FACILITATING CONDITIONS THAT INCREASE FACULTY PERCEIVED USEFULNESS OF LEARNING MANAGEMENT SYSTEMS: A MULTIPLE-CASE STUDY

by

Darnell Kemp

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy in Education

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Abstract

The purpose of this research study designed as a multiple-case study was to discover the facilitating conditions that led faculty at the higher education level to create activities using student-centered learning tools in the learning management systems (LMSs). The theories guiding this study were Davis' technology acceptance model and two versions of the unified theory of acceptance and use of technology. Both theories looked at how perceived ease of use (PEU) and perceived usefulness (PU) determine a user's use of a technology. The unified theory of acceptance and use of technology added facilitating conditions as a primary determiner of technology user behavior. This study focused on the facilitating conditions that increase PU and the use of active learning tools in LMSs. The study was designed as a multiple-case study and conducted at two different California community colleges. Participants were tenured or tenure track faculty members whose use of LMSs increased as a result of the pandemic. Documents were gathered to learn about the training and support offered at each college during the transition to online during the Coronavirus disease 2019 (COVID-19) pandemic. Faculty were interviewed individually and in focus groups about their experience with support and resources available during the transition to discover the most impactful practices. Seven themes emerged from the research: course design support, peer support, student engagement, the distance education infrastructure, technical support, pedagogical foundations, and more time. The results of this study indicated that faculty benefited from course design and peer support, but faculty need more pedagogical support and more time to use active learning tools in LMSs.

Keywords: distance education, facilitating conditions, higher education, learning management system, online learning, pedagogy, peer support

Copyright Page

Dedication

I dedicate my dissertation to my husband Paul, who has been my rock throughout our marriage but has had extra duty during the last four and a half years. From the moment my life shattered with the loss of my father in 2018, to the devastating loss of Beau, and the forfeiture of life as I knew it before the pandemic, you have stood strong and helped me to keep standing. As I mourned my losses and adapted to working nonstop to bring 800 teachers and 19,000 students online, you were there. As I worked on schoolwork and my dissertation until late in the night, you were understanding and supportive. When COVID made me very sick and threatened to take my mom away, you helped me recover and be able to support her from 540 miles away. Thank you for your continual support and love.

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There are many people that made this entire process possible. First and foremost, I want to thank my husband Paul for his suggestion that it was time for me to pursue my Ph.D. and his constant support and love during this process and every moment of our busy life together. I also want to dedicate this to my father, Danny Johnnie, who although no longer with us, instilled in his children the importance of education and would be so proud of "the professor." My mother, Sharon Pfister, who raised us to believe anything was possible and has been my sounding board in times of frustration. My brothers who have always been there for me. There are many that have listened as I share my excitement over what I learned, including my hard-working daughter-in-law, Jessica Kemp, my friend and champion for online education and accessibility for all, Cory Thomas, my lifelong friend Gina who continually prays for me, and my officemate and forever friend Angela Henderson. Finally, thank you to all my professors at Liberty University. I felt so prepared and challenged at every step due to your excellent guidance. I especially want to thank my dissertation chair Dr. Alan Wimberley for graciously agreeing to be my dissertation chair. I know that God led me to Dr. Wimberley and his guidance and support motivated me through the entire dissertation process. Also, thank you to Dr. Sarah Pannone, who was my research professor who agreed to be my methodologist. Dr. Pannone's support with this case study from early on in the program was paramount to my success. At every moment of this journey, I have felt God's guidance and know and trust that he knows "the plans I have for you," declares the Lord, "plans to prosper you and not to harm you, plans to give you hope and a future" (New International Version, 2011, Jeremiah 29:11).

Table of Contents

List of Tables

List of Abbreviations

Coronavirus Aid, Relief, and Economic Security (CARES) Act

Coronavirus disease 2019 (COVID-19)

Distance education (DE)

Distance education coordinator (DECO)

Higher education (HE)

Higher education institution (HEI)

Institutional review board (IRB)

Learning management system (LMS)

Perceived ease of use (PEU)

Perceived use (PU)

Society of Applied Geoscientists and Engineers at Two Year Colleges (SAGE 2YC)

Technology acceptance model (TAM)

Unified theory of acceptance and use of technology (UTAUT)

CHAPTER ONE: INTRODUCTION

Overview

With the worldwide pandemic forcing schools to stop face-to-face classes in the spring of 2020, instruction needed to continue. In more developed countries, online instruction is estimated to have accounted for 80–85% of instruction during the pandemic (United Nations, 2020). Even before the pandemic, most higher education institutions (HEIs) in America provided faculty with a learning management system (LMS) for online instruction, hybrid instruction, and as an available supplement for classroom instruction (Pomerantz et al., 2018; Rienties et al., 2016; Walker et al., 2016). Prior to 2020, faculty use of LMSs often depended on factors like the mode of delivery of their classes (Machajewski et al., 2019; Rhode et al., 2017), their comfort with technology (Almarashdeh, 2016), and peer use of the system (Kidd, 2010). Some faculty had already embraced an LMS and used it for all classes, experimenting with the different tools available. Still, a large percentage of faculty ignored LMSs if they were not teaching an online course or used it only for content storage and distribution (Chow et al., 2018; Li, Su et al., 2019; Monett & Elkina, 2015; Sinclair & Aho, 2018). The rush to transition to online classes at the start of the pandemic led many higher education (HE) faculty to LMSs, highlighting its prior underuse and revealing the need for institutional support for faculty to teach classes online (United Nations, 2020). As faculty increasingly use LMSs for all types of classes, it is important to understand the institutional factors that can increase deeper use of active learning tools.

In this chapter, I discuss the overall historical development of online courses and LMSs and narrow in on the California Community Colleges system because the colleges for this case study cane from this system. I also discuss the social and theoretical context of faculty use of LMSs. Next, the problem leading to the need for this research study, its purpose, and its

significance are explained. The chapter ends with the central research questions, the sub-questions, and the definitions of terms used in the study.

Background

It is essential to understand the background of LMS use in HE, both in general and for California community colleges. Distance education (DE) at the HE level has progressed from courses that primarily had students watch, read, or listen to content (Howard, 2005) to interactive courses that use the internet. As technology has changed, the popularity of these courses has increased. The historical context in the following section details how online education has evolved. In addition, the social context that faculty are immersed in as they work to use LMSs to instruct students is examined. Finally, the theoretical context that lays the foundation of technology use theories that have been developed from earlier behavioral theories is established.

Historical Context

Although some universities have had DE for over 100 years (Howard, 2005), California community colleges have employed DE for about 40 years (Woodyard & Larson, 2017). DE courses began with television, radio, and correspondence courses, but with the internet becoming available for use in the 1990s, the type of instruction began to change (Howard, 2005). With a move to e-learning, students accessed course materials through the internet (Howard, 2005). Still, from 1995–1996, DE courses accounted for less than 1% of courses available to students in the California Community College system (Woodyard & Larson, 2017).

Over the last decade, HE use of LMSs has increased dramatically (Rhode et al., 2017; Walker et al., 2016). Community colleges in California have followed this global trend. In 2017, DE courses accounted for 14% of all course sessions for California community colleges (Woodyard & Larson, 2017). Before the pandemic, the number of DE courses had reached 17%,

with some community colleges having up to 78% of their courses online (Petek, 2021). *The 2021–2022 Budget Proposals for the California Community Colleges* proposed increasing online course offerings even more by requiring college districts to have 10% more courses offered online in 2021–2022 than in 2018–2019 (Petek, 2021). The plan to increase online course offerings in California comes on the heels of the temporary switch to remote learning by all community colleges in California due to the Coronavirus disease 2019 (COVID-19) pandemic in 2020, which resulted in a "large-scale migration" to the Canvas LMS (Petek, 2021, p. 15). Because many factors influence faculty LMS use, it is essential to look at the social context surrounding its use.

Social Context

Although LMSs are hosted virtually, the social context surrounding their use comes from the organization they are used in and is an influence over faculty use (Zheng et al., 2018). Thus, how instructors feel about LMSs, the institution, and the available support are all important to consider. In addition, it is necessary to recognize that student expectations can influence faculty use (Sinclair & Aho, 2018). Finally, institutional structure, technical support, and pedagogical support must be considered to understand faculty use of LMSs.

An increase in faculty technical knowledge relates directly to how faculty feel about the ease of use of LMSs (Fearnley & Amora, 2020). Numerous studies have found that use increases as faculty become more comfortable using a system (Fathema et al., 2015; Melki et al., 2017). Unfortunately, faculty often have to work through a fear of technology as a hindrance to using LMSs (Sinclair & Aho, 2018). Understanding the technical use of LMSs lays the foundation for faculty LMS use (Fathema et al., 2015), and both LMS' providers and HEI may provide technical support that can help faculty to overcome fear and increase their comfort with LMSs.

However, faculty must go beyond technical knowledge to use LMS tools that engage students in deeper learning.

In addition to technical support, HEI need to have pedagogical support in place (Schoonenboom, 2014). However, many studies have found pedagogical support lacking (Koh, 2019; Melki et al., 2017; Monett & Elkina, 2015). Support tailored to faculty making pedagogical changes is needed (Koh, 2019) to show how LMSs can be used for active learning (Melki et al., 2017) and to increase the perceived pedagogical usefulness (Davis, 1989) of LMSs. Pedagogical support is not as straightforward as a help desk or job aide but requires changes in the contextual conditions and professional development available to faculty at HEI (Koh, 2019; Melki et al., 2017; Monett & Elkina, 2015).

Students also contribute to the social context of HE faculty use of LMSs. Many students view LMSs as a chance for more practice with course content, but often they find that practice with content is not happening (Monett & Elkina, 2015). Instead of interaction with peers and opportunities to deepen learning, students often find instruction focuses on understanding and memorizing facts (Annansingh, 2019). George and Sanders (2017) found a strong emphasis on low-level learning for online students, with one-third of the tasks in LMSs centering on knowledge and one-third of the tasks centering on application. There was very little synthesis-level work and even fewer evaluation tasks (George & Sanders, 2017). Faculty need support to increase student satisfaction with LMSs and provide activities that require student-to-student engagement (Pomerantz et al., 2018).

Another pertinent social context influencing faculty use of LMSs is the institution itself. A variety of institutional factors are related to the use of LMSs and often interfere with the perceived pedagogical usefulness of the system. Zheng et al. (2018) found that an organization's

support in training and encouragement significantly affects LMS use. Institutions need to cultivate a formal culture of sharing (Mei et al., 2019), support change (Koh, 2019), and give faculty the ability to take risks without fear of reprisal or any consequences from bad student reviews (Sinclair & Aho, 2018). Finally, institutions and faculty need to have shared values (Kivijärvi et al., 2013) missions, and goals that encourage faculty to continue to grow in their practice.

Theoretical Context

Technology acceptance and use have evolved from accepted learning theories into models and theories that deal directly with the intention to use and actual use of technology. The roots of the theories to be examined lie in Bandura's (1977) self-efficacy theory and Ajzen's (1991) theory of planned behavior. Because these theories were applied to general contexts and not necessarily to a specific technology, later researchers interested in behavior as it relates directly to technology extended these theories. The technology acceptance model (TAM) (Davis, 1989) and two unified theories of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003; 2016) center specifically on users' intention to use and actual use of technology.

Technology Acceptance Model

According to the TAM (Davis, 1989), the use of technology is dependent on the perceived ease of use (PEU) and perceived usefulness (PU) of the technology. These two factors influence the user's attitude toward using a system and determine actual system usage (Davis, 1989). According to Davis (1989), technology acceptance is grounded in user self-efficacy. Self-efficacy theory states that people determine their ability to perform behavior through an intellectual connection of multiple factors (Bandura, 1977). Davis's model used two studies to create scales to measure PEU and PU of technology. Davis (1989) found that PEU was necessary

before PU could be recognized, but usefulness was a stronger determinant of technology use. This study aimed to take the theory even further by examining how the facilitating conditions at HEIs could increase faculty members' PU and use of active learning tools in LMSs.

Unified Theory of Acceptance and Use of Technology

In the UTAUT framework (Venkatesh et al., 2016), based on the TAM and other theories about technology, user performance and effort expectancy work along with social factors, including motivation and price value to determine the intention to use technology (Venkatesh et al., 2016). If this theory is applied to an organizational context like HEI, price value is no longer an influencer (Venkatesh et al., 2016) because the institution pays for the technology, not the faculty member. In contexts that do not consider cost, such as those where faculty are not paying for LMSs, user behavior intention and use of technology are influenced by facilitating conditions and habit influences. UTAUT delves deeper into contextual factors, including the environment, organization, and location (Venkatesh et al., 2016). However, in this model's second rendition, Venkatesh et al. (2016) recommended continued research into how contextual factors, including environment, location, and organization, influence technology usage. In addition, they suggested looking at how the use of different features in a technology, like the focus in this study on active learning tools in an LMS, are influenced by "the environment, location, organization, and event" (p. 348).

Problem Statement

The problem is many faculty members in HE show low and superficial use of LMSs due to a lack of knowledge about how to use active learning strategies in LMSs (Kite et al., 2020; Li, Garza, et al., 2019; Monett & Elkina, 2015; Sinclair & Aho, 2018). Facilitating conditions have been shown to be positively related to PEU of technology (Gunasinghe et al., 2019; Scherer et

al., 2019), yet there is a gap in the research because researchers have not inquired into what facilitating conditions lead to the use of LMSs for active learning. Although Venkatesh et al. (2003) found that intention to use and facilitating conditions were strong determinants of actual use, studies looking at what facilitating conditions lead to the use of LMSs have tended to look at overall usage, not directly at faculty use of active learning strategies in LMSs. Also, studies have not tightly defined facilitating conditions or have been specific and only looked at a few facilitating conditions. This study aims to build a description from HE faculty of facilitating conditions necessary for deeper LMS use.

HEI need to create an environment that encourages active online learning. It is, therefore, crucial to understand what facilitating conditions lead teachers to grow in the strategies they use and the tools they employ within LMSs to teach students. By working directly with instructors at two institutions who used LMSs to teach fully online, I aimed to discover conditions that could be added, changed, and improved at the institution to support faculty using active learning tools inside LMSs.

Purpose Statement

The purpose of this case study was to understand the facilitating conditions that led to faculty use of active learning tools in LMS at the community college level in California. For this research study, active learning in LMSs was defined as activities that allowed students to interact and engage with course content (Annansingh, 2019). In Canvas, the LMS used by the participants in this study studied, these tools included the use of discussion boards, collaborations (Dlalisa & Govender, 2020; Kara & Yildirim, 2019b), groups, formative assessments (Annansingh, 2019; Monett & Elkina, 2015), and instructor feedback (Acosta et al., 2021; Kara & Yildirim, 2019b; Li et al., 2020). The theories guiding this study were Davis's

(1989) TAM and UTAUT Versions 1 (Venkatesh et al., 2003) and 2 (Venkatesh et al., 2016), which grew from Davis' model. These theories all looked at how PEU and PU determine the use of technology. The second version of UTAUT added, "higher-level contextual factors" (Venkatesh et al., 2016, p. 346). This study directly linked the use of LMS features to an organization's contextual factors (Venkatesh et al., 2016). I sought to understand further how these factors improve faculty use of LMSs.

Significance of the Study

The COVID-19 pandemic brought about significant changes worldwide, and these changes disrupted and continue to change HE (Blankenberger & Williams, 2020). Two significant changes for community colleges were funding and demand for online courses (Blankenberger & Williams, 2020). Although one change for HE prior to 2020 was budget cuts (Blankenberger & Williams, 2020), California community colleges received $579 million in funds through the Coronavirus Aid, Relief, and Economic Security (CARES) Act (California Community Colleges Chancellor's Office, 2021b). Thus, during the COVID-19 pandemic, funding was available to train and support faculty in deeper use of LMSs. According to Pomerantz et al. (2018), 87% of HE students wanted faculty to use LMSs more. In addition, a survey of California community college students found that "overall, students show a higher demand for online courses" (California Community Colleges Chancellor's Office, 2021a). However, overall student enrollment in California community colleges declined by 6.4% between the fall of 2019 and the fall of 2021, which was twice the national average (California Community Colleges Chancellor's Office, 2021a). Therefore, this is a pivotal time for community colleges to figure out how to allocate these one-time funds to create the facilitating conditions that will support and increase faculty LMS use and increase student retention and

enrollment in online courses.

Studies show that faculty with a solid pedagogical foundation employ LMSs for more active student engagement (Koh, 2019; Mei et al., 2019; Short, 2014). In addition, faculty perceptions of facilitating conditions have been shown in some studies to impact their use of LMSs (Garone et al., 2019; Gunasinghe et al., 2019; Scherer et al., 2019). Thus, by collecting empirical insights into what faculty felt were the facilitating conditions that led to the use of active learning tools in LMSs during this quick rush online, this study gives a clearer picture of where HEIs can invest money and build infrastructure to support faculty use of LMSs.

This study also aimed to add to the definition of facilitating conditions, which are defined as the support and factors that assist faculty use (Venkatesh et al., 2003) of LMSs. In many qualitative studies, the term *facilitating conditions* is used but not fully defined or fleshed out. By listening to what faculty felt were the conditions that have been most helpful for them, I was able to provide an "in-depth understanding" (Creswell & Poth, 2018, p. 104) of faculty views on the essential facilitating conditions for deeper LMS use. In addition to defining facilitating conditions, this research study also added to the theoretical significance by detailing the support and factors in the HE environment that the faculty participants found led to deeper LMS use. This study extended TAM (Davis, 1989) by investigating "fundamental mechanisms driving user behavior" (Davis, 1989, p. 335). It expanded on the "other variables" that Davis (1989, p. 334) noted as needing more research. In addition, this study explored the facilitating conditions in UTAUT (Venkatesh et al., 2003) and UTAUT2 (Venkatesh et al., 2016) in the HE environment and examined how those conditions work in that specific context. Also, by targeting active student learning tools, this study explored the technology of LMSs at the "feature level" (Venkatesh et al., 2016, p. 347) to determine how user performance and the PU of LMSs could

be improved for HE faculty.

Research Questions

The rapid transition to online courses and the increase in a variety of support to assist HE faculty members to instruct online provides an opportunity to explore a myriad of facilitating conditions. In addition, many sources have predicted that online course availability and demand will increase greatly because of student exposure to online instruction during the COVID pandemic (Blankenberger & Williams, 2020; Lokken, 2021). Therefore, it was crucial to discover what faculty felt was valuable in creating a student-centered environment in LMSs.

Central Research Question

How do faculty describe the facilitating conditions that lead to the use of active learning strategies in LMSs?

Sub-Question 1

What technical resources do faculty need to use active learning tools in LMSs?

Sub-Question 2

What pedagogical support do faculty need to use active learning tools in LMSs?

Sub-Question 3

What faculty professional development lead to active learning tool use in LMSs?

Sub-Question 4

How does the perceived influence of the atmosphere of the institution affect faculty use of active learning tools in LMSs?

Sub-Question 5

How is DE supported at the institution?

The central question focused on the facilitating conditions necessary to ensure technology

acceptance of LMSs. Venkatesh et al. (2016) stated that “we need multi-sample, multi-study research to theorize the influences of location/organization attributes in the model” (p. 347). This study aimed to provide such research by using two sites to discover the facilitating conditions at each site and the influence these conditions had on student-centered learning tools in LMSs. The study then brought those findings together and refined the influential contextual factors broadly defined in many studies. By looking directly at active learning tools in LMSs, the study linked the facilitating conditions to the individual use of features of LMSs, as further recommended by Venkatesh et al.(2016). The sub-questions explored specific facilitating conditions as identified in previous studies.

The sub-questions explored further details about facilitating conditions that have been shown to improve faculty LMS use and explored conditions that have yet to be studied (Venkatesh et al., 2016). Technical resources are needed for LMS usage (Al-Maroof et al., 2021; Monett & Elkina, 2015; Zwain, 2019), yet it is beneficial to know what type of resources faculty find most helpful for deeper LMS use. Pedagogical support leads to active learning in LMSs (Koh, 2019; Melki et al., 2017; Mokhtar et al., 2018), but again, what type of support an organization should provide needed further examination. Training has been tied to deeper LMS use (Chow et al., 2018), and the need to quickly train faculty during the switch brought on by the pandemic allowed for a deep inquiry into what HE faculty felt was most helpful. Finally, the examination of institutions’ atmospheres provided a broader question that allowed faculty to share how they felt about the college’s leadership (Bøe, 2018) and environment. The last question focused directly on DE support (Çogaltay & Karadag, 2016) and infrastructure (Damşa et al., 2021; Pettersson, 2018), which supported deeper LMS use during the transition to online course facilitation required during campus closures brought on by the COVID-19 pandemic.

Definitions

1. *Effort expectancy*—the belief in the amount of effort required to do the behavior (Venkatesh et al., 2016).
2. *Facilitating conditions*—the support and factors in the environment that make performance easier (Venkatesh et al., 2003).
3. *Learning management system*—an online learning environment where teachers can create content, activities, and tasks for students to perform learning activities (Chow et al., 2018).
4. *Pedagogy*—knowledge about learning and ways to teach encompassing a wide range of strategies (Kiray et al., 2018).
5. *Perceived ease of use*—the degree to which someone believes using a particular technology will require little to no effort (Davis, 1989).
6. *Perceived usefulness*—the degree to which someone believes that using a specific technology will improve their ability to perform a job (Davis, 1989).
7. *Performance expectancy*—the belief that using a technology will help improve job performance (Venkatesh et al., 2016).
8. *Social influence*—the perceived belief of others influencing the performance of actions (Venkatesh et al., 2016).
9. *SpeedGrader*—the tool in Canvas that allows faculty to assign grades to student assignments and provide feedback (Instructure, 2022).

Summary

The rapid rush to move classes online put a spotlight on HE faculty LMS use. At one time, LMSs were used primarily in HEI for online courses and content storage for other classes.

Even though LMS usage had increased before the pandemic, LMSs were still underused by HE faculty. There are numerous factors that influence LMS use, including technical knowledge and support, pedagogical knowledge and support, student expectations, and organizational support. The system and contextual factors that influence ease of use and PEU are outlined in the discussion of TAM (Davis, 1989) and UTAUT (Venkatesh et al., 2016) that lay the foundation for this study. These models look at technology in general; however, this study looked at a specific technology, LMSs, in a specific context, the HE level. This study was grounded in the purpose of improving and defining facilitating conditions that will lead to deeper use of LMSs by faculty and helping institutions create an infrastructure to support the facilitating conditions that faculty found most valuable during the rapid rush to remote learning.

CHAPTER TWO: LITERATURE REVIEW

Overview

The theoretical frameworks and previous research related to learning management system (LMS) use by higher education (HE) faculty are discussed in this section. Three technology acceptance and usage models informed the review of these studies. These models focused on perceived ease of use (PEU), perceived usefulness (PU), and facilitating conditions. Both quantitative and qualitative studies presenting research related to LMS use by HE faculty compose the corpus of this literature review. Studies examining usage are broken down by system use (Almarashdeh, 2016; Fathema et al., 2015; Stockless, 2018), faculty factors (Al-Maroof et al., 2021; Chow et al., 2018; Sinclair & Aho, 2018), and facilitating conditions (Fearnley & Amora, 2020; Gunasinghe et al., 2019; Scherer et al., 2019). Numerous studies focusing on various facilitating conditions show how broad the definition of this term is as it relates to technology use at the HE level (Baishya et al., 2017; Damşa et al., 2021; Garone et al., 2019). Some studies focus on organizational support as a facilitating condition (Al-Maroof et al., 2021; Meriem & Youssef, 2020; Zheng et al., 2018), which centers on the administration's commitment to providing support that facilitates LMS use. This support is then divided and examined deeper as the technical support, pedagogical support, and professional development offered at the HE level. In addition, findings on organizational trust and distance education (DE) support teams are discussed as facilitating conditions that improve LMS use. The variety of components that compose the environmental support and the general focus on LMS usage and not deeper LMS use in the studies reviewed in this chapter reveal the need for further qualitative research into the facilitating conditions that lead to the use of active learning tools in LMSs. In addition, the rapid rush to move instruction online during the Coronavirus disease 2019

(COVID-19) pandemic provides a unique opportunity to interview faculty who did not choose to go online but were required to due to the shutdown of campuses.

Theoretical Framework

The theories that inform this literature review include Davis's (1989) technology acceptance model (TAM), the unified theory of acceptance and use of technology (UTAUT), and UTAUT2 (Venkatesh et al., 2003; 2016). Each of these theories is used to explain what leads to human behavior directly related to technology use. By looking at these theories in chronological order, it is evident how each theory is informed by its predecessor and has evolved as technology use has increased and theories have been applied to many different technological systems.

TAM looks at how PEU and PU predict technology use (Davis, 1989). TAM was built from many unvalidated measures used to predict and explain the use of technology systems and informed by Bandura's (1977) work, which stated that self-efficacy beliefs lead to more successful performance. However, instead of just focusing on the user, TAM looks at how the system and user work together to predict usage. According to Davis (1989), PEU and PU of a technology predict system usage, but PU is the stronger predictor of use. Although ease of use is significant in looking at LMS use, in HE, the goal of educating students is directly related to the PU of using LMSs to teach. Therefore, this model's focus on PU is a strong framework for looking at faculty use of LMSs to improve student learning; however, because this model looks at technology but not at a specific system or context, further research is needed to extend TAM to HE faculty LMS use.

UTAUT originated from other theories, including the theory of reasoned action (Ajzen & Fishbein, 1980), TAM (Davis, 1989), the theory of planned behavior (Ajzen, 1991), the model of PC utilization (Thompson et al., 1991), the innovation diffusion theory (Moore & Benbasat,

1991), and the social cognitive theory (Compeau et al., 1999). Venkatesh et al. (2003) researched and tested these models and synthesized them into the UTAUT model. Venkatesh et al. (2016) added new constructs to UTAUT for UTAUT2. The UTAUT2 model states that performance expectancy, effort expectancy, social influence, and facilitating conditions are the strongest determiners of user technology acceptance and behavior (Venkatesh et al., 2003).

