the proliferation of studies based on TAM was due to the model's simplicity, while researchers ignored UTAUT due to the more complex methodologies required for its incorporation into research. Šumak et al. called for the incorporation of more variables in future studies surrounding technological acceptance, noting that the most commonly studied

contributing factors - technical background and perceived self-efficacy - account for much less of an impact on technology adoption than do perceived usefulness and perceived ease-of-use.

Influence of technical background and perceived self-efficacy. Liaw, Huang, and Chen (2007), Teo (2009), and Walker (2008) studied the impact of educators' general level of comfort and expertise with computers and hypothesized that their degree of experience with technology directly related to their perceived self-efficacy regarding technology. Furthermore, the perceived level of self-efficacy largely influenced the eventual adoption of educational technologies. Results of these studies showed that faculty members' intentions to adopt educational technologies were highly influenced by perceived self-efficacy related to levels of technical experience. Regardless of past experience, currently practicing faculty members were considerably more influenced by perceived usefulness of the technology, likelier to experiment with new applications, and more frequently sought training opportunities as a part of the decision-making process. Perceived ease-of-use and the availability of institutionally provided technical support (usually in the form of formal training) were not absent from the equation, but found to be distant secondary contributors to adoption.

Buchanan et al. (2013) reaffirmed the findings described above, but questioned the implication made in TAM that perceived self-efficacy is the result of one's prior technological background. A majority of faculty members who participated in the study indicated that gaining direct exposure to the LMS via formal training and independent practice improved their perceived self-efficacy with respect to the LMS, which increased their inclination to use the LMS as a part of regular teaching practice. The institutionally provided infrastructure, training, and

support exposed faculty members to possible uses for the LMS and increased the perceived ease-of-use of the system, described by Buchanan et al. as powerful and critical factors for adoption.

Influence of perceived usefulness and perceived ease-of-use. Given the results of the aforementioned studies and calls from Bagozzi (2007) and Šumak et al. (2011) to expand the variables considered for eventual educational technology adoption, subsequent studies conducted by Liaw et al. (2007) and Walker (2008) focused on the ways in which perceived usefulness and perceived ease-of-use are affected by instructor experience, institutional climate and support, and quality of the LMS. In line with previous findings, both studies focused on perceived usefulness as a predictor of eventual adoption. Al-Busaidi and Al-Shihi (2012) conducted a factor analysis that resulted in their claim that perceived usefulness and perceived ease-of-use can be more deeply described and predicted by three variables: (a) instructor attributes such as perceived technical self-efficacy, general attitude toward technology, previous experience with LMS technologies, and propensity for innovative teaching methods; (b) institutional attributes such as the availability of training and technical support, extrinsic motivators (e.g. monetary, credit toward tenure, etc.), administrative support, and task-appropriate technology; and (c) technological attributes of the LMS such as its technical quality, availability of service and support, and quality and quantity of support documentation. Concurrent and subsequent studies revealed that available LMS features had a particularly strong influence on perceived usefulness and the eventual satisfaction of faculty members who chose to adopt LMS technologies, followed closely by instructor attributes related to willingness to innovate and perceived match between pedagogy and available LMS tools (Lee, Hsieh, & Hsu, 2011; Najmul Islam, 2011; Samarawickrema & Stacey, 2007).

Other contributing influences. Perceived usefulness has emerged as a consistently strong predictor of the intention to adopt an LMS. Rogers (2003) developed innovation diffusion theory (IDT) in 1963 to describe how a technology spreads throughout human populations. Lee et al. (2011) and Samarawickrema and Stacey (2007) examined the factors that impact technology adoption through the lens of IDT and found that a few were significant contributors to LMS adoption. The strongest predictors of LMS adoption were (a) relative advantage, which describes the extent to which one perceives a technology to be superior to the one it purports to supplant, and (b) compatibility, which refers to the degree to which one's values, experiences, and needs are consistent with what the technology offers. Lastly, Samarawickrema and Stacey found that faculty members were even more inclined to adopt the LMS if they considered themselves to be technological "risk-takers" and felt that doing so would improve their teaching practices and perceived job performance.

Reasons for Faculty Adoption of LMSs

Technology acceptance models describe factors that determine whether faculty members adopt LMS technologies, but neither go beyond the binary adoption decision nor explore the deeper rationales and thought processes that contribute to the final decision. Schoonenboom (2012) suggested that faculty members base their decisions in part on a consideration of whether an LMS sufficiently replaces alternative methods of achieving the same educational ends. She concluded that the importance placed on adoption of new technology, both intrinsic and extrinsic motivation for using it, the extent to which an LMS delivers an opportunity to improve pedagogy, and the availability and ease-of-use tools offered by the LMS played the most important roles in the decision-making process. Lastly, the consideration of student reactions and

expectations also plays a part in the decision (Percival & Muirhead, 2009; Rourke & Coleman, 2010).

Sources of Motivation

The arena of motivation is large, and a more thorough discussion of theoretically grounded research findings pertaining to specific types of motivation (i.e. expectancy-value, self-determination, and self-regulation) is presented later in this review. Grounded in theory, the concepts of intrinsic and extrinsic motivation as described by Ryan and Deci (2009) are frequently mentioned in the literature as factors that impact the decision to learn about and adopt an LMS. Studies conducted by Butler et al., (2004), Shea (2007), Sørebø, Halvari, Gulli, and Kristiansen (2009), and Tastle, White, and Shackleton (2005) examined intrinsic motivators and reported quite similar results. Faculty members who considered themselves to be on the cutting edge of technology and pedagogical trends tended to be early adopters of LMSs simply due to personal curiosities and a desire to explore alternative ways to teach students. They were also more receptive to training opportunities, seeking help online, asking for assistance from individual peers, or participating in peer groups as a means for exchanging ideas in a social setting. Furthermore, these individuals tended to have higher self-efficacies related to technology - either preexisting or as a result of training and experience. The aforementioned qualities often combined to serve as an internal driving force to improve one's teaching through the use of technology.

Extrinsic motivators, though shown in Ryan and Deci's (2009) research to be less powerful and sometimes damaging to intrinsic motivators, also emerged as factors influencing LMS adoption and were found to be similar. Institutional- or departmental-level directives might

lead a faculty member to begin using an LMS, but less draconian measures such as release time for training and course development, differential pay for teaching using an LMS, or public recognition and awards also positively impacted adoption decisions. Conversely, a lack of support or training from the institution, insufficiency of remuneration or release time for course development, or scant recognition for one's efforts proved to be deterrents to adoption (Bagozzi, 2007; Birch & Burnett, 2009; Buchanan et al., 2013; MacKeogh & Fox, 2009; Oomen-Early & Murphy, 2009; Shea, 2007; Van der Merwe, & Mouton, 2005).

Opportunity to Improve Pedagogy and Reduce Transactional Distance

When building an LMS-based course, faculty members must strive to create and maintain as many opportunities as possible for computer-mediated communication - both student-student and instructor-student - to help students avoid feelings of disconnectedness and apathy. Greater extent and depth of relationships between learners, content, and instructors proved to be a positive influence on the student learning process, and faculty members who designed LMS content to be conducive and encouraging of meaningful relationships found the greatest opportunities to improve their pedagogy. They did so by aligning their pedagogy with tools made available through the LMS, all without sacrificing student satisfaction with course quality or stifling students' sense of autonomy (Anderson, 2003; Anderson & Kuskis, 2007; Boyd & Apps, 1980; Burge, 1988; Garrison, 1989; Liao, 2006; Moore, 2007).

When considering whether to use an LMS, faculty members must not only make a determination about how well the features of the LMS align with their current pedagogical practices; they must consider the extent to which they are willing to learn about the LMS features, the means by which to learn about them, and the degree to which they can adapt their

pedagogy to the LMS environment (Rourke & Coleman, 2010). Benson and Samarawickrema (2009) and Falloon (2011) concluded that faculty members willing to invest time learning to build a structured and consistent LMS environment found using an LMS to be harmonious with their pedagogy. The most successful LMS environments provided multiple opportunities for autonomous interactions between and among learners, instructors, and LMS content. Students in such courses reported a higher level of involvement and satisfaction with the course. Simple enthusiasm for LMS technology without regard for pedagogically sound practices, however, proved to be uninspiring for both faculty members and their students. Sound instructional design practices are necessary for LMS course design, which requires a more technically-oriented skill set (Steel, 2009).

Falloon (2011) and Lightfoot (2005) found that faculty members used an LMS to create an environment rich in opportunities for learner-learner and instructor-learner interactions, maintained a consistent and frequent presence by providing timely feedback, encouraged online discussions and dialog, created a course structure that facilitated student's location of course materials and opportunities for interaction with other students, and clearly defined a set of expectations for LMS usage. Given the existence of these traits in a course, students experienced a greater feeling of connectedness to faculty members and peers. Students reported a stronger sense of autonomy that encouraged them to explore their interests. Faculty members whose pedagogy included encouraging the formation of student study groups, studying while online, and the seeking out of internet-based materials outside the confines of the pre-defined curriculum also found LMS technologies appealing as a means to meet broad instructional goals and encourage learner autonomy (Bouhnik & Carmi, 2012).

Addressing of Chickering's Seven Principles

Many of the pedagogical methods mentioned in the above section closely align with Chickering's seven principles for good practice in undergraduate education (Chickering & Gamson, 1999; Chickering, Gamson, & American Association for Higher Education, W. D. C., 1987). Lightfoot (2005) cautioned that the push to adopt LMS technology sometimes comes at the cost of pedagogical quality and recommended that faculty members focus on technologies and tools that best address the seven principles rather than trying to employ as much technology as possible. The university-level business students who participated in Lightfoot's study showed a propensity to communicate more often with faculty members via electronic means when given the option to do so via the LMS. Students in the study also preferred to get information about the course - specifically announcements and expectations - via postings made in the LMS environment.

More recent studies support Lightfoot's (2005) findings and described how the seven principles could best be addressed by an LMS that allows faculty members to configure the interface or "look" of the course to suit their personality. Such customization made the courses appear inviting to students, encouraged student-faculty and student-student interaction via multiple means, and facilitated the setting of clear expectations by allowing for a diverse array of methods for presenting course materials and assignments. Faculty members' ability to adapt to changes in technology and the evolution of existing LMS features is critical, and such adaptations must be able to be made without sacrificing the ability to set high expectations and encourage a variety of learning methods. Institutional support and continuous training is necessary in order to help faculty members keep abreast of available LMS tools and techniques

for usage (Bailey & Card, 2009; Puzziferro & Shelton, 2009; Wang, Doll, Deng, Park, & Yang, 2013; Wang, Solan, & Ghods, 2010).

Availability of Tools

Despite the advances in LMS technologies, faculty members' needs for certain tools to be present within the context of the LMS remain fairly consistent. Lightfoot (2005) explained that without the presence of effective tools, technology quickly devolves to being an end without means (technology for technology's sake) rather than a means to an end (technological tools that enable faculty members to induce opportunities for deeper student learning). The preceding sections alluded to the expectation that specific tools be present in an LMS in order to reduce transactional distance, motivate faculty members to learn about and adopt the LMS, and assist faculty members with augmentation or adaptation of their pedagogy through the use of available LMS features. Faculty members select LMS tools for classroom usage based on three major criteria: communication, collaboration, and assessment (Benson & Samarawickrema, 2009; Puzziferro & Shelton, 2009; Steel, 2009).

Firstly, tools that enable student-instructor and student-student communication are imperative. Such two-way communication enables students and faculty members to create a personal connection and allows for the provision of prompt feedback. More formal tools such as discussion boards help students explore their own beliefs about course content and create a space for open dialogue and reciprocal teaching among students - often with the infusion of faculty members' comments and direction. A means for disseminating information about the course in the way of announcements contained within the LMS or distributed via emails sent from the LMS keeps students connected to the course in ways that face-to-face interactions alone cannot

accomplish (Benson & Samarawickrema, 2009; Gonzalez, 2010; Salyers, Carter, Barrett, & Williams, 2010; Schweizer et al., 2002; Steel, 2009).

Secondly, tools that provide opportunities for asynchronous student collaboration (e.g. wikis, blogs, etc.) and group project spaces where students can collaborate, construct knowledge, and complete assignments both synchronously and asynchronously help engage students with the course and its content in ways difficult to achieve in a traditional classroom environment. Many modern LMSs provide such advanced tools, but using them requires a commitment on the part of faculty members to receive training and support to build and administer them (Benson & Samarawickrema, 2009; Gros, 2002; Mishra & Koehler, 2006; Schweizer et al., 2002; Steel, 2009).

Lastly, many LMSs feature tools that allow for the creation of authentic assessments in addition to traditional objective- and essay-based exams. Authentic assessment involves the creation of complex assignments that emulate real-world scenarios in which students have freedom to investigate possibilities and propose a considerably wider range of responses than traditional forms of assessment permit. Regardless of the level of complexity of assessment functionality, LMS assessment tools require faculty members to have access to training and support in order to create functional, usable interfaces for students (Beebe, Vonderwell, & Boboc, 2010; Schweizer et al., 2002; Puzziferro, & Shelton, 2009).

Forms of Training

Faculty training for LMSs takes two major forms: both formal and informal. Formal training involves classroom-based training provided by instructional designers or information technology (IT) specialists and is sponsored by the institution. Walker & Johnson (2008)

described how classroom-based training has the potential to increase both the participants' perceived usefulness and intended usage of LMS technologies. Furthermore, faculty members who received formal support found they could decrease the amount of preparation time required to design and build their LMS courses (Visser, 2000). Communities of practice are typically composed of formally grouped sets of faculty members who learn about LMS features and instructional uses in an institutionally sponsored, structured, team-based environment. Sarsa and Soler (2012) suggested that faculty members, when given the chance to view and constructively criticize each other's course design, usability, and opportunities for meaningful student-student and student-teacher interactions, benefitted from the opportunity to work collaboratively in a formally constructed training setting.

Informal training generally consists of mentorships arranged by institutional IT specialists, instructional designers, or departmental administrators. Unstructured or impromptu interactions between faculty members who seek one another's help without supervision or structure provided by any institutional department or training program also exist, but they are understudied in the current body of literature. Conceicao (2006) and Wilson (2012) cautioned that classroom-based training focuses to much on teaching procedural knowledge, rather than emphasizing the pedagogical benefits of LMSs. They suggested that creating opportunities for social learning in the forms of arranged mentorships and informal interactions between experienced and inexperienced faculty members could be more efficient and beneficial for the production of high quality LMS courses.

Classroom-Based Training

The most traditional form of LMS training takes place in a computer lab where faculty members learn about the procedures used and best practices for implementing LMS tools in their courses. Classroom-based training allows for efficient transmission of information, but according to Falconer (2007), it can expose a chasm of understanding and experience between those who develop the training sessions and those who attend them. Falconer claimed that when faculty members participated in training sessions less rigid in format, trainers and participants found common ground through the negotiation of "boundary objects," or elements of the LMS that experienced technicians and novice faculty members used as common building blocks for teaching and learning. Bigatel, Ragan, Kennan, May, and Redmond (2012) conducted a factor analysis on more than 60 online education skills to generate a short list of seven elements suggested for discussion during classroom-based training: (a) active learning, (b) administration/ leadership, (c) active teaching/responsiveness, (d) multimedia technology, (e) classroom decorum, (f) technological competence, and (g) policy enforcement. Sensitive to the time constraints that deterred many faculty members from attending classroom-based training sessions, researchers at The University of Illinois created an online LMS training portal that, while still formal in structure, allowed for self-paced learning by faculty members (Varvel, Lindeman, & Stovall, 2003).

Several studies called for the combination of classroom-based training with opportunities for self-paced learning beyond the context of formal sessions. Results of the studies described the advantages of faculty members' physical presence in the classroom setting, where they had the opportunity for direct access to technical experts, instructional designers, and others with

varying degrees of technical and LMS experience. The same studies also cautioned that formal sessions were often too rigid in format, overly technical in nature, and limiting of interactions between participants. Suggestions for alleviating these concerns included creating opportunities in the classroom setting for participants to construct their own knowledge by discussing their learning processes, critiquing each other's designs, and learning diverse approaches to achieve the same ends (deNoyelles, Cobb, & Lowe, 2012; Falconer, 2007; Gonzalez, 2012; Irani & Telg, 2002; Schweizer et al., 2002). Butler et al. (2004) also recognized the value of classroom-based formal training as a way to present basic LMS skills in a structured environment, but felt that social learning opportunities are best achieved through the creation of small groups of faculty members who work together as a community of practice with the objective of continuing their training beyond the confines of the classroom walls.

Communities of Practice

By definition, communities of practice (COPs) are composed of groups of faculty members who share common goals and interact with each other in a structured or semi-structured format for the purposes of idea exchange, constructive criticism, demonstration of best practices, and group meaning making (Cochrane, Black, Lee, Narayan, & Verswijvelen, 2013; Reilly et al., 2012). COPs generally involve some amount of formal training before faculty members are organized into groups for collaborative learning and idea sharing. In fact, results from several studies suggest that the most effective COPs - both in the sense of achieved learning outcomes and faculty member satisfaction - begin with classroom-based training. When faculty members cannot be present on campus, synchronous video-based training was an occasional substitute for in-person training. Once faculty members possessed a common baseline of LMS knowledge and

skills, they collaborated on their own time to learn more about how to solve pedagogical problems using the LMS and shared solutions with peers (Butler et al., 2004; LeBaron & McFadden, 2008; Paulus et al., 2010).

Being formal in nature, COPs typically involve participation in follow-up meetings or additional classroom-based training for the purpose of cross-group idea sharing and continued technical support provided by IT staff members and instructional designers. Recommended methods for follow-up ranged from weekly or monthly in-person meetings to synchronous video-based meetings to posting ideas and findings on a wiki site (Cochrane et al., 2013; LeBaron & McFadden, 2008; Paulus et al., 2010; Reilly et al., 2012). The combination of initial training, participation in COPs, and attending follow-up meetings or sharing ideas online is time consuming. Several researchers considered faculty member reactions to participating in a COP and cautioned that faculty members need appropriate release time, compensation, the opportunity for securing tenure or promotion for having participated, and continuous access to technical support staff in order to best ensure motivation and support for learning about LMS functionality. Additionally, the shared knowledge of COP members should include a combination of technical and pedagogical outcomes in order for faculty members to feel their time was well spent (Birch & Burnett, 2009; Cochrane et al., 2013; LeBaron & McFadden, 2008; Oomen-Early & Murphy, 2009; Paulus et al., 2010; Reilly et al., 2012). Oomen-Early and Murphy (2009) indicated that some of the same results made possible by COPs could be achieved via less formal means such as mentorships or impromptu interactions between faculty members.

Mentorships

Birch and Burnett (2009) considered the barriers to participating in formal training mentioned earlier in this review and interviewed faculty members who possessed varying degrees of technical and teaching experience. As a result of the interviews, Birch and Burnett recommended that providing unstructured but consistent access to pedagogical and technological mentors could encourage faculty members who do not have time to participate in formal training to learn about LMS technologies. When not forced by administration or other external pressures to participate in formal training, several studies concluded that faculty members often prefer to work with one another to learn about LMSs and exchange ideas for effective pedagogy surrounding the technology. Working with peers helped encourage faculty members with technical knowledge of the LMS to share their experiences and provide one-on-one demonstrations to others in the same department or discipline, with the added benefit of allowing for flexible scheduling of meetings and less pressure to perform in front of others. In other words, faculty members felt more comfortable consulting with one another without the oversight of a training leader or the risk of being exposed as inexperienced in front of peers (McQuiggan, 2012; Mishra & Koehler, 2006; Oomen-Early & Murphy, 2009; Samarawickrema & Stacey, 2007).

