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A CASE STUDY OF THE PEDAGOGICAL USE OF TECHNOLOGY BY A SELECTED
GRADUATE-LEVEL EDUCATIONAL LEADERSHIP PROGRAM: HOW IT AFFECTS
STUDENTS' LEARNING EXPERIENCE

A DISSERTATION SUBMITTED TO THE FACULTY OF THE SCHOOL OF EDUCATION
OF THE UNIVERSITY OF ST. THOMAS
ST. PAUL, MINNESOTA

BY

ASMA ALMALKI

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A CASE STUDY OF THE PEDAGOGICAL USE OF TECHNOLOGY BY A SELECTED
GRADUATE-LEVEL EDUCATIONAL LEADERSHIP PROGRAM: HOW IT AFFECTS
STUDENTS' LEARNING EXPERIENCE

We certify that we have read this dissertation and approved it as adequate in scope and quality.

We have found that it is complete and satisfactory in all respects, and that any and all revisions required by the final examining committee have been made.

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Abstract

The purpose of this study was to learn how professors in educational leadership use technology and how that usage effected their students' learning experience. To gather data relevant to this study, I interviewed twelve participants from an educational leadership program: four faculty members and eight students. The data from this case study revealed that the faculty viewed technology as a tool for student engagement and motivation and for measuring student understanding in real time. They also used technology as a student-centered pedagogical tool. The students valued technologies that facilitated synchronous interactions within and beyond the classroom, as well as those that used visual media to facilitate learning. They saw a clear link between faculty proficiency with technology and their own educational experience. Their responses also showed several criteria that they used to evaluate the effective integration of technology into their leaning environment. Deeper analysis of these themes revealed the effectiveness of shifting educational leadership settings toward hybrid courses. The case study offers a theoretical framework for approaching technology use in higher education and further research into its pedagogical role.

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Chapter 1: Introduction

Using new technologies in leadership training and higher education is important because they allow educators to support different learning styles within class activities. Young (2004) suggests educators use technology such as PowerPoint in their teaching to help make students more interested and engaged during class activities. However, more recent research asserts that the continued use of more traditional technologies, such as lecturing with the use of PowerPoint, can actually be un motivating and disinteresting for many students (Nowak, Speakman, & Sayers, 2016). Does this mean that the proficiency of the professors' use of the technology affects students' perceptions of its effectiveness? Does the relative age of the technology have any influence on perceptions of efficacy?

Within the last decade we have experienced rapid changes in technology from K-12 settings through graduate schools. For instance, K-12 educators have begun using new devices such as iPads or laptops within class activities, as well as some new apps like IXL for math and myON for reading. Both apps are based on informal learning strategies that students can also use at home, which make learning more exciting and attractive. For instance, in myON students can practice reading with stories for different ages and ability levels. IXL contains fun activities for every grade level that incorporate the subjects of math, language arts, science, social studies, and Spanish to specifically support students' mathematical understanding. According to IXL's website, 1 in 9 students in the U.S. use this app in K-12 classrooms; this translates to approximately 6.2 million students engaging in app-based learning through IXL alone. Impressively, another 7.5 million students across 49 states are using myON in their classrooms and at home (Wan, 2018). This incorporation of technology in the classroom can also be seen in higher education, at both the undergraduate and graduate level. For instance, in educational

leadership programs it is common to use PowerPoint, Blogs, Wikis, and electronic whiteboards such as the SmartBoard (Beetham & Sharpe, 2013). However, in 2018 these technologies are no longer considered “new” or “innovative,” leaving educational leadership programs in the background of the technological frontier. By contrast, educators in the engineering field have begun using game-based learning as well as virtual labs that simulate real-life scenarios in order to help students learn how to implement their skills more effectively (Barron, 2015; Beetham & Sharpe, 2013).