Performance expectancy is the belief that using a particular technology will improve job performance (Venkatesh et al., 2016). PU, extrinsic motivation, job fit, relative advantage, and outcome expectations (Venkatesh et al., 2016) work together to create a user's performance expectancy. Faculty PU for an LMS is defined as how well that LMS can be used to teach content (Mokhtar et al., 2018). Extrinsic motivation is defined as the user wanting to use technology because of some outside incentive (Venkatesh et al., 2003), which for LMS usage requires looking at faculty and what the higher education institution (HEI) offers to encourage LMS use. Job fit relates to the belief that the use of the technology will increase the performance of the task (Venkatesh et al., 2003) for faculty use of LMSs. For the HE context in this study, job fit means how an LMS can help faculty with instruction. Relative advantage examines how the technology is viewed as better than what was previously used (Venkatesh et al., 2003). In the case of LMSs use for classroom instruction, the relative advantage is critical to examine because faculty often believe face-to-face instruction is superior to online instruction (Brinkley-Etzkorn, 2020; Jääskelä et al., 2017). Finally, outcome expectations look at the consequences of using a particular technology on job performance and personal feelings (Venkatesh et al., 2003). With LMS usage at the HE level, faculty would consider the effectiveness and time required to use LMSs to teach and how the use of LMSs could improve or hurt their reputation (Sinclair & Aho, 2018).

Performance expectancy combined with effort expectancy and social influence strongly determine the intention to use a technology (Venkatesh et al., 2016). Effort expectancy is the belief in the amount of effort required to use the technology (Venkatesh et al., 2016) and directly relates to Davis's (1989) ease of use. Effort expectancy can be broken down into PEU, complexity, and ease of use (Venkatesh et al., 2003). For HE faculty, ease of use and complexity determine a willingness to use LMSs (Bourdeaux & Schoenack, 2016). Social influence is the perceived belief of others that influences the use of the technology (Venkatesh et al., 2016), and for HE faculty, the opinions of others include students (Sinclair & Aho, 2018), colleagues, and administration (Kivijärvi et al., 2013).

UTAUT2 (Venkatesh et al., 2016) adds a significant contribution to previous technology theories by including the influence of "higher-level contextual factors" (p. 346), which are the environment, organization, and location attributes. The contextual factors combine to create the "organization and technical infrastructure" (Venkatesh et al., 2016, p. 453) that supports faculty use of LMSs. The organization structure needs to support HE faculty with the required knowledge, guidance, instruction, and support to use LMSs. However, HE faculty still need to have perceived behavioral control, including control over using LMSs (Venkatesh et al., 2016). In addition, the faculty need to believe LMSs are compatible and a good fit (Venkatesh et al., 2016) for instructing students, which often comes from the environment of the HEI. The contextual factors are combined and referred to in UTAUT2 as facilitating conditions (Venkatesh et al., 2016) which are discussed at length in the following literature review.

Related Literature

This section examines HE faculty use of LMSs and the factors that support the use of active learning tools in LMSs. First, the review establishes the importance of LMS use at the

college level and the factors that influence LMS usage, including system usage and faculty factors. It then focuses specifically on facilitating conditions at the organizational level that facilitate faculty use of active student learning tools in LMSs. These facilitating conditions are broken down into organizational support, technical support, pedagogical support, and professional development. Organizational trust and the DE infrastructure at HEI are further examined as influential facilitating conditions at the HE level. The articles selected for the literature review were primarily from the previous five years. However, a few older articles were included due to their strong focus on organizational support. The research is a mix of qualitative and quantitative studies focused on LMS use.

Learning Management System Usage by College Faculty

Most HE institutions provide an LMS to faculty members for online instruction and supplemental classroom instruction (Rienties et al., 2016). However, prior to the COVID-19 pandemic, many studies showed that faculty usage remained low and superficial (Kite et al., 2020; Li, Garza, et al., 2019; Monett & Elkina, 2015; Sinclair & Aho, 2018). Li, Garza, et al. (2019) used quantitative data mining inside LMSs to show that faculty mostly used content storage and distribution features in LMSs. Rhode et al. (2017) found that 82% of courses in LMSs used announcements, and 76% of courses had content items created in the pages tool in LMSs. Files and folders were used in over 50% of the courses in LMSs (Rhode et al., 2017). Dlalisa and Govender (2020) confirmed this finding stating that faculty primarily used LMSs for course management and communication. Faculty perceive LMSs as a useful tool for one-way communication and file dissemination; however, there was no evidence of deeper use of active student-centered learning functions in LMSs in any of these studies.

In particular, there was little use of student-centered tools in LMSs, which have been

shown to increase student motivation and success (Bervell et al., 2019; Teo et al., 2018). For instance, faculty rarely used discussion boards and collaboration tools in LMSs (Dlalisa & Govender, 2020). Only 21% of the courses examined in one study had discussion boards (Rhode et al., 2017). Additionally, faculty find the discussion board tool challenging to use and desire better design of tools in LMSs to facilitate student collaboration (Zanjani et al., 2017). Students echo the frustration with discussion boards, stating that there is not enough authentic interaction (Ensmann et al., 2021) and that discussion boards are often "busy work" (Li et al., 2021). Thus, faculty are not using LMSs to create student-centered learning (Dlalisa & Govender, 2020; Liu et al., 2019). Although some complaints about student-centered learning tools in LMSs reflect difficulties with ease of use (Davis, 1989), the use of student-centered learning tools also requires HE faculty to shift from the traditional lecture method often found in face-to-face classes to a facilitator of learning in the online classroom (Dlalisa & Govender, 2020). A change in instructional methods used to instruct in online learning classes could lead HE faculty to recognize the PU of the student-centered tools in LMSs.

Both faculty and students are deeply affected by how technology is utilized for instruction (Bervell et al., 2019; Teo et al., 2018). Two studies that surveyed both faculty and students found that students felt LMSs were used only for presenting course materials (Kite et al., 2020; Monett & Elkina, 2015). Students wanted creative, effective, and exciting courses (Bourdeaux & Schoenack, 2016; Koh & Kan, 2021), but faculty noted a lack of technical support and pedagogical support as a barrier to broad use of student-centered activities in LMSs (Koh, 2019; Melki et al., 2017). Although instructors are often not satisfied with student participation (Brinkley-Etzkorn, 2020), they need further guidance in creating student-centered tasks (Bervell et al., 2019). Students want a chance to share their perspectives, give comments, communicate

(Bourdeaux & Schoenack, 2016) and collaborate (Koh & Kan, 2021). Although faculty often feel LMSs are easy to use (Brinkley-Etzkorn, 2020), the inability of HE faculty to facilitate active student learning in LMSs shows that the PEU and PU of LMSs for active learning needs further support.

The lack of PU, which ties directly to pedagogical beliefs and performance expectancy, is exemplified by the lack of active learning strategies in LMSs (Kite et al., 2020; Monett & Elkina, 2015) and faculty beliefs that LMSs are not suitable for teaching their subject (Monett & Elkina, 2015). For example, a recent study that surveyed 117 science faculty at the community college level found that many faculty eliminated lab-centered learning outcomes when classes were moved online because they felt that the activities required to meet lab course outcomes could not be accomplished in LMSs (Barton, 2020). Pedagogical support could alleviate these concerns (Almarashdeh, 2016), and instructors could be shown how LMSs fit with their subject and is even helpful for teaching their content and meeting course outcomes (Mokhtar et al., 2018). Sinclair and Aho (2018) further supported this finding in their study with LMS administrators as participants. The administrators shared that faculty with the strongest pedagogical foundations showed the most educationally relevant use of LMSs (Sinclair & Aho, 2018).

The issue of low pedagogical use by HE faculty is further highlighted by studies looking at the use of assessment tools in LMSs. Rhode et al. (2017) reported that only 19% of the courses in LMSs used assessment tools. Three additional studies also found that the use of assessment tools in LMSs was very low (Chow et al., 2018; Dlalisa & Govender, 2020; Machajewski et al., 2019). In a mixed study that used qualitative interviews to examine the role of the instructor in deep learning in LMSs and quantitative methods to determine student experiences of actual LMS instructional use by faculty, Annansingh (2019) found that assessment use in LMSs was low and

often only used for summative assessments. Walker et al. (2016) also found that LMS assessments were summative and often multiple choice. Dlalisa and Govender (2020) provided further support that faculty use of assessment was strictly for summative evaluation by finding that the system often graded assessment and there was no use of self-assessment. Faculty were, therefore, not interacting with student answers to help shape teaching and not providing the formative assessment and feedback that students desire in online courses (Monett & Elkina, 2015). Instead, faculty are sticking to assessment to test knowledge rather than allowing students to continually create knowledge.

In addition to the need for feedback from formative assessments, students desire an improvement in instructor interaction in the online environment (Acosta et al., 2021). Instructor feedback in the online setting significantly influences student motivation and sense of community (Li et al., 2020). However, informal feedback in a face-to-face classroom from instructors and peers is not naturally available in online courses (Acosta et al., 2021; Li, Garza, et al., 2019). Therefore, instructors need structured formats to ensure students receive feedback and recognize that feedback is part of student-centered teaching (Acosta et al., 2021). In order to guarantee that feedback is formative in nature, students need to receive feedback before the next assignment is due (Li et al., 2021). In addition, students desire detailed feedback (Li et al., 2021). To accomplish student-centered feedback, instructors need training on the various methods of giving feedback in the online environment (Li, Garza, et al., 2019), and students need training on how to access instructor comments and utilize the information to continue learning (Mensink & King, 2020; Winstone et al., 2021). LMSs add powerful tools for feedback, including different formats to share comments previously unavailable, like video and audio feedback (Li, Garza, et al., 2019), and the ability to present feedback and grades simultaneously (Mensink & King,

2020).

The studies cited so far give a clear picture of the superficial use of LMSs by using qualitative and quantitative methods and range of participants that included faculty (Annansingh, 2019; Chow et al., 2018; Monett & Elkina, 2015), students (Annansingh, 2019; Monett & Elkina, 2015), and LMS administrators (Chow et al., 2018). Although pedagogical knowledge has been noted as a reason for low and superficial usage (Monett & Elkina, 2015; Sinclair & Aho, 2018), other factors also determine LMS use (Scherer et al., 2019). It is crucial to explore the factors that determine LMS use by HE faculty in light of the theories mentioned previously to obtain a clearer picture of research findings on the PU of LMSs (Davis, 1989) and faculty use of student-centered learning tools in LMSs. Students often stated they needed more feedback in online courses (Li et al., 2021; Winstone et al., 2021). Faculty need more training to recognize the ease of using student-centered learning tools in LMSs and the PU of these tools for continued student learning.

Factors Determining LMS Usage

The major factors determining LMS use by college faculty can be broken down into system factors, faculty factors, and facilitating conditions (Fathema et al., 2015). System factors of LMSs relate directly to TAM's ease of use (Davis, 1989) and UTAUT's effort expectancy (Venkatesh et al., 2003) in using LMSs. Faculty factors are indeed part of TAM's PU (Davis, 1989) but also are covered by wide range of variables represented in the UTAUT model. The first faculty factor in UTAUT is performance expectancy, which is the belief that using LMSs will help HE faculty instruct students (Venkatesh et al., 2003). The second faculty factor in UTAUT performance expectancy is effort expectancy, which consists of PU, extrinsic motivation, job fit, relative advantage, and outcome expectations (Venkatesh et al., 2003).

Finally, as with faculty factors, facilitating conditions cover many things defined as the support and factors in the environment that make the performance easier (Venkatesh et al., 2016). Looking at each of these elements in detail makes it apparent where more research is needed.

System Usage

System usage looks at LMSs to determine how easy it is to accomplish tasks (Fathema et al., 2015). Studies on technology acceptance have had conflicting results on ease of use when it comes to LMSs. Gunasinghe et al. (2019) found that overall ease of use encouraged e-learning adoption by faculty. Bervell and Arkorful (2020) confirmed this finding in a study of tutors' voluntary use of LMSs. In a mixed study utilizing both qualitative and quantitative methods, Brinkley-Etzkorn (2020) found that faculty were satisfied with the ease of use of LMSs. In addition, Melki et al. (2017) found that ease of use led to higher use of LMSs in their qualitative study but found, as Davis (1989) stated in the TAM model, other factors played a more critical role. Fathema et al. (2015) found that ease of use determined higher LMS usage; however, since the largest percentage of respondents in their study ranged in age from 51–60, the researchers felt age could be a determinant in the findings. Two additional recent studies found that ease of use had no influence on instructor use of LMSs (Almarashdeh, 2016; Stockless, 2018), which could be attributed to the more intuitive design of recent systems. Although ease of use has been shown to be an essential factor in LMS use in the past (Fathema et al., 2015; Gunasinghe et al., 2019; Melki et al., 2017), this looks to be changing (Almarashdeh, 2016; Stockless, 2018). Therefore, it is necessary to clarify and expand previous research findings by examining what HE faculty feel were essential supports for increasing student-centered learning tool use in LMSs.

Faculty Factors

Because this study explored one particular technology in a focused context, it is essential

to look at factors specific to HE faculty that predict and explain (Davis, 1989) LMS intention to use and usage. Faculty factors that influence technology use are broken down in UTAUT into performance expectancy, effort expectancy, and social influence (Venkatesh et al., 2016). In addition, individual differences are described as moderating variables in UTAUT2 (Venkatesh et al., 2016). Faculty attributes, including levels of technology experience and pedagogical training, contribute to PU (Davis, 1989), leading to more instructor use of LMSs (Almarashdeh, 2016). Therefore, for this research study, it was vital to consider individual faculty differences that predict LMS use, focusing on differences that can be changed through training and support.

One important faculty factor is the PEU of LMSs, as discussed previously. A technology system that is easy to use is more likely to be accepted and used (Davis, 1989; Teo et al., 2018; Venkatesh et al., 2016), and an LMS that is easy to use leads to higher faculty use (Fathema et al., 2015; Gunasinghe et al., 2019; Melki et al., 2017). Overall, faculty find the current LMSs easy to use (Bervell & Arkorful, 2020; Brinkley-Etzkorn, 2020), but some faculty attributes influence PEU. One factor influencing PEU for HE faculty is the level of experience using technology and LMSs (Chow & Croxton, 2017). Faculty who used LMSs as a student and those who have encountered student-centered activities in LMSs are more likely to engage students in active learning activities (Brinkley-Etzkorn, 2020; Liu et al., 2019). In addition to hands-on experience, Chow et al. (2018) found that trained faculty trained are more likely to use LMSs and use them for active learning activities. Faculty training, of course, builds faculty confidence, leading to more and robust use of the LMS (Fathema et al., 2015).

After looking at PEU, it is imperative to look at performance expectancy, which in the context of this study is the degree to which HE faculty believe that using LMSs is useful for teaching (Venkatesh et al., 2016). Performance expectancy in UTAUT2 (Venkatesh et al., 2016)

includes PU (Davis, 1989), which is the extent to which faculty believe that using LMSs for instruction will improve their job performance and productivity (Venkatesh et al., 2016). Although many HE faculty find LMSs improve their ability to communicate and distribute content to students (Li, Garza, et al., 2019; Monett & Elkina, 2015; Sinclair & Aho, 2018), they do not feel the same about LMSs for instruction.

The most substantial faculty factor for determining HE faculty PU (Davis, 1989) of LMSs for instruction and student-centered instruction is a solid pedagogical foundation (Al-Maroof et al., 2021; Kiray et al., 2018; Mei et al., 2019; Sinclair & Aho, 2018). Although faculty enter the profession with different levels of pedagogical knowledge, in a study that was a mix of both qualitative and quantitative design, the researchers found that HE faculty felt they did not receive training on how to teach their discipline (Li, Su et al., 2019; Melki et al., 2017). Instead, most are solely content experts. However, those with a solid pedagogical foundation show the deepest use of LMSs (Kiray et al., 2018; Mei et al., 2019; Sinclair & Aho, 2018). Also, those considered to be pedagogical innovators use more tools in LMSs (Fathema et al., 2015). Faculty who lack a teaching foundation may not appreciate the tools in LMSs "that enable learning" (Pomerantz et al., 2018). Part of the problem with deeper pedagogical LMS use can be traced to faculty pedagogical training, but some problems can be traced to HE faculty beliefs based on discipline. Many HE faculty feel LMSs do not fit their needs in teaching specific subjects (Sinclair & Aho, 2018). Faculty have also stated that the assessment tools in LMSs do not meet the needs to assess the content (Li, Garza, et al., 2019).

Another necessary part of performance expectancy to consider with HE faculty is the relative advantage (Venkatesh et al., 2016) of using an LMS, which in the context of this study is defined as the belief that using LMSs is better than face-to-face teaching**.** Faculty often do not

believe online instruction is superior to face-to-face instruction and often do not feel that online learning is even of equal quality (Chow & Croxton, 2017). In addition, faculty who use active learning in the face-to-face classroom feel that it is hard to reproduce this learning in LMSs (Mælan et al., 2021; Melki et al., 2017). Faculty who teach fieldwork courses from 70 different institutions felt that the online substitutions necessary during the switch to remote learning in 2020 were inadequate compared to face-to-face activities (Barton, 2020). Faculty beliefs about the inadequacy of LMSs to facilitate the same quality of instruction and learning in the traditional classroom have a direct impact on student learning. Because pedagogical knowledge may be the most significant predictor of deep LMS use, and there is often a lack of overall support and especially the pedagogical support needed for faculty in HE (Koh, 2019) to use active learning strategies in LMSs, this is a crucial HE faculty factor that needs further investigation.

In addition to performance expectancy, effort expectancy, which is the amount of effort HE faculty believe will be required to use LMSs, is another factor that needs to be explored. The two issues of effort expectancy (Venkatesh et al., 2016) that are often noted by HE faculty as a barrier to LMS use are lack of time to use and learn LMSs and compensation for that time. Delivering a course or materials through LMSs requires additional planning and setup time (Brinkley-Etzkorn, 2020; Chow & Croxton, 2017; Chow et al., 2018; Mælan et al., 2021). HE faculty feel there is a higher workload in transferring lessons from the classroom to the online environment (Monett & Elkina, 2015; Walker et al., 2016), and they do not have the extra time required to set up courses in LMSs (Coleman & Mtshazi, 2017; Sözgün et al., 2018). Another complaint is the lack of time required to participate in professional development (Berry, 2018; Coleman & Mtshazi, 2017; Kara & Yildirim, 2019a; Kite et al., 2020). In addition, the extra time

for both setup and training is often not compensated (Brinkley-Etzkorn, 2020; Coleman & Mtshazi, 2017; Kite et al., 2020). As a result, HE faculty often feel that the effort expectancy to use LMSs for instruction is a barrier to use (Brinkley-Etzkorn, 2020; Monett & Elkina, 2015). However, compensation, rewards, and recognition can encourage faculty to dedicate time to training and collaboration (Andrade, 2016; Brinkley-Etzkorn, 2020).

Another effort expectancy issue faculty noted is the lack of time to collaborate (Cho, 2017) and work together in their department to develop and discuss content-specific online teaching strategies (Berry, 2018). In a quantitative study on professional development, faculty rated peer support as the most valuable use of training time (Redstone & Luo, 2021). However, numerous studies have found that institutionally supported time to collaborate with peers is either insufficient or nonexistent (Berry, 2018; Brinkley-Etzkorn, 2020; Cho, 2017; Coleman & Mtshazi, 2017). For example, in a recent study during the COVID-19 pandemic, faculty often turned to more experienced colleagues for support (Mælan et al., 2021). Another study found that one-third of faculty would like to have monthly faculty meetings on teaching online (Damşa et al., 2021). Therefore, it is vital to consider if institutionally provided collaboration time should be a part of the support provided by HEIs.

In addition to performance expectancy, social influence, which includes HE faculty beliefs about peer and administration support (Venkatesh et al., 2016), influences faculty LMS use. An important factor is the internalization of technology use by peers and superiors (Kidd, 2010). HE faculty are often motivated to use LMSs by peer use and comments about LMSs (Sinclair & Aho, 2018). Faculty support at the department level and peer level increases technology use (Kidd, 2010). In addition, how peers and superiors review technology being used has implications for technology adoption (Kivijärvi et al., 2013). Strong reviews focusing on

ease of use and usefulness increase faculty adoption of technology (Kivijärvi et al., 2013; Sinclair & Aho, 2018). In addition, the way an organization and those within it place value on the individual user's use of technology is crucial (Kivijärvi et al., 2013). McGee et al. (2017) recommended that faculty who teach online receive formal and informal recognition, increased job security, and a reduced workload. As a result, faculty are more likely to adopt online teaching technologies and methodologies that they feel will reflect well on their professional image. (Kivijärvi et al., 2013). Furthermore, incentives, including monetary rewards and recognition, are often desired from those faculty doing more to teach online and use LMSs (Brinkley-Etzkorn, 2020).

Another important factor to consider when looking at social influence at the HE level is the students' opinions about use of LMSs by their instructors. A fear of technology and unfavorable student reviews discourage many teachers from trying new tools in LMSs (Sinclair & Aho, 2018). Students often want more practice and formative assessment (Monett & Elkina, 2015; Pomerantz et al., 2018) but instead are given content to view and read. According to Monett and Elkina (2015), students felt LMSs were not well used and rated satisfaction with the amount of activities in LMSs that require student-to-student engagement much lower than content dissemination functions (Pomerantz et al., 2018).

Examining faculty factors that can be influenced by institutional support is critical. These factors include ease of use, PU, performance expectancy, effort expectancy, and social influence. This study examined how HEI used facilitating conditions during the COVID-19 pandemic to support faculty use of LMSs and focused on those that increased faculty use of active student learning tools in LMSs.

Facilitating Conditions

Facilitating conditions are defined as the "degree to which an individual believes an organizational and technical infrastructure exists to support the use of a system" (Venkatesh et al., 2003, p. 453). In a meta-analysis, Scherer et al. (2019) found that facilitating conditions often increase ease of use and PU. Facilitating conditions have also been shown to increase both the intention to adopt and the actual use of technology (Gunasinghe et al., 2019). However, this is not true in every study. For example, Fearnley and Amora (2020) found no relationship between facilitating conditions and PEU. The conflicting results and broad definition of facilitating conditions in the UTAUT (Venkatesh et al., 2003) and UTAUT2 (Venkatesh et al., 2016) as to the support and factors in the environment that make performance easier (Baishya et al., 2017; Gunasinghe et al., 2019), lead to the need for further research into how facilitating conditions improve and increase LMS use (Kara & Yildirim, 2019a; Kamarozaman & Razak, 2021; Venkatesh et al., 2016). In addition, since TAM (Davis, 1989), UTAUT (Venkatesh et al., 2003), and UTAUT2 (Venkatesh et al., 2016) are all applied to general technology use in any context, there is a need to look specifically at the influence of facilitating conditions on faculty use of LMSs at HEIs.

A study by Garone et al. (2019) illustrates the ambiguity of facilitating conditions. Garone et al. grouped faculty into three clusters based on their use of LMSs. The faculty who high UTAUT scores, felt they could easily use LMSs, and felt their institution had high facilitating conditions. The faculty at the same HEI with moderate UTAUT scores showed lower PEU and facilitating conditions. Faculty at the HEI with the lowest UTAUT scores did not feel LMSs were easy to use and scored facilitating conditions low, leading to the conclusion that they did not feel adequately supported (Garone et al., 2019). These three clusters of faculty all worked

at the same university, yet they rated the support available and factors in the environment differently. Clearly, the facilitating conditions at the institution were not different, but faculty perception of facilitating conditions was different. Damşa et al. (2021) also found in Norway that many HE faculty stated they were unaware of the resources or support structures at their HEI. Therefore, further exploration of faculty awareness of facilitating conditions is essential.

These conflicting results and the wide variety of support and factors that make up the facilitating conditions in a HE institution necessitated an examination of the components of the environment (Venkatesh et al., 2003) that predict LMS usage by faculty. In UTAUT2, the contextual factors influencing behavior intention and technology use are environmental attributes, organization attributes, and location attributes (Venkatesh et al., 2016). However, research into facilitating conditions at HEIs often focuses on additional components of contextual support. Facilitating conditions include organizational attributes (Bøe, 2018; Çogaltay & Karadag, 2016) but also add technical support (Almarashdeh, 2016; Al-Maroof et al., 2021; Zwain, 2019) and pedagogical support (Koh, 2019; Mokhtar et al., 2018). In addition, professional development at HEIs should be examined because an abundance of research focuses on this type of training (Liu & Geertshuis, 2021; Monett & Elkina, 2015; Muries & Masele, 2017; Rudhumbu, 2020). Finally, there is a need for a deeper look into how organizational attributes lead to behavior intention (Venkatesh et al., 2016) by examining the issue of trust the faculty have in leadership (Bøe, 2018), the infrastructure (Mælan et al., 2021; Pettersson, 2018) and support provided by HEIs and the DE support team (Çogaltay & Karadag, 2016).

Organizational Support. The overarching support for faculty use of LMSs is at the institution level. Support and encouragement at this level significantly affect LMS use (Muries & Masele, 2017; Zheng et al., 2018) through behavior intention (Venkatesh et al., 2016). Al-

Maroof et al. (2021) found that organizational support had the most significant effect on the intention to use LMSs. In addition, this top-level support is necessary if HE faculty are to recognize the attributes of the technology (Venkatesh et al., 2016), understand how to fully utilize LMSs (Melki et al., 2017), and recognize its PU (Venkatesh et al., 2016). On the other hand, HE faculty who sense that there is no organizational support are less likely to use LMSs and less likely to take the risk of trying new teaching methods in LMSs (Al-Maroof et al., 2021; Meriem & Youssef, 2020). There can also be a discrepancy between what HE administrators feel is needed for support and what faculty feel is needed (Chow & Croxton, 2017).