Mentorships can help form strong relationships between two or more faculty members and provide a context for those with more experience to share their knowledge and expertise with less technologically inclined colleagues in a low-threat environment. Having the opportunity to share information about using the LMS combined with the ability to discuss and demonstrate best practices, show real world examples, and apply pedagogical knowledge to the

technical environment of the LMS motivated both mentors and mentees to seek additional knowledge, explore more complex LMS features, and return to share their findings with one another (Buchanan et al., 2013; Mishra & Koehler, 2006; Puzziferro & Shelton, 2009; Shea, 2007). Mentorships also allow for the social construction of knowledge in its most basic sense: through the sharing of experiences using language and demonstration. Furthermore, the provision of opportunities to combine pedagogical and content knowledge with technological knowledge and experience encouraged experimentation and the solving of pedagogical problems using the LMS as a tool (Buchanan et al., 2013; McQuiggan, 2012; Samarawickrema & Stacey, 2007; Vaill & Testori, 2012).

Unstructured or Impromptu Interactions Between Faculty Members

Sometimes formal training, structured communities of practice, and even formal or informal mentorships are deemed too time consuming or simply not sought out by faculty members. Nevertheless, those who choose to use an LMS rarely do so in a vacuum (LeBaron & McFadden, 2008; Puzziferro & Shelton, 2009; Reilly et al., 2012). Buchanan et al. (2013) questioned whether faculty members who were comfortable with technology and had a high self-efficacy for learning about new technologies could have their needs met through training and experience alone. They suggested that while consistent IT and infrastructure support were important, equally important were the interpersonal support systems that grew organically from faculty members working together to learn and use the LMS.

Samarawickrema and Stacey (2007) found that those who had an informal support system in place - in other words, casual access to novice and expert faculty members - tended to be more willing to experiment with and find solutions to pedagogical problems using the LMS with the

support of peers. Critical to the success of such interactions is a combination of access to a more knowledgable other, a peer struggling with the same technological issue, and the opportunity to discuss the intersection of technology, teaching, and content in a social setting (Vaill & Testori, 2012). Several theories on social learning and motivation pertain to the informal situations described above. The next section describes several theories pertinent to the scope of this study and summarizes previous researchers' efforts to reveal how faculty members learn about LMS technologies via individual and collaborative means.

Theoretical Perspectives

Studies on mentorships and informal interactions between university faculty members are sparse in the body of literature on LMS technology usage and training. There are, however, several theoretical bases for a study on such interactions - specifically social learning and motivation. The following subsections briefly describe some of the applicable theories and summarize research findings relative to this study.

Expectancy-Value

Expectancy-value theory has deep historical roots in the field of educational psychology that date back to the 1930s. Lewin (1938) first defined the construct of value as an activity to which an individual attaches personal importance, where a high level of importance creates a high sense of value. Atkinson (1957) refined the construct by adding that value is tied to the attractiveness of success on a specific task. Eccles et al. (1983) defined four components that contribute to the overall value of a task: (a) attainment value - the importance of achieving success with respect to the task; (b) intrinsic value - the extent of satisfaction experienced while completing a task; (c) utility value - the extent of pleasure derived from completing the task; and

(d) cost - what must be ignored or given up in order to complete the task. Higgins (2007) expanded the construct to include a motivational component, adding that an individual's desire to succeed at a particular activity had a direct impact on the value placed on it.

The construct of expectancy as first proposed by Tolman (1932) simply referred to one's belief about success with an activity, and Atkinson (1957) expanded upon the definition by adding that one's level of expectancy is tied to an individual's assumed probability of success on a given task. Wigfield and Eccles (2000) described expectancy as one's belief about how well he or she will perform on a specific task - related to but not to be confused with self-efficacy, which has to do more with beliefs about ability than with expectations surrounding imminent task performance.

Expectancy and value work together to predict whether one chooses to engage in an activity, the subsequent level of persistence toward success, and the ultimate achievement of expected results. Wigfield, Tonks, and Klauda (2009) summarized the research findings of Eccles and others and explained that individuals choose to engage in a task because of a combination of high value placed on the task, an expectation of success relative to the belief in one's own abilities, the influence of others' beliefs about both the importance of the task and expected performance of the individual, and the perception of a degree of difficulty for achievement, which Atkinson (1957) proposed serves as a motivator for success (as opposed to tasks deemed easily achievable).

Agbatogun (2010) conducted a study on Nigerian university professors and lecturers with the intention of making the connection between faculty perceptions of e-learning, perceived ease-of-use, intention to use the technology (the TAM model) and the actual usage of LMS

technologies. Though the study focused primarily on an expansion of TAM to include actual usage rather than just intention for usage, Agbatogun found through interviews with professors and lecturers that expectancy-value theory played a role in the determination of actual usage. The perception of ease-of-use created a high level of expectancy, which generated a sense of value in using the technology - ultimately helping to generate motivation for actual usage. Garrote and Pettersson (2007) focused on Swedish faculty members and found a strong negative correlation between perceived cost and expectancy of success. The more time required to learn and implement an LMS feature, the less motivated faculty members were to use the LMS. When long-term benefits for using LMS features were clearly present or previously demonstrated, faculty members in the study tended to place a higher value on usage and held similarly high expectancy for success. The Garrote and Petterson study did not explore the connection between intention and actual usage, however.

Mahdizadeh, Biemans, and Mulder (2008) conducted a factor analysis based on data from a survey that measured faculty member's actual usage, perceived added value, and barriers to employing LMS technologies in their teaching. Similar to results in the Garrote and Petterson (2007) study, Mahdizadeh et al. found that prior demonstration of ease-of-use and subsequent successful deployment of LMS technologies (observed or by first-hand experience) had a direct positive effect on expectancy and subsequent usage - especially when the faculty member experienced the benefits first-hand. Faculty members also placed a higher value on LMSs when consistent assistance was provided through formal training and institutional support.

A couple of studies revealed the impacts of LMS training on expectancy and value. Wozney, Venkatesh, and Abrami (2006) described how the perceived risks of wasting time

working within an LMS environment or an unsuccessful implementation are greatly reduced through training and experience that demonstrate the implementation of LMS technologies within the context of the instructor's specific teaching practices and subject area. Participants in the study frequently mentioned application- rather than skill-based training as having the greatest positive impact on increased expectancy for success and increased value of LMS usage. Paechter, Maier, and Macher (2010) underscored the importance of training faculty members to the point where they have high levels of expectancy and value for LMS usage, suggesting that faculty members who feel they successfully deploy LMS technologies in their courses not only derive personal benefits, but their efforts help students develop similarly high levels of expectancy and value surrounding LMS usage.

Considering that the aforementioned studies tie faculty members' value of LMS technologies and expectancy for successful deployment to perceived or witnessed benefits of LMS usage, it would seem that faculty members who collaborate or consult with one another both within and outside the context of formal LMS training might be able to increase the value of usage and expectancy of success through a mutual exchange of suggestions for use and demonstrations of proven best practices.

Self-Determination

Self-determination theory is grounded in the presumption that all individuals have an innate desire to learn that is driven by the intrinsic motivation to feel competent and autonomous. Achievement of those two feelings makes the activity inherently pleasurable and further builds intrinsic motivation to continue learning, making appropriate and necessary adaptations along the way. Activities over which individuals feel they have control - in the senses of choosing to

perform a given task and the ability to continue or discontinue its pursuit based on outcomes - are highly rewarding when the individual reaches competency milestones (Reeve, Deci, & Ryan, 2004).

Except in early instances of children's play unfettered by adult inputs or impositions, most learning activities take place within a social context of imposed extrinsic motivators (e.g. school requirements, wanting to mimic one's friends, etc.) that may negatively impact one's motivation to perform or continue an activity for which intrinsic motivation already existed. Exposure to one's surrounding culture, values, and practices frequently causes internalization of those facets of society - especially when combined with a perception of security or support for the individual (Deci & Ryan, 1985; Ryan & Deci, 2000). Furthermore, when people feel they have the autonomy, competence, and desire to assimilate external cultural behaviors and practices for themselves (a concept termed relatedness), they are able to integrate the extrinsically motivated activities into their own intrinsically motivated desires to learn (Rogoff, 2003; Ryan & La Guardia, 1999).

Deci (1971) studied the impact of extrinsic motivators on situations where intrinsic motivation already existed by providing monetary rewards to college students to complete work they were already motivated to do and found that intrinsic motivation decreased. Deci also found that replacing monetary rewards with positive feedback about progress and final products resulted in increased intrinsic motivation. In short, studies that replicated or were similar to the original Deci study confirmed that extrinsic rewards, imposed deadlines, externally-created competition, evaluations, and close oversight all undermined one's sense of autonomy and

contributed to a loss of intrinsic motivation, while simply providing support and feedback in lieu of external rewards had a positive impact on intrinsic motivation (Ryan & Deci, 2009).

There exist only a few studies that attempt to connect self-determination theory to faculty members' experience learning about and using LMS technologies. Tastle et al. (2005) confirmed Ryan and Deci's (2009) supposition that intrinsic motivators trump extrinsic motivators in their examination of the primary motivating factors for faculty members who chose to build a course using LMS technologies. In line with self-determination theory, the top two motivators for the survey participants were personal desire and perceived added value to the course (intrinsic motivators). Financial compensation and institutional directives (extrinsic motivators) were among the least frequently cited.

Ho (2010) studied a group of instructors with varying degrees of experience using an LMS in an attempt to determine why they used and continued to use the LMS in their teaching. The study employed structural equation modeling in an attempt to connect TAM to the three basic elements of self-determination theory that contribute to increased intrinsic motivation: autonomy, competence, and relatedness. The results of the study revealed several statistically significant relationships. Firstly, perceived autonomy regarding LMS usage was positively correlated with perceived usefulness of the LMS. Secondly, perceived competence contributed to both perceived ease of use and confirmation of one's decision to use the LMS. Lastly, perceived usefulness, perceived ease of use, and confirmation of the decision to use the LMS all had positive correlations with subjects' attitudes and satisfaction, which ultimately correlated with a continuance of LMS usage. Based on the results of the study, Ho suggested that building competence, fostering autonomy, and finding opportunities to establish relatedness are critical to

instructors' continued usage of LMS technologies. He made no suggestions for how those ends might be achieved in terms of training or support, however.

Sørebø et al. (2009) more directly studied the impact of autonomy, competence, and relatedness on faculty members' motivation to use and continue to use LMS technologies. Similar to the findings of Ho (2010), Sørebø et al. found through structural equation modeling that perceived competence was the largest contributor to intrinsic motivation to use and continue using LMS technologies. While the researchers expected that autonomy would be the largest contributing factor, they acknowledged that simply being a member of a university-level faculty typically involves having a high level of autonomy as a part of the position. Nonetheless, autonomy and competence contributed to high levels of satisfaction with and continued usage of LMS technologies. The study cited training and widely available support as being potentially critical contributors to the development of competency and encouragement of autonomy.

None of the studies above mention specific suggestions for training or support, nor do they suggest ways to further develop competencies and autonomy surrounding the use of LMS technologies. Given that competency and autonomy are critical components of a faculty member's decision to use and continue using such technologies, it is possible that both components could be addressed not only in formal training situations, but also through informal mentorships and one-on-one consultations.

Self-Regulation

The concepts of competency and autonomy are loosely a part of self-regulation theory, which is related to self-determination theory in the sense that it focuses on one's intrinsic motivation to engage in and continue improving upon performance and achievement to the point

of personal satisfaction (Schunk & Zimmerman, 1994). Zimmerman and Cleary (2009) succinctly summarized the research that contributed to the formation of self-regulation theory. The theory suggests that intrinsic motivation to achieve personal goals causes the creation of an internal feedback loop. First, the learner takes into account his or her perceived personal abilities to achieve a desired outcome and then sets goals and develops a plan for achieving the outcome. Next, the learner actively assesses him or herself during the learning process using internal and external feedback. Finally, the learner reflects upon his or her performance against the desired outcome. The loop begins again as the learner reassesses perceived abilities based on actual performance, modifies or sets new goals, and adjusts future behaviors to more efficiently achieve success.

Zimmerman (2000) developed a cyclical, three-phase model for self-regulated learning based upon the feedback loop described above. The model begins with the forethought phase, where a learner establishes a desired learning outcome and then assesses beliefs about ability (self-efficacy), expectation and desire for success, level of interest, and the value of achieving success. Based upon this self-assessment, the learner sets goals and establishes a strategic plan to reach them. In the performance phase, the learner must rely upon his or her abilities and motivation to self-instruct, manage time, maintain interest, create an inspiring learning environment, and visualize success. Critical to this phase is the learner's ability to honestly assess progress toward achieving the established goal. The self-reflection phase is based upon the learner's evaluation of his or her progress and subsequent satisfaction with that progress. A highly regulated learner becomes motivated to modify his or her strategies to more efficiently reach the goal, whereas a less regulated learner may be discouraged by poor performance or

attribute failure to external causes. Highly regulated learners also recognize the need for and seek outside help where necessary. The cycle begins again as the learner looks to adopt new strategies or adjust goals in order to achieve the desired learning outcome.

Schunk and Zimmerman (1997) suggested that self-regulated learning begins with strong and external social influences that the learner gradually reduces as he or she gains competence and confidence, somewhat resemblant of scaffolding, a concept attributed to Vygotsky's (1978) theories of social learning (McCaslin & Hickey, 2001). The main difference between scaffolding and Schunk and Zimmerman's model is that the level of external support is determined by the learner, rather than the more knowledgable other. After establishing a desired level of skill competency, the learner first observes an individual who can demonstrate mastery of the desired skill. Next, the learner emulates the model using his or her own strategies to master the skill. During emulation, the learner is heavily reliant upon external feedback and praise, which serve to bolster intrinsic motivation to continue. The learner then practices the skill in a structured environment (e.g. pre-constructed tasks) with minimal external feedback, building his or her confidence through self-reinforcement and an internally generated commitment to skill mastery. Finally, the learner achieves the ability to self-regulate when her or she can adapt and apply the mastered skill in new contexts.

Bagozzi (2007) commented on the connection between self-regulation and LMS adoption. He suggested that future research models shift away from TAM, which he found to lack both a human element and the examination of actual technology usage. Instead, he suggested using a paradigm focused on cultivating self-regulated learning and taking into account faculty members' needs to interact, discover sources of intrinsic motivation, and develop

competencies surrounding technology adoption and usage. Though not directly related to LMS proficiency, Butler et al. (2004) studied a group of teachers who participated in professional development workshops that provided the opportunity to observe new skills in context, emphasized the formation of collaborative groups to analyze existing pedagogical beliefs and practices, and encouraged individuals to adapt their teaching to reflect their new learning. The researchers found that this group of teachers developed a strong ability for self-regulated learning and a greater proclivity for adopting and adapting new teaching styles according to continuous assessment of skills and performance.

Paechter et al. (2010) confirmed the importance of a learner's (in this case, college students rather than faculty members) having an experienced model to emulate as they work to develop skill competencies in an LMS environment. The researchers suggested that faculty members who have the opportunity to model and communicate with other competent faculty members during the skill-building phase of LMS course creation would derive greater success and self-satisfaction as they work to become the models their students eventually emulate.

Mishra and Koehler (2006) discussed how contextualized LMS training that de-emphasized individual technical skills and encouraged collaborative exploration and design of classroom-ready LMS artifacts enabled faculty members to take control of and regulate their learning. In line with self-regulation theory, this model allowed for the trainer to serve as the experienced model rather than top-down lecturer. In a revised instructor training program at the University of Central Florida, faculty members who had access to an LMS expert and other faculty members as models during their LMS skill acquisition and course development processes reported that having the freedom to learn on their own - but with access to support - enabled

them to take a greater responsibility for their own skill mastery (deNoyelles et al., 2012). The employment of expert facilitators to demonstrate skills and subsequently function as coaches is an example of the application of a broader theoretical concept: situated learning.

Situated Learning

While it is possible for learning to take place without a context - via lectures, readings, drill and practice, etc. - Lave (1997) posited that institutions that employ only the aforementioned methods produce students who have merely acquired knowledge but do not necessarily understand how and when to employ it. Through his studies on apprenticeships for tailors in Africa, Lave observed what he termed a "cognitive apprenticeship," during which a student first observed the basic parts of the craft (e.g. simple sewing, hemming, etc.) and performed each increasingly complex task under the supervision of the expert. After a mastery of basic skills, the student moved to more complex and combined tasks, ultimately resulting in the ability to create a complete garment.

The situation described above is an illustration of Vygotsky's (1978) social learning theory. Vygotsky theorized that learning takes place after a person first observes something in a social context (in the case above, the creation of a garment by an expert in an African tailor's shop). Next, the person practices what he or she observed on his or her own, thereby internalizing the learning in the context of the learner's culture and language. Lave's (1997) concept of cognitive apprenticeship closely resembles learning within what Vygotsky (1978) termed the zone of proximal development. The zone to which Vygotsky referred represents what a learner can accomplish with the assistance of a more experienced guide. The guide serves the purpose of helping the learner move beyond his or her current abilities toward being able to

perform a previously impossible task. In the case of the African tailor described by Lave (1997), the student began his internship unable to sew. He observed the tailor's work, practiced and internalized each sub-skill, and ultimately - with the help of the expert tailor - learned the craft.

Lave (1997) and Lave and Wenger (1991) described situated learning - sometimes called situated cognition - as a learning process that takes place under the supervision of an expert within a context that enables the student to incrementally learn the subtasks required to master a whole task. Similar to scaffolding, situated learning involves an expert who first functions as a model and demonstrates a task in sequences of subtasks. A student observes and then performs each subtask under supervision, and receives constructive feedback from the expert. After mastering the subtask, the student masters increasingly complex tasks that ultimately result in the ability to combine all subtasks and perform the complete task on his or her own. During the process of learning and mastery, two things occur simultaneously: The student always learns subtasks and tasks within an environment where the task is readily applicable, and the expert gradually removes support for the student as he or she approaches mastery. Lave (1997) and Brown, Collins, and Duguid (1989) studied elementary school math students who performed kinesthetically-based tasks related to various mathematical concepts and found that those students more readily mastered concepts than students who learned via traditional drill and practice methods. Furthermore, students who learned concepts in context could more easily recognize other real-world applications of the same concepts and apply them successfully (Carr, Jonassen, Marra, & Litzinger, 1998).

Young (1993) argued that instructors themselves also benefit from situated learning experiences - especially when they are expected to become experts in teaching using situated

learning methodologies. He described how inservice training could be redesigned to have teachers function as apprentices who strive for task or conceptual mastery in the context of their discipline - or even in more general educational contexts such as classroom management or pedagogy. Gros (2002) suggested that pairs or groups of instructors - each of whom has similar goals for task mastery - can more efficiently learn in a collaborative and contextualized environment. Young's (1993) and Gros's (2002) assertions seemingly transfer to technology mastery and training, as demonstrated by the existence of several studies that explored the concept of situated learning with respect to faculty members' mastery of LMS technologies.

Mishra and Koehler (2006) pointed out that when training instructors to use educational technologies, the tendency to focus on the functionality of the technology itself frequently overshadows the teaching of how to use the technology in an educational context. They found that the most frequently occurring training paradigm involved a distinct separation between what technology experts deemed appropriate for training and the needs of faculty member participants. Training delivery focused primary on LMS features rather than usage contexts (Falconer, 2007; Wilson, 2012).

While educational technologists are a necessary part of the training process, Mishra and Koehler (2006) suggested a new paradigm for training in which trainees combine a realistic situational context with their existing pedagogy and content knowledge - initially under the supervision and guidance of a technology expert. This training format helped instructors more efficiently learn and effectively deploy educational technology in the classroom. The paradigm built upon the assertions of Schweizer et al. (2002) that faculty members need experience training in an authentic environment and learn by completing tasks they will actually complete as

a part of their teaching experience using the LMS - but not without the initial guidance of an expert. Despite initial thoughts that faculty members best learn how to use LMS technologies through formal training on LMS features, Papastergiou (2006) found that faculty members more effectively learn how to use the LMS through case studies, materials development, and collaborative learning situations that encourage real-world use and creative exploration of the available LMS features.

Butler et al. (2004) reinforced the importance of combining context with collaboration, stating that instructors naturally formed communities of practice when encouraged to try new ways of teaching. After having had the formal technology training, they were able to discuss the results among one another, reflect critically on outcomes, and provide constructive feedback for future success. Participants in their study frequently cited the ability to consult with one another as being the most crucial component to their learning and continued usage of educational technology. The content, process, and quality of such consultations is not adequately described by any study surveyed as a part of this literature review, however.