With new generations of students already incorporating modern technologies into their learning activities on their own, there exists the need for educators to increase their own knowledge, comfort, and utilization of more contemporary technologies within class activities. Turney, Robinson, Lee, and Soutar (2009) insist that “To use technology effectively, it is necessary to focus on the pedagogy and ensure the instruction is tied to the appropriate media” (p. 124). These authors built a hybrid-learning module over the span of two years that includes both informal learning (using online resources) and face-to-face instruction that provides formal learning experiences for students. The technology required utilizing assets on the internet as well as inside the college's Virtual Learning Environment called Queens-Online (Turney et al., 2009). Their findings indicated that technology can enhance students' learning in higher education only if that technology is completely connected with the curriculum and the professors are knowledgeable about the module they are employing. If these conditions are met, then the addition of technology in the hybrid learning module can enhance the students' overall pass rate.

An important question that remains unanswered in the literature is how professors in graduate level leadership programs can transform the classroom by using newer technologies (Bashir & Khan, 2016). My qualitative case study aimed to elucidate faculty and students'

perceptions of technology use in a graduate level Leadership, Policy, and Administration program in order to provide recommendations for future implementation. As well, using Bourdieu's (1980) theory allowed me to analyze my qualitative interview data effectively, using these three concepts: field, capital, and habitus.

Significance of the Research

This research significant because it illuminates new, possibly more effective ways of teaching and learning in higher education through the use of rich technology platforms based on both students' and faculty's interests and level of technological expertise. It identifies outdated and ineffective technology use within the case study program. The research focus on the most important areas of learning and teaching, highlighting the current use of technology, how technology transforms our learning, and how we should implement technologies in leadership programs. More generally, the emerging themes from this qualitative case study will assist professors in higher education to gain more knowledge about effective ways of incorporating technology to benefit adult learners.

Problem Statement

This study explored how technology is currently used in a graduate leadership program in a midwestern college, and to what extent its use positively impacts students' learning experiences. Students of all generations in higher education expect their professors to integrate new technological trends and techniques into their lessons because they like to have new ways of learning and teaching that make a class environment more enjoyable (Beetham & Sharpe, 2013). I learned from my study the ways that professors currently utilize advanced technology to facilitate learning activities in a leadership program, as well as what opportunities exist for growth. It is important that leadership programs begin to incorporate emerging and existing

technologies to simultaneously prepare both educators and students to practice their skills in real time with immediate feedback. New technologies are being developed every day; therefore, I used open-ended questions to gather as much information as possible about technology use in leadership programs.

I used a qualitative case study approach to examine the use of advanced learning technology in a Midwestern graduate leadership program. I used the qualitative approach because this yield richer and more descriptive knowledge through interviewing professors in the field of leadership to understand more about their plans and use of technology in the learning environment. Additionally, I interviewed eight graduate students about their experience with technology, how it enhanced their learning styles and outcomes, and what kind of technology they prefer; I also asked them about their perceptions of current technology use in the classroom. I interviewed four faculty members, all of whom are the experts in educational leadership; my questions sought to understand how and why professors currently use technology in their courses, as well as to understand what factors influence these decisions.

Purpose of the Study

The “iPad generation,” so to speak, is already moving beyond PowerPoint, Wiki pages, and blogs for supplementary information. The next generation of educational tools needs to enrich students’ learning experiences through effective teaching strategies. The use of older applications such as PowerPoint within the classroom has limitations, such as having many slides or short sentence with fragments, which can negatively affect student’s learning. Jones (2003) points out that PowerPoint can enrich the teaching and learning experience, but only when it is used appropriately. Jones (2003), Hardin (2007), and Stephenson, Brown, and Griffin (2006) all address how the professional structure of a presentation, including the amount of text per slide

and appropriate fonts and text sizes, can encourage and support learning environments. This highlights how instructors' knowledge and proficiency with certain technologies matters when it comes to students' learning outcomes.