Organizational support is reflected in the institution's professional development, technical support, infrastructure (Mukminin et al., 2020; Rudhumbu, 2020), and dedicated support team that should be part of that infrastructure (Muries & Masele, 2017). It is also important to look at how HEIs provide exclusive support for faculty providing online instruction. For example, at the community college level in California, online teaching support can be handled by a DE department. Therefore, there is a need to review research directly related to the structure and support of the office directly responsible for the pedagogical and LMS support that has the most significant impact on faculty use of active student learning tools in LMSs.

Technical Support. Technical assistance for the LMSs is one part of support that fulfills a critical role (Zwain, 2019). This type of support focuses on the procedural skills to use LMSs and the terminology that is often unknown or complex (Monett & Elkina, 2015). This type of support directly relates to the PEU (Davis, 1989; Venkatesh et al., 2003) of LMSs. Not having technical support causes faculty stress (Coleman & Mtshazi, 2017) and leads to less faculty use of LMSs (Bervell & Arkorful, 2020; Coleman & Mtshazi, 2017; Fearnley & Amora, 2020; Meriem & Youssef, 2020). Previous research shows different views about what HE faculty

desire in technical support.

There are important considerations for HEIs to increase PEU through maximizing technical support (Karthik et al., 2019). Technical help should be available at all times because this increases LMS use by faculty (Almarashdeh, 2016). Both faculty and students at one university rated live technological support as the most important resource for LMSs (Chow & Croxton, 2017). In a study of faculty conducted during the switch to remote teaching, HE faculty stated that technical support was what they used the most (Redstone & Luo, 2021). With this type of support, faculty can accomplish the tasks of creating learning materials in LMSs and feel motivated to do so (Al-Maroof et al., 2021), but what technical support faculty use is still undetermined.

In addition to the availability of technical support, HE faculty have other recommendations for what they feel is the most helpful for LMS use. HE faculty often desire in-person technical support with one-on-one guided practice (Berry, 2018; Monett & Elkina, 2015). In addition, there is a desire for support tailored to individual faculty needs (George & Sanders, 2017). The use of job aids (Kara & Yildirim, 2019a) and easily accessible online sources are noted as helping faculty accomplish the technical tasks that often take numerous steps. However, technical support alone is insufficient for an instructor to use LMSs to create and facilitate student-centered activities (Li, Garza, et al., 2019).

Pedagogical Support. Another critical facilitating condition that has been discussed in research studies is pedagogical support, which relates directly to the PU (Davis, 1989; Venkatesh et al., 2003) of LMSs. This type of support is necessary at the HE level because faculty are often content area experts but lack teaching skills (Li, Su et al., 2019; Melki et al., 2017). However, at the HE level, there is often a lack of pedagogical support (Koh, 2019; Monett & Elkina, 2015),

and often there is not an agreed-upon definition of what online pedagogy entails (Jääskelä et al., 2017). Pedagogical support is needed to help faculty understand how to change delivery methods for online instruction (Blankenberger & Williams, 2020) and how LMSs can be used to teach their subject and support active learning (Dlalisa & Govender, 2020).

In addition to understanding how to use LMSs to teach specific content, instructors also often need guidance on using LMSs for active learning (Melki et al., 2017). One way to overcome this lack of a pedagogical foundation for instruction and, most importantly, online instruction is to use educational designers (Kite et al., 2020) and instructional designers (Machajewski et al., 2019) skilled in online teaching. With a focus on pedagogy in lesson design, LMS materials can be changed from being centered on content transmission to student-centered meaning constructions (Koh, 2019). Koh (2019) also found that with pedagogical guidance, faculty used tools for peer feedback, self-diagnosis, individual support, and collaboration, all tools that are student-centered and not content or teacher centered.

Pedagogical support is clearly needed to support faculty in the use of active learning tools in LMSs (Koh, 2019; Melki et al., 2017; Monett & Elkina, 2015; Pettersson, 2018); however, further research is necessary to see what support best drives pedagogical change. In a 10-year longitudinal study, Englund et al. (2017) found that it was easier to change the pedagogical beliefs and practice for novice teachers, but experienced teachers tended to continue teaching the way they have always taught and were taught. Facilitating conditions work together, so pedagogical support alone might not change faculty pedagogy (Jääskelä et al., 2017) and increase the use of student-centered learning tools in LMSs. Thus, this research study aimed to gather information about what facilitating conditions led HE faculty experienced in face-to-face instruction to change their pedagogical approach when forced to teach online.

Professional Development. Along with technical and pedagogical support, the organization must also support HE faculty with professional development opportunities (Muries & Masele, 2017; Rudhumbu, 2020). Trained teachers use LMSs for deeper purposes which also influences PU (Chow et al., 2018), but there is often a lack of training at the HE level (Melki et al., 2017; Meriem & Youssef, 2020; Monett & Elkina, 2015) and many different types of training are needed by faculty (Redstone & Luo, 2021). Numerous studies on faculty professional development and technology use highlight the many issues with professional development for online education.

Opinions vary about the most valuable content for professional development. Some suggest that training cover technical, pedagogical, and content knowledge (Kayaduman & Demirel, 2019). Still, others have found that only training that focuses on pedagogy has an impact on faculty LMS use (Belt & Lowenthal, 2020), and in order to focus on pedagogy, professional development needs to be discipline-specific (George & Sanders, 2017; Kiray et al., 2018). Therefore, faculty need discipline-specific training, which needs to focus on how specific tools in LMSs can be used to teach content (Kiray et al., 2018). One study with similar findings showed that faculty felt that the most valuable professional development centered on course design and development; however when asked for specific examples, designing and evaluating content were two of the most desired topics, but media editing, a more technical skill, was also noted (Redstone & Luo, 2021). This connection of technology skills and pedagogical methods has been shown to support student-centered instruction (Li, Garza, et al., 2019). In addition, there is a need for professional development that highlights active and meaningful learning and ongoing assessment (Jääskelä et al., 2017) with time for faculty to experiment, reflect, and have continued support (Li, Garza, et al., 2019).

In addition to views about training content, HEI faculty also commented on the training structure. HEI faculty felt that the training offered was not flexible enough (Monett & Elkina, 2015). Some faculty felt that workshops moved too fast for their skill level; others thought that some workshops assumed that faculty already had the knowledge needed to start at a high level and that some workshops begin at too low of a level (Redstone & Luo, 2021). Faculty also desired longer training (Coleman & Mtshazi, 2017) and for training to be continual throughout the year (Brinkley-Etzkorn, 2020). The varied HE faculty views on professional development show a need for further research into what training faculty found the most useful in strengthening PU of LMSs (Scherer et al., 2019) and how training was designed to meet the needs of faculty with different levels of skills and support needs.

HE faculty also provided advice on providing professional development that will assist faculty in using active student learning tools in LMSs. They often felt training offered nothing to help with pedagogy and "desired more support for doing things like facilitating discussion, promoting student interaction, developing collaborative learning experiences and supporting students' sense of community" (Berry, 2018, p. 132). In addition, they desired training that modeled student-centered activity facilitation in LMSs with a strong desire to see discussions and feedback in action (McGee et al., 2017).

In addition, rather than offering a one size fits all training, there needs to be a focus on different skill levels (Liu & Geertshuis, 2021) and lessons that target specific instructor concerns (Kayaduman & Demirel, 2019). It has been suggested that training focus on self-efficacy and innovation (Mokhtar et al., 2018) but also focus on LMSs (Liu & Geertshuis,, 2021) by sharing the tools available and discussing the benefits and use of these tools (Al-Maroof et al., 2021; Stockless, 2018). With limited time for faculty to train (Kite et al., 2020) and many suggestions

on what training needs to include (Al-Maroof et al., 2021; Jääskelä et al., 2017; Kayaduman & Demirel, 2019; Liu & Geertshuis, 2021; Mokhtar et al., 2018; Redstone & Luo, 2021), further faculty input on what professional development HE faculty found most valuable in terms of both content and structure during the rush to online instruction in 2020 can help guide the most effective components of needed training for faculty use of active student learning tools in LMSs.

Organizational Trust. Organizational trust is one facilitating condition that has been found to impact behavior and behavior intention directly. In a meta-analysis on organizational factors that led to job satisfaction, Çogaltay and Karadag (2016) provided powerful support for educational leadership and organizational trust being strong predictors of job satisfaction. Çogaltay and Karadag's (2016) study is a solid argument for including organizational trust as a facilitating condition because it used data from 77 studies with correlational data. Organizational trust is further defined in a meta-analysis by Dalati et al. (2017). "Trust is conceptualized as individual intention to have good intent and have assurance in the actions and behavior of others; where trust is the main factor in the long-term stability of the organization and the wellbeing of its members" (Dalati et al., 2017, p. 18). Although the studies by Çogaltay and Karadag (2016) and Dalati et al. (2017) stressed the importance of organizational trust as a facilitating condition for job satisfaction, few researchers have addressed how this ties directly to meaningful LMS use.

One recent study did connect organizational trust directly to technology use. In a quantitative study with a large, diverse group of HE faculty, Bøe (2018) found that organizational trust significantly affects the intention to use e-learning technology. The findings support that "trust affects both continued use and PU" (Bøe , 2018, p. 373). However, Bøe's (2018) study was general in the questions it asked about trust and leadership, focusing on

management decisions as the basis for a trust relationship and not the support in the facilitating conditions of the organization.

A limited number of studies have found that the facilitating condition of organizational trust is a strong predictor of faculty use of LMSs (Bøe, 2018; Kivijärvi et al., 2013; Zheng et al., 2018). The levels of trust at the HE level can be assessed by looking at the process and conditions of the college (Shults, 2008) that deal with the relationship between the college and the authority within the college (Kivijärvi et al., 2013). A faculty member will need to submit to control regarding the requirements for an online course, and there are certain attributes for those in a leadership position that make HE faculty comfortable (Kivijärvi et al., 2013). For online faculty to trust those in authority, the trustee must be considered trustworthy (Kivijärvi et al., 2013). Additionally, there needs to be a power relationship balanced by shared attributes between the trustee and trustor (Kivijärvi et al., 2013). Shults (2008) found that those in the leadership also need to appreciate the individual. In addition to the control structure between people, control through institutional or state standards for online teaching is recommended (Kara & Yildirim, 2019a).

An analysis of the rules and regulations governing online education needs to be conducted at the institutional level. These guidelines should be analyzed to determine if they ensure successful online course design (Kivijärvi et al., 2013). Faculty struggle when there are no standards or standards lack clear meaning (McGee et al., 2017). In addition, Kidd (2010) found technology adoption difficult if the administration does not clearly articulate the policies. Kara and Yildirim (2019a) recommended adopting national standards before online education is offered at a school; however, to build trust, those standards should be based on the institutional vision (Essmiller et al., 2020; Kidd, 2010).

In addition to control and regulations, HEIs can foster social systems that build trust between the organization and faculty teaching online (Kivijärvi et al., 2013). An important factor is the internalization of technology use by peers and superiors. Faculty support at the department level, at the peer level, and through collaboration time with other faculty increase technology use by faculty (Kidd, 2010). Peers and superiors review of technology also has implications for technology adoption (Kivijärvi et al., 2013). Additionally, positive reviews focusing on ease of use and usefulness increase faculty adoption of technology (Kivijärvi et al., 2013). In addition, the way an organization and those within it place value on the individual user's use of technology is important (Kivijärvi et al., 2013). For example, McGee et al. (2017) recommended that faculty who teach online receive formal and informal recognition, increased job security, and a reduced workload. As a result, faculty are more likely to adopt online teaching practices that they feel will reflect well on their professional image. (Kivijärvi et al., 2013). This type of organizational encouragement for use of technology builds trust and must be analyzed to address any gaps that need to be addressed. As student demand for online education continues to grow (Blankenberger & Williams, 2020), the impact of organizational trust on faculty LMS use needs to be explored in greater depth.

Distance Education Infrastructure. The previous research lays a foundation for the importance of the need for organizational support (Al-Maroof et al., 2021; Muries & Masele, 2017; Zheng et al., 2018), technical support (Al-Maroof et al., 2021; Almarashdeh, 2016; Fearnley & Amora, 2020; Meriem & Youssef, 2020; Zwain, 2019;), pedagogical support (Koh, 2019; Melki et al., 2017; Mokhtar et al., 2018), professional development (Chow et al., 2018; Kayaduman & Demirel, 2019; Muries & Masele, 2017; Rudhumbu, 2020), and organizational trust (Bøe, 2018; Çogaltay & Karadag, 2016) as facilitating conditions for LMS use by HE

faculty. In addition, HEIs need to coordinate many support elements to successfully support faculty in online course instruction and facilitation (Damşa et al., 2021; Pettersson, 2018). However, how that support is designed and managed differs at institutions, and there is little documentation about how that leadership is structured (Fredericksen, 2017). Thus, it is vital to look at the limited studies related to DE structure at HEIs.

Of the 66 California community colleges that responded to a survey about DE structure in 2018, only 47% had a DE department; in contrast, 92% of California community colleges had a DE committee, with 83% of the committees being a subcommittee of the academic senate (California Community Colleges Distance Education Coordinators Organization, 2018b). The number of full-time equivalent staff supporting DE at California community colleges varies, with some colleges reporting less than one person in addition to the distance education coordinator (DECO) for support and one college reporting nine additional DE staff members (California Community Colleges Distance Education Coordinators Organization, 2018b). The average support staff at the community colleges reported in the survey was two people (California Community Colleges Distance Education Coordinators Organization, 2018b). From this microcosm of HEI, it is easy to see a wide range of structures that support DE, and often that support is not always situated in the instructional side of the HEI (California Community Colleges Distance Education Coordinators Organization, 2018a), which could contribute to the lack of online pedagogy support (Fredericksen, 2017). Therefore, as more faculty and students are online, the staff dedicated to supporting DE needs to increase.

A crucial part of the DE infrastructure that needs to be examined is how to have "strategic and digital competent leadership" (Fredericksen, 2017; Pettersson, 2018). After conducting a qualitative study of HE faculty, Kara and Yildirim (2019a) suggested that the

leader in DE be an expert in technology, management, instruction, and online course design. Koh (2019) stressed that training should focus on developing faculty pedagogy, which is echoed in the findings of Melki et al. (2017), who stated that LMS support needs to include pedagogical usefulness. Koh found that with strong support and primarily pedagogical support for faculty in HE, lessons changed from being centered on content transmission to student-centered meaning construction. In addition, a wider variety of interactive tools, including peer feedback, self-diagnosis, individual support, and collaborative activities, were included in instruction in LMSs after pedagogical training (Koh, 2019). Because organizational support in training significantly affects LMS use (Zheng et al., 2018), a DE leader with a strong foundation in pedagogy could lead to more robust LMS use and in particular, more use of student-centered learning tools in LMSs. Of the 66 California community colleges surveyed, 68% had distance coordinators who were faculty members (California Community Colleges Distance Education Coordinators Organization, 2018b) and therefore, have teaching experience. However, only 24% of all coordinators report to the vice-president of instruction (California Community Colleges Distance Education Coordinators Organization, 2018a), which raises the question of whether or not DE support is being led by an expert in instruction (Kara & Yildirim, 2019a).

Additionally, limited research highlights the importance of organizational trust in job satisfaction and LMS use at the HE levels. For example, in an older study, Kivijärvi et al. (2013) concluded that a trusted DE leader had shared values, shared attributes, and common experiences with online faculty. They further claimed that the DE leader must have a reputation for being trustworthy. However, except for Kivijärvi et al.'s article, no study explored how the trust of the DE leader contributed to increased LMS use.

DE support staff is another essential factor to examine. The analysis for the DE team can

start with the instructional design support that faculty often need (Kara & Yildirim, 2019b) and desire (McGee et al., 2017). However, only 40% of California community colleges in the DE Structure Survey reported having an instructional designer (California Community Colleges Distance Education Coordinators Organization, 2018b). There was also no indication in the survey if those instructional designers are part of the DE support staff. However, instructional designers who are part of a centralized DE staff reported feeling more "empowered" to focus on course design and online pedagogy (Drysdale, 2021, p. 72). In contrast, instructional designers in a decentralized system reported spending most of their time giving technical support (Drysdale, 2021). Thus, instructional designers need to be part of the instructional structure of the college (Drysdale, 2021) to keep the focus on teaching and not technical support.

In addition to the director and instructional designer, additional staff members are necessary to support faculty in online course preparation and management (Kara & Yildirim , 2019b). In addition to professional development, pedagogical support, and instructional design, HEI faculty desire additional to assist with media creation and editing (McNew et al., 2016; Redstone & Luo, 2021). Kara and Yildirim (2019b) argued for an increase in DE staff stipulating that those working in the office have tenure to increase their commitment to online education. In addition, flexibility is required in scheduling for those working with online faculty because the medium supports access at any time (Kara & Yildirim, 2019a). Furthermore, those in the office must have both strong technical and management expertise (Kara & Yildirim, 2019a). Finally, the demands of this office also require extra pay to meet the fluctuating needs and ensure constant support (Kara & Yildirim, 2019a). Careful analysis of this office can verify these findings and ensure that these suggestions are recommended and implemented as needed.

As HEI look to develop the infrastructure necessary to support the increase in online

education (Mukminin et al., 2020; Rudhumbu, 2020), further research is needed to understand what type of support, resources, and staff lead HE faculty to use student-centered learning tools in LMSs. For example, HE faculty have shared that they do not feel they have the pedagogical knowledge and support to teach certain classes online (Berry, 2018; Damşa et al., 2021; Koh, 2019; Li, Su et al., 2019) and that often are not aware of available resources available through their institutions (Damşa et al., 2021; Garone et al., 2019). Therefore, it was essential to examine the current infrastructure and leadership (Kara & Yildirim, 2019a; Pettersson, 2018) that supported deep use of LMSs during a time when many HE faculty were forced to teach online.

Summary

This literature review examined HE faculty member's use of LMSs through the TAM and two versions of UTAUT. Faculty use of LMSs is determined by system factors, faculty factors, and facilitating conditions. Faculty factors can be further broken down into system ease of use, faculty pedagogical knowledge, which influences PU (Davis, 1989), and facilitating conditions (Venkatesh et al., 2016). Despite increased ease of use of LMSs, faculty use before the pandemic was superficial, and often, LMSs were used only to transmit content (Monett & Elkina, 2015; Rienties et al., 2016). However, numerous studies show that increased pedagogical knowledge leads to more and deeper instructional the use of LMSs (Kiray et al., 2018; Mei et al., 2019; Sinclair & Aho, 2018). In addition, facilitating conditions can increase use of LMSs (Gunasinghe et al., 2019; Scherer et al., 2019).

Facilitating conditions are the HEI environmental surroundings, including organizational support, which motivates faculty to use LMSs (Al-Maroof et al., 2021; Muries & Masele, 2017; Zheng et al., 2018), and technical support, which increases PEU and therefore increases LMS use (Almarashdeh, 2016). In addition, pedagogical support helps faculty create meaningful student-

centered learning activities (Koh, 2019) and shows how LMSs can be used to teach all subjects (Mokhtar et al., 2018). Furthermore, organizational trust leads to increased meaningful use of LMSs (Bøe, 2018) and faculty support (Koh, 2019). Finally, the DE infrastructure plays a pivotal role in HE faculty LMS support and needs further examination (Damşa et al., 2021; Pettersson, 2018). DE leaders can also play a vital role in establishing this trust and enhancing pedagogical practice within LMSs (Melki et al., 2017). An appropriately staffed DE office is needed to support faculty in online course creation (McNew et al., 2016)

The sudden increased use of distance learning in the past two years combined with the variety of facilitating conditions used to support faculty in using LMSs highlights the need for studies looking directly at the facilitating conditions that increase faculty use of active learning tools in LMSs. HEI have various ways to support faculty, and many types of support have been shown to increase LMS use. Still, there is a need to hear from faculty regarding what they found to be the most valuable support. There is also a need to focus on the departments responsible for DE support to see how organizational infrastructure can support faculty pedagogy online and increase the use of active learning strategies in LMSs. Many faculty in 2020 were forced to move their classes online not through an administrative push but because of the need for social distancing. This provided an unprecedented opportunity to hear what faculty found were the most valuable facilitating conditions that increased the use of student-centered learning tools in LMSs.

CHAPTER THREE: METHODS

Overview

The purpose of this qualitative research done as a multiple-case study was to describe how facilitating conditions led faculty to use active learning tools in a learning management system (LMS). The reasoning for choosing a qualitative study designed as a multiple-case study is detailed in this chapter. In addition, the research question and sub-questions are restated, followed by a description and justification of the choice of sites and the methods for selecting the participants involved in the study. The role of the researcher, which is essential to qualitative research, is also examined. The procedures used, including institutional review board (IRB) approvals, are explained. The procedures are followed by a description of the data collected from documents, interviews, and focus groups. The processes used for data analysis techniques are defined in detail. Furthermore, the techniques used to ensure the trustworthiness and protect the participants are outlined.

Research Design

In order to understand the facilitating conditions that led to deeper LMS use, I used a qualitative research study design. I had numerous reasons for choosing a qualitative design over a quantitative design. One goal of this study was to broaden the term *facilitating conditions* and not to survey previously established contextual factors that contribute to faculty use. I was also looking for a complex, detailed (Creswell & Poth, 2018), and "empathetic understanding" (Stake, 1995, p. 39) of faculty perspectives on LMS use support and the value they assigned to these supports (Creswell & Poth, 2018). In addition, because I am responsible for providing facilitating conditions that increase LMS use at a college, my background and experiences are interwoven throughout this study (Creswell & Poth, 2018). Finally, a qualitative study is

warranted because I, as a researcher, served as an instrument in the study (Creswell & Poth, 2018).

The case study design method was chosen based on the research question, my involvement as the researcher, and the phenomenon being explored (Yin, 2018). My research focused on the "operational processes" (Yin, 2018, p. 10) that facilitated deeper LMS use during a rapid transition to online courses. This examination of how facilitating conditions influence HE faculty LMS use explains what support is necessary for colleges to support faculty LMS use (Yin, 2018). In addition, this study explored many variables (Yin, 2018) that were experienced differently by each faculty member and in each context. Another reason for choosing a case study design was that the closure of community college campuses during the Coronavirus disease 2019 (COVID-19) pandemic was an uncontrolled and contemporary event (Yin, 2018) that provided valuable insight into the use of LMSs by higher education (HE) faculty. In addition, there was a variety of evidence from the recent past and the present of how this transition was facilitated at different sites (Yin, 2018). This evidence, paired with the multiple viewpoints from faculty, was used to expand (Yin, 2018) Davis' (1989) technology acceptance model (TAM) and the definition of facilitating conditions in the second version of the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2016).

A multiple-case study was valid because I examined two California community colleges in a context that was clearly defined and described (Creswell & Poth, 2018). I wanted to see the uniqueness and the commonalities of the facilitating conditions at these colleges, which is an important part of multiple-case study design (Stake, 1995). A multiple-case study design maximized what I could learn (Stake, 1995) about the different facilitating conditions at each site and helped me discover conditions that were replicated at each site (Mills et al., 2010). The use

of two sites helped me discover some possible transferability of valuable facilitating conditions to other community colleges and HE situations (Yin, 2018) and inform distance education (DE) practices and policies (Bartlett & Vavrus, 2016) that can help community colleges best support HE faculty LMS use. In addition, the rich description of the variables in facilitating conditions at these sites allowed me to extend (Mills et al., 2010) the UTAUT theory in relation to facilitating conditions.

Research Questions

Central Research Question

How do faculty describe the facilitating conditions that lead to the use of active learning strategies in LMSs?

Sub-Question 1

What technical resources do faculty need to use active learning tools in LMSs?

Sub-Question 2

What pedagogical support do faculty need to use active learning tools in LMSs?

Sub-Question 3

What faculty professional development lead to active learning tool use in LMSs?

Sub-Question 4

How does the perceived influence of the atmosphere of the institution affect faculty use of active learning tools in LMSs?

Sub-Question 5

How is distance education supported at the institution?

Settings and Participants

California has 116 community colleges and has adopted Canvas as the LMS for all

community colleges (Petek, 2021). Two California community colleges located in Southern California were chosen as sites. In order to maintain confidentiality, these colleges are referred to as Site A and Site B. The study was limited to tenured and tenure-track faculty because adjunct faculty often work at more than one site and therefore, have different contextual influences. This part of California was put under a mandatory stay-at-home order on March 19, 2020, due to the COVID-19 pandemic. As a result, both selected colleges were forced to move on-campus classes online.

In addition to the shared experience of holding classes online during the pandemic, both of these colleges had similar DE management structures, with a faculty member serving as the distance education coordinator (DECO) and one person as the LMS administrator (California Community Colleges Distance Education Coordinators Organization, 2018a). Furthermore, they both had a DE committee that is a subcommittee of the college's academic senate (California Community Colleges Distance Education Coordinators Organization, 2018a). In addition, both required faculty to do training before teaching their first online class (California Community Colleges Distance Education Coordinators Organization, 2018a). However, during the pandemic, most colleges used the state chancellor's waiver to allow faculty who had not completed training for online education to move their classes online (Alvarado, 2020).

Settings

Site A is similar to size as Site B, with 15,541 students, 222 tenured faculty, and 416 temporary faculty reported in the fall of 2021 (California Community Colleges Chancellor's Office, 2022a). In the fall of 2021, College A reported 1,242 DE full-time equivalent students (California Community Colleges Chancellor's Office, 2022a). At Site A, tenured and tenure track faculty showed a pretty even gender split with 122 female and 100 male faculty. Tenured

faculty employment by race was 46.40 % White, 20.27% Hispanic, 14.41% Asian, 5.86% African American, 4.50% multiethnic, and 8.56% unknown (California Community Colleges Chancellor's Office, 2022a). Tenured faculty employment by age was 6.31% age 34 and under, 40.09% ages 35 through 49, 45.04% ages 50 through 64, and 7.56% over age 65 (California Community Colleges Chancellor's Office, 2022a).