One-on-one or small group consultation among faculty members is a highly effective and desirable practice in the space of LMS training and usage. Vaill and Testori (2012) found that faculty members who faced the challenge of transitioning to a new LMS preferred learning about the LMS using situated, authentic training experiences where they had the ability to access professional experts on a regular basis. After the initial training period, however, faculty members preferred to confer with and learn from one another - a process called reciprocal teaching.

Reciprocal Teaching

The concept of reciprocal teaching is based upon mentorship and the belief that more knowledgeable and experienced individuals can teach skills, monitor progress, and provide personal guidance to a less experienced individual in a one-on-one context. The concept of mentorship dates back to Greek times: The word "mentor" originates from the story of Odysseus's request that Mentor teach battle skills to his son, Telemachus. Today's business world embraces mentorship: As newer, younger, more technologically experienced people join the enterprise, managers capitalize on the fact that mentorships can work in both directions. Workers with less experience might possess critical advanced technological skills that make them valuable and effective in providing guidance and support to seasoned colleagues. A mutually beneficial, two-way mentorship also has the advantage of allowing individuals to hone skills in a less public, low-stakes environment found to be more comfortable to both parties and more conducive to learning (Strom & Strom, 2012).

Reilly et al. (2012) suggested that even the most reluctant faculty member might be encouraged to learn about and use LMS technologies if provided with brief formal training followed by the opportunity to interact with both novice and experienced faculty members in a community of practice. Reilly et al. found that faculty members seemed to be more willing to receive suggestions and criticism from other faculty members. Hardaker and Singh (2011) also reported that faculty members were better able to motivate each other to learn and improve LMS-related skills when working with more experienced colleagues. They intimated that a certain degree of peer pressure and competition developed during peer-to-peer interactions, which created a more productive and energetic environment not easily replicated in a formal

training setting. A meta-analysis on research on LMS usage in higher education settings performed by Papastergiou (2006) confirmed frequent mentions in the literature of the efficacy of training using situated learning and technical support in the form of other faculty members.

Transitioning from one LMS platform to another provided Cochrane et al. (2013) with the opportunity to explore how using reciprocal teaching practices could ease faculty members' trepidations surrounding LMS usage. The study concluded that while providing basic formal training on the functionality of the LMS and access to technology experts was essential, the intentional forming of groups of faculty members as learners proved to be an effective means of encouraging faster adoption of the new LMS platform because faculty members' individual needs could quickly be met through brief, unstructured consultations with more expert users. Having smaller groups or dyads also enabled discussions and learning to take place in a situated educational context, rather than a purely technological one. Schweizer et al. (2002) found that communities of practice in which faculty members had the opportunity for frequent dialogue and the giving and receipt of constructive criticism to be especially effective.

McQuiggan (2012) reinforced the importance of creating environments where faculty members can collaborate and consult with one another during the development and deployment of their LMS courses. Her qualitative case study revealed that participants frequently cited the ability to work one-on-one with other faculty members on transferring ideas to the context of the LMS platform as an invaluable tool. Furthermore, reciprocal teaching bolstered faculty members' self-esteem concerning the LMS and was correlated with effective and continued use of the system. Nearly all of the participants exposed to the opportunity to interact with and learn from

colleagues mentioned that they wished they had even more time to consult with and see examples from their colleagues.

Paulus et al. (2010) and Vaill and Testori (2012) similarly found that reciprocal teaching between faculty members increased confidence levels and helped them make more effective use of LMS tools. The researchers indicated that more experienced faculty members reported taking pleasure in mentoring those less experienced by showing them examples of designs and processes found to be pedagogically sound and well received by students. Conversely, the inexperienced faculty members shared their new knowledge of and experiences with the LMS, thereby completing a cycle consisting of a constant transferral of experience and new ideas between each party.

Need for Further Study

Shortcomings of Formal Training

While there is certainly a need for traditional, classroom-based training, the studies described in this literature review cumulatively suggest that faculty members need much more than encouragement to adopt an LMS and that training on the purely technological and procedural aspects of the LMS is insufficient. Rourke and Coleman (2010) specifically warned against letting LMS technology alone be the driver of curriculum redevelopment. The literature suggests that the most effective faculty training begins with highly structured activities led by an expert and quickly evolves into learning in a practical context and working with the LMS in real world situations (situated learning). Much like the tailor's apprentice described earlier, novice faculty members have a greater need for a technical expert as they learn the individual skills and build their technical knowledge with regard to the LMS. They practice the skills and combine

them under the supervision of an expert, develop task competencies, and require decreasing amounts of assistance from the expert over time.

At this point, purely formal, top-down training begins to fail faculty members who desire contextualized learning opportunities and the ability to work with others. Moreover, the studies cited on situated learning and reciprocal teaching described how faculty members benefit from working closely with one another on real wold problems. Cochrane et al. (2013) described how formal training can begin with highly structured activities, but strongly suggested that the most successful training encourages impromptu collaboration and mentorship among faculty members.

Gaps in the Literature

Returning to Chickering et al. (1987) and the seven principles for good practice in undergraduate education, three of the principles are especially relevant not just for teaching undergraduate students, but for helping faculty members learn about LMS design. Many of the studies described in this review of the literature reference or confirm (a) the power of developing reciprocity, (b) encouraging person-to-person contact, and (c) using active learning strategies. Puzziferro and Shelton (2009) specifically attempted to apply all seven practices to faculty training and support, but did not go beyond theoretical suggestions for how to shift the paradigm.

Among the research already completed on how faculty members best learn to use LMS technologies effectively, no study delved beneath the surface of such interactions to explore the details of how relationships between individuals form or the exact nature of the interactions between individuals. Without such detail, it is difficult to determine which qualities of interpersonal interactions outside the formal training environment contribute most positively to a

faculty member's learning about and effective use of LMS technologies. Bailey and Card (2009) suggested that future research specifically examine the effects of personal networks among faculty members who teach using an LMS and indicated that such personal partnerships might eventually be able to formalized - or at least kindled - in the context of formal training or structured mentorship programs.

There are opportunities for the integration of formal and informal training not yet explored by the extant literature base. Periodic formal training sessions might reinforce skills and provide scheduled opportunities for faculty members to share discoveries and best practices, but not without a more detailed exploration of how the out-of-class, informal interactions between faculty members develop and take place. It is difficult to quantify how or why one seeks assistance, the process by which one selects a colleague for mentorship, or the nature of the real-world scenarios faculty members use to learn from one another. Thus, a qualitative exploration of the aforementioned facets is justified.

Summary

This study has the potential to provide a richer view of the nature and content of faculty interactions with one another concerning issues related to LMS technologies - specifically those outside the context of formal training. By taking a qualitative, interview-based approach, this study aims to go beyond the current literature and reveal the detailed nature of the situations in which faculty members seek help from one another, how they determine whom to consult for advice, the content and quality of the conversations and demonstrations, and how they employ situated and reciprocal learning to improve their practices surrounding usage of LMS technologies. Ideally, having a better understanding of these processes will enable the

development of an evolved form of LMS training for faculty members that provides technical training but capitalizes upon the strength and power of interpersonal interaction both in and outside of the training room.

CHAPTER 3: METHOD

Purpose of Study

The purpose of this study was to deeply explore the learning that occurs outside the context of formal LMS training among faculty members who actively use LMS technologies as a part of their regular teaching practice. Specifically, I attempted to address the following research questions:

1. What situations cause faculty members to consult with one another outside the context of formal training regarding the pedagogical and technical issues surrounding the implementation of LMS technologies?
2. How do faculty members determine whom to consult with regard to LMS technical and pedagogical assistance?
3. How do faculty members experience learning from one another about LMS technologies outside the context of formal training?
4. How do faculty members use real-life examples to help each other learn about LMS technologies outside the context of formal training?

Exploratory Nature of the Study

Creswell (2002, 2007) described the need for qualitative research to be conducted in instances where "a problem or issue needs to be explored … [when] we need a complex, detailed understanding of the issue." He further explained that the level of detail needed to adequately

explore the problem or issue and describe the findings may be accomplished by interviewing individuals directly and seeking to have them describe their experience through the telling of their stories. For this study, I endeavored to explore by interviewing faculty members who used an LMS for classroom instruction and chose to interact with another faculty member or colleague regarding the use of the LMS. These interactions occurred outside the context of formal training and included consultations, requests for technical assistance, and seeking of advice on incorporating pedagogy into LMS course design. All participants were faculty members from the same, large, public research institution who used the LMS made available by the campus administration. Establishing the parameters above enabled me to focus solely on the subjects of interest and allowed them to tell their stories, from which I distilled the themes presented in Chapter 4 and discussed in Chapter 5.

Research Methodology

Yin (2003) advised that qualitative research should be based on established or emergent theories. This study followed Yin's advice to use existing theories as a basis for the study; I used them to inform the writing of interview questions that stood the best chance to provide the information I sought without directly asking participants to comment on how specific theories applied to their behavior. To the extent possible, the interpretation of the results of this investigation is in the context of existing theories such as reciprocal teaching, situated learning, self-regulation, self-determination, and expectancy-value. Such interpretive bases led to suggestions for practice to be examined by future studies, as elucidated in the discussion.

The goal of an exploratory qualitative study is not necessarily a search for grounds to establish new theories, nor is it to make an attempt to pose an overarching generalization

applicable to larger populations. Rather, it is one of the first steps in the process of looking for information and answers along the lines of the research questions in hopes of learning from research participants information that both answers the research questions and informs the direction for future studies (Berg & Lune, 2012). Through individual interviews with participants who use LMS technologies and work in consultation with other faculty members and colleagues to learn more about the technology and pedagogy surrounding its use, I attempted to establish the groundwork for future studies that could investigate how formal training methods concerning LMS technologies might capitalize upon or facilitate the social learning already occurring among faculty members.

Ultimately, findings from exploratory qualitative studies based on interviews provide information that describes and/or explains the subject of interest to the point where a deeper understanding allows more than the opportunity to answer the research questions; that understanding illuminates the opportunity for potential replication of the study with participants who possess different qualities or who work under different circumstances than those in the initial study. When combined, the results of multiple studies more fully explain the topics of interest and may provide evidence of patterns in participant experience and behaviors that justify experimentation - in this case, with the integration of social learning into formal LMS training (Berg & Lune, 2012).

For this study, I employed individual, semi-structured interviews as the primary source of data to answer the research questions, as supported by the work of Merriam (2001) and Rubin and Rubin (2005). A description of the specific nature of the interview process and the rationale for its use follows, but it is important to note here that interviews permit the deep level of

investigation necessary to attempt to explain a specific issue or situation. Interviews are a useful research tool because they enable the provision of "thick, rich description" that Geertz (1973) stated is crucial to any attempt to adequately illustrate a phenomenon. Merriam (2001) and Brinkmann and Kvale (2015) stated that semi-structured interviews provide a means for gathering specific information via predetermined open-ended questions and allow for follow-up questions to clarify participants' responses or seek more depth of information.

Rationale for Interview-Based Design

Merriam (2001) specifically discussed the applicability of qualitative research methodology in the context of education and elucidated the process of interview techniques. She explained the importance of employing interviews to obtain knowledge that could not otherwise be gained through observation alone. Furthermore, she specified that interviews are especially appropriate in circumstances where the participants' perspectives and feelings are important, which was appropriate for the purposes of this study. Semi-structured interview techniques, as described by Merriam, allow for establishing a combination of highly structured questions that elicit specific information and less structured, open-ended questions that allow for a degree of interpretation on the part of the participant. Open-ended questions typically receive richer responses and serve as the basis for follow-up questions.

Because the content and quality of responses cannot be predicted - especially at the onset of the interview process - open-ended questioning permitted the participant and me to negotiate our way through the exploration of the themes and experiences I intended to explore. The findings of this study are comparable to those of other in-depth studies on faculty behaviors and

social interactions, and may be considered to collectively address the research questions and serve as the foundation for future studies (Berg & Lune, 2012; Yin, 2003).

Brinkmann and Kvale (2015) underscored the importance of creating a balance between strictly scripting an interview and allowing for dynamism and responsiveness of the participant. While carefully worded, open-ended questions are important to gain specific information, the participant's experience diminishes if they cannot respond freely. Brinkmann and Kvale suggested beginning semi-structured interviews with more highly structured questions, but quickly moving to open-ended and follow-up questions that simultaneously accomplish the goal of addressing the researcher's needs but take into account the responses and emotions of the participant at the time of the interview. This method of questioning should not be mistaken as being at constant risk for digression; rather, the researcher is responsible for maintaining the direction and momentum of the interview by asking specific, directed questions to keep participants on track.

Participant Recruitment, Selection, and Consent

In this study, I explored and then described the nature of interactions between university-level faculty members concerning their learning about LMS technologies outside the context of formal training. Given my budgetary, time, and travel limitations - and in consideration that this is an exploratory study not intended to be representative of all faculty members everywhere - I targeted a narrow group of people for selection for the interview process once I received IRB approval (see Appendix A). All participants were faculty members (a combination of tenured, non-tenured/tenure-track, and non-tenured/non-tenure track statuses) from a variety of disciplines and levels of experience who used the same LMS - Canvas by Instructure, in this case

- to varying extents. All participants had at least one meaningful or helpful interaction with another faculty member or colleague - in the eyes of the participant, anyway. Due to the limitations mentioned above, I selected participants from a population of faculty members at a single large, public, research university in the southeastern United States.

I developed recruitment emails (see Appendix B) and sent them to all faculty-level users who actively used the LMS in the semester prior to the interview or during the semester of the interview itself. The Instructional Multimedia Group (IMG), the unit that manages the campus LMS, provided me a list of email addresses for active faculty members. The recruitment email requested that recipients complete a brief survey administered using Qualtrics survey software. The survey sought informed consent (see Appendix C for a copy of the informed consent letter), gathered demographic data relevant to the study (see Appendix D for a list of questions asked in the demographic survey), and requested permission for me to contact the faculty member to establish a day and time for an approximately 90-minute interview. The informed consent letter explained that the study concerned the experiences of faculty members who both use Canvas and consult with other faculty members about its use. Additionally, it assured potential participants that personally identifying information would be stripped from their records for the purposes of disclosure and discussion in this study.

Of the 847 faculty members who received emails soliciting their participation in the survey, 114 responded to the survey (13.5% response rate), 46 consented to be interviewed (40.4% of respondents), and 12 participated in an interview. The group of 114 survey respondents reported the following about their gender and race: 55% were female, 44% male, and 1% other; 91% were White, 4% Black, 4% Asian, and 2% other. Less than 1% reported

being Hispanic or Latino. Participants ranged in age from 30 to 79 (one participant indicated an age range of 19 to 29) and had from less than one year to more than 25 years of university-level teaching experience. Ninety-one percent reported that they frequently or often use an LMS as part of their regular teaching practice.

To protect the privacy of potential interviewees, the Institutional Review Board (IRB) required that I gather the demographic survey data separately from the request for a consent to interview. In other words, I could not connect participants' individual responses to the demographic survey with a specific individual's consent to interview. Of those who participated in the interview, however, I visually observed the composition of the group of participants to be 58.33% female, 41.67% male, and 100.00% White. The institution's personnel directory indicated that 66.67% of the participants were tenured and 33.33% were non-tenured, and participants represented the academic disciplines of business, education, engineering, forestry, liberal arts, and nursing.

All participants consulted with other faculty members or colleagues with respect to LMS usage to varying degrees, as established more explicitly during individual interviews. I made an attempt to represent a diverse range of faculty members in terms of all criteria mentioned above, but the final selection of participants ultimately depended upon respondents' willingness to dedicate the time to be interviewed and their availability for follow-up questioning and member checking. The process used to solicit interviews from the 46 participant candidates was four-fold: First, I created a list of participant candidates and ordered it alphabetically by last name. Next, I used a random number generator to assign a number to each of the participants and reordered the list by the assigned number. A second random number generation provided the order in which I

invited participant candidates for an interview. Finally, I emailed the first 15 participant candidates with an interview request, to which I received 12 affirmative responses within 48 hours. I chose not to conduct more than 12 interviews because I wanted to be able to focus on a manageable amount of data and be able to adequately represent and interpret individual voices in the description of my findings. Furthermore, after conducting the first nine interviews, I realized that information gleaned from participants consistently fell into a defined and narrow set of themes, described by Bernard and Ryan (2010) as data saturation. The remaining interviews did not yield any new themes, but they provided more data to support the existing ones.

Interview Process and Questions

Process

Based upon participant availability, I scheduled 90-minute interviews that took place at a location of mutual convenience - such as the faculty member's office, a common meeting room, classroom, or my office. In all cases, the interviews took place in a closed-door setting where I ensured privacy to the greatest extent possible. Details on the exact means and the mechanics of the data collection are described in the next section.

Since I collected demographic data of participants in the initial survey, the interview dispensed with collecting the same information and consisted of both open-ended and follow-up questions using a semi-structured interview process. I developed the list of questions as a result of an exploratory pilot interview with a faculty member from the College of Education. The participant in the pilot interview provided feedback that helped me eliminate superfluous or duplicative questions, develop more directed questions to solicit the depth of information I sought, and determine follow-up questions that expanded on the initial answers received.

Additionally, the pilot interview revealed that I needed 90 minutes (rather than 60) to conduct the interview. A selected sample of questions is presented in the next subsection, and a more complete list is located in Appendix E.

The semi-structured interview process allowed me to obtain the information and depth of description necessary for this study. It also permitted me to ask follow-up questions in reaction to the participants' responses to elicit more information along unexpected lines or to request that the participant provide a more in-depth answer. Semi-structured interviews are less rigid in nature, and according to Brinkmann and Kvale (2015), tend to make the participant feel more at ease - as opposed to feeling interrogated by an inflexible and completely scripted process.

Sample Questions

Examples of questions I posed during the interview are (a more complete list may be found in Appendix E):

1. Describe your level of experience using Canvas or another LMS.
2. Describe your experience with respect to formal (classroom-based) training you attended to learn about Canvas.
3. Tell me about a story of success involving the use of Canvas in your classes.
4. Tell me about a time where you provided assistance to another faculty member or colleague to assist them with achieving success involving the use of Canvas in his or her classes.
5. Tell me about a time you struggled with incorporating Canvas into your classes.
6. Are there any other sources you use aside from formal (classroom-based) training and consultation with other faculty members or colleagues to inform your use of Canvas? If so, please describe those sources.

Data Collection and Transcription

I recorded all interviews using a microphone connected to a Mac computer running Garage Band software. The software easily enabled me to monitor recording levels and timing, and it allowed for pausing and starting if the participant needed a brief break. I maintained each interview session as a separate file stored on the local hard drive of the computer, which I encrypted using U.S. government standards and accessed via a password known only to me. I stored the computer itself - when not in use - behind a minimum of one locked door and out of plain sight. I backed up the data files to a portable hard drive - also encrypted using the technology mentioned above - and secured in a locked cabinet behind a locked door in an off-site location. I limited the creation of hard copies of data (e.g. for preliminary coding of transcripts, review of a second coder, etc.) and maintained the hard copies in a locked cabinet behind a minimum of one locked door. Once the study concluded, I destroyed all personally identifiable data using industry standard means (seven-pass erase) within a year of the conclusion of data gathering and analysis.

During the period in which the interviews took place, I transcribed and coded the audio files using atlas.ti, a software package designed specifically for qualitative research. I made every attempt to transcribe each interview wholly and accurately. Once I completed the transcription of all interviews, I verified accuracy via member checks with select participants by emailing them snippets from the transcription of their interview. I then asked participants to either verify the snippets as an accurate representation of the interview or requested they provide clarification for specific responses. Participants had the opportunity to clarify their responses, along with the opportunity to suppress data if they presented a compelling reason or indicated an

error in transcription. No participants requested data suppression or indicated errors in transcription. Hard copies of transcriptions remained in my possession and were destroyed within a year of the conclusion of data gathering and analysis.