Not only should professors work to use existing technologies like PowerPoint efficiently, but they should also consider how a mix of media technologies could help students with different learning styles be successful. For example, self-directed learning (SDL) is considered to be one process that leads to successful educational outcomes (Knowles, 1975). SDL, as interpreted by Knowles (1975), occurs within the process of formulating goals, identifying resources, selecting and implementing proper strategies, and evaluating learning outcomes. According to Caravello, Jiménez, Kahl, Brachio, and Morote (2015), technology supports self-directed learning; they cite a study done in 2014 by Bonk et al., who surveyed the learning preferences, motivations, achievements, and possibilities for life change related to self-directed online learning. Their findings indicated that 85% students' use self-directed online learning to incorporate new skills, and 70% use self-directed online learning for self-improvement and self-efficacy. Incorporating different learning styles with other strategies may be crucial for optimizing adult learning in graduate programs. For instance, Caravello et al. (2015) explain three approaches for teaching and learning including pedagogy, andragogy, and behavior. With pedagogy, students are dependent, and instructors coordinate when, where, and how a subject is learned and evaluated. The educator is there to enable students to push toward autonomy. With andragogy, learning is self-directed; the educator empowers and sustains this approach, whereas with pedagogy, the student's experience is of little value and, thus, instructors frequently utilize a pedantic approach. In andragogy, the student's experience is a fundamental part of the learning process. Discourse and role-playing are frequently utilized as teaching strategies.

With pedagogy, students realize what society expects them to learn. Therefore, the pedagogical educational program is the standard. With andragogy, students realize what is beneficial in their own, genuine application. With pedagogy, educational programs are created around particular subjects that students need to learn. With andragogy, learning is focus on adult experiences which bolster the execution needs of adult learners (Caravello et al., 2015). Mager (1962) recognizes three key segments for behavioral objectives: Behavior, Condition, and Standard. The behavior must be equipped for perception and must be particular in nature. The conditions for learning ought to be unmistakably expressed and ought to incorporate depiction of fundamental materials. The standard is the desire level, including the acknowledged scope of right answer. In 1985, Robert Gagne created "9 Types of Instructional Events" through which learning is confined. This is a novel method for understanding the way that outside instructional occasions, for example, social media can prompt inside learning processes and anticipating ways that new technology can enable and enhanced modes for learning (Caravello et al., 2015). These days, many new ways of learning through technology exist. As professionals, we need to identify how technology can improve teaching within the field of leadership training in order to benefit the students in these programs. We need to implement a significant shift in the American education system, one that requires educators to continually incorporate the most effective learning technologies into their curriculum for adult learning (Dey, Burn, & Gerdes, 2009). This creates high expectations for educators to understand the advancements in technology and may be challenging because of the rapid development of technology and tools for learning. This study explored the use of technologies in higher education leadership program in how technology play big roles for engaging ,motivating, supporting the teaching and learning environment, and to identified where leadership educators currently are, where they plan to go, and what factors

influence their decisions to incorporate certain technologies over others in their curriculum. Equally important in the study are leadership students' perspectives and desires for technology use in the classroom. As well, this study shed the light on some technologies that improve the teaching and learning interaction especially with the crisis of COVID-19 which require people to stay home and communicate online. In sum, the purpose of this study was to examine the pedagogical use of technology and how it affects students' learning experience in a selected graduate-level educational leadership program at a four-year college in Minnesota.

Reflexive Statement

Four years ago, I completed a master's degree program at Minnesota State University, Mankato (MSU-Mankato). It was an extraordinary experience that developed my personality and changed my attitude toward life. I grew up in Saudi Arabia, where educational opportunities have only been available to women for approximately the last 30 years. These days, many women attend school and they have more job opportunities than ever before. Despite this, the educational system is entirely different than it is in the United States; for example, all of our universities and institutions are separated by gender, with male students and professors segregated from female students. There is also a difference in the use of technology between these two school systems. During my fifteen years of education in Saudi Arabia, I never saw any technology used. My small village did not have access to the internet, and the university where I completed my undergraduate studies was under construction while I was there. While technology has now been integrated into the university's learning environments, it was not available until after I had graduated.