Site A had technical, pedagogical, and professional development resources during the time of the study and during the faculty transition to remote teaching in March of 2020. Site A required faculty to have online certification to teach online. The online certification training is a 5-week course focusing on course design, content, accessibility, course communication, interaction, assessments, and feedback. According to the DECO's response to a survey in 2018, the college atmosphere was not favorable to DE. In addition, the coordinator reported that the site did not have sufficient instructional design or instructional technology support. The infrastructure of Site A remained the same throughout the pandemic.

Faculty had access to a variety of technical resources at Site A. There was staffed phone and chat support through the LMS provider available at all times. The DE office at the college offered phone support from 8 a.m. to 5 p.m. on weekdays. The college also linked the Canvas Instructor Guides for additional instructor technical support. There was a wide variety of technical training in the five-week online teaching certification. Finally, the college had in-person drop-in hours prior to going fully remote. The drop-in hours continued through the switch to remote; however, they were held through Zoom rather than in person.

During the transition and the year after the transition, the professional development at Site A consisted of three types of training. The first professional development activity available was an emergency Title 5 training, a five-hour, self-paced training module in Canvas focused on

the attainment of course outcomes, expectations for regular and effective contact, and meeting accessibility requirements. This training focused on the technical aspects of building a course in Canvas with practice in creating modules, pages, discussion boards, and quizzes. Finally, there were online training sessions on the required faculty in-service day (flex day) before each semester.

The atmosphere of Site A prior to going remote in March of 2020 was captured in the Survey of DE Structures in March 2018 (California Community Colleges Distance Education Coordinators Organization, 2018a). At that time, the DECO at Site A reported that faculty somewhat disagreed that they had sufficient instructional accessibility support or that the top administrators supported DE. In addition, the DECO reported that the faculty strongly disagreed that there were sufficient resources to teach online.

During the transition to online teaching in March 2020 and the study period, Site A had the same distance office education structure. The office was led by the Dean of Library/Learning Resources and Distance Education who reported directly to the vice president of instruction. Working with the dean was a faculty DECO, a classified program specialist, and a classified distance-learning assistant. However, Site A had no accessibility specialists or instructional designers during this time. Furthermore, the DE committee was a subcommittee of both the Academic Senate and Budget Committee.

Site B was similar in size to college A with 16,115 students but had fewer faculty, with 107 tenured faculty and 354 adjunct faculty reported in the fall of 2021 (California Community Colleges Chancellor's Office, 2022a). In the fall of 2021, College C reported 2,623 DE full-time equivalent students (California Community Colleges Chancellor's Office, 2022a). There were over twice as many female tenured faculty at this site, with 71 female and 35 tenured male

faculty (California Community Colleges Chancellor's Office, 2022a). Tenured faculty by race was 60.75% White, 18.10% Hispanic, 19.63% Asian, 7.48% unknown, and 2.80% African American (California Community Colleges Chancellor's Office, 2022a). Tenured faculty employment age was 3.74% under age 34; 45.80% ages 35 through 49; 42.05% ages 50 through 64; and 8.41% over age 65 (California Community Colleges Chancellor's Office, 2022a).

Site B had technical, pedagogical, and professional development resources during the study and the transition to remote teaching. In addition, Site B had instructional design support. The online certification training at Site B was a 120-hour training course for online teaching certification that focused on new course design, improvement of existing courses, and how to facilitate online courses. According to the DECO's response to a survey in 2018, the atmosphere of the college towards DE was positive; however, at that time, the DE infrastructure lacked instructional design and accessibility support (California Community Colleges Distance Education Coordinators Organization, 2018a).

Similar to the other site, Site B faculty have access to a various kinds of technical support. Faculty can call a site-specific Canvas helpline at any time. The online certification training required faculty to complete technical tasks centered around building a Canvas course. These tasks included creating an assignment, quiz, and discussion board.

During the transition and the year after, the professional development at Site B consisted of five types of training. The first professional development activities focused on assisting faculty transitioning to remote teaching. These workshops focused on how to use Canvas, conduct remote instruction, and use the Zoom video conferencing tool. Shortly after those workshops, professional development during the spring of 2020 was the first six weeks of the 12-week, in-house online teaching certification program. The first six weeks of the training were

offered again in the summer of 2020. Participants in the training had a year to complete the other half of the training for a total of 120 hours of training. The campus also had ongoing workshops during the following school year, including sessions on introduction to online teaching, accessible course design, and remote learning. In addition, the Instructional Design Center had workshops on video editing, mobile design, accessibility, and Canvas integrations. Finally, professional development sessions were held the week before school that included sessions on engaging learners and trauma and learning.

The atmosphere of Site B prior to going remote in March 2020 was captured in the Survey of DE Structures in March 2018 (California Community Colleges Distance Education Coordinators Organization, 2018a). At that time, the DECO at Site B reported that the faculty strongly disagreed that they had sufficient instructional accessibility support. However, the faculty did feel that the top administrators supported DE. In addition, the DECO reported that the faculty somewhat disagreed that there were sufficient resources to teach online.

During the transition to online teaching in March 2020 and the study period, Site B had the same distance office education structure. However, the structure did change after the 2018 DE Survey with the addition of three personnel. The office was led by a faculty DECO who reported to the Dean of Institutional Effectiveness, Library and Learning Support. The dean reported directly to the vice president of instruction. Working with the faculty DECO was a classified DE service specialist, a classified instructional design center specialist, and two instructional design technicians. Site B had no accessibility specialist, but from the training documents, accessibility training is often a topic of the Instructional Design Center workshops. In addition to the DE office structure, Site B had a DE committee that worked to advise the office. The DE Committee was a subcommittee of the Academic Senate and was chaired by the

faculty DECO and the vice president of academic affairs.

Community colleges are a vital part of the educational system in the state of California. The two chosen colleges represent larger community colleges in the California Community Colleges system, with the average community college having 8,210 students and the largest college having 36,885 students (Community College Review, 2022). These two colleges also reflect the overall employment patterns of the statewide system, which employs more than twice as many adjuncts teaching classes as full-time faculty (California Community Colleges Chancellor's Office, 2022a). In addition, most full-time faculty have all now had to teach in Canvas, the state sponsored LMS. The experience of most faculty using LMSs to conduct courses over the past year and a half makes for a large pool of faculty to portray the multiple realities (Stake, 1995) of using LMSs to teach classes entirely online. From each college, five to six faculty members who had little or no experience with LMSs before the pandemic were interviewed regarding their experiences with the facilitating conditions that helped them use active learning tools in LMSs. In addition to interviews, a focus group was conducted at each site, and DE related documents were analyzed. By analyzing the experiences at each site and then comparing them across two sites, I was able to add to the definition of facilitating conditions, to the literature on technology acceptance and use (Hancock & Algozzine, 2016), and provide generalizations (Yin, 2018) about what faculty members felt were the most valuable facilitating conditions that increase the use of active learning tools in LMSs.

Participants

For this multiple-case study, the sample pool was all interested tenured and tenure-track faculty that taught online. From this pool, purposeful sampling was done using a questionnaire that measured Canvas use before the pandemic and current tool use in LMSs. From this

questionnaire, six faculty were chosen from Site A, and five faculty were chosen from Site B. Because the goal of a case study was to get a rich picture and not to generalize the findings to individuals (Thomas, 2016), participants were chosen who had the least experience with Canvas prior to the pandemic but showed current use of active learning tools in LMSs. Therefore, demographic information was not considered in the choice of faculty to participate; however, when possible, faculty were chosen from different disciplines.

The questionnaire to select faculty included two demographic questions, two LMS use questions, and one training question. The following questions were used for screening:

- What is your employment status as a faculty member?
    - Tenured
    - Tenure track
    - Adjunct
- Please list your department and division in the space below.
- How long have you been using Canvas to teach courses?
- Before the campus went fully online, I used Canvas for:
    - Nothing
    - Posting the syllabus
    - Class documents
    - Student activities
    - Sending announcements or messages
    - Assessment
    - Other (please list)
- I currently use the following Canvas tools (check all that apply):

- Assessments
- Assignments
- Collaborations
- Discussion boards
- Groups
- Inbox
- Pages
- SpeedGrader
- Syllabus
- Other (please list)

Researcher Positionality

Because the researcher is a key instrument in a qualitative study (Creswell & Poth, 2018), it is essential to detail my motivation for studying facilitating conditions that led faculty to student-centered tool use in LMSs. As I explored the reality that HE faculty members experience at two different colleges, I hoped to find connections that would help solve the problem (Stake, 1995) of low interactive tool use in LMSs. I also aimed to value individual experiences using an inductive design to discover new realities (Creswell & Poth, 2018).

Interpretive Framework

I wanted to view this study with a social constructivism paradigm in which I understood LMSs through the varied and multiple lenses (Creswell & Poth, 2018) of HE faculty at different sites. Faculty views on LMSs are shaped by their understanding of what LMSs can do and their experiences (Stake, 1995) while creating and teaching classes in LMSs. Through interviews and thick descriptions of the stimuli (Stake, 1995) faculty believe led to the use of active learning

tools in LMSs, I aimed to "construct a clearer reality" (Stake, 1995, p. 101) of what facilitating conditions faculty felt were the most valuable. I used open-ended questions using the facilitating conditions noted in the technology acceptance model (TAM) (Davis, 1989) and UTAUT (Venkatesh et al., 2016). In addition, questions expanded on the facilitating conditions noted in the TAM (Davis, 1989) and two versions of the UTAUT (Venkatesh et al., 2003; 2016) to learn about additional support that faculty found valuable during the context (Creswell & Poth, 2018) of having to use LMSs for instruction due to the shutdown of campuses and the transition of almost all face-to-face courses to online. I also looked at the support and communication provided at each institution to understand the world faculty experienced (Creswell & Poth, 2018) during the transition to online instruction and the meaning and importance faculty ascribed to the facilitating conditions surrounding them. Faculty input is described in detail so that the reader and researcher can see the multiple realities faculty lived and valued during the transition to online instruction.

Philosophical Assumptions

In addition to my interpretive framework, it is important to describe my philosophical assumptions that have shaped this study and informed my choice of theories (Creswell & Poth, 2018) and method design. These philosophical assumptions include my ontological assumptions, which compose my beliefs on the nature of reality. In addition, I will discuss my epistemological and axiological assumptions.

Ontological Assumption

Since I come to my research with a Christian worldview, I believe there is one universal reality, yet at the same time. I know that humankind is flawed. Therefore, I feel that people experience their reality through that flawed perception. HE faculty construct their reality of using

LMSs through their experience with the technology and those in the institution. In addition, although LMSs and institutional support offered at an institution are usually the same for all faculty, each faculty member experiences support differently. Thus, they construct different realities. These different realities are exemplified in the study by Garone et al. (2019), wherein faculty at one institution rated supporting conditions differently despite having the same resources. By using interviews, I hoped to support the multiple realities. At the same time, through the document analysis and focus groups, I hoped the uncover the actual context at each institution.

Epistemological Assumptions

As a qualitative researcher exploring the reality of HE faulty using LMSs, my epistemological assumptions came from examining the truth as an expert in DE instruction and the multiple truths I heard from faculty. It was essential to discover the multiple truths faculty ascribed to the processes enacted at each institution. As I worked to include an epistemological lens, I immersed myself in the online transition at each site to get individual views of what faculty felt led to increased knowledge of how to use LMSs (Creswell & Poth, 2018). It was essential that I looked at the truth through the faculty lens and not a DE director lens. I know what LMSs can do, but I also know that faculty often do not know that truth.

Axiological Assumption

My perspectives and experiences are shaped by my extensive training in teaching and my training of teachers. Both gave me a strong grounding in pedagogy. Unlike many in HE, I am not just a subject matter expert; I am a teaching expert. My undergraduate work centered on teaching English and writing at the secondary level. In addition, I have a single-subject teaching credential in English. I spent 13 years as a high school teacher. During that time, I completed my master's

degree in the teaching of reading. My training in the teaching of reading is typically considered developmental education at the HE level; however, it gave me a strong background in pedagogy and a student-centered focus on engagement. Before accepting an online teaching assignment, I completed a 12-unit training certificate to prepare me to move my instructional practices to the online environment. I am dedicated to continually improving my teaching practice.

My training and background led me to work with a few colleagues to develop an optional online teaching certificate focused on pedagogy in the online classroom to help other faculty improve their practice. Online course design and teacher training became a passion. In 2017, I was granted a sabbatical to study informed pedagogy and responsive instructional design to increase student success in the online environment. After a failed accreditation due to online course issues, my college made some significant changes. Online certification became mandatory, and the vice president of instruction asked me to step into the role of the DE director due to his awareness of my instructional background, faculty training experience, and recent sabbatical.

My role as the director of DE at a California community college has exposed me to deficiencies in the college infrastructure that supports online education. The college I work at has one person in the DE office, me. There is no additional instructional design or administrative support. However, there is technical support offered through the LMS. I have witnessed firsthand that faculty need further pedagogical support and the challenges of providing that support with little staffing. My experience as a faculty member and in DE as an instructor and as an administrator are important contributors to my axiological assumptions related to faculty use of LMSs in HE. I do feel that having a pedagogical foundation is essential for student-centered teaching in face-to-face and online classrooms. There is also a difference between teaching

strategies in the face-to-face and online classroom. In addition, I feel that faculty training is the cornerstone to successful LMS use and that HEIs need to build a DE infrastructure that supports faculty and student use of LMSs as a teaching and learning tool. Most importantly, I feel that HEIs must make changes at the organizational level that support faculty in the student-centered use of LMSs.

Researcher's Role

I served as a key instrument in this study by collecting the data through interviews and examining documents (Creswell & Poth, 2018). Because I was an outsider to the two sites, my relationship with the participants was that of a researcher, and I had no influence over anyone at the sites; however, because I am also a faculty member, I could have been viewed as a peer. In addition, because I serve as the director of DE at the college I work at, I could also have been considered an expert in LMSs. My experience and position also bring certain biases and assumptions.

A deep understanding of instructional design from training and education coupled with a 23-year career teaching English and reading impacted how I looked at and presented the data. My writing reflects the heart of a teacher as I strove to instruct the readers (Stake, 1995) on improving institutional support of online teachers. In addition, two and a half years working very closely with the administration in the role of DE director has given me a better understanding of the school system. In this role, I am an advocate (Stake, 1995) for what facilitating conditions will best serve faculty and student. A true heart for servant leadership, a dedication to what is best for students, and the spiritual gift of empathy guide all that I do.

Finally, I was the interpreter of information from each case and the cases viewed together. I looked to make new connections and make my findings understandable (Stake, 1995).

This interpretation was informed by being the main person at my campus that organized and provided training and resources for faculty that had to transition online. Thus, my initial questions and interpretations were influenced by the support and resources provided at my college; however, I was eager to find other variables (Yin, 2018) through this multiple-case study.

Procedures

Permissions

After the defense proposal for this study was approved, the proposal was submitted for IRB review (see Appendix A for IRB approval from Liberty University). Once I received IRB approval from Liberty University, I began working with each college for approval as an external researcher. First, at each college, I contacted the DECO to be the sponsor to assist me in contacting subjects. Then, after establishing rapport with the coordinators, I submitted an interest to conduct research form online to the Institutional Research and Planning Office at each college. Finally, I submitted the IRB approval from Liberty University to each college and received approval from each site to proceed.

Recruitment Plan

Once I had approval at each institution, I created a link to my questionnaire identified in the participant section in this chapter, included the study description, and had the DECO at each site help promote participation from their faculty (Stake, 1994). Both DE offices assisted by sending the recruitment email (see Appendix B) and questionnaire link to faculty who completed online certification training after March 2020. They later expanded the search to other online faculty as needed. Creswell and Poth (2018) suggest limiting each case to four to five participants; however, to achieve a “higher level of certainty” in this study, five to six

participants were desired from each site (Yin, 2018, p. 59). The sample pool of full-time faculty at Site A was 222 participants, and six participants were selected through purposive sampling at this site (Creswell and Poth, 2018). The sample pool of full-time faculty at Site B was 107 participants, and five participants were selected through purposive sampling at this site (Creswell & Poth, 2018). Purposive sampling was used to find faculty members who could provide the most information (Creswell & Poth, 2018) on the facilitating conditions that helped them transition courses online.

All participants were required to return the consent form (see Appendix C) before interviews were scheduled. The consent form included an invitation and the purpose of the study (Creswell and Poth, 2018). In addition, it outlined participant involvement in the study and the benefits and risks of the study (Creswell and Poth, 2018). How information gathered would be kept private was detailed, along with information on voluntary participation and withdrawing from the study (Yin, 2018). Finally, the consent form gave information on discussing concerns about the study or participant's rights.

Data Collection Plan

An essential feature of case studies is the evolution of questions during the study (Stake, 1995). For that reason, my interview data collection techniques included flexible questions (Stake, 1995). As issues were redefined (Stake, 1995), I needed to utilize a recursive nature in my participant information gathering, which was done with the focus group interviews. In addition, I worked to embrace the unexpected (Stake, 1995) and use multiple sources of evidence (Yin, 2018). I started with document analysis to assist in collecting information from the participants.

Document Analysis

Document analysis was the first step in data collection to understand better the situational support provided (Yin, 2018) for faculty to use LMSs to teach. In addition, documents provided a "record of human activity" (Mills et al., 2010, p. 318) necessary for my understanding of the context faculty experienced during the campus closures. The documents I looked at were the websites advertising professional development, descriptions of the online training certification program, DE policy statements (Mills et al., 2010), and the DE handbook at each site. Many of these documents were available online at the DE websites for each college. In addition, I requested these documents from the DE office staff at each site as needed.

These documents were critical for understanding what support was available for faculty to inform interview follow-up questions, facilitate the focus groups, and remove researcher bias. Facilitating conditions are context dependent (Venkatesh et al., 2016), and the documents helped to remove any assumptions I brought to the research as someone who provides the support and resources for faculty. All California community colleges have access to a few shared resources and support, which I am familiar with; however, each institution decides how to support faculty and online training certification requirements. For this reason, I began with the documents to understand some of the facilitating conditions at each site.

Document collection began as soon as the study was approved. The initial collection was used to inform further questions in interviews. The collection process continued as participants and gatekeepers referenced supportive contextual factors or pointed out additional documents (Mills et al., 2010) during interviews. Documents were also used to elicit responses in the focus groups (Thomas, 2016). After the focus group, additional documents noted by participants were also collected and requested (Mills et al., 2010). These documents were used to corroborate and

augment evidence (Yin, 2018) in the other two data collection methods.

Document Analysis Data Analysis Plan

The first data analysis concentrated on document review; however, this analysis was ongoing because documents were collected throughout the study. Documents were descriptively coded in order to look for larger topics (Saldaña, 2016) that faculty discussed concerning facilitating conditions and also to search for "unexpected clues" (Stake, 1995, p. 68). Document analysis was first coded using established codes (Stake, 1995) gathered from TAM (Davis, 1989) and UTAUT (Venkatesh et al., 2016). In addition, document data analysis included pattern matching (Yin, 2018) utilizing NVivo to find repeated words, phrases, themes, and meanings (Mills et al., 2010). This first method of descriptive coding of the documents revealed information about the sites but was not used in interviews because it was not valuable for capturing what the faculty were thinking (Saldaña, 2016). Descriptive coding was used as an initial method to broaden original codes and themes established from TAM (Davis, 1989) and UTAUT (Venkatesh et al., 2016). As document collection continued throughout the study, these documents were used to confirm or contradict interview findings (Mills et al., 2010).

Individual Interviews

Interviews were the second data collection method for this study. Each participant was interviewed for an hour on Zoom at a time of their choosing. Interviews were semi structured with the goal of a guided conversation (Thomas, 2016; Yin, 2018). When warranted, I asked follow-up questions to fully understand each faculty member's unique experience (Mills et al., 2010) in relation to the contextual factors that helped with LMS use. Although the questions were standardized, it was also vital for me to adapt and even change questions to reveal both supportive and contrary evidence (Yin, 2018) on facilitating conditions. In addition, it was

necessary to have structure to enhance the comparison of the experiences (Mills et al., 2010) across both sites. However, a key to the interview was having each participant be a key informant providing information instead of just responding to questions (Yin, 2018).

Individual Interview Questions

1. Please walk me through your educational experience of becoming a college professor. (SQ2)
2. Tell me about how you use Canvas now? (SQ2)
    a. How do you interact with your students in Canvas?
    b. How do your students interact with each other in Canvas?
    c. Tell me about how and why you use assessments in Canvas.
3. What training did you do during or before the transition to Canvas? (SQ3)
4. What was the most valuable training or experience in the transition? (SQ3)
5. How do you use the available resources when you are creating a course in Canvas? When you run into an issue with Canvas, who or what do you reach out to? (SQ1, SQ2, SQ4)
6. Tell me about how you worked with your colleagues to transition online. (SQ4)
7. I'd like to have you think back to your transition to teach online. What advice would you give to a new instructor preparing to teach online? (SQ4)
8. What does your institution do to support distance education and online teaching? (SQ5)
9. In this next question, I would like you to think about the future. What further support would you like to be able to better use Canvas? (SQ5)
10. One last question, what else do you think would be important for me to know about the support you needed to transition teaching online? (SQ5)

The first question was designed to build rapport (Creswell & Poth, 2018) with the

participants and, simultaneously, understand the foundations they felt were central to becoming an instructor. TAM (Davis, 1989) and UTAUT (Venkatesh et al., 2016) discuss factors other than facilitating conditions that predict technology use. This question helped uncover rival explanations and previous contextual factors (Yin, 2018) of deep LMS use. This question also revealed both pedagogical foundations and technical expertise.

Although broad to begin with, question two also had follow-up points to elucidate information about active learning strategies used in Canvas. The goal of the structure of the question was to gain information directly related to the inquiry (Yin, 2018) of LMS use and gauge faculty focus on student-centered activities (Mei et al., 2019). These questions were structured as how questions to keep the tone nonthreatening (Yin, 2018) and not ask leading questions. The focus on assessment as part of this question was to delve deeper into whether the assessment tool use was formative or summative based on findings that assessment use in LMSs is often multiple-choice questions and not assessment as active learning (Annansingh, 2019; Walker et al., 2016).

Facilitating conditions are defined in the UTAUT model as the support a user has based on both organizational and technical infrastructure (Venkatesh et al., 2003). Questions three through six were designed to see what infrastructures were in place at the college and how faculty utilized these. These questions asked about training, digital, other resources, and the individual support available when technical issues arose (Koh, 2019; Melki et al., 2017; Monett & Elkina, 2015). In addition, questions three through six sought to answer the sub-questions of the study on technical resources, pedagogical support, and professional development without leading faculty into answers that focus on the facilitating conditions previously established as necessary. Questions six focused on how faculty solved problems rather than on specific issues

to create an unbiased question (Yin, 2018) where faculty would share their process not specific to the different types of support available. These three questions also revealed possible rival explanations (Yin, 2018) that are addressed in the study.

Questions seven and eight focused on discipline-related support for using LMSs to teach (Kiray et al., 2018). Faculty training often covers using LMS tools, but many faculty still need support to utilize LMSs tools for what they want to teach (Li, Garza, et al., 2019; Mei et al., 2019; Melki et al., 2017; Walker et al., 2016). Questions seven and eight aimed to find what type of institutional support was discipline-specific and how the colleges supported faculty working with their colleagues in the same divisions or departments. Because pedagogical support has been shown to increase use of LMSs (Koh, 2019; Mokhtar et al., 2018) and the use of LMSs for active learning (Melki et al., 2017), these questions aimed to discover the pedagogical support available at each site.

Questions nine and ten offered participants a chance to reflect on what they felt the institution was doing to support faculty, what they felt was missing in institutional support, or what opportunities they would still like to take advantage of to utilize LMSs fully. It is critical to ask questions that are not leading (Yin, 2018) to uncover "unexpected clues" (Stake, 1995, p. 68). Question nine gave participants a chance to share what institutional supported resources, training, and support they felt were and will be valuable and available to them without being led into a specific type of resource being asked about as in previous questions. Question ten gave insight into what specific resources and institutional support were missing at the sites. Questions nine and ten did not directly ask about the atmosphere and infrastructure of the institution but elicited answers that led to further inquiry.

The final question allowed participants to add anything they felt was relative (Mills et al.,

2010). In order to portray the multiple realities of LMS use and support at the college, validate "coexisting happenings" (Stake, 1995, p. 39), and discover new conditions not previously considered, this final question gave participants the chance to share their perspective without the researcher leading them into an unexpected answer (Yin, 2018). The final question was also an opportunity to uncover rival explanations for faculty use of active learning student tools in LMSs that are not considered facilitating conditions (Yin, 2018).

Individual Interview Data Analysis Plan

The first technique used for individual interview data analysis was the coding of the interview data using established codes (Stake, 1995) gathered from the document analysis, TAM (Davis, 1989), and UTAUT (Venkatesh et al., 2016). In addition to the established codes, I also looked for new codes (Stake, 1995; Yin, 2018). Codes were analyzed to transition from the broader basic codes established with the initial descriptive coding (Saldaña, 2016) into concept coding to capture the depth of each case (Creswell & Poth, 2018). Because concept coding looks for broader meaning (Saldaña, 2016), initial ideas for the concepts were focused on the facilitating conditions topics established from the theories grounding this study (Yin, 2018) and those revealed in the documents that each site had in place to enhance faculty use of LMSs. However, because this study aimed to capture the actions faculty felt led to deeper LMS use, in vivo codes were used to capture faculty language (Saldaña, 2016). These codes looked for the ideas suggested by faculty (Saldaña, 2016) that enhanced LMS use. In addition, the codes were informed by my experience as someone who works to increase faculty LMS use. The highly interpretive nature of concept codes (Saldaña, 2016) allowed for the "critical thought" (p. 122) that is important to interpret the meaning of the cases studied (Creswell & Poth, 2018).

Focus Groups

The final data collection technique was a focus group session at each site. Each site had a separate focus group for a total of two focus groups. In these sessions, the participants interviewed earlier for the study met together for a one-and-a-half-hour session resulting in approximately sixty minutes of data (Mills et al., 2010). The focus group was held to help overcome some common interview issues, including poor recall, bias, and poor articulation (Yin, 2018). In addition, the focus group data allowed me to corroborate individual participant views from the interviews (Yin, 2018). Additional materials gathered during the document analysis were also utilized to facilitate discussion.