Data Coding and Analysis

Following coding procedures suggested by Bernard and Ryan (2010), I developed an initial codebook before the first interview and maintained it in electronic format on the encrypted machine described earlier. The initial set of a priori codes contained codes and sub-codes based upon the theories outlined in the literature review, as well as a very limited set of codes I expected to emerge during interviews (e.g. background information on education and teaching experience, prior experience with LMS technologies, and the use of outside resources such as websites and online forums for assistance). Since this study is an exploratory qualitative study where interview participants' answers were neither predictable nor constrained, a few emergent themes presented themselves during the coding process. For each emergent theme, I created new codes and sub-codes to represent them. The codebook for this study is presented in Appendix F, and a sample of coded data appears in Appendix G.

As suggested by Bernard and Ryan (2010), I used a hard copy of two transcripts for an initial coding pass, where making notes in the margins and having the ability to use different-colored highlighters assisted in adjusting to the coding process itself and making adjustments to the codes as necessary. I took note of potential emergent codes and added them to the codebook. The initial coding pass consisted of multiple readings and markings of the transcript, where I focused on a subset of codes for each reading so as not to miss any important coding

opportunities. Ultimately, I coded the transcripts used for the initial coding pass using atlas.ti, which I used for coding the entire body of transcripts for this study.

Once I completed the initial coding of the interview transcripts, I provided transcript exemplars and my codebook to a second, more experienced coder - in this case, a member of my committee with over a decade of coding experience. After an independent coding of the transcript exemplars, the second coder and I met to discuss our coding process and compared coding patterns. Bernard and Ryan (2010) described this process as the establishment of intercoder agreement - an important element of a qualitative study that reduces the likelihood of primary coder error and provides an opportunity to reduce the amount of personal and observational subjectivity in the coding process. During this meeting, we discussed discrepancies in coding and arrived at a mutual understanding of the codebook and the methods by which we coded. Most of the discrepancies in coding resulted from either a lack of application of a theoretical framework to a passage or differences in the level of specificity each coder used during the process. For instance, a few codes fell under the umbrella of other more general codes (e.g. the codes for informal assistance received and informal assistance provided are subparts of the more general code for informal interactions between faculty members). Once we discovered the main sources of discrepancies in coding, the secondary coder and I discussed and agreed upon the application of theoretically-based codes to passages and the usage of general codes simultaneously with subpart codes. We reached further understanding of coding discrepancies after I provided additional context to the exemplars provided to the secondary coder. I did not make any additions to the codebook as a result of the meeting, but I reorganized portions of it to more clearly show that some codes had associated sub-codes that emerged during transcription.

Bernard and Ryan (2010) described several methods for establishing intercoder agreement, but since two individuals coded for the purposes of this study, Bernard and Ryan suggested comparing codes by lining up text from each coder and determining whether agreement exists for each instance of a single code. The result for each coding instance is a binary (i.e. either text was coded similarly or it was not), which produces a simple percentage of agreement between coders. Bernard and Ryan acknowledged that the research community disagrees on the threshold for "acceptable" intercoder reliability. Given the nature of this study, I suggest that an intercoder reliability of 70% or higher is acceptable. For the transcript exemplars assessed by both coders, and after our discussion of coding techniques and discrepancies described above, the secondary coder and I reached consensus on 87% of the coding.

Subjectivity and Assumptions

Between careful and accurate transcription practices, member checking, initial coding, and checking for intercoder agreement, I made all reasonable attempts to gather, analyze, and present credible and trustworthy data as a part of this study. Brinkmann and Kvale (2015) conceded that much of the determination of the degree of trustworthiness of coded data is left to the reader, who must ascertain their belief based on researcher reputation, perceived or declared researcher subjectivity, and the description of the research process.

Since I am the research instrument for this study, it is both inevitable and expected that I insert myself and my ability to synthesize and analyze data into the study, but without abject bias. To establish trust and credibility with readers of this study, I feel it is appropriate to disclose all assumptions and potential biases by "bracketing" myself in the context of the study. It is the

goal of bracketing to help reduce the possibility of covert prejudice (Brinkmann & Kvale, 2015); thus, a full disclosure of my personal connections to the research topic follows.

I have always been a fan of technology of all kinds - particularly educational technology. In elementary school, I readily volunteered to advance the filmstrip to the next frame at the sound of the gong and learned to set up a reel-to-reel movie projector. I spent as much time in the computer lab as possible to work on producing newsletters and play math games. As a high school student, I was among the few students to be excited by the mere fact that I was encouraged to type my papers using a rudimentary word processing program. I taught myself to code in BASIC and began writing my own programs at the age of 13.

My undergraduate degree included course work in pedagogy and the completion of a certification process to teach grades seven through twelve. At the time, educational technology primarily consisted of overhead projectors and videotapes; nevertheless, these primitive technologies had a substantial presence in my lesson planning process. As a graduate teaching assistant, I used a newly developed LMS - WebCT - and an independent course website to facilitate learning and encourage interaction between students. Once established in my first university-level professional position, I began teaching first-year seminars in addition to my normal workload. As I developed my curriculum and syllabus, I was careful to employ the LMS (then Blackboard) at every opportunity.

My degree of experience using LMS technology reaches back to the genesis of what we know today as today's most modern LMSs. I have over 16 years of university-level teaching experience and am currently an assistant director for a comprehensive student services unit at the institution where I conducted this study. Among other things, I am responsible for the oversight

of the institution's first-year seminar courses. To that end, I place a high level of importance on the use of LMS technologies in the classroom and provide classroom-based training and limited out-of-class support for the use of Canvas, the institution's LMS at the time of this study.

Over the years of exposure to a variety of individuals ranging from master's-level graduate students to esteemed members of the faculty, I became acutely aware of the differing levels of technical prowess and degree of comfort with LMS technologies both during classroom-based training and outside the formal training context. While I rarely require technical support from other LMS users, I frequently seek feedback on LMS course design from my students and colleagues, which informs modifications to my courses and the subsequent formal training I provide to the approximately 80 first-year seminar instructors whom I supervise.

Though I might qualify to be a participant in my own study, I feel that my intimate knowledge of LMS technologies and experience training faculty members who possess various degrees of expertise allow me to approach the study with an informed set of eyes and ears. I am equally capable of helping a novice faculty member understand a simple function as I am providing constructive feedback to an experienced user. Given these assertions, I feel I am able to place myself within the context of this study as an expert professional who can refrain from judging others' work or teaching practices.

Epistemologically speaking, I consider myself to be a social constructivist, meaning that I believe humans learn by witnessing and exploring the world around them and by building their own knowledge and interpretations through experimentation and experience. Though learning can certainly takes place in a solitary environment, it also takes place in the context of social settings and through interaction with and observation of others. As a social constructivist, it is

also my belief that learning takes place in and is influenced by the context surrounding the individual - including but not limited to physical location and surroundings, language, culture, tradition, and time period. My beliefs are informed by the research and theories on social learning proposed by Vygotsky (1978, 1986) and Bandura (1977). After consideration of all of the declarations made above, I cede the interpretation of my level of trustworthiness and credibility to the reader and hope this study may be read with the understanding that I made every effort to approach it without letting any personal biases interfere.

Ethical Issues and Considerations

One must remember that for qualitative research, the researcher is the instrument and thus a powerful, all-in-one tool for gathering, analyzing, synthesizing, and interpreting data. As with all forms of research, however, issues of ethics must be considered. Per common practice and regulations imposed by the institution - and not to mention a sense of personal responsibility for all participants in the study - I sought informed consent from all participants electronically (See Appendix C). The consent form disclosed the nature of the study and potential risks and benefits to the participant, described the procedures of the data gathering process, and explained the methods used to protect the identities of and the data gathered on the participants. Additionally, I informed participants that the results of the study would be published as part of a doctoral dissertation and potentially in research journals - or presented at a conference. Lastly, participants had the right to refuse to participate in the study or withdraw their participation at any time before its completion. The aforementioned considerations are in line with recommendations made by Brinkmann and Kvale (2015) for studies that involve interviewing participants.

Issues of confidentiality are important to this study. Participants received pseudonyms and are not identified by their actual academic department. During transcription, I masked any mention of information specific enough to identify a participants' true identity with a generic substitution that did not change the essence of the participants' meaning. Recordings, transcriptions, and all other data associated with this study consistently resided on an encrypted and physically secured computer, and backups similarly existed on an encrypted and physically secured backup drive. No access codes, login information, or passwords existed in a location or format by which another individual could gain access except through extraordinary and illegal means.

Brinkmann and Kvale (2015) described how interviews with human subjects raise the issue of beneficence, or the intent to reduce the risk of harm to participants via all available avenues. In addition to the methods and procedures described above, participants received a briefing about the interview and the interview process before recording began. Even though the questions asked during interviews presented little-to-no risk, participants had the option to pause the interview or leave it altogether. All 12 participants completed their interviews in full. After recording each interview, I debriefed the participant and encouraged him or her to ask any lingering or clarifying questions about the interview and research process.

The final two chapters describe the findings of this study and highlight the implications of this project, its limitations, and make suggestions for future directions of study. Since this study's data consist primarily of information gathered through interviews with human participants, a thematic description is appropriate (Van Maanen, 2011). I considered this method to offer the best means for presenting the interview findings in an orderly fashion.

CHAPTER 4: FINDINGS

As expected, participants of this study provided thick, rich descriptions of their experiences working with colleagues while using - or learning to use - an LMS. This chapter presents a summary of participants' contributions that addressed the four research questions posed for this study. Twelve in-depth interviews yielded lengthy transcripts replete with detailed descriptions of experiences with the LMS and interactions with fellow colleagues. In line with the suggestion by Van Maanen (2011) that a thematic description is an appropriate method for describing findings based on interviews, the following sections condense the data into general themes that emerged as responses to the research questions. To the extent possible, I used the participant's own words to adequately and accurately illustrate each of these themes. To protect the confidentiality of participants, I assigned a pseudonym to each and did not reveal their academic department or college/school affiliations.

Situations Causing Faculty Members to Consult With One Another

Faculty members sought out colleagues for assistance outside the context of formal training for a variety of reasons. The following themes emerged from the data: avoiding inefficiencies associated with formal training, learning how departmental colleagues use the LMS to ensure consistency between course sections, seeking assistance from colleagues for basic technical issues, and gaining reassurance for course design with respect to specific and situated issues. It should be noted that formal LMS training was not required for faculty members at this

institution, so participants had varying degrees of experience with it. Not all participants attended formal training, but all participants had an opinion about the value of it that related to their reason for seeking out colleagues for assistance.

Avoiding Inefficiencies Associated With Formal Training

Among the faculty members who had attended formal training provided by the institution, the overall sentiment with respect to its efficiency was quite negative, though several positive remarks were made about the follow-up technical support made available by the same unit that conducts formal training. When asked to contrast her experience with formal training to one-on-one interactions with other faculty members, Rhea exclaimed, “I don't send [my colleagues] to formal training sessions. I just don’t.” Follow-up questions revealed that she found formal training to be too general in nature and not directly applicable to her subject area. Andrew stated flatly, “I don't think I ever went [to formal training]. I think I got some colleagues who are down the hall to just give me basic pointers.”

With respect to scheduling formal training sessions, the consideration of return on time investment was of high value: “I found it is a colossal waste of my time,” said Anita, “because [the trainers are] starting with how to turn on your computer and how to send email attachments, [and] I just always felt like at the very end [of the session], I could ask the questions that I wanted to have the answers to.” Jason reiterated the same sentiment about time. In a frustrated tone, he said, “So the last thing I've got time to do is to schedule and find an hour or two to go off to one of these classes.” He also offered a more tempered response: “The flexibility of having [a] short, pointed conversation with an experienced user as opposed being able to find an appropriate session and block out the time to go to that session [is more convenient].” The

faculty members quoted above desired efficient, timely, and contextualized help - something that formal training for heterogeneous groups of faculty members did not provide.

Ensuring Course Consistency

Not all references to formal training were negative. In sharp contrast, Mary felt her departmental faculty members benefitted from formal training but wanted to carry the conversation beyond the confines of formality: "The whole group went over [to training], and they were all interested in learning something new … and it kind of started at least a conversation [along the lines of], 'How could we do some things that were more in common amongst us?'" In this case, having the same formal training baseline enabled departmental faculty to work toward common curricular goals without technology becoming an impediment. Stephanie, a curriculum coordinator, described the experience thusly: "When it comes down to actually working with your own curriculum in your own courses … It is more conducive [to work] with people who are familiar with the content that you're trying to teach." In a similar vein, Katherine, another curriculum leader, mentioned that with regard to her faculty seeking help from her over attending formal training, "It's probably easier for them just to come ask me and find out." Comments like these suggest that while formal training can fulfill the role of providing basic guidance for course design, the people best equipped to give such help are those who are in the same department - more specifically, those who teach the same or similar courses and can provide course design assistance from an experienced insider's perspective.

Seeking Assistance for Technical Issues

Regardless of their impressions of formal training, participants frequently mentioned the need to be reminded about how to accomplish a very specific task in the LMS as a reason for

consulting a colleague. Although the option to call campus technical support was chosen at times, Lisa remarked, “Once I got my feet wet in Canvas and saw how friendly it was, then I no longer felt like I was going to do that. I was going to ask specific questions of [technical support] and then go to colleagues and say, ‘Hey, what are you doing?’” Sam described the same phenomenon from a slightly different angle: “I mean as a rule, we tend to support each other … whether it's a technological issue with teaching or whether it's a more routine matter of teaching. You know, ‘How did you do this assignment? How did you do that? Does this work for you?’ Generally, it's just more informal, casual conversation… I'll mention, you know, ‘I’d like to do this in Canvas, but when I tried it it didn't work.’ ‘Oh well here's what I did.’” The difference between seeking help for technical issues and the reconciliation of pedagogy with LMS features and practices frequently appeared to be one in the same. In nearly all situations described, however, the reason for seeking help originated from a need to address an issue in the context of a specific situation.

Gaining Reassurance for Course Design

Seeking help from colleagues for specific, situated questions is best encapsulated by Rob’s simple explanation: “Well, when you work with someone one-on-one, then you're typically just going to go to them to help you solve some specific issue, some specific problem. So you get exactly what you wanted and that's all.” Laura described the situated help as, “*tactics* as opposed to exactly how [you do something] in Canvas.” Her response illustrates how faculty members differentiate getting course design assistance - which encompasses the pedagogy of one’s teaching discipline - from technical help on LMS features.

The need for help with integrating pedagogy into use of the LMS emerged as something conveniently accomplished outside the context of formal training. An experienced faculty member, Rob described talking and learning about the LMS as something that "…just comes up in casual conversation. [Another faculty member in the department told me], 'I've been teaching with the same textbook for so long and now, I've built up this set of questions for each chapter.'" The second faculty member continued to describe the intricacies of setting up an open-book quiz that prompted Rob to respond, "Wow -what a great idea." Rob not only gained reassurance for his course design as a part of regular conversation; he also discovered opportunities for improvements. The informal interactions described above did not take place randomly; faculty members who participated in this study also explained their decision-making process for determining whom to consult for assistance.

How Faculty Members Determine Whom to Consult

When faculty members described how they chose colleagues to consult regarding the LMS, a narrow set of themes emerged. Pragmatism frequently prevailed; the immediate availability or convenience of accessing a colleague was commonly the sole reason for the choice. Perceived technical expertise with the LMS and familiarity with the help-seeking faculty member's curriculum were also practical reasons. On a pedagogical level, perspective-seeking from a more knowledgeable and respected other - in the creative, technical, or pedagogical senses - presented as reasons for selecting a colleague. On an interpersonal level, faculty members based their decision on whom to consult on their level of familiarity and comfort with the individual whose advice they sought.

Immediate Availability or Convenience

Participants frequently cited the convenience of soliciting help from colleagues as a main reason making a particular choice. Katherine succinctly described this rationale as, "Accessibility is important!" As a faculty member who frequently serves as the provider of help, she described the decision as purely functional: "It's probably the … uncertainty [surrounding finding help] - that [the person who needs help is] not sure - you know, not sure who to call… It's probably easier for them just to come ask me and find out." Katherine acknowledged the fact that she often spent time in her office with the door open, able to quickly answer questions or address situations for her departmental colleagues who stopped by.

More experienced participants also described the convenience and accessibility of colleagues as important. Jason explained, "We're all pretty busy so … usually we're usually pretty efficient about figuring out, 'Do you know that? Do you not know that?' and moving on with both parties involved." Sam said, "It … was just a matter of convenience that he happened to be there, happened to know." Jeff quipped: "I might be the guy standing there at that time…" Describing the ultimate convenience factor, Rhea described her preferred mode of accessing help: "I've been known to literally roll my chair down to [her] office when I'm just too flippin' tired. I will roll out and down. 'Can you help me do that?'" Participants immediately and consistently identified colleagues on whom they knew they could count to be available for timely responses to questions or issues.

Perceived Technical Expertise

Participants identified their most technically capable colleagues with ease as well - sources of assistance they trusted for help with LMS features. The theme of seeking others who

possessed more experience with LMS tools or LMS usage in general was exemplified in multiple ways. Katherine framed the concept quite simply. She stated, “I asked her because … I just know she's using it.” Rob explained his choice more elaborately, but with the same underlying reasoning that his colleague possessed more LMS experience: “Paul is known more as a Canvas guru around here, because he's been doing [it] for quite some time. And so I think people … who are using Canvas know to go to Paul … He has used a lot of these features, and so he... he's been doing it for years … When I started Canvas, I was really kind of under the gun to … get everything all ready in time… And so I was kind of panicking, I was like, ‘Paul, help!’”

Similar to Rhea, who rolled her chair down the hallway to get help, Mary combined the reasons of convenience and perceived expertise for selecting a colleague for assistance: “I might ask my direct neighbor here [because] he's very tech savvy… I mean we have we all have our go-to people for tech stuff, I guess. It was very obvious to me that [he] was the go-to person.” Having a “go-to person” is convenient - especially if they are physically proximate. More importantly, knowing that expert help was readily available actually encouraged Rob and Mary to seek assistance they might not have otherwise sought.

Perspective-Seeking From a More Knowledgeable Other

While technical know-how is important, perspective-seeking from other colleagues - often from those familiar with the course content or with similar pedagogical views - presented itself as important to several participants as they considered whom to consult for assistance. “Alex is beaucoup creative about how to do distance [education],” said Lisa, “He's one of the most creative individuals I've ever seen. And the way he does his distance ed... I have stolen so many ideas from him.” She continued, “If I'm looking for something creative, I go to Alex. If I'm

looking for how to manage something that the university wants us to do like Degree Works or whatever, I'm going to head to... I'll do Michelle." Based on her immediate needs, Lisa determined which one of her colleagues could provide the most relevant perspective and approach them for advice.

Andrew focused more on choosing a colleague who could provide alternative viewpoints in the technical sense: "I guess it would be someone who knows a lot about the [LMS] tool but knows a lot about, I guess, maybe the content area and the types of courses that I want to offer. And I guess I'd need to sit down [with] this person and just... I guess this person would need to be both like very well versed in IT, but also someone who also kind of like me that has expertise in a content area that knows the curriculum that they're trying to create through the tool." Andrew stressed the importance of form fitting function with respect to his course design, which was the rationale for his choosing a colleague with both advanced technical skills and a similar pedagogical expertise.

Familiarity and Comfort With Colleagues

Lastly, participants expressed a desire to work with a colleague with whom they felt comfortable - someone who would not judge them for a lack of experience and who provided caring and constructive criticism. Mary summarized this issue by commenting, "I suspect that [it's] a psychological question, actually, how people probably prefer talking to someone they feel familiar more familiar with … It might just feel better to be able to talk [to me] at the same time about [our course] or whatever, you know? I think that might have something to do with it. And I'm familiar with the issues that we have with these courses, right? So any issue that might arrive because of the course itself, you know - it and the technology - then I can address that at the

same time and tell him how I solve it." Participants described having a personal connection to a colleague as key to reducing the risk of being exposed as less-than-knowledgeable or inadequate. Anita explained, "I think that that creates sort of a safer environment where someone can come and say, 'Can you look at mine and give me some honest feedback,'" Laura bluntly stated, "[my colleague] probably... he would put up with my stupidity. And my having to ask the same questions every semester." It was important to Anita in her consideration of whom to contact "that they're not going to take it personally, but they also don't feel that they're opening themselves up to some vulnerability." Lisa, a frequent provider of assistance, described how she perceived her colleague's rationale for deciding to seek help from her: "Knowing Lucia, it's because she felt comfortable coming to me. You know, we feel very comfortable asking each other stupid questions and smart questions and all that." Relationships such as Lisa's and Lucia's developed over time and have a depth that cannot quickly be replicated by a technical support advisor, no matter the quality of assistance he or she can provide. It is clear from the comments above that participants were most willing to seek assistance or consult with one another if they had already established a mutually trustful, nonjudgmental relationship.