Later, I had the opportunity to study abroad in the United States. When I began attending graduate school, I was stunned about how modern, clean, well-organized, and technologically

advanced the classrooms were. Back home, my school was an old building that poorly prepared students for academic success. For instance, the chairs were uncomfortable, the classroom was too small, and there was no technology except the screen and projector used to allow the male professors to teach without being physically present in the female classrooms. Additionally, the professors used a teacher-centric model, and the classroom activities contained either very limited or no student engagement whatsoever. At MSU-Mankato, I had the new experience of using the school's online Blackboard services, which is an educational tool not available back home. During my coursework, I witnessed class activities that relied on the use of technological tools such as PowerPoint for the first time. However, even though I found these tools to be very engaging, I could not see a similar level of engagement on my classmates' faces. Instead, I observed their annoyed reactions to the use of PowerPoint and wondered why they weren't engaged in the same ways that I was.

I wondered about the look of dull, uninterested faces on my student peers. I asked one of my classmates about his annoyance, and he said to me that "they use PowerPoint all of the time, and I feel sleepy and exhausted when the professor uses the same way of presenting information." He added, "Today, technology has a lot of programs that we never see our teachers use to make the class more enjoyable." This made me think about my experience at Disney World, and how the rides use innovative technology that appeal to both the parents and the children alike. During our family trip there, I kept noticing how all of the rides utilized cutting-edge innovations and technology to integrate both fun and learning. I saw no dull faces, even looking at the adults. Just like at Disney, students like to see new technologies used to make class engaging. I think that many new technologies could be utilized to support adult learners and to make their learning experience more meaningful and effective. While PowerPoint can be

“boring,” it does have practical uses. However, professors must be careful not to misuse or overuse PowerPoint (Isseks, 2011). Educators need to seek out and adopt new educational technologies that offer more exciting ways to teach their students.

Research Questions

In order to best understand the views and uses of technology in the educational leadership program studied, I focused my research on two primary questions:

1. In what ways are professors currently using technology within adult learning activities in the selected higher education leadership program?
2. What are students’ perceptions of the current technology use in this program? What other technologies would they recommend be implemented based on their own learning preferences?

Overview of the Chapters

In Chapter Two, I review the literature regarding the history of media, including Concept of Media in the McLuhan Perspective "Hot" and "Cool" Media, and how his idea connected to Higher Education , and the chapter has more of the innovations platform as guide for class activities for traditional and online learning. In Chapter Three, I introduced my methodology, including the kind of sampling that I used, the participants that I interviewed, and my faculty and student interview questions. In Chapter Four, I interpret the data generated by the cast study interviews. The study revealed three faculty and four student themes. After analyzing each theme, I share the students’ feedback regarding future technology use in the program, and I compare the themes. In Chapter Five, I provide a theoretical framework for approaching my findings, with a focus on Goffman’s theory of the Dramaturgy of Pedagogy, and Bourdieu’s

theory of Social Structuration and Education. The chapter concludes with recommendations for further study regarding technology within higher education.

Chapter 2: Review of Literature

This chapter discusses the history of using technology from McLuhan's point of view, especially his idea of hot and cold media, and how his idea relates to higher education. The chapter explains what technology currently involves in educational leadership higher education. McLuhan introduced important ideas which "hot" and "cold" media in his days. He explains hot media needs interaction and participation as the film, however, cold media considers passive interaction that audiences only watch. His idea related to our technologies these days. For instance, in leadership field the use of PowerPoint is an essential way of teaching which depend on the teacher presentation, it can be hot with students' participation or cold without. The chapter examines the recent shift toward hybrid class activities using e-learning activities that contain both "hot" and cold" media. It also provides a guide to some of the new technologies used in hybrid, traditional, and online courses in higher education.