Focus Group Questions

1. Tell us your name, what you teach, and how you felt about taking your classes online in March of 2020?
2. What Canvas support and training did you find most valuable during the transition to online? (SQ3)
3. What discipline-specific support did you find most valuable during the transition to online? (SQ2)
4. What technical support and training did you find most valuable during the transition to online? (SQ1)
5. What would you change about the support for online/Canvas on your campus? (SQ4, SQ5)
6. What would you not change about the support for online/Canvas on your campus? (SQ4, SQ5)
7. After listening to your colleagues' remarks about Canvas and campus support, what

additional comments would you add to any previous thoughts? (SQ1, SQ2, SQ3, SQ4, SQ5)

8. Finally, state your position on the resources, knowledge, and college support of online education on your campus. (SQ4, SQ5)

The first question for the focus group was designed to be fact-based and establish commonality among the participants (Mills et al., 2010). Because this commonality centers on LMS use and often what was forced LMS use during the pandemic, I started with names, what each faculty member taught, and a reflection on initially holding classes online during the campus closure. Question one included an emotional response that brought together the shared experience of working in LMSs.

Questions two through four were directly connected to the research topic (Mills et al., 2010) by focusing on the site's facilitating conditions that supported technical and pedagogical use of LMSs. By focusing first on Canvas support, participants shared how they learned to use specific tools in LMSs (Kiray et al., 2018; Mei et al., 2019). Then, moving to discipline-specific support, participants shared how they used the tools in LMSs to teach specific content (Kiray et al., 2018). Technical support was last in this group of questions to steer faculty away from sharing just about the immediate help available when issues arose. The remaining four questions focused directly on the campus and atmosphere established that influenced LMS use. Questions five and six were purposely open ended to reveal previously undiscovered facilitating conditions at each site.

In a study of 174 faculty at a university in Belgium, faculty ratings of facilitating conditions differed based on their use of LMSs (Garone et al., 2019). Faculty at this same university rated the facilitating conditions as high, medium, and low even though they were all at

one site. The two final questions in the focus group setting help to clarify what facilitating conditions were available on campus and corroborate individual views (Yin, 2018) about what might or not be available. As someone who provides support and resources for faculty, I can see that faculty often do not always know about all that is available. Questions seven and eight helped me see if the issue was centered more on knowledge and communication and not an actual lack of facilitating conditions. Question eight was also a valuable sub-question in this study because this line of questioning was an inductive inquiry (Yin, 2018) into each site.

Focus Group Data Analysis Plan

The techniques used for focus group data analysis were similar to those used for interview data analysis. The focus group data were coded using previously established concept codes (Stake, 1995) gathered from the document analysis and interviews. By analyzing the focus group data with the same methods as the interview data, I triangulated my findings, leading to more decisive conclusions (Yin, 2018).

Data Synthesis

Each site was coded as a separate case in the first analysis to discover "within-case patterns" (Yin, 2018, p. 196). Once these patterns were discovered, explanation building was used to write longer explanations that looked for the patterns (Yin, 2018) and "situational uniqueness" (Stake, 2005) of facilitating conditions that faculty felt led to deeper LMS use. Then, the sites were analyzed together using concept coding in order to look for concepts that transcended "the local and particular of the study" (Saldaña, 2016) and were replicated at the other site (Yin, 2018). In addition to looking for similarities in concepts, this study also looked for the differences in the sites (Saldaña, 2016). All information was first analyzed by hand and then using NVivo. The data were organized into themes about what is needed for support for

online instruction by looking at repetitions (Stake, 1995) and patterns (Saldaña, 2016; Yin, 2018), but data were coded and recoded as I worked through the sites in a cyclical order to refine the coding (Saldaña, 2016) and not miss concepts suggested in the data.

Finally, the comparison method was used to look at data from the two colleges to find similarities and differences. Cases were originally chosen to have a similar DE structure (Yin, 2018) in order to be able to look for replication across the two sites; however, the DE structure at one of the sites changed during the pandemic, which led to different DE structures at the sites. Studying two cases allowed for triangulation of the findings and revealed consistent and corresponding patterns (Stake, 1995) that allowed for some generalizability about facilitating conditions that support the use of active learning tools in LMSs. The comparison analysis was combined to create a cross-case report (Yin, 2018).

Trustworthiness

Trustworthiness in a qualitative study looks at credibility, dependability, transferability, and confirmability issues. In a case study, this is accomplished through triangulation of evidence (Stake, 1995; Yin, 2018) through the use of multiple sources. In addition, careful attention to exploring rival explanations is paramount (Yin, 2018). Because many facilitating conditions can support LMS use, along with other influencers, including performance expectancy, effort expectancy, and social influence (Venkatesh et al., 2003), it was necessary to explore the possibility of other casual relationships to establish internal validity (Yin, 2018). By designing a case study with methods for data collection, then comparing sources both within site and across the sites (Yin, 2018), using a database for data (Yin, 2018), and including rich descriptions (Creswell & Poth, 2018), this study utilized robust methods for establishing trustworthiness.

Credibility

Credibility in case studies looks at whether the findings reflect the truth. This study was focused on being an accurate description of the reality at each site. Multiple sources of information were collected and analyzed (Yin, 2018). All collected evidence was inputted into an organized database, and that was available for later access (Yin, 2018). Interviews were recorded (Mills et al., 2010) and transcribed to capture participant interviews accurately and store exact information for retrieval. In addition, the writing included substantial detail about the context and setting to give readers an accurate picture (Stake, 1995). Data were triangulated (Creswell & Poth, 2018; Yin, 2018) within each site and then compared across the two sites. In addition, I documented and addressed my biases and perspectives (Mills et al., 2010).

Transferability

As a multiple-case study, this study addressed some of the transferability concerns brought up in single-case studies. Choosing two cases with similar DE support offerings strengthened the possibility of replication (Yin, 2018) and allowed for cross-case conclusions. Using two cases as opposed to one further strengthened the findings (Yin, 2018). In addition, detailed and "rich, thick descriptions " (Creswell & Poth, 2018, p. 260) also increased transferability.

Dependability

Consistency and dependability are necessary to construct a trustworthy study. Dependability was accomplished by thoroughly describing the procedures used in this study. In addition, each case includes a chain of evidence that the reader can follow from the beginning questions to the conclusions (Yin, 2018). This chain of evidence included a database (Yin, 2018) that stored all collected data. In addition, a codebook was used for recording the initial words and

phrases I assigned to passages during the data collection and analytical memos that established the final themes (Saldaña, 2016).

Confirmability

To ensure the confirmability of this research study, the procedures used are described in detail so they can be replicated. To enhance the confirmability of this study, data were gathered from multiple sources. First, the interview and focus groups were recorded and transcribed by me, further strengthening confirmability (Yin, 2018). Second, established codes from theories and new codes were created from participant interviews to reduce researcher bias. Third, an audit trail of document collection, analysis, coding, and creation of themes was created. Finally, this study is also grounded in the prior theories of TAM (Davis, 1989) and UTAUT (Venkatesh et al., 2016), leading to further confirmability.

Ethical Considerations

A good qualitative researcher is sensitive of the risks to the participants (Stake, 1995). Therefore, all participants in the study were protected from harm and any disclosure of the findings. Therefore, prior to any data collection, IRB approval was received from Liberty University. In addition, approval for the research was obtained at each site following their protocols. Through this process, flaws in the design were discovered and addressed (Yin, 2018). In addition, to ensure the design method was ethical, additional steps were taken during the study.

In order to protect the human subjects in my study, the participants were well informed about the study. Each time data was collected, the purpose of the study was disclosed. All participants gave informed consent and were advised that involvement is voluntary and could be stopped at any time. Participants were given the opportunity to review interview transcripts and

provide clarification. Sites were chosen where I had no direct influence and no connection to the site. In addition to these general considerations, more specific actions were taken to protect all involved.

There was a large amount of data collected for this study, and the security of that data were a vital part of protecting the participants. The first step was to ensure proper data storage. All data were stored on password-protected computers during the collecting and writing of the study. Once the study was completed, all data were removed from the computer and stored on a password-protected drive in a locked safe. This data will be kept for three years, and then the password-protected drive will be destroyed. In addition, the data used for the study was coded. Finally, all participants and sites were assigned a pseudonym to prevent either the sites or the participants from being identified.

Any issues that arose or changes that needed to be made were submitted to the IRB at Liberty University. Because the only changes were site changes, there was no need to inform the Institutional Research and Planning Office at either site of any issues or changes at the respective site. Through vigilance in research, a focus on communication (Mills et al., 2010), and the proper preparation and training (Yin, 2018) provided by Liberty University, any possible issues were proactively addressed before needing further action.

Summary

The study design, sites, participation, and procedures for this multiple-case research study were outlined in this chapter. The reasons for selecting a qualitative study was to discover the depth (Creswell & Poth, 2018) of facilitating conditions faculty felt led to the use of active learning tools in the LMS. In addition, the value of a case study in portraying multiple realities of the faculty at each site and then looking for both commonalities and uniqueness of each site was

highlighted (Stake, 1995). The need for a multiple-case study to strengthen the findings and provide analytical generalizations (Yin, 2018) was explained. Researcher positionality was described to give the reader a clear understanding of my motivations for conducting the study, along with my assumptions and bias. In order to elucidate the process, all steps in the research study were outlined. A description of the community colleges chosen as sites, the reasons for choosing the sites, and the participants selected were included. The steps in data collection, including documents, interviews, and focus groups, were explained and connected to the research questions and literature. The data analysis processes and documentation during the analysis were covered. Finally, the trustworthiness of the study and ethical considerations were explained.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this multiple-case study was to describe how facilitating conditions led faculty to use active learning tools in learning management systems (LMSs). The study used the theoretical lens of technology acceptance models and utilized a multiple-case study design. Faculty members from two California community colleges were interviewed individually. In addition, the interviewed faculty members from each site met together for a focus group. Documents regarding distance education (DE) training and infrastructure at the college were collected and analyzed for triangulation. Each case was individually analyzed and coded; then, a cross-case analysis was conducted.

This chapter begins with a description of the participants and is followed by the results. Next, the results are reported as seven themes, with some themes including subthemes. In addition, two outlier findings are reported in this chapter. Finally, the findings and themes are used to answer the research study's central research questions and sub-questions.

Participants

The participants from this study included 11 tenured faculty members from two California community colleges.

Table 1

Participant Demographics

Name	Site	Status	Department	Age range	Canvas use prior to 2020	Focus group
Allison	A	Tenured	Chemistry	50–60	Nothing	Yes
Bridget	A	Tenured	Math	30–40	Nothing	No
Christine	A	Tenured	Art	40–50	Documents, announcements, assessment	Yes
David	A	Tenured	Geology	50–60	Nothing	Yes
Emily	A	Tenured	Culinary Arts	50–60	Syllabus, class documents, student activities, announcements	No
Frank	A	Tenured	Communication Studies	50–60	Syllabus, class documents, student activities, announcements	No
Grace	B	Tenure track	Earth Science	30–40	Documents, announcements	Yes
Harper	B	Tenured	Geography	50–60	Documents, assessment	Yes
Isabel	B	Tenured	Physics	50–60	Documents, syllabus, assessment, online homework	Yes
Janet	B	Tenured	Math	50–60	Documents, announcements	Yes
Kelly	B	Tenured	Math	50–60	Syllabus	No

Allison

Allison was a tenured chemistry instructor who did not use LMSs before March 2020. She had over 35 years of teaching experience, including many years as an adjunct professor at different community colleges before becoming a tenured professor at Site A. Allison had

previous training with an LMS but stated that the training was about 35 years prior to using Canvas. She stated that when her courses went remote, she knew nothing about Canvas except that Canvas existed. Now that her courses have returned to face-to-face, Allison continues to use Canvas for grading, quizzes, videos, lecture recordings, and feedback for both her online and face-to-face classes. She was very positive about Canvas and felt it made communication better.

Allison used a variety of resources to help with transitioning her classes online. She first discussed how valuable the campus's five-week online certification training was for teaching online. Allison found the videos in the five-week training long but valuable. Allison also noted Google search, the Online Network of Education training videos, and other videos created by professors she found on the internet as valuable resources for transitioning online. She mentioned that she worked with her department to decide how to do testing, but her department is small, so there was not much peer support. Allison was very positive about the DE office and the support offered by the campus. She recommended that all instructors take the college's five-week online teacher certification course. Allison also wanted the campus to continue offering the same support for DE, both with the structure of the DE office and the support of online programs that were purchased during the pandemic. She did feel that there could be more support for the learning tool integrations in Canvas.

Bridget

Bridget was a tenured chemistry instructor who did not use Canvas prior to the transition to remote teaching in March 2020. She had a pedagogical foundation with a degree in math education and applied math. She taught briefly at the high school level, as an adjunct instructor at the community college and university level, and for over five years as a tenured instructor. Bridget did not have any prior LMS training and stated that her first time using Canvas was in

March 2020. She now uses discussion forums, formative assessment, and email through Canvas. She stated that for her students, Canvas was the "go-to place for everything, everything!"

Bridget used a variety of resources to transition to online instruction. She had completed the campus's five-week online teaching certification in 2019 but did not use Canvas after completing the training. Instead, she took the Title 5 training when the campus went online and used that in addition to a department resource training shell to develop her online classes. Bridget also mentioned the Canvas training for continuous online instruction and searching for videos as resources she used to help her teach online. Her peers were another valuable resource. She mentioned talking to experienced instructors about how to organize online courses and working with her department on course design and online exams.

Bridget was also very positive about the support received through the DE office and the campus. She felt that the accessibility support she received was essential. She also felt that drop-in support for the campus was helpful. Bridget hoped the campus would continue with extra training about accessibility and online education. She wanted to continue working with division teams created during the transition to focus on online teaching. Furthermore, she wanted the campus to support "your ideas and the things that you need."

Christine

Christine was a tenured art instructor who used Canvas for student access to course documents, announcements, and assessments prior to March 2020. Christine had about 20 years of teaching experience and was comfortable using technology. She had participated in training for the Blackboard LMS many years ago but did not complete the training due to the complexity. She currently uses Canvas for announcements, discussion boards, lectures, recordings, and grade feedback for students, including rubrics.

Christine mainly relied on two training workshops, the DE office, and her technical expertise to transition online. She first took the Title 5 training when the campus went online. She then did the five-week online teaching certification in the summer of 2020. Christine discussed reaching out to the DE office and working with peers for continued support with Canvas. She found the DE office to be extremely helpful and responsive. In addition, Christine talked about working with "study buddies" during the five-week online teaching certification training and sharing assignments with her colleagues. Finally, she identified Canvas Commons as a valuable tool for teaching resources.

Christine was positive about the support received by the DE office and campus, but she did have some suggestions. She felt the DE office was "super helpful" and "responsive." She did feel that the training had an overemphasis on accessibility but at the same time, felt the campus needed more support for accessibility in online courses. She spent considerable time on her own mastering lecture recording and screencasting, which led her to feel that faculty would benefit from training that was specialized for the discipline.

David

David was a tenured geology instructor with over 20 years of experience in the classroom. Before March 2020, he did not have any training for teaching online and did not use the Canvas LMS. David saw the value in LMSs for certain classes but felt it was challenging to make geography visible online for students with visual problems. He also felt it was important for geography labs to be in person. He currently uses Canvas for announcements, discussion boards, exams, audio clips, and study groups facilitated by a tutor assigned to his course.

David identified training, searching, and a willingness to try things out in Canvas as what led to his success in transitioning online. He completed the Title 5 training and the five-week

online certification training at the same time in order to move his classes online. He liked that the training sessions were online, but he felt he could have completed the five-week training in a shorter time. After completing the training sessions, David would occasionally search for answers to Canvas questions and ask colleagues, friends, and students for ideas on creating course materials in LMSs. He felt that his ability to adapt what he did in-person to the online format and his willingness to keep "clicking buttons until something happens" helped him successfully create his courses in Canvas.

David was also positive about the support he received from the DE office and the district but had some suggestions. He liked that the certification training was offered online and suggested that it not be moved back to in-person training. David also felt that certification should be built into the required faculty training days. In addition, he felt that the DE office should offer higher levels of training that lead to advanced certificates. Finally, he identified stipends and the funds given by the district to help faculty with technological needs during the transition as valuable for faculty teaching online.

Emily

Emily was a tenured hotel, restaurant, and culinary arts instructor who used Canvas to post class documents, facilitate student activities, and send announcements before March 2020. Emily had been using Canvas for hybrid courses before the campus switched to online teaching; however, most of her student engagement happened in the on-campus portion of the course. Still, she felt comfortable with the transition to online. Emily taught in the hospitality industry for many years before becoming a community college instructor. Emily developed a love for teaching and is a proponent of hybrid courses. She currently uses Canvas for announcements, assessments, assignments, collaborations, discussion boards, groups, and student activities.

Emily attributed her success using Canvas to the students she worked with, her ability to find Canvas support, and her experience with hybrid courses. Emily felt that having a group of students that went through the program and were like "a family" helped with engagement in her classes when they went online. In addition, she was comfortable using Canvas and talked about using Canvas guides or searching Google when she needed support. Unlike most other participants at her site, Emily did not complete the five-week online certification training. Because she had been using LMSs for hybrid classes before the requirement was established, she was allowed to teach without the certification. However, she completed the Title 5 training and felt it was an important refresher for online teaching.

Emily praised the DE office but felt the institution needed to do more to provide support for online instructors. She commented that the staff in the DE office were excellent and "working very hard." However, as a member of the site's faculty senate and other campus groups, she felt that DE was poorly funded and often not discussed as a priority. In addition, she wanted more resources available for faculty who teach online.

Frank

Frank was a tenured communications studies instructor who used Canvas to post class documents, student activities, and announcements prior to March 2020. Frank, like Emily, had been using Canvas for hybrid instruction and was comfortable switching classes to Canvas during the pandemic. He also had a foundation in pedagogy from his master's degree and teaching in the classroom as an assistant. Frank had taught for over 35 years. He is a proponent of online and hybrid courses and often had to convince his department to keep hybrid courses on the schedule. Frank currently uses Canvas for announcements, assignments, chats, discussion boards, groups, and student activities.

Frank discussed being part of two campus programs, various workshops, and working with a college success network as helpful for conducting engaging classes online. Frank felt that he learned how to make online courses more interactive through a course audit program that his site was working on with another community college. He also was part of a pilot of a student engagement software program, which, he stated, "is really great, and it's a chance to monitor what we're doing in the class." He has worked closely with the California Community College Success Network for years and found his work with the network helpful with teaching online. Frank did not complete the campus online teacher certification training. Like Emily, his prior experience was sufficient to meet the campus requirement, and he was hesitant to take more training when the campus went online. However, he completed the Title 5 training and felt it was helpful to be "reintroduced to things" that he had not used before the campus transitioned online. Frank also talked about "literally waking up in the morning and going to webinars" at the beginning of the transition online to learn more about conducting courses in Canvas.

Frank also had high praise for the DE staff and some suggestions for improving the support of online instructors at his site. He talked about how easy it was to work with the DE support staff and how he always felt comfortable asking questions. Frank felt the campus would benefit from creating a "practice" of supporting faculty members with the opportunity to share what they were doing in Canvas. Frank stated that it needed to happen regularly and become a "habit."

Grace

Grace was a tenure track instructor in the earth science department who used Canvas to post announcements, practice exams, and documents before March 2020; however, she had no training or experience as an instructor or student in online classes before the transition. She

discovered she loved teaching when she was a teaching assistant during her master's degree program. Grace talked about a class during her program that utilized active learning and "changed the way she thought" about learning. She now says she has "everything" in Canvas. Grace talked about using external tools integrated into Canvas like Pronto and FlipGrid for student communication. She currently posts her lectures, does her grading, leaves feedback, and conducts formative assessments in Canvas. In addition, she uses the collaboration tool in Canvas, which allows students to work together on a document, spreadsheet, or slide show.

Grace identified various resources and training that helped her transition online, including training, colleagues, and peers. She completed the campus 120-hour training shortly after the transition. In addition, Grace was in a training cohort with the Society of Applied Geoscientists and Engineers at Two Year Colleges (SAGE 2YC) in January 2020. She gained experience in Zoom and breakout rooms through the training before transitioning online. When courses went online, she continued working with other faculty in the cohort and commented that "it was great to be partnered with other geoscience educators all across the US. We are all going through the same thing." In addition to other geoscience educators, she talked about sharing in her department and how her department joined with another department to share and try different tools in the LMS. She also talked to her husband about his experience as a student in online courses.

Grace was also positive about the DE office at the campus. She talked about support from the on-campus DE team and Canvas support. Grace also felt that the student support offered by her campus was valuable. She felt that the technical support they offered students as soon as they went online, and the eventual support of laptops and hotspots were vital. Grace suggested that students could use training on how to use Canvas. She would also like to learn more about course

and universal design.

Harper

Harper was a tenured instructor in the geography department. She worked in software development for many years and took an adjunct position at a university. She loved teaching at the university and accepted a tenured position at Site B seven years ago. Prior to transitioning to online in March of 2020, Harper had her syllabus, other course documents, and some assessments in Canvas. She was one of the more experienced faculty using Canvas before the transition, and she was online certified by her campus before the transition. After the transition to online teaching, Harper used lecture videos, Zoom conferencing, assessments, assignments, and group activities in Canvas. She stated that she uses Canvas for everything in her face-to-face and online classes.

Harper identified her prior experience with Canvas, her campus role in DE, some more advanced training, and working with colleagues as leading to her success using active learning tools in LMSs. She completed the campus online teaching certification training in 2017. Harper helped to lead the campus online certification training in the summer of 2020, and the experience of teaching about LMSs strengthened her use. She also identified some more advanced training she was able to take because she was an adjunct at a university. Harper explained that these workshops were extremely valuable because they focused more on teaching strategies and not tool use in LMSs. Harper identified texting with colleagues and working with other geographers as helpful during the transition. She stated that she felt "more connected to my colleagues being remote" than when she was on campus.

Harper was positive about the DE office on her campus. She felt that there were numerous workshops on the tools in Canvas. She also noted the online teaching certificate as an

essential training offered by the office. Harper felt that having someone in the office with an instructional design background was beneficial in giving her ideas about how to facilitate lessons. She stated that at one point, there was an advanced class available through the Online Network of Educators training group. Harper hoped that in the future, there would still be advanced classes and more training on how to make her course more interactive.

Isabel

Isabel was a tenured instructor in the physics department. She also had experience using Canvas prior to the transition to online. She used Canvas for the class syllabus, other course documents, assessments, and online homework. In addition, Isabel had a solid pedagogical foundation from her prior experience as a high school teacher. She had almost 30 years of teaching experience. Isabel also stated she was very comfortable with technology, which helped her try new things in Canvas. After the transition to online, Isabel used Canvas to post weekly announcements and lecture notes. She continued to use Canvas for practice quizzes and homework exercises. Isabel also used Canvas for grading and study groups after the transition to online. Isabel stressed that she no longer used Canvas for summative assessment because she had discovered more online cheating during the last two years.

Isabel noted training, Canvas guides, publisher resources, school templates, and working with a specific group of colleagues as helping her be successful online. She did not complete the online teaching certification through the campus but was certified through a training certificate offered by the Online Network of Educators. Isabel, like Grace, had been part of the training with SAGE 2YC that began in January of 2020. She noted this training as helpful for her strengthening her online teaching. Isabel did not work much with colleagues at her campus because she was in a small department, but she shared with adjunct faculty. She also talked about

the Canvas discussion forums being helpful. She was able to post questions on the forum and get detailed answers.

Isabel had great experiences with the DE support at her campus. She discussed the workshops as valuable and stated that faculty could request a workshop, and the DE office would facilitate it. She also felt that the office was good at compiling and disseminating information about new software and apps. Isabel stated, “They do a really good job of making sure that we’re aware of what is going on.” Isabel also noted that the ability to get questions answered immediately and the templates available for faculty were helpful. However, she was disappointed that the campus would no longer financially support some of the software she found useful during the pandemic. She also would like to have better cheating monitoring, grading methods, and statistical data on quizzes.

Janet

Janet was a tenured math instructor who used Canvas to post documents and announcements prior to March 2020. She had a pedagogical foundation as a former credentialed high school math teacher before teaching at the community college. Janet had taught briefly online six years earlier before her college required any training to teach online. She did not feel that online teaching was a strength, so she returned to teaching only face-to-face classes. Janet currently uses Canvas for discussion boards, communication, homework, and quizzes. In addition, she is a strong advocate for using videos in Canvas, including screencasting demos and feedback videos for her students. She is “not a fan of online” but is using Canvas for all of her classes.

Janet cited training, her willingness to try new things, and her colleagues’ support of her colleagues as what led to her success to transitioning to online instruction. She took the 120-hour

online certification training shortly after the campus transitioned to remote teaching in March 2020. Janet found the intense focus on making courses accessible to be the most valuable component of the training. In addition to the certification training, she noted using Canvas Commons, the Math Department Canvas shell, and working with her peers as resources that helped her be successful in the transition. She discussed how her department "loves to share" and gave examples of sharing everything from entire courses, discussion board ideas, and even "snippets of stuff." Janet saw this culture of sharing in her department as essential to the success of colleagues who struggled to transition online. She suggested that new faculty look to more experienced faculty members for ideas and not "try to reinvent the wheel" when so many available resources are available from other instructors.

Janet was very positive about the support received from this DE office at her campus, remarking that "they did such a good job." She talked about the instructional design support available to faculty, the ongoing workshops, and the drop-in lab hours. She also talked about the campus supplying tablets and screencasting software for faculty if needed. For a suggestion, Janet revisited the value of peer support and stated that she would like to see a cohort of faculty available to review online courses when requested.