How Faculty Members Experience Learning From One Another

Once a faculty member determines whom to consult for assistance, they seek and receive it. This study explored faculty members' experience with seeking help and learning from one another outside the context of formal training in an attempt to describe the details of how such transactions take place. Katherine described her experience of being able to help another faculty member in terms of the intrinsic reward she gleaned from providing assistance: "It's not that I'm better at computers. I'm better at something than someone else, so that kind of feels good that

you actually can help someone out." Sam said, "Oh, of course it feels good. I mean we are teachers. We like it when we can help people learn something that's useful. It's going to make life better. So that feeling doesn't really change … As colleagues, we feel like we kind of have to watch each other's back." The experience of helping another colleague carried an emotional element for these individuals.

Though there is some crossover between descriptions of how faculty members experience learning from one another and how they use real-life examples during such experiences, the themes that emerged surrounding how faculty members experienced learning from a colleague primarily fell into the categories of sorting out details (e.g. "Have you figured this detail out?"), collaboration (e.g "Here's what we need to do."), and group meetings with colleagues. The format of help took several forms - from impromptu conversations, to planned arrangements for help, to group meetings among faculty members within a department.

Sorting Out Details

When sorting out details of how to work within the LMS environment, participants described the experience as one of seeking to remember something they had learned previously. Stephanie recounted one such situation: "I said, 'Do you remember? For some reason this isn't working right.'" Similarly, Katherine explained, "I was working on something that I couldn't remember how to do. I just said, 'Do you remember how to this?' Something about grades…" Lastly, Rhea described trying to remember how to do something she'd previously learned from a colleague: "It didn't stick. I still don't understand weighted grading, but Janet tried really hard. And she was really nice about it, but I still don't get it. And so I don't use it." All of the examples above were a part of impromptu conversations, but not all resulted in solutions to the presented

problem. Nevertheless, a dialog on LMS usage began, enabling opportunities for follow-up conversations based on discoveries of solutions to specific technical details. The excerpts also exemplify trusting, non-judgmental relationships among colleagues - the foundation for future collaboration.

Collaboration

Collaborating toward a commonly sought solution presented itself in a few ways. Jason described the experience of making sure other faculty members who taught the same course in the same semester used the LMS in a similar fashion: "We have to kind of get together and figure out how we're going to set up the Canvas (sic) and use of TAs involved and that sort of thing." Stephanie described a similar situation as "an opportunity to go sit with some folks that are maybe in the same area as you … and be able to ask questions and work on your course in that room and be able to say, 'Well here's specifically what I'm trying to do with this,' and work some kinks out." Discussing how to engage students in academic activities - in this case, completing readings - was also a source of discussion that focused on the LMS. Jeff explained, "Actually we talked a little bit about some potential solutions to - well, again - getting students to read the textbook. I related my online reading quizzes … the use of pop quizzes to try to stimulate a desire to actually show up to class on a regular basis. Just what works, what doesn't work." The interactions described above were also in-person, impromptu conversations.

Three participants employed an impromptu show-and-tell method for providing assistance: "I had a colleague who came to me a year or so ago," Sam explained, "and [he was also] missing the glossary feature. And I said, 'Well, this is what I did. You know, just make a page, enter the words, boldface what you want, put images in there whatever you want to do.' He

said, ‘You know, I hadn't thought about that.’” Andrew described an example of an impromptu interaction as, “Something will come up. I'll mention, you know, ‘I’d like to do this in Canvas, but when I tried it it didn't work.’ ‘Oh, well here's what I did.’” Anita explained a slightly different and more planned show-and-tell arrangement: “Another colleague [invited] me last semester, I think, to … view her Canvas course so that I could give her some feedback on ways that she could use Canvas a little more effectively, or, you know, some things that maybe she's not using correctly … just to give her a little bit of feedback…” Again, the examples above illustrate how faculty members who trust one another for honest feedback and who share a common goal for improved course design can work together toward solutions. Alternatively, faculty members in select departments described an opportunity to learn from one another in a slightly more formal setting.

Group Meetings

The most structured method by which faculty members experienced receiving assistance took place in the form of group meetings. “One of our [faculty members] has started a weekly meeting,” stated Jeff, “where we’re talking about things that work and don't work in the classroom - which I find extremely helpful. Just to be able to share victories and commiserate with people that understand what you're trying to accomplish.” Rob reported that he attended and benefitted from the group meeting Jeff described: “I guess that’s actually where I learned [about] Canvas quizzes… And so I think that's again some learning examples that you could get from Canvas as well of course a lot of other active learning techniques. And just you know what's working in your classroom, what's not working kind of thing.” The group meeting that Jeff and Rob described was initiated by a colleague rather than departmental administrators,

demonstrating how initiative on the part of one faculty member can lead to an impactful group sharing session.

Charged with oversight for a particular course, Anita described how faculty members who attended group meetings learned from one another and discussed issues relevant to using the LMS in the specific courses they taught: “There were a couple of other professors who wanted to sit in on that meeting because they were curious… And whenever they responded with, ‘Well you’re using it differently than any other professors,’ then their ears perked up too. ‘Well, like, how are you using it differently than we are? Is your way better? Or worse?’” Anita also explained her involvement in a regular departmental meeting: “[Every three weeks], we have a program meeting … So each week, I kind of show them another little piece of [Canvas]. So last week, I introduced to them Voice Thread and showed them how you access it through Canvas … So I tend to to share a lot of how I'm using Canvas, and how I’m using technology in general - even outside of Canvas.” Anita found a way to share her expertise and discuss best practices regarding LMS usage in the context of an existing departmental meeting - an experience welcomed by her colleagues.

Use of Real-Life Examples

Although the previous section described how faculty members experience the act of learning from one another, several of the descriptions included mentions of others using real-life (i.e. situated) examples to assist with learning about the LMS. After focusing exclusively on participant responses that related how situated examples aided in their experience learning about the LMS, three broad themes emerged: Some faculty members provided help by demonstrating the use of the LMS using their own course or activities as exemplars. A few novices sought help

by inviting more experienced colleagues to view and critique their work in the LMS. Others employed a mentorship model in which they provided guidance and support to a novice working on his or her course in the LMS environment.

Demonstrating by Example

The phrase "leading by example" may be cliché, but by definition, clichés represent something used to the point of becoming commonplace and unoriginal. In the context of education, however, the practice is common because it is effective, as exemplified by several participants' remarks. Jason described how colleagues with less LMS experience prompted a demonstration by asking him a simple, direct question: "Some of the older professors started coming to me and saying, 'All the students say that you're putting your homework assignments on the web… How do you do that?'" Lisa related a story about helping a new faculty member set up her LMS course. The new faculty member, after seeing the structure and design of the course, exclaimed, "Oh my gosh, Lisa, look how you got this set up! You got it set up in weekly modules, and everything the student needs is in that module… [The students] don't have to look anywhere else." Lisa explained her approach to course design and how her example impacted her colleague: "…Every one of my modules has an agenda for the module. It tells you what the objectives are, how much time it should take, what your assignments are… I shared with her how I do that, and I think she's got most of her courses set up the same way now." After seeing Lisa's use of modules, the colleague was able to modify her approach to her own course.

Sam, who had developed a dynamic glossary feature in the LMS, related how he helped a colleague create the same feature: "And I said, 'Well, this is what I did. You know, just make a page, enter the words, boldface what you want, put images in there… whatever you want to do.'

He said, ‘You know, I hadn't thought about that.’” A relatively novice user, Rob related his experience learning about how another faculty member in his department delivered online quizzes using the LMS. Rob recounted the conversation where the experienced faculty member explained, “I've built up this set of questions for each chapter. So … I just randomly choose [a set of questions] for each time. [The] reading is assigned for next Tuesday and [the students can] take the online quiz … up to three times. It will only record [the highest] score.” Rob’s response: “Wow! What a great idea!” It is clear from the examples above that exposure to how others use the LMS often inspires faculty members to emulate their colleagues.

Inviting Criticism From Colleagues

A different approach for learning in contextualized situations involves the less experienced user asking a colleague to review and critique his or her work in the LMS environment. “Another colleague … invited me last semester,” explained Anita, “to … view her Canvas course so that I could give her some feedback on ways that she could use Canvas a little more effectively, or, you know, some things that maybe she's not using correctly… just to give her a little bit of feedback on her use of Canvas.” Anita described another example of reviewing a colleague’s site: “…I tried to look at [her course] as a student. What are the assignments that she was asking me to turn in as a student in that class, and what are the benefits of that assignment? Was it something where [she was] assessing something? Or [was she] using it just as a filler? …I just really don't like it. And so I looked …To see, you know, is there a better way of using your time and students’ time? …And I think that maybe this [was] her first time trying to use [Canvas], so it was a little bit bumble-y. So I was able to come in: ‘Well as a student, this is what I saw,’ and, you know, she was like, ‘Oh, I didn't know you could see that…’” Opening

oneself to constructive criticism by colleagues is a regular part of the academic process, and one that applies to this situation. As is the case with peer review of research, the result of peer review of LMS usage opened a dialog between Anita and her colleague that resulted in a more refined product.

Mentoring Novices

Lastly, participants employed a mentorship model where one colleague helped another solve a specific problem by providing scaffolded guidance rather than by giving fully formed examples of their own LMS use. Jeff briefly described such an approach: "Okay you want to do this? You think that's the best way to do it. Have you considered…?" Lisa described how she made suggestions to a colleague who was building a course on dissertation completion, but did not provide the colleague with a concrete example. Lisa said to the colleague, "Start with module one… Module one could be your general... filing your plan of study. Module two could be about how to file your general... for your general oral exam. Module three could be about what that presentation should look like." An experienced LMS user, Rhea described her scaffolding approach to helping a novice colleague. She explained, "And so when people like that come to me or when the opportunity presents itself to talk to me, my question is, 'What about your class would you like to see be more efficient or more easy?' And 8.5 times out of ten, they talk about document delivery. And I'm like, 'Let's just do that. Let's just do that, and when you're really comfortable with that, we'll come back to another question.' …Use it to the level that you're comfortable, and then go on from there." Mentoring differs from the other approaches described in this section because it both creates a trusting, non-judgmental relationship between colleagues and encourages novice learners to contribute original ideas and solutions to problems as they

learn about the possibilities afforded to them by the LMS, as encouraged by Rhea in the last example. Mentoring also requires that the mentee take primary responsibility for his or her learning. In this spirit, Lisa and Rhea suggested the first steps for their mentees but stopped short of providing complete solutions.

Summary

The rich examples provided by participants in this study begin to explain the situations in which they seek help using the LMS, how they determine whom to seek for help, and the ways in which help is both given and received. “It's a very friendly collaborative kind of environment where we want to see each other succeed,” explained Anita. Sam’s comment elaborated on the same point: “We like it when we can help people learn something that's useful. It's going to make life better … As colleagues, we feel like we kind of have to watch each other’s back.” The next chapter endeavors to make meaning of these findings, connect them to the body of extant literature, and suggest ways in which the information provided by participants in this study might be used in future research and in practice.

CHAPTER 5: DISCUSSION

Situations Causing Faculty Members to Consult With One Another

The main themes that emerged from exploring the causes for faculty members to consult with one another outside the context of formal training were seeking confirmation from colleagues for basic technical issues, gaining reassurance for course design with respect to specific and situated issues, learning how departmental colleagues use the LMS to ensure consistency between course sections, and avoiding inefficiencies associated with formal training.

Participants - both those who attended formal training and those who did not - described a propensity to avoid formal training. Jason succinctly described the rationale for this behavior: "[I like] the flexibility of having short, pointed conversation[s] with an experienced user as opposed being able to find an appropriate session and block out the time to go to that session. And probably just another thing would be familiarity. They know me. They know what they're going to get conversationally or informationally when they talk to me." The expectancy-value theoretical framework summarized by Wigfield et al. (2009) most clearly explains this phenomenon. Formal training requires setting aside time and energy to learn in an environment and in a way that participants generalized to be "a colossal waste of … time" (Mary) or about "stuff that I'm not involved with" (Laura). Laura commented, "I feel like I have more important things to be doing in my life - in my career," which might seem to be hyperbole; but as a group that places such high value on time and immediate applicability ("just a quick and dirty two-

minute, ‘This is how I'm using it,’ kind of thing” (Anita)), faculty members who participated in this study did not agree that formal training directly prepared them for success in the classroom. Wozney et al. (2006) specifically addressed how the effective use of faculty members’ time and the contextualized implementation of LMS features increased the value of the LMS and associated training as well as the expectancy for success with using the LMS. While formal training can certainly achieve these ends, participants of this study described a preference for seeking contextualized help from known colleagues.

The findings of this study also correspond to the conclusion by Mahdizadeh et al. (2008) that faculty members who witness first-hand a successful LMS deployment have a higher value of an LMS and and a corresponding expectation for success. Participants made frequent mention of seeking one another out for basic technical support. Convenience and access played a role in one’s decision to consult a colleague, as evidenced by statements such as, “I got some colleagues who are down the hall to just give me basic pointers” (Andrew), and “I've been known to literally roll my chair down to [her] office when I'm just too flippin' tired. I will roll out and down. ‘Can you help me do that?’” (Rhea). Knowing that a colleague is not only a convenient but a trusted source of information also informed the decision to consult a colleague to ensure success. Katherine explained, “[Other faculty members] - they’re not sure - you know, not sure who to call, maybe, or you know where it's probably easier for them just to come ask me and find out.” Rob best encapsulated the concept that pointed, expedient answers are important to increasing the value and expected success when using an LMS: “When you work with someone one-on-one, then you're typically just going to go to them to help you solve some specific issue, some specific problem. So you get exactly what you wanted and that's all.”

Lastly, faculty members sought to satisfy curiosities about others' approaches to course design and to ensure consistency of course design within departments or courses. Mishra and Koehler (2006) and Papastergiou (2006) agreed that learning about the LMS in contextualized settings (situated learning) aided faculty members with learning to use the LMS more effectively. The findings of this study confirmed this premise. Anita, a faculty member in one of the institution's larger departments, stated, "I think that in our program in particular, it's a very friendly collaborative kind of environment where we want to see each other succeed, and we want to be the best teaching program that we can be together, so I think that that creates sort of a safer environment where someone can come and say, 'Can you look at mine and give me some honest feedback,' that they're not going to take it personally, but they also don't feel that they're opening themselves up to some vulnerability." The concept of feeling more comfortable working in situ with colleagues presented itself in another form: "It might just feel better to be able to talk to me at the same time about [this course] or whatever, you know?" said Mary. "I think that might have something to do with it … I'm familiar with the issues that we have with these courses, right? So any issue that might arrive because of the course itself, you know - it and the technology - then I can address that at the same time and tell him how I solve it."

Butler et al. (2004) found that faculty members felt the ability to consult with one another was the most crucial component to their learning and continued usage of educational technology. The findings of this study explored this concept more deeply and confirmed that claim.

How Faculty Members Determine Whom to Consult

When considering whom to consult for technical and pedagogical assistance with respect to the LMS, participants most frequently cited the availability and immediacy of assistance from

another colleague, a colleague's prior technical expertise and experience, a familiarity with the curriculum or course material, a willingness to share alternative perspectives, and an established relationship with the colleague that provided a comfortable learning environment and a reduced risk of feeling incompetent. These themes most closely align with previous research on impromptu interactions, mentorships, self-regulation, situated learning, and reciprocal teaching.

Birch and Burnett (2009) touched on the issue of immediacy in their study. They concluded that faculty members who sought mentors outside the context of formal training were more apt to learn about LMS technologies because there was not a commitment of time required for formal training. Katherine expressed this exactly: "If there's someone in the building [then it's] a lot easier to remember, 'Oh, yeah… You were in my training, [so] I can ask you questions.'" Anita responded similarly: "I think that it may have been valuable to have that mentor person, too, as my, you know, go-ask-this-question-to - outside of [formal support] … So someone that I can just go knock on their office door and say, 'You know, why is this greyed out?'" Considering that the potential for time investment is a common detractor from one's decision to seek help (Wozney et al., 2006), it is important to weigh that finding against comments made by participants of this study who indicated that the accessibility on an impromptu basis was well worth spending time getting help from or providing help to a colleague. With respect to seeking help, Jason remarked, "I don't remember ever having a thought that I wasted time by attempting to ask somebody…" Katherine commented on the ease of providing help on an impromptu basis: "It's probably easier for them just to come ask me."

Participants of this study indicated they seek help from those with more experience - both with the LMS and with their respective curricula. Andrew provided an example of this

combination of needs: “I guess it would be someone who knows a lot about the tool but knows a lot about, I guess, maybe the content area and the types of courses that I want to offer … This person would need to be [both] well versed in IT, but also someone who … has expertise in a content area…” Vaill and Testori (2012) and Paechter et al. (2010) also found that faculty members who sought to work with a more experienced mentor benefitted from the chance to work in a social setting that helped them build their LMS skills. Further, Paechter et al. found that the experience of self-satisfaction following a successful interaction with a colleague helped reinforce the faculty member’s desire to continue seeking success - a tenet of self-regulation theory (Bagozzi, 2007; Schunk & Zimmerman, 1997). Although not addressed directly by the interview questions, Lisa expressed exactly this sentiment: “Well, when I go to him, it's all about being creative, so that's the fun … And I'm really interested in that idea. I haven't done that yet. And that to me is really creative. And I love that. That's where my heart is.”

Complementing the research by Strom and Strom (2012) on reciprocal teaching, this study found that interpersonal familiarity and the ability to collaborate in a low stakes environment - one in which there is little risk for judgment or ridicule for ineptitude - were frequently cited as reasons for selection of a colleague for help. Put simply by Stephanie, “People probably prefer talking to someone they feel more familiar with.” Mary expressed the same sentiment in slightly different terms: “I’m very friendly with them, so … when you're friendly with people, they ask you questions about anything, right?” Having a low-stakes environment in which to exchange ideas helped faculty members become more receptive to criticism. “I think that that creates sort of a safer environment,” Anita remarked, “[one] where someone can come and say, ‘Can you look at mine and give me some honest feedback,’ that

they're not going to take it personally, but they also don't feel that they're opening themselves up to some vulnerability." Studies conducted by McQuiggan (2012), Mishra and Koehler (2006), Oomen-Early and Murphy (2009), and Samarawickrema and Stacey (2007) discussed how mentorships with other faculty members helped reduce the risk of exposure. Lisa illustrated this by commenting, "We feel very comfortable asking each other stupid questions and smart questions and all that." Laura was more brusque: "[My mentor] would put up with my stupidity. And my having to ask [the same] questions every semester." The establishment of collegial relationships enables situated and reciprocal learning to occur between colleagues in an informal environment.

How Faculty Members Experience Learning From one Another

A review of the accounts of this study's 12 participants and the ways in which they described their experience learning about LMS technologies allowed for their experiences to be grouped into three overarching categories: sorting out details (e.g. "Have you figured this detail out?"), collaboration (e.g "Here's what we need to do."), and critiques by colleagues. The three categories share a common connection, however: The learning that took place was contextualized. Lave and Wenger (1991) defined situated learning as a contextualized learning experience that generally transpires between a more knowledgeable expert, or model, and a person who aspires to learn a particular skill. Mishra and Koehler (2006) and Schweizer et al. (2002) underscored the efficacy of teaching instructors about technology in the context in which they would use it. According to Butler et al. (2004), faculty members who collaborated with one another during the learning of LMS features formed support groups where they could apply their knowledge in a contextualized setting.