Kelly

Kelly is a tenured math instructor who only used Canvas to post the syllabus prior to March 2020. Like Janet, Kelly has a solid pedagogical foundation from a master's degree in the teaching of math and prior experience as a high school teacher. Kelly currently uses Canvas for discussion boards, class meetings, email, and homework. She remarked that "everything is on Canvas" but also stated that online teaching was "not my jam." Kelly stated that she was "fueled" by in-class interaction and found that missing in the online environment.

Kelly cited the campus online certification training, Canvas instructor guides, and her colleagues as resources that helped her transition online. She did the first 60 hours of the campus online certification in the Summer of 2020 and then took another year to finish the second part of the training. She talked about using the help button in Canvas as the best way to find support. Kelly also discussed working with her department to share frustration, examples, and course materials in Canvas. She felt that colleagues working together in the online certification training was valuable. In addition, Kelly talked about working directly with a "tech-savvy" friend.

Kelly was also positive about the DE office. She felt that the office did a good job communicating upcoming training opportunities and was open to answering questions. Kelly was very appreciative of the quick responses to any emailed questions. She could not think of any further support the campus needed to offer but also included the caveat that in the future, she would only teach online if she was told it was mandatory.

Results

The results section explains the themes and subthemes that were developed from the participant interviews and focus groups. Themes were analyzed to look for subthemes to break down the findings and clarify what faculty shared about facilitating conditions they felt led to the use of LMSs. The seven major themes that emerged from the analysis of the findings were course design support, peer support, student engagement, the DE infrastructure, technical support, pedagogical foundations, and more time. The subthemes that emerged for course design support were course organization, the challenge of online assessments, course accessibility, integration of materials, and the suitability of course to online format. Student engagement included the subthemes of ease of communication tools and the challenge of student-to-student interaction. The theme of DE infrastructure included the subthemes of DE office support,

instructional design support, and financial support. The subthemes for technical support were Canvas technical support, other technical support, and student technical support. In addition, this section looks at the unexpected findings that did not align with the research questions of this study.

Themes were discovered through the coding aggregation in NVivo software. Coding was first analyzed by looking at the interviews and focus groups. Afterward, coding was analyzed in the DE support documents. The descriptive coding was then analyzed in order to capture the significant meaning of the descriptive coding and discover themes (Saldaña, 2016). In addition, once themes were discovered, some descriptive codes were moved into Subthemes that belonged to the themes.

Table 2

Themes and Subthemes

Themes	Subthemes
Course design support	Course organization, challenge of online assessment, course accessibility, integration of materials, suitability of course to online format
Student engagement	Ease of communication tools, challenges of student-to-student interaction
Peer support	
DE Infrastructure	DE office support, instructional design support, financial support
Technical support	Canvas technical support, other technical support, student technical support

Pedagogical foundations

More time

The seven major themes and the total number of references to the themes for both cases in the interviews, focus group, and DE documents appear in the table below. References to the themes were taken from participants' quotes from the interviews and focus groups. In addition, the number of faculty at each site that discussed the theme is noted in Table 3.

Table 3

Themes and References

Themes	Total references	Participants who cited Site A	Participants who cited Site B
Course design	155	6	4
Student engagement	162	6	5
Peer support	119	6	5
DE Infrastructure	86	6	5
Technical support	71	6	5
Pedagogical foundations	33	2	5
More time	31	5	4

Note. * n=6. ** n=5.

The cases were then analyzed separately using explanation building (Yin, 2018), which created links between the data gathered from the participants to the contextual support at the institutions detailed in the DE support documents. Finally, the cases were compared, looking for similarities and differences. The results of the comparison analysis follow.

Course Design Support

The first theme that emerged from the faculty interviews and focus groups was the importance of course design support. Eight of the 11 faculty discussed course design support during the interview, and the importance of course design support was discussed in both focus groups. Course design support included guidance on organizing a course, conducting assessments, making the course accessible, and integrating publisher materials and video. For example, Allison commented that with proper support, her course was "extremely organized and easy to use" and that she "use[d] Canvas to organize everything."

Course Organization

The subtheme of the importance of support for course organization was stated repeatedly during the interviews and focus groups. Faculty members discussed the necessity of organizing the course using modules, which allowed faculty to group course materials by week, theme, or topic. The participants felt that course organization was vital for faculty to design courses. For example, Bridget emphasized that it was important for online faculty to have an "initial way of organizing" their courses. Isabel stated, "The most important thing to do is know how your Canvas site and your structure is going to be organized." Faculty members also discussed the importance of course design for the students accessing courses. Christine and Grace stated that modules made courses in Canvas "understandable" to students. Janet added that it was important to know "how to design your courses for a user-friendly format." Finally, Allison summed up the benefit of course organization for both faculty and students by sharing, "but now they have this extremely organized easy to use [course] and so they don't email me as much about what is due when."

The Challenge of Online Assessments

Another subtheme repeatedly discussed at both sites was how to create and conduct assessments. However, the discussions focused on the challenge of assessing in the online classroom, with only one mention of training for online assessment. Faculty instead lamented the proliferation of cheating by students during online assessments. David at Site A stated, “They are going to cheat,” and Isabel at Site B remarked, “Before COVID, I used to do quizzes [online], and then I stopped because the cheating was so bad.” Although both sites had proctoring tools to monitor students taking online assessments, the consensus during the focus groups was that students would find ways to “workaround” what was in place.

In addition to the problems with cheating, faculty at Site B discussed issues with the quiz tool not having enough features to enable easy and seamless testing experiences. Janet pointed out how difficult it was to have students show their work for math assessments. Isabel detailed a complicated process she devised so students could go back and review and resubmit incorrect answers. Harper shared her workaround of using fillable PDFs but still found difficulties with the PDFs. At both sites, faculty expressed a desire for a more robust quiz tool in the LMS.

The participants from both sites primarily responded to the question about assessment with answers about the Canvas quiz tool. Assessment in the online classroom can be done with many other functions. For example, Emily shared that she uses essays, interactive videos, group projects, and individual projects for assessment. David stated, “I do like essays, and you know, I’ve kind of moved away from those since we since we went online mainly for timing issues.” Grace added that she often had students upload items to be used for assessment. However, other than Grace and Emily, none of the participants discussed tools other than the quiz tool for assessing students.

Faculty members at both sites did discuss some benefits of the assessment functions in Canvas. For example, practice assessments were a widespread use of the quiz tool. Bridget at Site A shared the value of formative assessments stating, “If they get it wrong, they can go back and check and find the correct answer, and then go back and be able to do the problem again.” Grace at Site B shared that students “can take it as many times as they want in order to kind of master that foundational material.” Additionally, two participants from Site A and one from Site B explained using rubrics for assessment was helpful for grading and feedback.

Course Accessibility

The value of training in creating courses that are accessible for all students was another subtheme discussed by six of the faculty members. When asked about the most valuable part of the training offered during the transition to online teaching, David stated, “The most valuable part to me was learning about accessibility.” Christine also felt that accessibility training was valuable but felt conflicted because she felt the focus on accessibility was “really heavy because we rarely have blind students in art,” and she had only had two deaf students in courses in her 20 years of teaching. However, Emily stated, “A lot of questions that I have are about the accessibility and making my site more accessible.” David was also concerned with making modifications for blind students online, but he acknowledged that he has been able to do this in face-to-face courses. There was a focus on accessibility in the online training and the *DE Faculty Handbook* at Site A.

Accessibility was also discussed by faculty at Site B. Janet commented that “making things ADA compliant was the most valuable part of online course training. Grace shared that “universal design and learning” training was what she felt was the most valuable. Site B had a slightly heavier focus on accessibility in the DE supporting documents. For example, the *DE*

Faculty Handbook detailed the importance of accessibility training available to faculty and the use of an accessibility checklist being used for "web-based resources." There were also four units in the online certification training dedicated to accessibility and three workshops available for the accessible design of documents and courses.

Integration of Materials

Another subtheme repeatedly mentioned in the interviews and focus groups was the value and needed support for integrating online learning materials into LMSs. Faculty members talked about the need for videos, audio clips, proctoring software, publisher's integrations, and lab integrations. At Site A, Allison, who used numerous integrations, commented that she had issues because "DE was so swamped. There's a way to integrate or link the lab archives into the Canvas course, but no one would do it because they were so busy doing everything else." David felt that integrating audio was valuable for instruction. At Site B, Isabel discussed the ability to show rich experiments to her students using video, stating, "I don't have the set up in our undergraduate lab" to show the experiments. Faculty at Site B also stated that they would like further video support, with Harper saying, "I have not embedded any questions in my videos. That is something I would like to do going forward," and the rest of the faculty in the focus group agreed with her on the need for more video training. Video training was also focused on in the DE support documents at Site B, with four units in the online teaching certification training and five workshops available during flex training days.

Suitability of Course to Online Format

The final subtheme for course design discovered from the interviews and focus groups was the suitability of a course to be taught online. Faculty members had differing views, with most faculty at Site A believing their courses were unsuitable for the online environment. David

stated, “Canvas was never designed for science teachers to teach online,” and Bridget agreed, stating that “Canvas quizzes are not friendly for science” instruction. All six faculty at Site A chose to return to teaching on campus in the Spring of 2022 due to the limitations they felt in teaching online. In contrast, only two faculty at Site B returned to campus, and during the focus group, the faculty at Site B seemed excited to continue teaching online. Isabel did reflect that “there are pros and cons to teaching labs online,” and Kelly shared, “I think math is better face-to-face.” However, Grace shared, “I’d never taught an online course before, but I was really excited to get the opportunity to do so.” Harper was looking forward to improving online labs and learning how to make labs “where they can like step through this lab in a way that’s more meaningful to them, so I guess it’s kind of how to design my class for this asynchronous experience.” Grace, Harper, and Isabel expressed interest in further training to improve their courses in the online modality.

Peer Support

All of the faculty interviewed discussed working with their peers as the most helpful way to know how to teach their classes online. Peer support was mentioned the most as a facilitating condition leading to active learning tool use in LMSs at Site B, with 27 faculty references to peer support in the interviews and six lengthy references in the focus group. Although peer support was not mentioned as much at Site A as at Site B, it still was a valuable facilitating condition.

At Site A, peer support was mentioned by all the faculty members during the focus group and in the DE support documents. Bridget highlighted the value of having “a department that is collaborative,” and Allison remarked that she “really did learn” from her colleagues who had more experience teaching online. Emily and Frank at Site A talked about sharing with faculty beyond the department during their interviews. For example, Frank shared that he attended

helpful webinars by an instructor at another community college, stating that “he had some really great workshops about how he’s approaching his Canvas shells and what does he do in terms of formatting and how does he set up his courses.” During the focus group, Allison reflected that hearing “other people’s experiences, that just makes me feel better,” and David responded, “maybe developing a support group would have been helpful.” At Site A, small departments made it hard to collaborate, but faculty discussed working with at least one other person as central for creating learning materials in LMSs.

The DE support materials at Site A showed that the campus values peer support. The online teaching certification training developed small cohorts within the larger group to work together. Faculty at Site A talked about the value of peer connections developed within the cohorts, with Christine remarking, “one thing that was helpful is that I was in a cohort with some of my colleagues, and during the training we were assigned each other like study buddies.” The DE Plan at Site A highlighted the importance of peer support by aiming to “promote quality course design by establishing a Peer Online Course Review program in the future.” In addition, the college flex day included a time for a department debrief “discussion intended for sharing takeaways from their experiences of remote/online teaching during spring/summer semesters and the professional learning they have done since spring.” However, faculty in the focus group remarked that the only way to get discipline-related support was from peers, and they saw this as something missing in the training opportunities.

At Site B, every faculty member interviewed talked about the value of peer support, and peer support was a major part of the focus group. Faculty from Site B shared within their departments, with other colleagues at the site, colleagues at other campuses, other educators, and professionals in the field. Janet stated, “We love to share;” Grace commented, “I love to share all

my things," and Harper reflected that she felt "more connected to my colleagues being remote." Perhaps the strongest testament to the value of peer support at Site B came during the focus group. As Isabel discussed how she scheduled student conferences, she asked if she could share her screen. She then proceeded to model her process with her colleagues. The other faculty members also shared, and one participant demonstrated by sharing her screen. Sharing at Site B was also emphasized in the DE support documents. Building "relationships with your teaching colleagues to support your continued growth" was one of the goals of the online teaching certification, and the opportunity to work with colleagues appeared numerous times in the flex day activities.

Student Engagement

Another theme that emerged from the faculty interviews was student engagement, including instructor-to-student, student-to-content, and student-to-student interaction. Faculty at both sites felt comfortable using various tools in LMSs to foster student engagement, including announcements, discussion boards, email within Canvas, and grade feedback. Janet stated, "All our communication is through here" when talking about Canvas. However, faculty members discussed the difficulty of getting students to interact with each other in online courses.

Ease of Communication Tools

Faculty at both sites talked about using a variety of communication tools through LMSs. When asked what tools in the LMS she used for student interaction, Janet at Site A replied, "inbox, announcements, feedback for assignments, discussion boards, and I often create just real quick videos." All 11 faculty members used the discussion board tool for instructor-to-student and student-to-student interactions. All but one faculty member at both sites mentioned using the announcement tool in Canvas to interact with students. Three faculty members at each site

discussed grade feedback. Both Harper and Isabel at Site B and Christine and Frank at Site A talked about using rubrics for feedback, with Isabel sharing, “I think rubrics is a great way to communicate those expectations.”

Challenges of Student-to-Student Interaction

Although the faculty interviewed found most of the communication tools in the LMS easy to use, faculty at both campuses wanted more student engagement in their online classes. Allison at Site A stated, “I haven’t gotten the students to interact as much as I would like,” and Bridget at Site A said that student interaction was “lacking in my course.” Kelly at Site B felt interaction in the online classroom could never match what happens in the face-to-face class. For this reason, Kelly felt that she did not want to teach online, stating, “What fuels me is being able to be in the classroom and interact with kids.” Other faculty discussed ways other than LMSs that students collaborate.

The faculty members had some complaints about the tools for interaction in LMSs and discussed other ways that students connect with each other. At Site B, Grace, Harper, and Isabel talked about using Flipgrid, which allows students to do video discussion boards, to increase student engagement. Although, Flipgrid can be integrated into Canvas, but some students preferred going outside of Canvas. Kelly and Isabel at Site B shared that many students prefer to interact through Discord, an independent discussion board platform. Bridget and Christine at Site A also had students using Discord to discuss class away from the instructor’s view.

When discussing student interaction, most faculty members relied primarily on discussion boards. However, at Site B, Harper and Grace discussed the challenges and desire for group work in the online classroom. Grace was a huge proponent of group work, stating, “we do a lot of group work in my face-to-face sessions, and I was like, how can I do that, because that’s

really how I run all of my classes, and so it was a really big transition." Grace shared that she learned how to facilitate group work through an outside professional development program she was part of. Harper at Site B said, "I do some group activities" but found issues with the Canvas group tool. At Site A, Emily discussed having "at least one group project a semester" where students can use the Canvas group tool, but students could also use other tools outside the LMS to work together in groups.

The faculty members desired more student-to-student interaction and more training on facilitating interaction. At both Site A and Site B, there is a focus on improving student interaction. At Site A, the DE Plan stated, "revise Online Teacher training to include a greater emphasis on tools and content promoting Regular and Substantive Interaction and student engagement." There are many references to student-to-student interaction in the DE Handbook and training scheduled before each semesters begins. At Site B, there are detailed references in the DE Faculty Handbook, and many training sessions were offered on student interaction. However, David from Site A wanted more and suggested training on "how to better interact with your students in discussions." Harper at Site B also said, "now I look for training on like what can I do for collaboration."

DE Infrastructure

The faculty members' view of the college infrastructure supporting the transition to online teaching was another theme that emerged from the interviews. Faculty shared what they felt was essential support received from the DE office. Christine at Site A felt that it was crucial to have support on campus and that "having these humans [was important] and so it wasn't just some number in Minnesota." Christine shared this during the focus group, and the other faculty all agreed that it was necessary to have people they knew from their campus for support. In

addition, the faculty spoke about the financial support received during the transition to remote. Finally, faculty members at Site B discussed the importance of having instructional design support.

DE Office Support

The first subtheme emerging from the DE infrastructure was the support received from the DE office. Every faculty member interviewed commented on the helpful support given during the transition to online. For example, Christine at Site A shared that the "DE team was very heroic," and Harper at Site B stated that the support she received was "a godsend." The DE office at Site B was praised for being "great about answering questions" by Isabel, echoed by Janet, who stated, "They were always there to answer questions," and praised by Grace, who said, "If I do have questions, they get back to me right away." Allison at Site A also praised the DE office and shared that the support staff "would email me back at like 10 p.m." when discussing how prompt DE support was during the transition.

In addition, the faculty felt supported by the campus during the transition to online by the online certification training offered before and during the transition to online teaching. Four of the six faculty members at Site A went through the campus online teaching certification. Allison commented that "The course they created was so good," and David stated, "When I took the training, the DE people were fabulous." At Site B, three of the five faculty members went through the campus for online teaching certification. Janet commented about the campus training, "They showed us everything, probably more than we really needed, but you know, it was all useful." Faculty also discussed going back to the original training course as a resource, with Bridget saying, "I still have access to those courses."

Faculty members also discussed other valuable resources available through the DE office,

including workshops, drop-in hours, and online materials. Janet at Site B remarked that the DE office was “always having workshops to help people out.” Bridget at Site A talked about the online offerings “where you can go ahead and grab a lot of resources.” She discussed online guides, including those for accessibility, Zoom, and screencasting. Faculty at both sites talked about the value of drop-in hours where faculty could come and ask questions. Allison stated that the drop-in hours were “available a couple of times a week, and so I’ve gone in and asked them a couple of questions.” Frank also appreciated the drop-in office hours and stated that he always felt comfortable dropping in and asking the DE support team questions.

Finally, faculty members discussed the professional development offered by the DE office. Faculty at both sites, as mentioned before, had high praise for the online teaching certification training. In addition, the faculty members at both sites talked about the shorter Title 5 training offered at both sites that were created to quickly prepare faculty to meet the state requirements for online classes. Emily and Frank at Site A felt that the Title 5 training was a valuable refresher for faculty who had achieved experience with online teaching prior to the requirement for online certification.

Nevertheless, the faculty made some recommendations about online teaching professional development. First, Bridget and David at Site A and Harper at Site B wanted training for teaching online to continue. Harper stated that training “should be ongoing because just like how you teach in a classroom will evolve as new things come available, so should your online teaching.” Second, David at Site A wanted advanced training and suggested: “they could have a series of courses and a certain level of certificates.” However, Kelly at Site B cautioned against training that assumes faculty are at an advanced level. She recalled a professional development session “where I just wanted to cry because I didn’t know what I was doing, and I

wasn't getting support." Third, Christine at Site A wanted to see more discipline-specific training. Finally, David from Site A and Janet from Site B wanted online professional development to be offered during every flex training day before each semester started.

Instructional Design Support

Both sites saw the value in instructional design support; however, for Site A, which did not have an instructional designer, a designer was mentioned seven times in the DE support documents and by only two faculty members who were talking about either what was available in the past or what should be available in the future. At Site A, the DE Plan had the goal of hiring "an instructional designer to assist faculty with course design and accessibility," and Emily shared that she knew the campus would be hiring one because of her role in Senate. Frank at Site A talked about working with an instructional designer at his campus many years ago and the benefit of the information the designer was able to share.

In contrast, at Site B, which had one full-time and one part-time instructional designer, and an instructional design center, the faculty interviewed all remarked how the design center and designers were a resource they turned to for technical issues. In addition, three faculty members discussed working with an instructional designer for support during the transition to online instruction. For example, Harper at Site B spoke about the value of working with the instructional designer at her campus:

> If I have a question, not just on how to do something, but like what do you think, you think it makes sense? She'll look at it for me and say oh, I would change this here, or that makes sense to me, and I appreciate her knowledge and background.

Isabel also shared the value of the materials provided by the instructional designer, "She put together some templates that are like real generic so that if you even didn't know a lot about

Canvas, it would be specific for our school, but it would look really nice." The faculty members at Site B identified many resources that were created by the instructional designer and instructional design team, and Isabel declared, "We need like three" instructional designers.

Financial Support

Finally, a third subtheme that emerged from questions about the site infrastructure was the need for financial support for individual instructors and to supply the technology needed on campus. David at Site A shared that during the pandemic, "the little bits of money the district did give us actually made a big deal" and discussed how he used the funds to improve his computer equipment at home that he used for teaching. Isabel also shared that she "got the funds from the COVID funds to buy" needed equipment to be able to instruct online. David also shared, "They didn't give us stipends or anything, but it's like what do you need? Do you need tablets? Is that going to help you?" The participants did feel the financial support during the Coronavirus disease 2019 (COVID-19) pandemic was there. However, Isabel and Harper expressed some concern because that funding was no longer available, and they lost what they felt were valuable programs provided during the pandemic.

There were also some concerns about the campus infrastructure needed to support online instruction. For example at Site A, all four faculty members lamented the poor Wi-Fi available on the campus. Bridget stated, "The internet connection on campus is rubbish. It kills us." At Site B, Grace shared during the focus group that "Some of my students go into the library to do the Zooms, but they can't talk, so when they go into breakout rooms, that's not conducive to a robust breakout session," and her colleagues present all agreed that students needed more substantial on-campus resources to participate in online classes.

Technical Support

Technical support was another theme revealed in the faculty interviews and focus groups. Faculty members shared that they were able to find the technical support they needed through the Canvas LMS and other resources. They did, however, feel that they had to provide technical support for their students. Technical training was a focus of the workshops offered at both sites, but Site A heavily emphasized technical training with 29 references to technical support, including 15 additional workshops about the technical aspects of LMSs. The documents gathered at Site B had 16 references to technical support, including 11 additional workshops on the technical parts of LMSs. However, in contrast to the emphasis in the DE support documents, faculty rarely mentioned technical support as a needed resource to transition courses online.

Canvas Technical Support

Faculty at both sites talked about the available Canvas resources as valuable assistance for technical support. At Site A, four of the six faculty talked specifically about visiting the Canvas guides. For instance, Emily shared that she "always" visits the Canvas Guides. Site B does have an integration called Impact that embeds Canvas video and guides into LMSs, and Kelly at Site B stated "there is a little help button" in Canvas that she found helpful for finding resources. Janet added, "It is so easy to just go into Canvas. How do I do this? And there's always great resources." Isabel found value in the Canvas guides stating, "I go to the Canvas guides all the time." Kelly preferred the videos and remarked, "They were quick, short, and very effective, and very clear." When the faculty members at both sites were asked if they called Canvas phone support, all faculty replied that they did not.

Other Technical Support

The faculty members at both sites discussed other resources they used for technical

support. Allison, Bridget, Emily, and Frank from Site A and Harper from Site B would search the internet for answers when they had technical issues. Allison shared that she "Googled a lot too. I always just Google like crazy." Another means of support for faculty at both sites was the DE office. Janet at Site B said she would email the DE office when she needed technical support, and Allison at Site A said the DE office was "really good at helping us" with technical issues. Isabel and Janet at Site B stated that they often contacted their textbook publishers for technical help. Isabel remarked, "The publisher has a lot of great things, so I rely on my publisher a lot." It was evident that faculty members at both sites knew where to find technical support.

Student Technical Support

Faculty did share that they spent a good deal of time providing technical support for students. When asked about any problems with technical support, Grace at Site B replied, "For me it was students, you know, emailing me saying, hey, I can't do this." Christine at Site A shared this sentiment saying, "So students, their computer wasn't running this software. Then, I had to deal with IT problems. I am not trained to work with IT problems." David also shared that he spent time helping students and cautioned, "be prepared to feel like you work for the Geek Squad," referencing the technical support available at Best Buy stores. He further added, "Too much of my time is spent with, you know, solving computer issues."

Pedagogical Foundations

Another major theme emerging from the interviews and focus groups was that a pedagogical foundation influenced faculty use of LMSs. This influence was reflected in the occurrence of this theme at the two sites. At Site A, two faculty members referenced their pedagogical background during the interviews. In contrast, at Site B, all five participants interviewed had a pedagogical background and referenced the importance of pedagogical

methods in their online courses. In addition, at Site B, there was a strong desire for more pedagogical training, which was only mentioned by three faculty members at Site A.

At Site A, two faculty members discussed their pedagogical foundation, and one discussed wanting further support for teaching methods online. Bridget discussed volunteering over 100 hours at a high school during her undergraduate work and as a teaching assistant before becoming a community college instructor. Christine had worked for an educational company where she realized she was "actually good at teaching, and I actually really liked teaching." Christine's desire to improve her online teaching methods was reflected in her desire for more "specialized training" to teach her discipline online.

The participants at Site B mentioned not only their past experience teaching as important for their online pedagogy but also talked about seeking further opportunities to improve their teaching methods in LMSs. Three of the faculty members from Site B were former high school teachers with degrees focused on teaching their subjects. Grace at Site B discussed picking up her commitment to "put active learning online" from being a teaching assistant and her experience in a class that "was student-focused" with an active learning foundation during her undergraduate experience. Isabel and Grace sought additional pedagogical training for online courses in their involvement in an outside professional development opportunity that started shortly before the pandemic and lasted throughout the first year. Harper also stated she would like more support to make classes "more interactive." Grace and Kelly stated they would look to peers to help with pedagogical guidance. There were no references to pedagogy in the DE documents, but there were two training sessions during the flex day training.

The DE support documents from the two sites also showed a different focus on pedagogical support. Site A referenced pedagogical support in the online teacher training

certification requirement by including goals for participants to learn how to create a "community of discourse in discussion" and "encourage active learning." In addition to the focus on pedagogy in the certification training, the DE plan at this site also had a goal of providing ongoing pedagogical training. Although more sessions during the in-service day focused on more technical aspects of LMSs, there were plenty of sessions focusing on pedagogical aspects of teaching online, including tools for student collaboration and using rubrics.

Although most faculty interviewed had a foundation in pedagogy at Site B, the DE documents at this site did not strongly emphasize pedagogy. There was one goal in the online training certification to encourage active learning in online courses. During the course, the faculty read and discussed an article that emphasized and explained how to encourage active learning for students. Additionally, there were two professional development workshops on active learning. The faculty referred to pedagogy 16 times during the interviews, but there were only four mentions of pedagogy in the DE documents.

More Time

The final theme that faculty members discussed was that teaching online was extremely time-consuming. Five out of six faculty at Site A and four of the five faculty at Site B discussed how much time they spent preparing and teaching online. Allison at Site A stated, "For an entire year, I was working every single day, Saturday and Sunday also." David added, "I was putting in 90-hour weeks that end of the first semester." Christine agreed, stating, "I did spend the whole entire summer working on the fall." Christine added, "This is why I went back, I'm like, I cannot do this." This sentiment was echoed at Site B, with Isabel describing online teaching as "very time consuming, much more time-consuming," and Harper adding, "There's never enough time, and I don't know if anyone has said this, like it is more work to teach online."

Faculty at both sites felt the colleges needed to support faculty teaching online by providing more time. Janet at Site B connected this directly with active teaching strategies by saying that if the college wants "less direct instruction and more interactive, that is more work for the instructor, and that is really what they want, and I believe that is the best thing for students." Harper added, "That shouldn't come at the expense of my time because I am working nonstop." Grace further elaborated, "What I would like is time to do all of this. I feel like I am being stretched in so many different ways that I really want to make my courses better, but I don't have more time." Although the need for more time was necessary for the faculty interviewed, provisions for extra time for faculty teaching online were not present in the DE supporting documents at either site.

Outliers Data and Findings

This section explains the two unexpected themes discovered during the analysis of the interviews and focus groups. The first outlier did not align with a specific research question because it pertained specifically to the switch to online in the second and third weeks of March 2020. The second outlier resulted from the different modalities of instruction utilized to move classes online quickly and blurred the asynchronous nature of online courses. These outliers give insight into the transition to online education, but because they capture the specific short-term actions instituted by the campuses because of the unprecedented move to halt face-to-face classes, the outliers do not connect to the questions in this research study.

Rush to Transition Online

Five participants reflected on the quick transition made in March 2020 and offered criticism of how the institution conducted the move. At both sites, faculty shared that they were given just a few days to switch their fully face-to-face classes to online with the possibility for

synchronous meetings. For example, David at Site A shared, “Some of my colleagues at other schools, they were given a least a little bit of time that we were not given” adding that at Site A, the faculty were “literally thrown in the fire.” Frank discussed how this was still something he and his colleagues thought about over two years after the transition. He remarked, “I still feel somewhat stunned with the fact that, you know, the lead time and the expectation that we should be all ready within a week was just little bit unreal.” He added that faculty needed “a little more time for people to figure out how we were going to approach this.” The outlier of the rush to transition online is more of a caution about what is not a supporting condition to lead faculty to active learning tool use in LMSs.

Hybrid for Active Learning

The second unexpected finding that was not included in the research questions was the use of synchronous sessions as a method to conduct active learning. When defining the active learning tools in LMSs, this study focused on tools that are part of LMSs and not additional tool integrations as defined in previous studies (Acosta et al., 2021; Annansingh, 2019; Dlalisa & Govender, 2020; Kara & Yildirim, 2019b; Monett & Elkina, 2015). However, the number of hybrid courses at the California Community Colleges increased by 73% from fall 2019 to fall 2021 (California Community Colleges Chancellor’s Office, 2022b). Therefore, many college faculty were teaching in a mixed format of online and some type of live sessions during the shutdown of campuses. The participants shared that the live portion at these two sites was conducted in Zoom. When asked how students interact in the class, Frank replied that it was all through Zoom, and Emily stated, “I’ll put them into breakout rooms, and we use the breakout room.” Harper also identified Zoom as a way for students to interact, remarking, “When we meet once a week via Zoom, I actually have a whole series of Google slides that I use that they use in

their breakout rooms, that they can then modify and give back to me." The citing of conferencing tools and a hybrid format as a live aspect to the course being used for active student learning is a significant finding from this study; however, it is an outlier for this research study because the focus was on active learning tools in LMSs and asynchronous instruction.

Research Question Responses

This study's central research question and sub-questions aimed to discover what facilitating conditions helped faculty use active learning strategies in LMSs. The central research question focused on all facilitating conditions, and the first three sub-questions reviewed technical, pedagogical, and professional development resources. The final two sub-questions examined campus infrastructure as a facilitating condition that supports LMSs use. There was a need for multiple sub-questions to explore the many variables (Yin, 2018) in online teaching support at the two sites.

Central Research Question

How do faculty describe the facilitating conditions that lead to the use of active learning strategies in LMSs? Faculty members discussed various facilitating conditions that supported their use of LMSs. Although faculty members did not focus on only using active learning tools in LMSs, they did detail what they felt was necessary to use LMSs to teach online after being primarily face-to-face instructors. Four major themes answered the central research questions, with faculty citing support for course design, student engagement, peer support, and the DE infrastructure as necessary facilitating conditions for successful online instruction.

Faculty overwhelmingly described the value of the course design component integrated into professional development as essential to conducting courses online. The faculty members at both sites talked about the theme of overall course design support and also the subtheme of

learning organizational strategies through training and seeing other courses that used Canvas modules to organize course content. Bridget discussed how in training, “they teach you how to put together your Canvas shell, how to organize it.” Isabel reinforced this by sharing, “The most important thing to do is know how it’s going to be organized, how your Canvas site and your structure is going to be organized.” In addition to organization, the faculty members mentioned other aspects of course design support they felt were essential.

Five faculty members also described the importance of course accessibility, a subtheme of course design support. Participants discussed training in designing accessible courses as another necessary facilitating condition for creating online courses. Three faculty members stated that ADA compliance was the most valuable training they received during the transition. During the interviews, the faculty elaborated on accessibility training by describing the importance of learning how to use headings, color contrast, and alternate text descriptions. For instance, David talked about the value of “making it accessible to everybody, not just people who can see and hear and read.” One faculty member explained that learning to subtitle videos was laborious but needed as part of online course design. Accessibility was the “key,” as Frank said, for course design, but the participants felt both supported by the training on accessibility and overwhelmed by what was required to make a course accessible.

Another area of course design where the participants struggled was revealed in the subtheme of the challenge of online assessments. Although the faculty members did not request additional support for designing assessments, their struggles with students cheating during online tests and designing “workarounds” to the Canvas quiz functions highlight the need for further support in assessing online. Furthermore, only two faculty members mentioned assessing using a tool other than quizzes in the LMS, and only three cited using rubrics. Support for designing

assessments in the online classroom is needed.

Additionally, the theme of student engagement for active learning in the online classroom developed during the interviews. The participants listed many tools they used for student interaction. For example, all the faculty members discussed using the discussion board; however, the participants discussed frustration with the inability to facilitate the type of engagement they would like in their online courses. Some complaints were about the tools in the LMS, but faculty members at both sites desired more training on increasing interaction in the online classroom.

Peer support was another major theme described by all faculty members as a necessary facilitating condition in learning how to use active learning tools in LMSs. The participants discussed working with a variety of peers. Some faculty shared going outside of the campus for peer support. For example, Grace and Isabel detailed the immense value in working with peers across the nation in a professional development workshop in 2020. Most faculty members talked about working with those in their department on ways to present content online and administer online assessments. For example, Allison shared about working with her department about what "to do about exams." The faculty members also talked about the ability to share content in different ways in Canvas. For instance, Allison gave the example of being given a copy of a complete course from another instructor. Janet talked about having a place in Canvas where her department would share "everything and anything." It was evident that peer support was a vital facilitating condition in using LMSs.

The DE infrastructure and the subthemes of DE office support and financial support also answered the central research question. Participants described a campus structure that supports training for online instructors as a facilitating condition that encouraged faculty use of active learning tools in LMSs. Six participants stated that the online certification training was the most

valuable training for learning to teach online. Two faculty members also felt that a shorter five-hour training offered was helpful in making a rapid transition to online teaching. Eight faculty members recounted working with the DE staff during the online certification training and appreciating their knowledge, patience, and skill. Janet said that she "felt a lot more confidence" after completing the online certification training.

The participants also elaborated on the subtheme of the DE office support they found valuable. The faculty members described additional vital attributes of the support coming from the DE office, including workshops, guides, drop-in hours, and email support. The faculty members repeatedly praised those that worked in the office by name. For example, when Christine shared in the focus group that it was important to her to be supported in online instruction by people on her campus that she knew, the rest of the participants strongly agreed.

In addition to the DE office, participants identified the subtheme of monetary support, which helped them be able to purchase needed equipment for teaching remotely during the shutdown. Faculty members also noted the importance of campus financial support in funding software purchases to help them create more interaction in their online classes. For example, Grace and Isabel discussed the campus funding an integration that assisted faculty in giving detailed feedback and building and revising rubrics. In addition, Allison talked extensively about the value of the campus financially supporting the integration of professionally created videos demonstrating chemistry labs.

Sub-Question 1

What technical resources do faculty need to use active learning tools in LMSs? The theme of technical support and the two subthemes of Canvas technical support and other technical support answered this sub-question. The faculty members discussed using various

technical resources for guidance in using the learning tools in Canvas. Faculty members at Site B identified the subtheme of Canvas Technical support and cited Canvas videos and guides as resources that detailed support. For example, Kelly said the "Canvas search was the best" method for getting technical support. In addition, participants stated that they often searched the internet for answers to technical issues. Another source of technical support was the DE office, a subtheme for the DE infrastructure. For instance, Grace stated she would "reach out to the DE team" for any questions about how to use Canvas tools. Christine agreed, stating she would "contact the DE" department. Isabel added to the subtheme of other technical support by stating that she found that the publisher resources on using tools in LMSs were valuable.

Sub-Question 2

What pedagogical support do faculty need to use active learning tools in LMSs? The participants described the methods in which they received pedagogical support and gave suggestions for further support. The predominant theme answering sub-question two was the importance of peer support; however, pedagogical foundations, course design, and student engagement were also themes that provided insight into the pedagogical support faculty needed to increase active learning in the online classroom.

The primary source of support the participants cited for using active learning tools in the LMS was working with peers. For instance, Bridget shared that she would ask the two instructors who had taught online "how to make our Canvas sites better or how to teach our online classes better." Another instance of collaboration for pedagogical support came from Frank, who stated, "We met as a department, we had those sort of moments about how to approach what we're doing in the classroom." In another illustration, Janet stated that she would ask her colleagues for "project ideas." Some participants discussed the importance of seeing other online courses as

helpful for figuring out how to use various tools in LMSs. Christine and Janet talked about looking at courses in Canvas Commons, an online resource where faculty from any site using the Canvas LMS can share courses. Nine of the 11 participants described how they and their colleagues shared resources for teaching online. Janet and Grace stated that faculty members "loved" sharing assignments that worked well in Canvas.

In addition to pedagogical support from peers, the theme of pedagogical foundations surfaced as an indicator of active learning tool usage in LMSs. The participants with the strongest pedagogical backgrounds at both sites discussed the importance of pedagogy in their online classrooms. For example, Grace wanted her classes to contain active learning strategies. Furthermore, Christine at Site A and four faculty at Site B, who had prior lower-level teaching experiences, all mentioned wanting more training on improving their online pedagogy.

Pedagogical support was an area where faculty felt they needed more assistance in order to utilize active learning tools within LMSs successfully. The themes of course design and student engagement came to light as participants discussed online teaching. The faculty members at Site A mostly felt that designing some courses for online instruction was impossible. At both sites, the participants discussed conducting assessments in person due to the inability to assess online. Additionally, all six participants at Site A returned to campus as soon as possible, with many citing that face-to-face classes had better student engagement. When asked about discipline-specific support received during the transition to online, two faculty members replied they received no support. One faculty member replied that she "was supporting everybody else." The participants desired more advanced training in course design using active learning tools in Canvas. For example, Harper wanted to increase student engagement and said, "now, I look for training on like what can I do for collaboration." Grace and Isabel gave an example of a

pedagogy-based workshop at another school that they found beneficial. David gave suggestions for upcoming workshops on course design and increasing student engagement with titles like "How to better interact with your students with discussion boards" and "New tools in Canvas."

Sub-Question 3

What faculty professional development led to active learning tool use in LMSs? The participants mostly cited professional development discussed under the subtheme of DE office support as assisting faculty in using the LMS, including the online certification training, the Title 5 emergency training, and other workshops. However, many participants described a paucity in campus-based professional development that would lead to active learning tool use in LMSs.

Those faculty that did cite training that helped them design more active learning-based activities described adopting practices under the theme of peer support. The professional development workshops where active learning strategies and tools were used consisted of educators from similar disciplines but different higher education institutions (HEIs) working together on instructional practices. Grace, Harper, and Isabel recounted adopting the interactive tool Flipgrid after experiencing its use in training. Frank talked about modeling active learning strategies after those he used in sessions he attended with a professional network. Grace discussed the value of being in a year-long workshop with educators in her field from all over the country. Regarding active learning, Grace stated that the group had "a whole list of active learning strategies and how to incorporate them" but also stated that the strategies were for face-to-face classes, so she had to figure out how to adapt those to online courses. Faculty members expressed a desire for professional development that would lead to more student-to-student interaction in discussion boards and groups, but this sub-question that did not have a decisive answer.

Sub-Question 4

How does the perceived influence of the atmosphere of an institution affect faculty use of active learning tools in LMSs? The theme of DE infrastructure, including the subthemes of DE support and financial support, were a major contributor to the perceived influence of the institution. The faculty members had a positive view of the support for online teaching during the transition to teaching remotely and felt that the campus support was beneficial for their use of active learning tools in LMSs. In addition, the participants felt that the campus was supportive by providing extra funding for additional integrations into LMSs. Grace, Isabel, and Allison appreciated using integrations that allowed more active engagement. David added that the funding for technical supplies that helped him teach from home was valuable. However, these same four faculty members were concerned that as the campuses were trying to bring more classes back to the campus, the financial support for integrations and technical supplies would no longer be available.

In addition, the theme of more time arose as a need to improve the perceived influence of the institution's atmosphere. There was a concern that the campus administration did not recognize the added time required to prepare and teach online classes. Allison, David, Christine, and Isabel talked about the extensive hours it took to transition their classes online. In addition, Janet, Harper, and Grace discussed needing even more time in order to create online classes with active learning.

Sub-Question 5

How is DE supported at the institution? The theme of DE office support reflected how the participants at both sites felt the institution supported DE, and the subtheme of instructional design support was discussed at one of the sites. Both institutions had a variety of support for

DE. The most apparent support noted by faculty was from the DE office and staff. At Site A, the participants described working with the distance education coordinator (DECO) and the DE special project manager. For example, Allison shared, “I think our DE department or division, or whatever, is just fabulous.” Although the participants felt they had superior support, Emily stated that the DE office needs “a whole division of people that can help.” Site B had a DE faculty coordinator, a full-time instructional designer, two instructional design assistants, and an administrative assistant. Grace, Janet, Harper, and Isabel discussed working with the instructional designer. The DE office and the resources created by the staff were valuable ways the institutions supported DE.

The subtheme of DE office support continued when the participants discussed what they needed to transition online. The online training certification run by the DE office was noted as the most valuable resource the institutions provided for supporting faculty in DE. The participants talked about how the certification training was available before the pandemic but was limited. For instance, David shared, “It’s like, you got to be one of the top 10 callers, or else you won’t get, the you know, you won’t get in.” Harper also stated that in years prior to the pandemic, the campus online certification training “wasn’t offered in the summer.” However, the institutions did offer the training support needed during the transition to remote, and participants were hopeful the training support would continue to be more plentiful.

Finally, the subtheme of financial support, which was part of the DE infrastructure theme, also emerged as an important way the sites supported DE. The participants described the funding for DE software and technical resources as a vital way the institutions supported DE. For instance, Isabel and Allison used additional integrations in the LMS paid for by the institutions during the pandemic; however, Isabel shared that the integration was no longer funded by the

institution, lamenting, “You can’t keep them as a teacher, and that makes it really difficult.” Furthermore, the faculty members praised the funding available for technical resources. The participants felt the institutions supported DE monetarily but, again, the faculty members were concerned that this support might have been temporary.

Table 4

Themes and Research Questions Overview

Themes	Research Question (s)	Summary
Course design	Central Research Question Sub-Question 2	Course design support helped with organization and accessibility; however faculty needed more course design support for online assessment. Discipline specific course design was needed as was support for designing courses faculty felt were not possible to conduct online.
Student engagement	Central Research Question Sub-Question 2	The LMS was seen as a valuable tool for communication with students, but the participants needed more support for increasing student engagement. Faculty with a strong pedagogical foundation were more likely to use active learning tools in the LMS and desire more pedagogical training opportunities.
Peer support	Central Research Question Sub-Question 2 Sub-Question 3	Peer support was a vital facilitating condition in using active learning tools in the LMS. Faculty cited peer support as the primary means of pedagogical support and as important for creating and facilitating courses. Faculty benefited from professional development that centered on working with peers from the campus and other

		institutions.
DE Infrastructure	Central Research Question Sub-Question 3 Sub-Question 4 Sub-Question 5	A robust DE infrastructure that includes a DE office, instructional designer, and financial support was a vital facilitating condition. The DE office led online certification and additional workshops were cited as the most valuable professional development experiences. The financial support during the pandemic increased the perceived institutional support for online teaching.
Technical support	Sub-Question 1	Technical support is a needed facilitating condition; however faculty felt they had the technical support needed to be successful in the LMS.
Pedagogical foundations	Sub-Question 2	A pedagogical foundation increased faculty use of active learning tools in the LMS and created a desire for more pedagogical support.
More time	Sub-Question 4	The participants desired more support from the institution for time to develop online classes and work with students and peers.

Summary

Chapter four shared the results of this study by exploring the facilitating conditions that led to the use of active learning tools in LMSs. The chapter began with detailed descriptions of each of the 11 participants. The participant descriptions were followed by details on the DE support and structure at the two sites used for the study. Next, the process of discovering themes was conducted using Saldaña's methods of descriptive coding. Through the analysis of interviews and transcripts, seven major themes were identified and described in this chapter,

including course design support, peer support, student engagement, the DE infrastructure, technical support, pedagogical funds, and the need for more time. In addition, some themes were broken down further into subthemes. Each theme and subtheme was explained in detail, with summarized comments and participant quotes used to support the findings. Finally, the central research question and sub-questions were answered using a cross-case report (Yin, 2018) that detailed the findings and themes that emerged from the data analysis.

CHAPTER FIVE: CONCLUSION

Overview

The purpose of this research study was to discover the facilitating conditions that led faculty to use active learning tools in learning management systems (LMSs). The findings from this study revealed themes about what faculty felt regarding the support they received. This chapter summarizes the thematic findings that emerged from this study. Additionally, there are recommendations for distance education (DE) support in policy and practice in higher education (HE). Furthermore, the theoretical and empirical implications of the findings of this study for HE DE support are explored. The limitations and delimitations of this research study are outlined. Finally, this section concludes with recommendations for future research areas for DE support at higher education institutions (HEIs).

Discussion

The Coronavirus disease 2019 (COVID-19) pandemic and subsequent shutdown of community college campuses in California created an opportunity to research what conditions helped faculty use LMSs for instruction. For this study, 11 faculty who either did not use LMSs or primarily used LMSs for course documents and content distribution prior to the 2020 transition online were interviewed. The participants in this study came from two sites. In addition to interviewing faculty, DE support documents were gathered from both sites. Seven themes about the support needed to teach online arose from the data.

Interpretation of Findings

The findings from this research study on the facilitating conditions that led faculty to use active learning tools in LMSs reveal what support faculty felt was the most valuable in transitioning their class to the online modality using LMSs. In addition, the findings also

revealed what further support faculty need to create online courses with a higher level of active learning strategies and student involvement. Finally, the findings suggested some components of the DE infrastructure that could be strengthened at HEIs to support faculty with online courses.

Summary of Thematic Findings

Seven themes were revealed in the analysis of the 11 faculty interviews and two focus groups. Although the prevalence of the themes varied at the two institutions used for this multiple-case study, there was enough evidence for these seven themes as valid factors in supporting faculty who teach courses online. First, the participants discussed the need for course design support for creating and organizing an online course. Most of the faculty members felt they received the support necessary to create a course online; however, many faculty members stated they needed further support to use more interactive tools. For example, although the faculty members found most of the tools in LMSs easy to use, they lamented the lack of student interaction in their courses. Also, faculty at both sites discussed the importance of peer support for determining how to conduct online instruction and supplementing the lack of discipline-specific support.

On the other hand, the faculty members shared that they had adequate technical support and often found the answers they needed to technical questions by searching the internet, Canvas guides, or emailing the DE office. In addition, the faculty members were overwhelmingly content with the current structure for DE at their institutions. Some were worried that the financial support would no longer continue once campus instruction returned to pre-pandemic levels, but no one was concerned that DE office staffing would diminish. Finally, the faculty felt they needed more time to create student-centered activities in their courses.

Deeper Course Design Support. Faculty need course design support focusing on online

pedagogy and increasing student engagement. During the transition to online instruction, course design support was focused on the technical aspects of building and organizing courses in LMSs. In addition, training on course organization was needed to transition faculty with little to no LMS experience into the online environment. However, there is a need for more course design support that helps with active learning tool use in LMSs.

One support needed for faculty to create courses using active learning tools is training on how to assess in the online environment. Faculty in this study, like those in a prior study (Li, Garza, et al., 2019), felt that they could not use the assessment tools in LMSs to assess content mastery. For Isabel and David, this was partially due to a concern about cheating; however, some of the faculty interviewed also felt the assessment tools were restrictive. Janet, Isabel, and Harper described tasks that were useful for assessing their disciplines, but that they all found were not easily done with LMSs quiz tools. The participants mainly discussed using the quiz tool for assessments. There are other ways to assess online. For example, Christine shared that she used file uploads for assessment. David was aware of other assessment methods, but he shared that he had moved away from using those methods once he transitioned online. Course design methods for online courses need to show methods for meaningful assessments (Jääskelä et al., 2017).

In addition, faculty need more support in designing active learning in the online environment. Previous research has found that HE faculty felt that it was hard to facilitate active learning in the online classroom (Mælan et al., 2021; Melki et al., 2017). Grace echoed this finding when she stated that she needed more time if she was going to design courses with active learning. Likewise, Bridget and Allison felt student interaction was lacking in their courses. Faculty members also talked about using tools that were not part of LMSs. For instance, faculty talked about using Flipgrid for student interaction and students using Discord to facilitate

discussion outside of LMSs. Instead of going outside LMSs tools for interaction, faculty need training models that showcase student-centered activity in LMSs (McGee et al., 2017).

Instructional designers are valuable to a HE DE team because they can help faculty design active learning activities in their online courses (Kite et al., 2020; Machajewski et al., 2019). Instructional designers have a foundation in online educational strategies, collaboration, technology (Cho, 2017), and discipline-specific strategies (Karthik et al., 2019). Faculty members desire more support in creating and managing discussion boards and collaborative activities (Berry, 2018) and numerous participants in this study requested this support in this study. Emily expressed optimism about the plans for her site to hire an instructional designer and added, "I would love to have them in a department meeting to talk about how our Canvas site can be more meaningful." Instructional designers can assist faculty in becoming more aware of the value of using active learning in the online classroom (Xie et al., 2021) and assist in creating student-centered activities. Instructional design support will help create online courses that utilize active learning tools in LMSs.

Instructional designers can also help address the concern held by many faculty in this research study and faculty in previous studies who stated that LMSs are unsuitable for teaching specific courses (Sinclair & Aho, 2018). College faculty often feel that LMSs are valuable for communication but not instruction (Li, Garza, et al., 2019; Monett & Elkina, 2015; Sinclair & Aho, 2018). The value of LMSs for communicating with students was reflected in comments by three of the four faculty at Site A who planned to continue to use Canvas for communication, but these four felt they could better instruct their classes face-to-face. In contrast, the faculty members interviewed at Site B were excited to move traditionally face-to-face classes online, including labs. In addition, Site B had an instructional designer who could help support

discipline-specific pedagogy (Kiray et al., 2018). With an expert on the pedagogical usefulness of LMSs (Koh, 2019), faculty are more likely to use interactive tools in LMSs, and with an instructional designer who is an expert in teaching methods for the online classroom, faculty can learn how LMSs can be used for all classes.

Peer Support is Essential. Online instructors need peer support to increase their use of active learning tools in LMSs. Faculty at Site B and in previous studies cited peer support as the most essential facilitating condition in using LMSs (Redstone & Luo, 2021). At Site A, the participants did not rate peer support as high as at Site B, and Frank cited this as a campus issue, remarking, "I don't know if it's become part of our culture to say here's how we can be working together to benefit all faculty together by sharing these ideas about what we're doing in terms of Canvas." However, it was clear Site B embraced time for peer support as an institution with days dedicated to faculty professional development, including many opportunities for faculty members to work together. An atmosphere of collaboration was demonstrated during the focus group at Site B when faculty started sharing methods for organizing and facilitating courses.

All faculty members at Site A discussed peer support; however, the participants noted small departments and having only a few people to work with as a hindrance to working with colleagues. There was no emphasis on peer support in the training offered at Site A. Faculty at Site B also discussed having small departments, but they shared that they combined departments or worked with peers outside of their institution and education for assistance in designing course materials. It was evident that the institutional support for peer collaboration time impacted faculty beliefs. HEIs must support faculty with time to collaborate (Berry, 2018; Brinkley-Etzkorn, 2020; Cho, 2017; Coleman & Mtshazi, 2017). Through fostering peer support, HEI can increase social influence to use LMSs and expand pedagogical and discipline-specific

knowledge.

Distance Education Support Needs to Continue and Grow. HEIs need to continue to support DE at the same level provided during the transition to online instruction in 2020 and increase the DE infrastructure to assist faculty in using active learning tools in LMSs. Although most of the participants in this study remarked that they felt highly supported by the DE office on their campus, the faculty members often used the words overwhelmed, overworked, and busy to describe the staff. For example, Allison hesitated to ask questions because she knew the DE office was "so busy doing everything else." Also, faculty were concerned that some of the DE support would wane with the removal of funding from the Coronavirus Aid, Relief, and Economic Security (CARES) Act during the pandemic. However, the level of DE support during the pandemic was pivotal in supporting instructors as they moved classes online.