The findings of this study support the claims made by the above named researchers. Jason recalled his experience learning about the LMS, focusing on his experience learning in a situated context: “You definitely do. You need an opportunity to go sit with some folks that are maybe in the same area as you [and] be able to ask questions and work on your course in that room and be able to say, ‘Well here's specifically what I'm trying to do with this,’ and work some kinks out.” In the same vein, Jeff explained how another faculty member helped him learn about online quizzing as a way to increase readership in his class. “We talked a little bit about some potential solutions to - well, again - getting students to read the textbook. I related my online reading quizzes, the use of i>Clickers, the use of pop quizzes to try to stimulate a desire to actually show up to class on a regular basis. Just what works, what doesn't work.” An experienced faculty member, Sam described how his colleagues collaborate to help each other with details surrounding the implementation of the LMS. He said, “As a rule, we tend to support each other around here … whether it's a technological issue with teaching or whether it's a more routine matter of teaching. You know, ‘How did you do this assignment? How did you do that? Does this work for you?’ Generally, it's just more informal, casual conversation. Something will come up. I'll mention, you know, ‘I’d like to do this in Canvas, but when I tried it it didn't work.’ [And someone else would respond,] ‘Oh, well here's what I did.’”

Participants in the study conducted by McQuiggan (2012) described the ability of being able to learn from each other and seek and receive criticism with respect to their LMS course design as invaluable. Schweizer et al. (2002) discovered that opportunities for reciprocal learning could manifest themselves in small group settings, or communities of practice. Again, the findings of this study confirmed this supposition. A few participants mentioned that discussion of

the LMS or presentation of ways to use it were a frequent part of organized faculty meetings. Jeff explained the origin of the meetings and his satisfaction with them. He said, “One of our faculty in the school has started a weekly meeting among teachers, instructors, where we’re talking about things that work and don't work in the classroom - which I find extremely helpful. Just to be able to share victories and commiserate with people that understand what you're trying to accomplish.” Anita discussed her participation in a regular departmental meeting as an LMS expert: “So like they wanted to look at how my Canvas page looks, and how I'm using Canvas. So each week, I kind of show them another little piece of it” The power of a community of practice where reciprocal teaching consistently takes place - termed a “teaching circle” in this example - made a particularly positive impression on Sam. He explained, “The teaching circle is not just about meeting periodically to address a technological pedagogical issue, but they're also intended to create a community of contact people that if you have a specific question during the semester, you just seek out one of the circle people and bring them your question or your concern.” In each of the examples of learning described by participants, contextualization was important - either by explicit mention or implicit in the recounting of the situation.

Use of Real-Life Examples

The previous section described how the findings of this study reinforced the power of situated learning and reciprocal teaching, as described by Lave and Wenger (1991) and Strom and Strom (2012), respectively. Several of the examples in that section also exemplified how faculty members employ real-life examples when providing assistance or mentorship to a colleague; therefore, they will not be repeated here. On the topic of the impact of situated learning, Jeff described its power by saying, “Everybody’s an example. Some good some bad.

We learn not just from our successes but also our failures. And if somebody relates to me a catastrophic failure, I don't feel the need to make that mistake myself. So hearing about it is valuable. And the same thing [when] people have true successes in the classroom… But until you hear about … the way something was attempted, you may not even realize [it's] an option. So I find those conversations sometimes useful, always fascinating. So it's one of the joys of being in the academy…" Rhea explained her experience with reciprocal teaching using an athletic metaphor: "I find it to be a very bidirectional network kind of a thing. For as many times as I have asked Ashley questions, she has [asked me], too. It's very much a bunch of people slogging it out in the mud together and, 'Oh, hey, I found a firm footing over here.'" Speaking on the topic of reciprocal assistance, Sam declared, "…We tend to support each other around here, you know, whether it's a technological issue with teaching or whether it's a more routine matter of teaching… 'How did you do this assignment? How did you do that? Does this work for you?' … 'I'd like to do this in Canvas, but when I tried it it didn't work.' [I responded with,] 'Oh well here's what I did.'"

According to Papastergiou (2006) and confirmed by participants of this study, faculty members learn most efficiently about the LMS when they have the opportunity to do so using real-life examples in a collaborative situation. In the previous section, Jeff described how a colleague's demonstrating the use of online quizzing in class improved readership among students. After seeing his colleague's example, Jeff decided to try the same tactic in his own class. Another example already mentioned related how an experienced faculty member described the use of LMS modules to facilitate course design. Lisa elaborated on how she used examples and the impact on her less experienced colleague, saying, "You got [your course] set up in

weekly modules, and everything the student needs [for the week] is in that module, you know, and they don't have to look anywhere else. And then every one of my modules has an agenda… It tells you what the objectives are, how much time it should take, what your assignments are… I shared with her how I do that, and I think she's got most of her courses set up the same way now."

Participants in this study also reinforced the work of Paulus et al. (2010) and Vaill and Testori (2012), who described how a reciprocal teaching environment promoted an exchange of ideas and built a level of comfort among participants that encouraged them to use the LMS efficiently and with confidence. Anita commented, "I assumed everybody knew how to use Canvas. And that was a false assumption on my part… So I tried to look at [her LMS course] as a student. What are the assignments that she was asking me to do in as a student in that class, and where over the benefits of that assignment? Was it something where [she was] assessing something? Or were [she] using it just as a filler? …And so I looked for that... To see, you know, is there a better way of using your time and students time, or something like that?" A discussion ensued between the two faculty members that led to a better understanding of each other's pedagogy and use of the LMS. Speaking about the sense of community he felt in his department, Rob explained, "it's a very friendly collaborative kind of environment where we want to see each other succeed … so I think that that creates sort of a safer environment where someone can come and say, 'Can you look at mine and give me some honest feedback?'" Rob's brief comment succinctly ties together several important concepts discovered as a part of this study: the importance of a trusting, non-judgmental relationship between colleagues; the effectiveness of learning in a situated context; and the power of reciprocal learning among colleagues.

Summary

The findings of this study confirmed many of the suppositions and claims made in prior studies outlined in the literature review and referenced throughout this chapter. More importantly - and to fulfill the purpose of this study - the data yielded by the interviews conducted as a part of this study provided the thick, rich detail that Geertz (1973) stated is necessary to adequately explain a phenomenon. The level of detail participants provided with respect to their thought processes and the actual experiences surrounding the provision and receipt of help have the potential to inform future studies and provide guidance for developers of formal training to incorporate social learning into their curricula. No research project is perfect, however; therefore, it it important to acknowledge the limitations of this study.

Limitations

At the time of this study, all interview participants were faculty members at a single, large, research-intensive university in the southeast United States who used the same LMS (Canvas). While it was not my intention for the findings of this study to generalize to all college- or university-level faculty members, I would feel even more confident in the findings had I had a more diverse group of participants. That said, there may be differences with respect to types and levels of informal interactions between faculty members at different institutions, in other regions of the country, or at institutions using another LMS.

All faculty members who used Canvas during the two semesters preceding this study received an invitation and reminder to complete the initial survey, but the gender and racial makeup of those faculty members was not reported in the list. Due to the split design of the surveys used to collect participant information, the gender and race of interviewees were

observed rather than requested directly during interviews. While the preliminary survey collected demographic information such as race, gender, age, etc., none of that information passed to a second, anonymous survey used to collect contact information for those willing to participate in an interview. The institutional review board responsible for oversight of this study required the divorce of such information, which limited the ability to purposefully sample interview candidates.

Because I conducted this study at the institution where I am employed and have occasional interactions with employees of the Instructional Multimedia Group (IMG) - the unit responsible for the administration of the campus LMS - there are implications surrounding the politics of conducting the study in my own institutional environment. Though no data were suppressed, nor did I misrepresent anything interview participants stated in their interview responses, I would have felt freer to ask questions specific to participants' experience with formal training sessions they attended were I to have conducted this study at another institution.

Furthermore, the separation of the initial survey and the disconnected survey where potential participants could indicate their willingness to participate in an interview prevented me from being able to correlate initial survey and demographic data with the set of interview participants. It would have been preferable to be able to present comparative results for those who completed the initial survey versus those who participated in an interview. Since the initial survey was not permitted by IRB to collect personally identifiable information on participants, I was not able to approach any initial survey participants to follow up with either a second request to consider participating in an interview, nor will the data I gleaned from that survey permit me

to follow up with those who chose not to participate in an interview in any subsequent study I choose to pursue.

Lastly, although all interview participants had access to formal LMS training opportunities, formal LMS training is not required at the institution where this study took place. Therefore, interview participants possessed a range of experiences with formal training - from none to extensive. Whereas all participants described informal interactions with other faculty members concerning the use of the LMS, participants who had little-to-no formal training experience had no basis for contrasting the benefits of formal training versus informal learning. Although not reported by any participants in this study, this discrepancy in experience may influence one's receptivity to or reliance upon informal interactions with colleagues.

Recommendations for Future Research

To address some of the limitations of this study and further explore the subject of social learning behaviors between faculty members with respect to learning management systems, future research should take into consideration that this exploratory qualitative study intended to deeply explore this subject through one-on-one interviews of individual faculty members at a single institution. The same or similar procedures could be employed for studies on more regionally and ethnically diverse groups of faculty members to determine whether the findings of this study apply in other settings - a concept termed "transferability" by Merriam (2001).

A faculty member's experience with formal training might impact his or her frequency and quality of informal interactions with other faculty members concerning the LMS. Future studies might explore the nature of such differences at institutions where all faculty members - or at least those who participate in the study - have the same level of formal training (or a complete

lack of it). Having a common baseline among participants might assist with describing how formal training experiences impact informal experiences.

Participants in this study indicated disparate levels of institutional and departmental support for learning about and using the LMS as a part of their regular teaching practices. None described incentives beyond intrinsic motivation and a perceived value of classroom technologies as reasons for implementing the LMS. New research might endeavor to describe whether and how informal interactions differ if such interactions are a part of the campus or departmental culture. They might be encouraged on an institutional level or as a result of intentional pairing of faculty members for mentorship purposes.

Lastly, information gathered from qualitative studies such as this one could be used as the basis for future research designs. An instrument that measures the quality of and satisfaction with informal interactions between faculty members who consult with one another about LMS technologies could be developed to quantitatively assess different faculty groups and their methods of using situated and reciprocal learning to improve their understanding and use of LMS technologies. A mixed methodology approach could further explore the intricacies of faculty member engagement with one another in informal settings but also assess the efficacy of or their satisfaction with informal situated learning experiences. The ensuing results might further encourage providers of formal training and departmental administrators to make adjustments that would promote more frequent and higher quality informal interactions between faculty members.

Conclusions and Recommendations for Practice

An exploratory qualitative study seeks to explore a subject in great detail in an effort to better understand and explain it. Such studies also lay the groundwork for future research built

upon the findings. Despite the fact that this study endeavored to uncover details rather than draw specific conclusions or make specific recommendations for practice, the participants provided enough data to enable the suggestion of a few items for consideration:

- Learning in context - situated learning - is a critical component to faculty members' ability to use and motivation to learn about the LMS. Every participant in the study described how he or she benefitted when able to learn using real-life examples or by solving problems that actually existed in their courses. Given that faculty members learn from each other in the informal setting via this method, administrators responsible for formal training should consider designing LMS training in a way that allows participants to learn using real-world scenarios that can be readily applied to their respective courses or disciplines.
- Individual departments could seek out and publicly identify faculty experts who are willing to share their LMS expertise - either in the context of a regular faculty meeting or as informal consultants. Furthermore, if such experts volunteered to assist colleagues with pedagogical and technical issues having to do with the LMS, faculty members who need assistance could more easily access colleagues who are receptive to providing it.
- Departments or programs could benefit from the creation of forums for meeting other LMS users in the same discipline. Reciprocal teaching is a powerful tool for learning about and solving problems related to the LMS, and the provision of a forum for consultation among colleagues could be of great benefit. Examples of forums for consideration are regular faculty meetings, a dedicated physical space for consultation, or an online medium for communication and exchange of ideas (e.g. interactive blog, discussion board, etc.). Unlike corporate-

sponsored support forums and conferences, local forums could introduce and connect local faculty members who share a desire to hone their LMS skills.

- Though indirectly mentioned by a minority of participants of this study, the literature indicates that intrinsic motivation plays a key role in a faculty member's level of interest in and commitment to learn about implementing LMS features (Butler et al., 2004; Shea, 2007; Sørebø et al., 2009; Tastle et al., 2005). While institutions cannot provide intrinsic motivators for faculty members directly, they can assist by creating environments that empower faculty members to become intrinsically motivated. Examples of such environmental factors are providing release time for faculty members to attend formal training, allowing for faculty members who function as LMS mentors to receive credit for their efforts (e.g. recognition, service awards, release time, etc.), and formally acknowledging the efforts of faculty members who effectively use the LMS to improve undergraduate and graduate education.

Significance of the Study

This study contributes to the existing knowledge about faculty learning with respect to LMS technologies in several important ways:

- As described in previous sections, this study reaffirms several of the findings of quantitative studies cited in the review of extant literature. While affirmation of prior research is important, this study extends the body of knowledge regarding faculty interactions outside the realm of formal LMS training by providing extensive details about the nature of those informal interactions. Previous studies called for qualitative research that delved beyond the superficial; this study addresses that need.

- Participants in this study revealed the importance they place on having situated, convenient, and low-stakes opportunities to learn about and share knowledge of LMS technologies - none of which they felt were provided in the context of formal training. These findings - and the details provided by the participants - can be utilized to reconfigure formal training to better address faculty members' needs, rather than simply providing technical or procedural knowledge.
- No previous research surveyed the criteria faculty members use when soliciting another colleague for help. This details provided by participants of this study lay the groundwork for potential efforts by academic departments and providers of formal training to facilitate the process of assisting faculty members with locating an effective mentor who can provide relevant, contextualized, and timely feedback on LMS usage.
- A major contribution of this study to the extant body of literature is its provision of detailed descriptions of how faculty members prefer to interact with one another when working in pairs or small groups to effectively learn about and use an LMS. This information is critical for providers of formal training when considering reconfiguring formal training to encourage the formation of communities of practice (COPs) during formal training that can continue to exist - and be supported - long after formal training concludes. The responsibility for ensuring longevity of COPs could be divided between providers of formal training, departmental representatives, and the members of the COP themselves.
- This study's findings revealed a distinct need by faculty members who use LMS technologies to have immediate and convenient access to help and consultation. This creates an opportunity for both academic departments and providers of formal training to publicly identify faculty

experts willing to serve as local providers of assistance, encourage the development of mentorships, and inform providers of formal training of ways in which they can make services more accessible and timely. The details provided by participants of this study can serve as a foundation to assist with the direction of such projects in a way that satisfies faculty members' needs for immediacy and convenience.

- Details provided by participants of this study reveal the importance they place on situated learning and informal partnerships among colleagues; it is crucial to their continued and expanded use of LMS technologies. This information provides an opportunity for informal partnerships to be encouraged and developed in a more formal context - either through formal training sessions or by efforts on the part of departmental administrators to encourage collaboration among faculty members who share common interests and academic expertise but have differing levels of experience with LMS technologies.

Summary

The purpose of this study was to explore and describe the situations in which college- and university-level faculty members who actively use LMS technologies as a part of their regular teaching practice interact with one other outside the context of formal training, providing a level of detail not present in the extant body of literature. By focusing on the content and quality of these interactions, this study not only reinforced claims made in previous research; it exposed the nature of interpersonal interactions between faculty members concerning LMS usage outside the context of formal training. With a deeper understanding of the situations that cause faculty members to seek help outside the context of formal training, information about how and why faculty members seek one another for informal assistance, and detailed accounts of how they

receive help and assistance in a low-stakes, collegial environment, new challenges present themselves. It becomes more possible to develop institutional- and departmental-level formal training in a way that spawns mentorships, encourages and facilitates interpersonal interaction, and creates the possibility for COPs that begin during formal training but continue to exist beyond the formal training environment. Providers of formal training can capitalize on the power of situated and reciprocal learning in the design of training curricula to best ensure that social learning opportunities are made available to participants, as well as take an active role in the cultivation and support of COPs. Departments can assist with connecting novice users with experts, and include the discussion of LMS usage as a regular part of meetings, as well as helping to encourage and support COPs formed on an impromptu basis, as a product of departmental meetings, or as a result of formal training experiences.

The details revealed by the participants of this study lend credence to the suggestion made by Cochrane et al. (2013) that the most effective faculty learning involves impromptu collaboration and mentorship. More importantly, this study helps fill a major gap in the literature identified by Bailey and Card (2009): it examined the details of interactions between faculty members who teach using an LMS in an effort to provide a basis for future studies on how such interactions can be encouraged in the context of formal training. While this study does not purport to provide a specific, comprehensive suggestion for the overhaul of formal training or a sure-fire way to ensure collaboration between faculty members, it can be used to inform those who develop, administer, and support LMS technology and training. Ideally, future research can focus on ways to address faculty members' desires to learn about LMS technologies in

contextualized settings, from their peers, and in an environment that encourages reciprocal learning and the development of COPs among colleagues.

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APPENDIX A: IRB APPROVAL LETTER

Tuesday, August 23, 2016 at 6:47:44 PM Central Daylight Time

Subject: Approval, Protocol #15-260 EP 1507
Date: Tuesday, July 28, 2015 at 11:36:14 AM Central Daylight Time
From: IRB Administration
To: Christopher Wyckoff
CC: Jill Salisbury-glennon, Sheri Downer
Category: EPSY
Attachments: Investigators Responsibilities rev 1-2011.docx, 2956_001.pdf

*Use IRB**submit**@auburn.edu for protocol-related submissions and IRBadmin@auburn.edu for questions and information.*
The IRB only accepts forms posted at https://cws.auburn.edu/vpr/compliance/humansubjects/?Forms and submitted electronically.

Dear Mr. Wyckoff,

Your protocol entitled " An Exploration of Social Learning Behaviors Concerning University Faculty member's Use of Learning Management Systems " has been approved by the IRB as "Expedited" under federal regulation 45 CFR 46.110(6,7).

Official notice:
This e-mail serves as official notice that your protocol has been approved. A formal approval letter will not be sent unless you notify us that you need one. By accepting this approval, you also accept your responsibilities associated with this approval. Details of your responsibilities are attached. Please print and retain.

Electronic Information letter:
You may begin your study using the information letter to which you have already added the IRB approval information. A scan of the approved letter is attached.

Consent document:
Also attached is a scan of your new, stamped consent that you may use to make copies. You must provide a copy for each participant to keep. (The original paper document/s will only be sent upon request.)

Expiration:
Your protocol will expire on July 20, 2016. About three weeks before that time you will need to submit a renewal request.

If you have any questions, please let us know.
Best wishes for success with your research!
Susan

Susan Anderson, IRB Administrator
IRB/Office of Research Compliance
115 Ramsay Hall (basement)
Auburn University, AL 36849
(334) 844-5966
IRBadmin@auburn.edu *(for general queries)*
IRB**submit**@auburn.edu *(for protocol submissions)*

APPENDIX B: SAMPLE RECRUITMENT EMAIL

Dear Faculty Member and Canvas User,

I am a graduate student in the Department of Educational Foundations, Leadership, and Technology at Auburn University. I would like to invite you to participate in my research study to explore and describe the situations in which faculty members who use Canvas as a part of their regular teaching practice interact with one other outside the context of formal training. All full- or part-time Auburn University faculty members who use Canvas to any extent are eligible to participate in this study.

Participants will be asked to complete a brief online survey administered through Qualtrics, which will take approximately five minutes to complete. Select participants will be invited to participate in an approximately 90-minute follow-up interview to more deeply explore the use of Canvas in the context of their teaching.

The information gathered as a part of the survey will be anonymous, unless you choose to volunteer for selection for a follow-up interview. All information will remain confidential and secured using industry standard methods. Any identifiable information you choose to provide will be encrypted and secured.

There are no costs or known risks associated with this study. Your participation will help determine how faculty members' experience with access to and usage of Canvas can be improved.

If you would like to know more information about this study, an information letter can be obtained by clicking on the following link: https://auburn.qualtrics.com/SE/?SID=SV_4Yjy0ZpBz57nuex. If you decide to participate after reading the letter, you can access the survey from a link in the letter.