The participants interviewed felt they received the institutional support needed to use LMSs to instruct students but stated they wanted higher student interaction in their courses. This interaction can be accomplished within LMSs, but if faculty are to harness the power of the active learning tools in LMSs (Melki et al., 2017), they need an administration that will provide them with advanced professional development and a robust infrastructure for DE (Mukminin et al., 2020; Rudhumbu, 2020). A dedicated DE team (Muries & Masele, 2017) is critical to faculty, and online course design improves when the team includes staff that can provide instructional design and discipline-specific support.

Finally, online faculty need extra time to plan and set up courses (Brinkley-Etzkorn, 2020; Chow & Croxton, 2017; Chow et al., 2018; Mælan et al., 2021). Harper pointed out "that it is more work to teach online," and designing activities with high student interaction requires additional planning and facilitation. Janet summed up the need for more time to use active

learning tools to teach online by stating that if institutions want "less direct instruction and more interaction, that is more work for the instructor. That is really what they [the institution] wants, and I believe that is the best thing for students to access." The participants offered different ways for the campuses to provide faculty more time, including monetary compensation (Andrade, 2016; Brinkley-Etzkorn, 2020), smaller online class sizes, and flexibility in allowing faculty to hold office hours online.

Less Emphasis on Technical Support. Technical support is vital to get faculty using LMSs and help with perceived ease of use (PEU), which determines higher LMS use (Fathema, et al., 2015). The participants felt the technical support offered by the campuses during the required certification training covered what faculty needed to know to create a class online. However, the participants in this study agreed with the sentiment shared by Janet that after certification "it is so easy to just go into Canvas, type how do I do this, and there are always great resources." The faculty members shared that they did not use all the technical support offered. For example, not one faculty member talked about using Canvas phone support. In addition, there were numerous workshops during the flex day training on technical topics in LMSs. Faculty would now be better served with training that focuses on online pedagogy (Koh, 2019; Melki et al., 2017).

Pedagogical Foundations Make a Difference. Often, HE faculty do not go through training on how to teach their subject (Li, Su et al., 2019; Melki et al., 2017). However, faculty with a pedagogical foundation show the most robust use of LMSs (Kiray et al., 2018; Mei et al., 2019; Sinclair & Aho, 2018). The participants in this study who had gone through training to be high school teachers showed a greater predilection to using active learning tools in LMSs. Additionally, they were more enthusiastic about moving courses that had been face-to-face pre-

pandemic to the online environment during and post-pandemic. The faculty members with the most robust pedagogical foundations were also the most excited to continue teaching and improving their online courses. Pedagogical support is necessary to assist faculty in adapting their delivery when teaching online; however, it is paramount to lay a foundation in online pedagogy before instructors teach online.

Implications for Policy and Practice

The implications for policy and practice are essential to discuss as California community colleges are slowly returning from primarily online instruction to a mix of face-to-face, online, and hybrid instruction. Over 50% of students surveyed by the California Community Colleges Chancellor's Office (2022b) stated, "They would prefer some form of hybrid educational setting that included online and in-person instruction" (p. 11). Only 18% of students surveyed said they wanted all face-to-face courses, whereas 27% wanted all online courses. Student demand for courses during a time of declining enrollment (California Community Colleges Chancellor's Office, 2022b) calls for HEIs to institute policies and practices that increase faculty use of active learning tools in LMSs that have been shown to increase student success and motivation (Bervell et al., 2019; Teo et al., 2018).

Implications for Policy

The current policies for California Community Colleges specify that online courses should be equivalent to face-to-face courses, accessible, and include "substantive interaction" (Accrediting Commission for Community and Junior Colleges, 2021). The policies place responsibility on the institutions to evaluate, have clear outcomes, and provide "the resources and structure needed to accomplish these outcomes" in online courses (Accrediting Commission for Community and Junior Colleges, 2021). However, there is no specificity as to what resources

should be provided and if these resources are for faculty or students. Therefore, the California State Chancellor should establish policies to improve support for faculty teaching online courses.

The first suggested policy would require certification for faculty teaching courses online. Although both campuses in this study did require faculty teaching online to complete a certification course, not all California community colleges have this requirement (California Community Colleges Chancellor's Office, 2022b). The faculty in this study discussed the immense value of online teaching certification courses. David recommended that faculty "take the training before you have to." Allison added, "Get distance educated and certified as soon as possible." Online certification would ensure that faculty had the technical skills and organizational methods to create courses online. Teachers who have been trained use LMSs more than those who have not been trained (Chow et al., 2018). Therefore, a certification policy would increase LMS use and pave the way for support to emphasize developing active learning strategies for online courses.

The second suggested policy is that campuses should be required to employ instructional designers based on the enrollment of students at the college. There is a lack of pedagogical support for online teaching in HE (Koh, 2019; Monett & Elkina, 2015). When asked about support for teaching their discipline, numerous faculty members in this study replied that there was none. Instructors who see how to use LMSs to teach their subjects find LMSs more useful. Hence, faculty need someone to help them determine how LMSs can be used for instruction. Instructional designers skilled in online teaching can help faculty overcome their lack of pedagogical knowledge (Kite et al., 2020; Machajewski et al., 2019). In addition, faculty who receive pedagogy-focused training transform their courses from being centered on content to transmission to becoming student-centered and focused on creating meaning (Koh, 2049).

Pedagogical training leads to higher use of student-centered tools in LMSs. In order to create better online courses, faculty need instructional design support and a state policy that requires instructional designers in the DE office, which would improve online instruction and the use of active learning in LMSs (Melki et al., 2017).

Finally, all California Community Colleges should be required to have a distance education (DE) office that supports faculty that teach online and the use of the adopted LMS of the campus. Of the 69 California Community Colleges that completed the DE Structures Survey in 2018, 31 colleges stated that they did not have a separate department dedicated to supporting faculty teaching online. A dedicated DE Team is the first step for a campus to show that it supports the training and encouragement of faculty teaching online, which has been shown to have a significant effect on LMS use (Al-Maroof et al., 2021; Zheng et al., 2018). Faculty who feel there is no organizational support are less likely to use LMSs and attempt pedagogical changes (Al-Maroof et al., 2021; Meriem & Youssef, 2020). The faculty in this study praised the dedicated support team's value, which has also been an important facilitating condition in other studies (Mukminin et al., 2020; Rudhumbu, 2020). However, many participants were hesitant to reach out to the DE office because, as Emily shared, "They're just really busy, I mean, they need more staff." Emily later added, "I usually don't go to Distance Ed because there is like three people." Therefore, the state should enact a policy requiring each community college to have a dedicated and robust department to support faculty use of LMSs.

Implications for Practice

It is also vital for colleges to adopt practices that faculty found valuable for supporting faculty teaching online. The faculty interviewed from the two sites in this study shared numerous recommendations for support that would be vital for improving online courses. First, although it

is clear that both campuses in this research study should work to offer more course design support that assists faculty in increasing student engagement and assessing students in the online environment, this may also be an effective practice at other community colleges. Student engagement in online courses has been shown to improve student success and motivation (Bervell et al., 2019). Therefore, increased support for engagement could increase student success in online courses at other colleges and should be adopted systemwide as a practice.

Additionally, the sites in this study would benefit from adopting the practice of including more pedagogical training in their online teaching certification training and faculty professional development. In the DE support documents from both sites and discussion with the faculty interviewed, there seemed to be more technical training than pedagogical training. Pedagogical support requires changes in the support available at an institution and the professional development available to faculty in HEI (Koh, 2019; Melki et al., 2017; Monett & Elkina, 2015). Now that most faculty are trained in the technical aspects of using LMSs, training sessions focusing on developing online pedagogy (Koh, 2019) and ensuring faculty understand the pedagogical usefulness of LMSs (Koh, 2019) may be beneficial to all community colleges. Furthermore, because a solid pedagogical foundation is a strong predictor of faculty use of active learning tools in LMSs (Kiray et al., 2018; Mei et al., 2019; Sinclair & Aho, 2018), new faculty should be required to attend training on online pedagogy.

The campus practice of embracing a formal culture of peer support and sharing is vital to the success of faculty in creating courses with high student engagement (Mei et al., 2019). The importance of peer support was showcased in the comparison of the two cases in the study. At Site B, which had numerous flex days dedicated to faculty collaboration and had stated goals of building “relationships with your online teaching colleagues to support your continued growth,”

faculty valued peer support as the most valuable resource for adapting curriculum to the online environment. The faculty at Site B also modeled how valued peer support was during the focus group session by sharing some of their favorite tools. It was evident that Site A could benefit by creating a strong culture of peer support like that at Site B. Frank had a suggestion for how Site A could do this. He proposed,

> We have these community of practice connections that occur, and part of that is when faculty get together to kind of share what's been working or not working for them or whether they find a useful handout. And I, in some respects, I think it'd be kind of nice to have a community of practice for Canvas. I think it would be great to be able to have moments where people are connecting with one another and saying here's something that I've been using that really is a great, useful tool, and then kind of like what occurs for Flex right, but a habit. Something that's consistently, maybe you know, once a month or something, where people can tap in and connect in.

A strong institutional commitment to support faculty with time for peer collaboration might also be a valuable change in culture for other community colleges.

Finally, the sites in this study and perhaps other college campuses should create practices that allow faculty the extra time to develop and teach a class with active learning strategies. For example, David, Christine, and Grace suggested enhanced technical support for students so the burden does not fall on faculty. In addition, most of the faculty at Site B suggested allowing faculty to hold online office hours for all classes in order to provide flexible access to all students.

Theoretical and Empirical Implications

As the California Community Colleges and many HEIs return to more on-campus-based

instruction, the demand for online instruction has increased (California Community Colleges Chancellor's Office, 2022b). Therefore, it is vital to discuss how HEIs can support faculty in creating online instruction that increases student success and retention. This study expands on the facilitating conditions necessary to increase faculty use of active learning tools in the LMS. In addition, it validates previous research on faculty use of LMSs and adds new contextual factors in the area of institutional support that assist faculty in developing online instruction.

Theoretical Implications

In this study on facilitating conditions that led faculty to use active learning tools in LMSs, the participants shared several contextual conditions they felt were valuable. The facilitating conditions provided for using the LMS to teach online courses supported the PEU and perceived usefulness (PU) from Davis' (1989) technology acceptance model (TAM). The conditions identified varied between direct course design support and organizational support. In addition, faculty shared support identified in the unified theory of acceptance and use of technology models (UTAUT) (Venkatesh et al., 2003; 2016) that addressed performance expectancy, effort expectancy, social influence, and the facilitating conditions at their respective sites. Table 4 summarizes how the themes, implications, and sub-question topics connect to the theories that grounded this study.

Table 5

Correlation of Themes and Implications to Theories and Type of Support

Themes	TAM model	UTAUT model	Type of support	Implications
Course design support	Ease of use and perceived usefulness	Performance expectancy including perceived usefulness, job fit, relative advantage, outcome expectations	Technical, pedagogical, professional development	Course design was for ease of use but now needs to focus on perceived usefulness
Peer support	Perceived usefulness	Social influence	Pedagogy	Peer support increases faculty online pedagogy
Student engagement	Perceived usefulness	Performance expectancy	Pedagogy and professional development	Faculty need course design support to increase student engagement
DE infrastructure		Higher level contextual factors	Infrastructure	DE support needs to continue and grow
Technical support	Ease of use	Effort expectancy including perceived ease of use, complexity, and ease of use	Technical	Technical support was needed to transition online but faculty have what they need
Pedagogical foundation	Perceived usefulness	Performance expectancy including perceived usefulness, job fit, relative advantage, outcome expectations	Pedagogy and professional development	Pedagogical foundation lead to deeper use of LMS
More time	Ease of use	Effort expectancy	Infrastructure	Institutions need to find ways to provide online faculty with more time for course design and facilitation

The faculty members' experience with support to use active learning tools in LMSs aligns with the TAM (Davis, 1989). The participants discussed how course design support,

including further needed support for assessment, student engagement, and transitioning highly interactive classes online, is required for faculty to feel that LMSs are easy to use. In addition, technical support and the need for more time are also necessary conditions for PEU. Course design support is also vital for the PU outlined in Davis' model, and it is crucial that in the HE context, design support moves further into addressing PU support now that faculty are more familiar with using LMSs and perceive it as easy to use. Peer support and pedagogical foundations are potent contributors to PU. The DE infrastructure is not reflected in the TAM model of technology use; however, because the contextual components were not part of Davis' model, a second model was used in this research study.

The facilitating conditions discussed by the participants in this study as helpful for using active learning tools in LMSs also align with the contextual conditions found in the two UTAUT models (Venkatesh et al., 2003; 2016) used to ground this study. In the context of HEI using LMSs as a specific technology, the facilitating conditions supported the improvement in faculty performance expectancy and effort expectancy. Course design support and a pedagogical foundation can increase faculty belief that LMSs would enhance their performance, including PU, job fit, relative advantage, and outcome expectations. Peer support was an integral part of the social influence discussed by the UTAUT models (Venkatesh et al., 2003; 2016); however, it also improved PU. The participants in this study believed the higher-level contextual factors found in UTAUT2 (Venkatesh et al., 2016) were necessary for deeper tool use of LMSs by HE faculty. In addition, technical support helped meet faculty expectations of effort expectancy, and the time demand to teach online led many to believe that the effort expectancy to use LMSs to teach online was so high that it was easier to teach face-to-face.

This study corroborates the previous technology acceptance models by confirming that in

the context of HEIs, faculty use of LMSs is determined by the facilitating conditions that increase the PEU and PU (Davis, 1989) of LMSs technology. This study examined the models in a specific context and detailed the facilitating conditions that were found at two community colleges. This research also centered on the use of certain LMS tools within a specific technological system as Venkatesh et al. (2016) recommended.

Empirical Implications

In addition to aligning with the findings in technology acceptance models, this study also corroborates the previous research on faculty use of LMSs. The pandemic forced many faculty to use LMSs, and similar to previous studies, the participants did find that LMSs were easy to use (Brinkley-Etzkorn, 2020; Melki et al., 2017). However, faculty still need increased support to create more student-centered learning for online instruction (Dlalisa & Govender, 2020; Liu et al., 2019) and to understand how LMSs can be used for all courses. Furthermore, HEIs need to increase their DE infrastructure to provide the support faculty need.

As noted in previous studies, the faculty participants felt that professional development in course design was vital for online courses (Kiray et al., 2018). These faculty members also discussed needing more support in two other course design areas cited in previous research, student engagement (Berry, 2018) and assessment (Annansingh, 2019; Walker et al., 2016). In prior studies, the use of the discussion board tool in LMSs was very low (Dlalisa & Govender, 2020; Rhode et al., 2017); however, discussion board use was mentioned by all the participants in this study as the tool used for student interaction. Although the faculty interviewed used discussion boards, they were unhappy with the level of student engagement and, similar to previously interviewed faculty, desired support in increasing student interaction in discussion boards (McGee et al., 2017). In addition, assessment use in LMSs was still low (Chow et al.,

2018; Dlalisa & Govender, 2020; Machajewski et al., 2019); however, this study expanded on previous research by finding reasons for low assessment use, including the potential for cheating and limitations of LMS assessment tools that do not allow faculty to assess in desired ways. Further support in active and meaningful learning and ongoing assessment (Jääskelä et al., 2017) could help increase assessment use in LMSs.

This study corroborated previous research by finding that there is still a lack of pedagogical support (Koh, 2019; Melki et al., 2017; Monett & Elkina, 2015; Pettersson, 2018) and discipline-specific support (George & Sanders, 2017; Kiray et al., 2018; Liu et al., 2019) for faculty in HE. However, this study did find that one solution for this lack of pedagogical support was institutional support of peer collaboration. Peer support was rated as the most critical facilitating condition in a previous research study (Redstone & Luo, 2021) and by Site B in this study. During the pandemic, contrary to research showing there was a lack of time to collaborate (Cho, 2017), there seemed to be more time to work with peers. This study's finding of the importance of peer collaboration as pedagogical support is a significant contribution.

In addition to peer support, there were other key findings in previous research about how pedagogical support increases active learning tool use. In this study, as in previous studies, participants with the deepest pedagogical foundations used more active learning tools (Kiray et al., 2018; Mei et al., 2019; Sinclair & Aho, 2018). Also, those who experienced the LMSs as a student, particularly those who participated in active learning in online professional development, were likely to transfer that to their own teaching (Brinkley-Etzkorn, 2020; Liu et al., 2019). Finally, instructional design support was cited in previous research (Kara & Yildirim, 2019a) and by some participants in this study for helping the development of active learning activities in LMSs.

Previous research found that faculty often did not feel that LMSs were useful for teaching specific subjects (Sinclair & Aho, 2018). This study echoed those findings, with many participants expressing they did not feel their subject was a good match for online, and many faculty stating that on-campus instruction was better than online (Chow & Croxton, 2017). As in previous studies, the faculty in this study, still need support to show how LMSs are suitable for teaching all subjects (Barton, 2020; Mokhtar et al., 2018; Monett & Elkina, 2015; Sinclair & Aho, 2018).

The final vital support cited minimally in previous research but mentioned by almost all participants in this study as a facilitating condition for increasing faculty use of active learning tools in LMSs was the institutional support of online instruction. Faculty in this study agreed with those in previous studies that they needed a dedicated DE support team (Muries & Masele, 2017), a trustworthy DE leader (Kivijärvi et al., 2013), and in-person teaching support (Berry, 2018; Monett & Elkina, 2015). Contrary to previous studies, faculty did not feel they needed increased technical support (Chow & Croxton); in contrast, they felt that there was enough technical support available. Finally, the faculty in this study, as in previous research, felt that it was important that the institution support faculty teaching online by providing them more time (Coleman & Mtshazi, 2017; Sözgün et al., 2018) to design online courses (Chow & Croxton, 2017) and collaborate with peers (Redstone & Luo, 2021).

Limitations and Delimitations

This study, designed as a multiple-case study to describe the facilitating conditions that led faculty to use active learning tools in LMSs, had limitations and delimitations that are important to discuss. The limitations of this study had to do with the participants that took part in the study, the location, and the faculty disciplines. First, the participants were limited to 11

participants and two sites. It was originally designed to have 12 to 15 participants from three sites, but after multiple attempts at recruitment at different sites, the study was condensed into two sites. This study also had primarily female participants. Only two males volunteered for the study. The age of the faculty also can be seen as a limitation because over two thirds of the faculty were in the 50–60 age range, one in the 40–50 range, and two in the 30–40 range. Having younger participants may lead to different findings. Also, the two sites were located in a very narrow region of California, which is a large state; it is possible that facilitating conditions throughout the state might vary. There were attempts to secure sites in a broader area, but those attempts failed. Finally, seven of the 11 faculty were instructors in the math or science divisions. There was no representation of the wide variety of divisions in HEIs.

Along with limitations, intentional delimitations were necessary when conducting this case study. Because the study aimed to explore contextual conditions (Yin, 2018), the participants were bounded by a particular site. For this reason, participation was limited to tenured or tenure track faculty. Adjunct faculty play an essential role in California community colleges, but the nature of this study required faculty to be limited to working at one community college. Additionally, this research was designed as a case study exploring faculty response to the uncontrolled event (Yin, 2018) of faculty being forced to take classes online due to the COVID-19 pandemic. Therefore, participants who had the least experience using LMSs for online instruction prior to having to teach online were chosen.

Recommendations for Future Research

Based on this study's findings, limitations, and delimitations, future research is needed to better understand the facilitating conditions that increase faculty use of active learning tools in LMSs. A multiple-site case study exploring how organizational trust influences faculty use of

LMS tools would be a helpful contribution in light of the changing campus dynamics during the pandemic and for a complex and detailed (Creswell & Poth, 2018) understanding of this facilitating condition. In addition, a phenomenological study of the experience of adjunct faculty during the transition to teaching online due to the pandemic would provide a rich description (Creswell & Poth, 2018) of various facilitating conditions that assisted faculty who were exposed to different contextual supports. Finally, a quantitative study about the support received by faculty would also be valuable for DE teams to evaluate the type of support that faculty received, and the type of support still needed to increase LMS use.

Conclusion

With the prevalence of LMSs being used and the increase in online courses in HE, institutions need to determine the support faculty need to create student-centered instruction. The technology acceptance theory and unified theory of acceptance and use of technology lay a foundation for how PEU and PU determine user adoption of technological programs. By exploring facilitating conditions directly related to the use of active learning tools in LMSs at HEIs, this study used faculty experience during the COVID-19 pandemic to capture what faculty felt were the most important contextual factors that facilitated deep use of LMSs. Course design training was one of the most vital components of the support faculty members received; however, the participants need further support in designing courses that include active learning. In addition, peer support was invaluable during the transition to online instruction, and HEIs should guarantee that faculty members are given time to collaborate with their colleagues. Finally, as DE courses continue to be desired by students, HEIs should listen to the voices of their faculty to provide the support they need to create courses that increase student motivation and success.

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Appendix A: IRB Permission Letter

December 3, 2021

Darnell Kemp

Alan Wimberley

Re: IRB Exemption - IRB-FY21-22-349 FACILITATING CONDITIONS THAT INCREASE FACULTY PERCEIVED USEFULNESS OF LEARNING MANAGEMENT SYSTEMS: A MULTIPLE-CASE STUDY

Dear Darnell Kemp, Alan Wimberley,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(iii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is

met:

The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by §46.111(a)(7).

Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, MA, CIP

Administrative Chair of Institutional Research

Research Ethics Office

Appendix B: Recruitment Letter

Dear [Recipient]:

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The purpose of my research is to understand the facilitating conditions that lead to faculty usage of active learning tools in learning management systems (LMS) at the community college level in California, and I am writing to invite eligible participants to join my study.

Participants must be tenured or tenure-track faculty. Participants, if willing, will be asked to participate in a one-and-a-half-hour interview via Zoom and a two-hour focus group session via Zoom. The interview and focus group will be video recorded. Participants will be asked to review interview transcripts for accuracy. Names and other identifying information will be requested as part of this study, but the information collected will remain confidential.

To participate, please complete the attached screening survey and return it by December 7, 2021, by email to [redacted]

A consent document is attached to this email. The consent document contains additional information about my research. If you are found eligible and choose to participate, you will need to sign the consent document and return it to me by email prior to your interview.

Sincerely,

Darnell Kemp

Principal Investigator

[redacted]

Appendix C: Consent Form

Title of the Project: Facilitating Conditions that Increase Faculty Perceived Usefulness of Learning Management Systems: A Multiple-Case Study

Principal Investigator: Darnell Kemp, PhD. Candidate, Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. In order to participate, you must be a tenure or tenure-track faculty member who currently uses the learning management system at your college. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research project.

What is the study about and why is it being done?

The purpose of this study is to understand the facilitating conditions that lead to faculty usage of active learning tools in learning management systems (LMS) at the community college level in California. The study is being conducted to discover what faculty felt was the most useful support and resources during the transition to online teaching in 2020 and 2021.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following things:

1. Participate in a one-and-a-half-hour individual interview via Zoom. The interview will be video recorded.
2. Review interview transcripts for accuracy.
3. Participate in a two-hour focus group via Zoom. The focus group will be video recorded.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

This study will benefit the design of distance education support for higher education faculty.

What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

Published reports will not include any information that will make it possible to identify a subject.
Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses will be kept confidential through the use of pseudonyms. Interviews will be conducted in a location where others will not easily overhear the conversation.
- Data will be stored on a password-locked computer only accessible by the researcher. After 3 years, all electronic records will be deleted.
- Interviews and focus groups will be recorded and transcribed. Video recordings will be stored on a password locked computer for 3 years and then erased. Only the researcher will have access to these recordings.
- Confidentiality cannot be guaranteed in focus group settings. Although discouraged, other members of the focus group may share what was discussed with persons outside of the group.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University or any other cooperating institution. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you apart from focus group data will be destroyed immediately and will not be included in this study. Focus group data will not be destroyed, but your contributions to the focus group will not be included in the study if you choose to withdraw

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Darnell Kemp. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at [redacted] or [redacted]. You may also contact the researcher's faculty sponsor, Dr. Alan Wimberley, at [redacted].

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu.

Your Consent

By signing this document, you are agreeing to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher[s] will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

☐ The researcher has my permission to video-record me as part of my participation in this study.

_____ _____

Printed Subject Name Signature

Appendix D: Interview Questions

Individual Interview Questions

1. Please walk me through your educational experience of becoming a college professor.
2. Tell me about how you use Canvas now?
    a. How do you interact with your students in Canvas?
    b. How do your students interact with each other in Canvas?
    c. Tell me about how and why you use assessments in Canvas.
3. What training did you do during or before the transition to Canvas?
4. What was the most valuable training or experience in the transition?
5. How do you use the available resources when you are creating a course in Canvas? When you run into an issue with Canvas, who or what do you reach out to?
6. Tell me about how you worked with your colleagues to transition online.
7. I'd like to have you think back to your transition to teach online. What advice would you give to a new instructor preparing to teach online?
8. What does your institution do to support distance education and online teaching?
9. In this next question, I would like you to think about the future. What further support would you like to be able to better use Canvas?
10. One last question, what else do you think would be important for me to know about the support you needed to transition to teaching online?

Appendix E: Focus Group Questions

Focus Group Questions

1. Tell us your name, what you teach, and how you felt about taking your classes online in March of 2020?
2. What Canvas support and training did you find most valuable during the transition to online?
3. What discipline-specific support did you find most valuable during the transition to online?
4. What technical support and training did you find most valuable during the transition to online?
5. What would you change about the support for online/Canvas on your campus?
6. What would you not change about the support for online/Canvas on your campus?
7. After listening to your colleagues' remarks about Canvas and campus support, what additional comments would you add to any previous thoughts?
8. Finally, state your position on the resources, knowledge, and college support of online education on your campus.