If you have any questions, please contact me at chris.wyckoff@auburn.edu or my advisor, Dr. Jill Salisbury-Glennon, at salisji@auburn.edu.

Thank you for your consideration,

Christopher T. Wyckoff, M.Ed., Doctoral Candidate

Department of Educational Foundations, Leadership, and Technology

Auburn University

E: chris.wyckoff@auburn.edu

P: 334.844.1708

APPENDIX C: INFORMED CONSENT LETTER

INFORMED CONSENT

for a Research Study entitled

"An Exploration of Social Learning Behaviors Concerning

University Faculty Members' Use of Learning Management Systems"

You are invited to participate in a research study to explore and describe the situations in which faculty members who use Canvas as a part of their regular teaching practice interact with one other outside the context of formal training. The study is being conducted by Christopher T. Wyckoff, M.Ed., a Ph.D. candidate under the direction of Jill Salisbury-Glennon, Ph.D. in the Auburn University Department of Educational Foundations, Leadership, and Technology. You were selected as a possible participant because you are a full- or part-time Auburn University faculty member who uses Canvas to some extent and are age 19 or older.

What will be involved if you participate? If you decide to participate in this research study, you will be asked to complete a brief online survey administered through Qualtrics, which will take approximately five minutes to complete. Select participants will be invited to participate in a follow-up interview to more deeply explore the use of Canvas in the context of their teaching. If selected for a follow-up interview, your total time commitment will be approximately 90 minutes.

Are there any risks or discomforts? In the rare case where a you become uncomfortable or distressed as a result of questions asked during interview process, you can skip that question or

withdraw from the study altogether. A list of available resources will be provided to you when you have completed the study or when you choose to withdraw from the study.

Are there any benefits to yourself or others? If you participate in this study, you can expect to help improve the learning conditions surrounding the use of Canvas and its deployment in the classroom context for all faculty members and graduate students who teach using Canvas. I cannot promise you that you will receive any or all of the benefits described.

Will you receive compensation for participating? No compensation will be offered for participation in this study.

Are there any costs? There are no costs associated with this study.

If you change your mind about participating, you can withdraw at any time during the study. Your participation is completely voluntary. If you choose to withdraw, your data can be withdrawn as long as it is identifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University, the Department of Educational Foundations, Leadership, and Technology or the researcher and his/her affiliates.

Your privacy will be protected. Any information obtained in connection with this study will remain confidential (anonymous if you choose to not to provide contact information for a follow-up interview. Your survey data will be stored on a secure server approved by Auburn University with access granted only to researchers involved in this study. All interview data will remain confidential and secured using industry standard methods for encryption and physical security. Any identifiable information you choose to provide will be encrypted using industry standards and stored in a secure physical location. Information collected through your participation may be

shared with the Instructional Multimedia Group at Auburn University, presented at a professional meeting, and/or published in a professional journal.

The researcher reserves the right to terminate subject participation for any reason at any time. Termination of subject participation will be at the sole discretion of the principal investigator and the associated advisor.

If you have questions about this study, please contact Christopher Wyckoff, M.Ed. at chris.wyckoff@auburn.edu or Dr. Jill Salisbury-Glennon at salisjd@auburn.edu. You may print a copy of this page for your records.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone (334)-844-5966 or e-mail at IRBadmin@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. IF YOU DECIDE TO PARTICIPATE, PLEASE CLICK THE ">>" BUTTON BELOW. YOU MAY PRINT A COPY OF THIS LETTER TO KEEP.

APPENDIX D: QUESTIONS ASKED IN THE DEMOGRAPHIC SURVEY

1. What is your primary role at the University? (answer options are faculty, graduate teaching assistant, staff, or other)
2. For how many years have you taught at the college or university level? (answer options are less that one year, 1 to 4 years, 5 to 8 years, 9 to 12 years, 13 to 16 years, 17 to 20 years, 21 to 24 years, 25 or more years)
3. Do you use Canvas as a part of your regular teaching practice? (answer options are yes and no)
4. If yes, to what extent do you use Canvas as a part of your regular teaching practice? (answer options are never, rarely, sometimes, frequently, very often)
5. Which Canvas features do you use as a part of your regular teaching practice? Place indicate all options that apply (answers options are home/syllabus page, attendance, announcements, pages, assignments, quizzes, modules, discussions, grades (grade book feature), files (file management, posting files), conferences, collaborations, course analytics)
6. Have you attended any formal (classroom-based) Canvas training sessions? (answer options are yes and no)
7. Approximately how many hours of formal Canvas training have you had? (answer options include 1 to 3 hours, 4 to 6 hours, 7 to 9 hours, 10 to 12 hours, more than 12 hours)
8. Have you even sought assistance from another faculty member or colleague with respect to your Canvas course? Please indicate all options that apply. (answer options are yes, to ask general questions; yes, to ask technical questions; yes, to seek clarification on tool usage;

yes, to seek feedback on course design; yes, to seek feedback on tool usage; yes, to compare notes and outcomes with others; no)

9. How frequently do you seek (or have you sought) feedback from other faculty members or colleagues concerning your use of Canvas? (answer options are infrequently, occasionally, somewhat frequently, frequently)
10. Please rate the quality of feedback you receive (or have received) from other faculty members or colleagues concerning your use of Canvas. (answer options are very good, good, neither good nor poor, somewhat poor, very poor)
11. Have you ever provided assistance to another faculty member or colleague with respect to your Canvas course? Please indicate all options that apply. (answer options are yes, to answer general questions; yes, to answer technical questions; yes, to provide clarification on tool usage; yes, to provide feedback on course design; yes, to provide feedback on tool usage; yes, to compare notes and outcomes with others; no)
12. How frequently do you provide (or have you provided) feedback to other faculty members or colleagues concerning your use of Canvas? (answer options are infrequently, occasionally, somewhat frequently, frequently)
13. In our own estimation, please rate the quality of feedback you provide (or have provided) to other faculty members or colleagues concerning your use of Canvas. (answer options are very good, good, neither good nor poor, somewhat poor, very poor)
14. Please indicate your gender. (answer options are male, female, transgender, other, and prefer not to say)

15. Please indicate your age. (answer options are 18 or younger, 19 to 29, 30 to 39, 40 to 49, 50 to 59, 60 to 69, 70 to 79, 80 or older)
16. Please indicate your race/ethnicity. (answer options are White, Native American or Alaska Native, Asian American, Black or African American, Native Hawaiian or other Pacific Islander, or other)
17. Do you consider yourself to be Hispanic or Latino? (answer options are yes or no)
18. Are you willing to be contacted by the researcher to set up an interview whereby you have the opportunity to provide more in-depth information about your experience (the interview would last one hour or less). (answer options are yes or no)
19. Please provide the following contact information (all responses will be kept strictly confidential, and your name will NEVER be used in association with your interview responses):
    1. First Name
    2. Last Name
    3. Email Address
    4. Phone Number
    5. Department
    6. College or School
    7. Best Means for Contact (answer options are email and phone)

APPENDIX E: SEMI-STRUCTURED INTERVIEW QUESTIONS AND FOLLOW-UP QUESTIONS

1. Describe your teaching experience thus far.
2. How would you describe your ideal teaching environment?
3. Describe your computer/technology experience and expertise.
4. Describe your level of experience using Canvas or another LMS.
5. Describe your experience with respect to formal (classroom-based) training you attended to learn about Canvas.
6. Tell me about a story of success involving the use of Canvas in your classes.
    1. Did you seek help or assistance from other faculty members or colleagues to achieve this success?
    2. For what reasons did you seek help (e.g. particular features, technical issue, etc.)?
    3. What, in particular, caused you to decide to solicit help or assistance from other faculty members or colleagues?
    4. Whom did you consult?
    5. Why did you choose this person/these people?
    6. Describe your experience seeking help from other faculty members or colleagues.
    7. How was the experience of seeking help from other faculty members or colleagues different from seeking help in the form of attending formal (classroom-based) training sessions?

7. Tell me about a time where you provided assistance to another faculty member or colleague to assist them with achieving success involving the use of Canvas in his or her classes.
    1. In your estimation, what, in particular, caused this person to decide to solicit help or assistance from another faculty member or colleague?
    2. In your estimation, why did this person choose you to provide such help or assistance?
    3. Describe your experience providing help to other faculty members or colleagues.
    4. How was the experience of providing help to other faculty members or colleagues different from formal (classroom-based) training sessions?
8. Tell me about a time you struggled with incorporating Canvas into your classes.
    1. Did you seek help or assistance from other faculty members or colleagues to achieve this success?
    2. For what reasons did you seek help (e.g. particular features, technical issue, etc.)?
    3. What, in particular, caused you to decide to solicit help or assistance from other faculty members or colleagues?
    4. Whom did you consult?
    5. Why did you choose this person/these people?
    6. Describe your experience seeking help from other faculty members or colleagues.
    7. How was the experience of seeking help from other faculty members or colleagues different from seeking help in the form of attending formal (classroom-based) training sessions?

9. Are there any other sources you use aside from formal (classroom-based) training and consultation with other faculty members or colleagues to inform your use of Canvas? If so, please describe those sources.
10. How would you describe the relationship between your pedagogy and the incorporation of Canvas into your courses?
11. Do you have any other information you would like to provide?
12. Do you have any questions for me concerning this interview or this research project?

APPENDIX F: CODEBOOK

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
1.1 - Prior Teaching Experience (prior teaching)	a priori	Bailey, C. J., & Card, K. A., (2009)	Description of prior teaching experience / anecdote about same	Description of past teaching experiences as graduate student or faculty member, anecdote	Mention of use of technology of any kind, degrees/ qualifications, type of teaching positions	"…well I I don't know how far back to go … I've taught college-level classes since 2007 - no, earlier than that - 2006 at least. So I was a GTA was in grad school … I started teaching discussion sections for [classes] for two years, and then once I graduated I was very lucky and had some fellowships … When I graduated, I started adjunction at [another institution]. And then I got a job here and started last fall 2014 teaching in [this department]."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
1.2 - Prior Teaching Experience (educational background)	a priori	Bailey, C. J., & Card, K. A., (2009).	Description of educational background / academic qualifications	Degrees, internships, assistantships, GTA positions, faculty positions	Anecdote, mention of use of technology	"In my graduate work, I didn't have a kind of experience designing or TAing the types of courses that I would later be asked to teach here. I did have expertise in the content area as far as reading texts, and so I had similar ancillary experiences related to the main task that I would be asked to do here as far as teaching."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
2.1 - Ideal Teaching Environment	a priori	Chickering, A. W., & Gamson, Z. F., (1999); Chickering, A. W., Gamson, Z. F., & American Association for Higher Education, W. D. C., (1987)	Description of ideal teaching environment - with or without use of LMS	Physical location, environmental attributes, availability of specific equipment, furnishings, arrangement, physical plant	Specific description of LMS technology usage	"The best courses I've taught have usually had about 10 students - 10 to 12 maybe - and we usually work in a circle. I have students read in advance so that we can then discuss the readings, take them apart. What I like to do is get everybody involved in the conversation, so I try to come up with ideas of how to do that. I also have them write reflections in some form."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
3.1 - Computer/ technology experience or expertise	a priori	Buchanan, Sainter, & Saunders, (2013); Liaw, et al., 2007; Teo, 2009; Walker, 2008	Description of level / degree of experience using computers or technology in general	Specific platforms (e.g. Mac, Windows), software, general LMS usage	Specific LMS usage, non-computer based technology	"I've been using computers a long time. Starting in about 1976, I mean, you know, I learned Fortran with cards. This was before monitors, obviously way before for PCs and all that. My first experience with PC was in about 1977 or 78. I was working as a co-op student … and wrote and eight... 600-line BASIC program in a Hewlett-Packard microcomputer that you can only see one line at a time … I just don't know how I did that."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
4.1 - Level of Experience Using Canvas or Other LMS	a priori	Buchanan, Sainter, & Saunders, (2013); Liaw, et al., 2007; Teo, 2009; Walker, 2008	Description of level / degree of experience specific to Canvas or another LMS	Length of time using LMS, specific uses of LMS	Training or assistance sought or received	"There are still a lot of … of tweaks that I want to make with my courses. I have... I've had an online glossary for years, and it it keeps growing … But with the quality of the computing resources that we've got, and the integration that goes on now, I have - with a lot of those definitions - started including photographs. Well, now you can include video clips, and I'm sure that if I really wanted to, I could for some of the major concepts include a two- or three-minute mini lecture."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
5.1 - Formal LMS Training	a priori	Bigatel et al., (2012); Butler et al., (2004); Falconer, (2007)	Acknowledgement of / description of formal training	Classroom-based training, organized communities of practice, required training by administration	Pairs or groups of faculty members not organized by administration, no mention of structured format	“It was a lot of work that required me to rethink a lot of the things that I did in the classroom. It gave me a list of things that I would like to do and change about my class. And I'm still working through that list. Implementing one or two things per term … We are researchers, we are scientists, so we can understand the value of a lot of the stuff, but the formal training... and we've got disciplinary expertise, but particularly it's not in teaching.”

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
5.2 - Formal Training Positive Experience / Perception	emergent	Bigatel et al., (2012); Butler et al., (2004); Falconer, (2007)	Acknowledgement of / description / perception of formal training using positive language	Indication that formal training was beneficial, description of positive experience during formal training	Use of negative language when referencing formal training	"I've had workshops with [IMG] before and [the crew] over there are very good. And of course always make themselves available outside of the workshops, you know, if you need to follow up with some other things. Yeah, I think that I think the pacing of the instruction and... what we needed to know to get started in it... I think I was all appropriately handled. And I think it's a comfortable environment … On the whole, it was a helpful experience and and useful … They they've continued to be so."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
5.2.1 - IMG Positive Experience	emergent	Bigatel et al., (2012); Butler et al., (2004); Falconer, (2007)	Acknowledgement of / description / perception of assistance received from the Instructional Multimedia Group (IMG) using positive language	Indication that interaction with IMG staff member(s) or services was helpful, description of positive experienc with IMG staff member(s)	Use of negative language when referencing personnel or services rendered by IMG	“I've had workshops [at IMG] before and [the] crew over there are very good. And of course always make themselves available outside of the workshops, you know, if you need to follow up with some other things. Yeah, I think that I think the pacing of the instruction and... what we needed to know to get started in it... I think I was all appropriately handled. And I think it's a comfortable environment.”

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
5.3 - Formal Training Negative Experience / Perception	emergent	Bigatel et al., (2012); Butler et al., (2004); Falconer, (2007)	Acknowledgement of / description / perception of formal training using negative language	Indication that formal training was not beneficial, description of negative experience during formal training	Use of positive language when referencing formal training	"Another reason I didn't go is because when I have done something like that, they've always has been a lot of time on stuff that I'm not involved with. And I don't do and I'm not going to do. And it's like, alright, the last two hours I'm twiddling my thumbs because I'm not going to do that. I just need this information. I don't need this information. So I don't have three hours to go and sit and listen to this two hours that doesn't affect me … So I don't need instruction on how to do that."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
5.3.1 - IMG Negative Experience	emergent	Bigatel et al., (2012); Butler et al., (2004); Falconer, (2007)	Acknowledgement of / description / perception of assistance received from the Instructional Multimedia Group (IMG) using negative language	Indication that interaction with IMG staff member(s) or services was not helpful, description of negative experienc with IMG staff member(s)	Use of positive language when referencing personnel or services rendered by IMG	"So I definitely had some issues, but I did get the training, and I did... At the beginning I was frustrated, because a lot of the training they wanted you to watch videos, which is not what I want to do."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
6.1 - Informal LMS Assistance (received)	a priori	Birch & Burnett, (2009); LeBaron & McFadden, (2008); Puzziferro & Shelton, (2009); Reilly et al., 2012); Walker & Johnson, (2008); Visser, (2000)	Acknowledgement of / description of informal LMS assistance	Descriptions of type of assistance sought, reasons for seeking assistance	Description of who provided assistance or why faculty member consulted specific person	“It was great. I mean he he came up. He sent me the tutorial and then he's like, ‘Are you in your office?’ And he just came up and showed me manually, you know, in my office, the steps to take to make sure that I was clear about what the directions were and then he drafted another set of directions for me to send to my students telling them what they needed to do on their end. He was very very helpful. And just little things that I would've never thought of…"

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
6.2 - Reasons for Seeking Informal LMS Assistance	a priori	Buchanan et al., (2013); Samarawickrema and Stacey, (2007); Vaill & Testori, (2012)	Specific mention of why faculty member chose to consult another faculty member regarding LMS usage	Trigger for seeking assistance of other faculty member, choice of faculty member consulted	Descriptions of type of assistance provided	
6.3 - Informal Interactions with Other Faculty Members	a priori	Buchanan et al., (2013); Samarawickrema and Stacey, (2007); Vaill & Testori, (2012)	Acknowledgement of / description of interactions with other faculty members or colleagues concerning LMS usage outside the context of formal training	General description of who provided assistance, quality of assistance, general mention of type of assistance sought	Detailed descriptions of type of assistance sought, technical reasons for seeking assistance	"I mean as a rule, we tend to support each other around here you know whether it's a technological issue with teaching or whether it's a more routine matter of teaching. You know, 'How did you do this assignment? How did you do that? Does this work for you?' Generally, it's just more informal, casual conversation."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
7.1 - Informal LMS Assistance (provided)	a priori	Birch & Burnett, (2009); LeBaron & McFadden, (2008); Puzziferro & Shelton, (2009); Reilly et al., 2012); Walker & Johnson, (2008); Visser, (2000)	Acknowledgement of / description of informal training provided	Descriptions of type of assistance provided, reasons for providing assistance, why participant sought for assistance	Reference to formal training, organized mentorship, or community of practice	“Like in passing, I would say it to him, ‘If you have, you know, if you're not sure how to do that, I'll be happy to help.’ And I've done it in email form when he sends out a note and says, ‘Can anybody tell me how to do XYZ?’ I will be one of the first to respond just because it's something I know I can do quite well and because I have experience with technology and also with helping people with technology.”

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
8.1 - Struggle with incorporation of LMS in classes	a priori	Al-Busaidi, & Al-Shihi, (2012)	Participant's indication of difficulty using LMS (specific element or general)	Description of specific technical problem encountered.	Description of seeking assistance of other faculty member, choice of faculty member consulted	"One thing I did last semester that I struggle[d] with … was that I was going to give three hour exams in the class and then have a final … I could never figure out is there a way because again, the student may choose to drop the second exam because they did really poorly at it."
9.1 - Sources outside of formal training and consultation with faculty colleagues	a priori	Buchanan et al., (2013); Samarawickrema and Stacey, (2007); Vaill & Testori, (2012)	Identification of source(s) other than faculty members or formal training	Mention of websites, help desks, forums, online discussion boards, campus IT professionals (informal consultation) etc.	Mention of other faculty members or campus-based formal training	"Sometimes I'll search - especially if it's out of office hours - I'll search on the Canvas help. I have not found that to be very helpful. That's usually really hard to find what I'm looking for."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
10.1 - Relationship between Pedagogy and LMS	a priori	Bigatel et al., (2012); Rourke & Coleman, (2010)	Description of participant's method or practice of teaching using the LMS	Description of how LMS impacts teaching practices, how faculty member adjusts course to use LMS tools (harmoniously or dissonantly)	Mention of forced use of LMS	"…so I think it's pretty integral to the way I do my class … they used to email [presentations] to me … [Now,] when they do email it to me, I say post it on the website … Because it makes it so much easier to have that all organized that way so for the flipping [the classroom,] I think it's essential: I need a good learning management system. The that way I do the presentations in my class it's very, very helpful."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
20.1 - Positive reaction to LMS	a priori	Al-Busaidi & Al-Shihi, (2012)	Participant's indication of pleasure with respect to LMS (specific element or general)	Use of "like," "love," "enjoy," etc. with respect to LMS or specific feature	Use of "dislike," "hate," "avoid," etc. with respect to LMS or specific feature	"So I like Canvas for a lot of reasons. There are some things that I think are a step back from Blackboard. But for the most part I like it a whole lot better. It's it's a fairly stable and easy-to-use environment."
20.2 - Negative reaction to LMS	a priori	Al-Busaidi, & Al-Shihi, (2012)	Participant's indication of dissatisfaction with respect to LMS (specific element or general)	Use of "dislike," "hate," "avoid," etc. with respect to LMS or specific feature	Use of "like," "love," "enjoy," etc. with respect to LMS or specific feature	"I find the gradebook to be very very very constraining. It does not - in my opinion - serve the function that it should, which is as a communications conduit between instructor and the students. It's ridiculous."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
30.1 - Expectancy -Value Indication	a priori	Atkinson (1957); Eccles et al. (1983); Higgins (2007); Lewin (1938); Tolman (1932); Wigfield and Eccles (2000); Wigfield et al. (2009)	Indication of influence by tenets of expectancy-value theory	Mention of valuation of using LMS, mention of expected success using LMS	Attribution of success using LMS to luck or chance, expression of lack of value or expectation of failure	"…There's a limited amount of time. If they've got to spend time learning the technology as opposed to learning the discipline, then it's useless … If it doesn't make what you [are doing] more effective, then get rid of the tool … If I'm using one of the aspects of Canvas that [they're not] familiar with, then is the time that I spend teaching that worth the benefit [that tool] is bringing the table …? And if answer is that it's not worth the time, if it's not something that is not going to make it easier … then it doesn't get implemented."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
40.1 - Self-Determination Indication	a priori	Deci (1971); Deci & Ryan (1985); Reeve et al. (2004); Rogoff, (2003); Ryan & Deci (2000); (Ryan & Deci, 2009); Ryan & La Guardia, (1999)	Indication of influence by tenets of self-determination theory	Mention of intrinsic or positive extrinsic motivating factors surrounding LMS usage	Mention of extrinsic motivation imposed by outside sources (e.g. administration, etc.)	“Well, I'm someone who likes helping, so I enjoy doing that. I prefer doing that over anything else, so if anybody asks me for help, I'll drop almost anything and go do that. So for me it's a boost, you know, it's an ego boost, I guess.”

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
50.1 - Self-Regulation Indication	a priori	Schunk & Zimmerman, (1994); Schunk & Zimmerman (1997); Zimmerman (2000); Zimmerman & Cleary, (2009)	Indication of influence by tenets of self-regulation theory	Description of self-monitoring pattern and/or adjustment of behavior based or perceive performance, evidence of metacognition	Indication of lack of understanding about one's learning, lack of understanding about reasons for success or failure	"With the assignment example, was there [something] in Canvas could have made that a little bit easier … ? I'm seeing that they're struggling, and so it needed to be set up better to do that … So obviously, the communication - whether it was me, or whether was Canvas, or it was the examples, or whether it was the reading... Did I not provide it, or did they just not read it? … So I'm thinking that if … the students respond with the material that was provided adequately, then that was a success."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
60.1 - Situated Learning	a priori	Brown et al., (1989); Carr, et al., (1998); Lave (1997); Lave and Wenger (1991)	Indication of influence by tenets of situated learning theory	Mention of learning about LMS features in real-world or applied context	Mention of procedural learning, decontextualized learning, learning about LMS features without context	P: “So we sat in a classroom preparing our syllabus … And sometimes there’d be something we were trying to figure out that that someone from IMG was working on, that we are all kind of you now working on it together … There’d be some issue that would come up and we’d try to figure it out so like how do you post pictures well which is not something I ever do, but you know some people do so…" Me: “Okay, so a giant collaboration.” P: “Right.”

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
70.1 - Reciprocal Teaching	a priori	Hardaker and Singh (2011); Papastergiou (2006); Reilly et al. (2012); Strom & Strom, (2012)	Indication of influence by tenets of reciprocal teaching theory	Mention of being able to learn from AND teach others about LMS (bidirectional)	Specific mentions of unidirectional learning or indication that reciprocity is not possible	"Well there were a couple of other professors who … were curious to see how they were going to respond to me. And whenever they responded with, 'Well you're using it differently than any other professors,' then their ears perked up too. 'Well, like, how are you using it differently than we are? Is your way better? Or worse? Should we all be…' they went to immediately: 'Should we all be standardizing?' and I was like 'No, we should not.' My class lends itself to this, yours may not. And that's okay."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
80.1 - Organized Meeting	emergent	Cochrane, Black, Lee, Narayan, & Verswijvelen, (2013); Reilly et al., (2012)	Indication or description of organized faculty, departmental, or college-wide meeting where discussion or demonstration of LMS takes place	Mention of source of training or training leader being from inside faculty, department, or college; mention of meeting regularity or structure	Mention of source of training or training leader being from outside faculty, department, or college; mention of impromptu nature of interaction	"And one of our faculty in the school has started a weekly meeting among teachers, instructors, where we're talking about things that work and don't work in the classroom - which I find extremely helpful. Just to be able to share victories and commiserate with people that understand what you're trying to accomplish."

Code	Kind	Source(s)	Operational Definition	Inclusion Criteria	Exclusion Criteria	Exemplar
80.4 - Independent Learning	emergent	Rogoff, (2003); Ryan & La Guardia, (1999)	Indication of practice of, example of, or intent to learn about LMS without external help	Description of experience learning without assistance from outside resource	Description that includes mention of use or need for use of assistance from outside resource	“Maybe intuitively I suspected that I could create discussion groups that didn't involve the whole class, but just smaller groups of 3 to 4 or 5 or whatever people. And I just kind of... I had seen that this is a group discussion option about a million times but I'd never clicked on it. I thought I think, ‘I can do this. Lets try it.’ And then functionally I was able to to set it up.”

APPENDIX G: SAMPLE CODED DATA

Document 1

D: Oh, yeah. It's enjoyable. It's fulfilling. That's what thing and yeah yeah and I think part of this is you know we are we are the people I deal with are technologically adept, and so we don't need a lot of detail. It's kind of like... it's more like shared practices. "Do you do this?" "Yes, I do this." "Well, you know this is probably a good idea while you're thinking about it..." And then that person is going to go off and use the that advice as they see fit and figure it out from there generally and yeah. That's basically it, so it's it's efficient and usually it works pretty well.

Me: No pun intended: It's the bits and bytes methods of both getting and giving help.

D: Yeah. Usually there's not a lot of, "Okay..." You know I don't have to deal with I don't have to worry about the fact that if I offer some help or give some help that I'm going to then be faced with three more cycles of the same type of thing. It's not an issue in terms of you know... I don't have to be scared about offering help I'm going to get into big time sink going forward. That's never happened, so that's good. It's a function of where I am.

Me: Has there ever been a time where you just had a flat-out struggle with with Canvas?

D: With Canvas itself? Well, I'll tell you this. This is new. I have got a for almost a year now, I've had my first touchscreen computer okay, and I've got to say that when it comes time to use that modules page that I like to use and move things up and down, there's some weird things about how Canvas interacts with a touch screen that just don't work very well. The equivalent of like left clicking and right clicking with a mouse and those kind of things that come intuitively to me... I've started to figure out over time really involved like touching and holding but for the appropriate half second or whole second, or something like that, and sometimes I just can't get to the same operations with the touch screen that... So I've got to get the mouse out, you know, and I could do it with the touchpad and it works particularly well. But so you know that may not be with you looking for.

…

D: Is I would take - and this may, embarrassingly enough, this may already be there, and probably is somewhat. But you know I would send out and take whatever is being sort of thought in these introduction to Canvas type seminars, or one-hour, two-hour for just absolute beginners. I would try to package those in such a way that they could be delivered online. And on demand.

Me: mmmhmm

D: Video or something like that. As a starting point so someone could do that on their own schedule. That's important from the point of view of what we talked about before about finding an hour or two...

Me: mmmhmm

D: In a in a schedule that's already been rigidly set, and then reserving a seat and all that kind of stuff.

Oh, yeah. It's enjoyable. It's fulfillin...
- Informal Interactions with Oth...
- Informal LMS Assistance (prov...
- Situated Learning

D: With Canvas itself? W...
- Struggle with incorporation of...
- Negative reaction to LMS

D: Is I would take - and this may, embarr...
- Formal LMS Training

Me: Right.

D: And for all I know, this is already happening. But I know that the ones that I liked that I went to from an administration point of view, I have to go somewhere, I had to reserve a seat, and oh, no, that session is already full... Let's try another session. And so if the sort of the fundamental intro could be delivered that way - on demand - then after you had one shot to that on your time, you're definitely though - when your new - you definitely do you need an opportunity to go sit with some folks that are maybe in the same area as you, or maybe not, and instructor and be able to ask questions and work on your course in that room and be able to say, "Well here's specifically what I'm trying to do with this," and work some kinks out. I know early on that was that was very important. Whether or not that would need to happen the first time... But you know obviously that's the kind of thing that has to be scheduled. But that point you got a pretty targeted idea of what you want to work on, and you're not both trying to accomplish that at same time you're trying two let's say listen to a structured presentation. You get the structured presentation stuff to where it's delivered on-demand... that kind of thing.

But I...
- IMG Negative Experience
- Formal LMS Training

when your new - you...
- Situated Learning
- Reciprocal Teaching
- Informal Interactions with Oth...
- Informal LMS Assistance (rece...

Me: And so beyond beyond that structured session and beyond the uh video-based training and for it to be available... What happens next? Is there anything that happens outside of the the classroom or outside the classroom or outside the video-based training?

D: Well these online tutorial things are great in terms of the basic management type or admin type things the need to be done. For the amount that I use Canvas, or employ Canvas, I think that's certainly enough. You know if I was going to be in if I was going to be into using some of the things like the test administration features, you know I certainly would take classes and I kind of thing.

Well...
- Sources outside of formal trai...

Me: mmmhmm

D: But that's certainly beyond my knowledge how that works. I'm not totally useful to you on that.

Me: Is there a point at which you know the consultation that you mentioned with other faculty members comes into play in in this training scenario or no?

D: Well it would you know... This sounds like a good idea in principle - I don't know that it would work out - but I almost do wonder if whoever offers the training might offer a college-specific type sessions occasionally.

This...
- Formal LMS Training

Me: mmmhmm

D: Where you're likely to get a few more folks that are more closely allied in terms of what they're trying to do course-wise in the room together. Whether it's over in IMG classrooms or like a roadshow, if you will, and bring it over to you know one of our learning labs

Whe...
- Situated Learning
- Reciprocal Teaching

Me: mmmhmm

D: Somewhere in our college or department or something like that. It might too small. I don't think enough people are going to show up for specific session, but if you have a college-wide type session and you invited people over for the [college] session, it's going to be there would

D: S...
- Informal Interactions with Oth...
- Organized Meeting
- Situated Learning
- Reciprocal Teaching

be to two of them, and one's gonna be Monday afternoon and one's going to be a Tuesday afternoon, you might do pretty well in terms of getting a decent-sized crowd to show up and actually have some significant shared learning going on in a session like that.

Document 2

D: So I definitely had some issues, but I did get the training, and I did... At the beginning I was frustrated, because a lot of the training they wanted you to watch videos, which is not what I want to do. I just want to look and see another much better they have many more things … actually posted some stuff that was not video that was helpful but that wasn't Canvas.

D: So I definitely had so...
- Formal LMS Training
- Formal Training Negative Exp...
- IMG Negative Experience
- Sources outside of formal trai...

Me: mhmm

D: That was [someone] coming in and seeing the faculty don't want to sit and watch a video. We just want to get the information so we don't have to sit through 10 minutes when we want to ask one question.

Me: Right.

D: So I did so I would go to IMG's site so that's another way I got training. But actually I went to a course, sat down - I don't know how long it was - and figured some stuff out... and some cases we were figuring it out together to set up my course. So I did get training, and when I have a problem sometimes go over to IMG and sometimes I will go over sometimes sometimes I'll just call and so I I tend to be one who will ask the question.

So I did so I would go...
- IMG Positive Experience
- Formal LMS Training
- Sources outside of formal trai...
- Formal Training Positive Exper...

Me: mhmm

D: Because I know they're good at it and they will get it for me.

Me: Sure.

D: So I'm always asking for questions. So my frustration was not with Auburn's system. It was more Canvas wasn't ready for all of us when we went there.

D:...
- Negative reaction to LMS

Me: And just to clarify one one thing that you said: You mentioned in in when you were in the formal training we worked on it do you mean is the we you and representatives of IMG or was that you and other other trainees?

D: So we sat in a classroom preparing our syllabus. Lots of us. And sometimes there'd be something we were trying to figure out that that someone from IMG was working on, that we are all kind of you now working on it together. And so I would say it was IMG and other faculty. There'd be some issue that would come up and we'd try to figure it out so like how do you post pictures well which is not something I ever do, but you know some people do so...

So we sat in a classr...
- Formal LMS Training
- Situated Learning
- Informal Interactions with Oth...
- Reciprocal Teaching

Me: Okay, so a giant collaboration.

D: Right. That's right.

…

D: Well I think... I'm not sure I could do the flipping the classroom if I didn't have a good learning management system.

Me: mhmm

D: And actually, I think that was one of the frustrations when I first went to Canvas when it was down and they couldn't see the lecture, or it could've been something like Panopto, too. So I think having a good one that works and now it seems like I don't I haven't had problems for a long long time. But when it first... When Panopto would go down or Canvas would go down, it was a huge issue so... Because I rely on it. But I'm not sure I could do my flipping... I know I couldn't do without some sort of web-based thing. And if I had to create it myself I probably wouldn't have, so I think it's pretty integral to the way I do my class. And with my graduate class, I've been doing presentations forever, and they used to email them to me, and that it was just that was much harder then having everything up on the website. So when they do email it to me, I say post it on the website because sometimes they will email it to me rather than post it. Because it makes it so much easier to have that all organized that way so for the flipping I think it's essentiaM: I need a good learning management system. The that way I do the presentations in my class it's very, very helpful.

D: Well I think... I'm not sure I could do the flip...

Relationship between Pedago...

Document 4

N: Oh, right. So in this semester, whenever they had come to me, and not known how to use it, there were several weeks where nobody was going on and doing their tasks. Like nobody was going on and doing anything or submitting their assignments, and those kind of things. And so I turned that obviously on myself. I didn't explain to you clearly enough what expectations were, so I had to go back and spend a face-to-face session kind of going over what I had gone over in the podcast, because either they didn't know was there, or they forgot, or whatever reason. And just the importance of that should be your first place to go every week as if you were sitting in class, you're going there to find out what to do. And after that they all responded to me like, “Oh, well nobody here has ever used this as a true blended class or a true online version, so we just didn't know all these things even existed in Canvas because no one ever required us to do that before.” So I thought that was a step in the right direction. It was a success in my mind, because now they're using technology for what it was intended to be used for, and not just, “Oh, this a new tool that you can use little piece of,” you know, they're able to see, “Well, I could've used this in my class.” You have they could use it in their classes or their lives, but also just it makes it so much easier to have a class whenever they are using the tool the right way.

N: Oh, right. So in this semester, whenever they had come to me,...

Self-Regulation Indication

Relationship between Pedago...

Me: Well that's interesting, too, because you talked about trying to make sure that your students are aware that these technologies are available to them before, you know, before they fall too far behind...

N: mhmm

Me: And they had a very contextualized experience in your class.

N: Right.

Me: Where where you you weren't on the same page, and so they saw how you reacted - which would be a great example for them to do with with their own students. So in achieving this success of what you described, did you at any point seek help from another faculty member or a colleague?

N: I sought their perceptions of those students.

Me: Okay. And that would count.

N: Yeah, not necessarily the tool, but you know I sought the other professor that I knew that this cohort was meeting with to say, “Are they turning in assignments to you?” You know, whenever I was trying to diagnose why they're not doing what I'm asking them to do before I, you know, blame them for it ,I needed to know if that was contextual just to my class, or if another professor was seeing an inactivity on their part as well. And they were not, but they met much more in a face-to-face class session, so they weren't required to go use Canvas like they are in mind so I sought that kind of information.

N: Yeah, not ne...
Informal Interactions with Oth...
Situations causing consultatio...

…

N: It was great. I mean he he came up. He sent me the tutorial and then he's like, “Are you in your office?” And he just came up and showed me manually, you know, in my office, the steps to take to make sure that I was clear about what the directions were and then he drafted another set of directions for me to send to my students telling them what they needed to do on their end. He was very very helpful. And just little things that I would've never thought of... like being sure to tell them that they need to not use a mobile device, because that's going to effect the connectability on Wi-Fi. So, you know, whenever you're doing these kind of recorded things or distance things if you're not on a land connector, then that's going to mess up your ability to fully participate, and I would've never thought to tell them not to use their iPad... to use their desktop or whatever.

N: It was great. I mean h...
Informal LMS Assistance (rece...

Me: mhmm. It would seem like you could do whatever you want…

N: Right.

Me: That's allowable in the system. So since you since you've not been to formal training on Moodle nor even for Canvas, this is more of a supposition on your part: Suppose that you could have attended formal training. So I'm asking for you to contrast, you know, what the ups - pros and cons would be to getting that assistance that you got from Matt - the one-on-one assistance - versus attending maybe a formal session that that also addressed that issue.

N: Okay. I guess maybe a bias on my end of why I didn't seek formal training to begin with would be that I usually am ahead of the technology ball compared to my colleagues, and I probably always have been. Like as a teacher, I was, you know, I just was always the one who relied more on technology than anyone else. And so in my previous experience of attending professional developments or whatever... When it’s technology, I found it is a colossal waste of my time because they're starting with how to turn on your computer and how to send email attachments, and and I just always felt like at the very end, I could ask the questions that I wanted to have the answers to. So I just that was part of the reasons why I didn't

N: Okay. I guess m...
Formal LMS Training
Formal Training Negative Exp...
Expectancy-Value Indication
Computer/technology experie...
Experience Using Canvas or O...

subconsciously seek out sitting through another one of those PDs. So in contrast to that preconceived notion of what I'm guessing that would've been like which could be completely false…

…

N: I have. Another colleague has invited me last semester, I think, to be to view her Canvas course so that I could give her some feedback on ways that she could use Canvas a little more effectively, or, you know, some things that maybe she's not using correctly or whatever for Canvas... just to give her a little bit of feedback on her use of Canvas. So I did that last semester. Every I guess three weeks, we have a program meeting. And so they've been adding a little technology tidbit from [me] kind of thing on there.

Me: uh huh

N: So like they wanted to look at have my Canvas page looks, and how I'm using Canvas. So each week, I kind of show them another little piece of it, I guess. So last week, I introduced to them Voice thread and showed them how you access it through Canvas and go through those external tools, and where will pop up, and you know how to use that. So I tend to to share a lot of how I'm using Canvas, and how I'm using technology in general - even outside of Canvas. I mean just things like digital portfolios instead of paper bound ones, and using - I like the digital poster boards for sharing information instead of - just other ways of sharing what students know rather than just discussion boards and writing papers. Like there's other ways that are a little bit more fun a little more creative on both ends, because I get tired of reading the same thing, and you know students get tired of responding the the same way all the time to time to, you know, mix up different tools for that.

…

N: Um, probably both. Our program chair … she makes the agenda and runs the sessions, but through candid conversations of, you know, what I'm doing in my classes, and, you know, she also serves much as my mentor as well being a new faculty person, so I bounce a lot of my ideas off of her. So there's been times where she's like, “Well, you need to tell this to everybody,” or, you know, that kind of stuff. So then as I'm talking about what I'm doing in those meetings, people are interested in knowing more about it and why are they not. And that success story that I told you about this semester: Whenever I had addressed in the face-to-face meeting with that particular cohort of what's going on? Why aren't you all you know responding or whatever? Well there were a couple of other professors who wanted to sit in on that meeting because they were curious to see how they were going to respond to me. And whenever they responded with, “Well you're using it differently than any other professors,” then their ears perked up too. “Well, like, how are you using it differently than we are? Is your way better? Or worse? Should we all be...” they went to immediately: “Should we all be standardizing?” and I was like “No, we should not.”

N: I have. Another colleague has invited me last se...
- Informal LMS Assistance (prov...
- Informal Interactions with Oth...
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- Organized Meeting
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- Organized Meeting
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