The Media as Focal Point

In *Understanding Media: The Extensions of Man* (1994), Marshall McLuhan suggests that the media, not the substance that they convey, ought to be the focal point of study. He proposes that the medium influences the society in which it played the role by the characteristics of the medium instead of the content (McLuhan, 1994). The book is viewed as a pioneering study in media theory. For instance, McLuhan indicated the light bulb does not have content in the manner in which a daily paper has articles, or a TV has programs, yet it is a medium that has a social impact; that is, a light empowers individuals to inhabit spaces in the evening that would otherwise be encompassed by darkness. According to McLuhan, "a light makes a situation by its

unimportant presence” (McLuhan, 1994). Furthermore, he proposed that content has little impact on society: for instance, it doesn't make a difference if the television transmits kids' shows or violent programming, the medium of television's impact on society would be identical (McLuhan, 1994). He noticed that all media has qualities that engage viewers in various ways; for example, an individual section in a book could be rehashed voluntarily, yet a movie must be screened again completely to think about any individual piece of it. McLuhan's well-known book is the source of the notable expression "the medium is the message" (p. 8). It has become the primary marker of change of progressively globalized local societies, affecting academics, authors, and social scholars alike.

Concept of Media in the McLuhan Perspective

McLuhan utilizes the words medium, media, and technology. For McLuhan, a medium is any expansion of ourselves, or more comprehensively, any new technology (McLuhan, 1994). For example, in addition to newspapers, TV, and radio, McLuhan incorporates the light bulb, autos, discourse, and language in his definition of media. These technologies mediate our communications; their structures influence how we see and understand the world surrounding us. McLuhan says that conventional pronouncements fail in examining media since they center on the content, which lead to social impacts that characterize the medium's actual significance. McLuhan sees that any medium amplifies or accelerates existing processes by introducing a new change of life scale and shapes new patterns into humanity that result in social change (p. 10). This is the true "meaning or message" brought by a medium, or social message, and it depends entirely on the medium itself, paying little attention to the content produced by it. This is fundamentally the importance of the phrase "the medium is the message" (p. 8).

To exhibit the downfall of the basic conviction that the message dwells in how the medium is utilized (the content), McLuhan turns to the case of mechanization. He points out that regardless of the product (e.g. cornflakes or Cadillac), the effect on workers and society is the same. In a further representation of the common misconception of the real meaning of media, McLuhan says that individuals portray the scratch, not the itch. For instance, in response to media specialists who pursue this fundamentally flawed approach, McLuhan cites an announcement from "General" David Sarnoff (head of RCA) that technological instruments are not in themselves good or bad, but that these products are the "voice of the current somnambulism" (p. 11). Each medium adds itself into what we already are, realizing amputations and extensions to our senses and bodies. McLuhan goes on to say that a characteristic for each medium is that its content is continued from another (previous) medium (McLuhan, 1994). For example, for millennials, the Internet is a medium containing traces of the many different mediums that came before it: the printing press, the radio, and moving pictures. The effect of every medium is to some degree restricted by the previous social condition, since it just adds itself to the existing processes (McLuhan, 1994). Therefore, different societies might diversely be transformed by the same media. As well, McLuhan insists that ethical judgment (for better or worse) of an individual utilizing media is hard, due to the psychic impact media has on society and their clients. Furthermore, media and innovation, for McLuhan, are not necessarily inherently amazing or awful, but instead they realize the extraordinary change in a general public's lifestyle. Familiarity with such progressions is what McLuhan appeared to consider most imperative, so that the only certain disaster would be a society not seeing an innovation's consequences for their reality, particularly in terms of the chasms and tensions between generations (McLuhan, 1994).

The main approach to recognize the real "standards and lines of power" of a media is to stand outside of it, to become disconnected from it (McLuhan, 1994). This is important to maintain a strategic distance from any medium by putting the subject into a "subliminal state of Narcissus trance, forcing its assumptions, inclination, and qualities" (McLuhan, 1994) onto it; while in a disconnected position, one can anticipate and control the impacts of the medium. This is difficult because "the spell can happen quickly upon contact, as in the main bars of a melody" (p. 15). One historical example of such separation is Alexis de Tocqueville and the medium of typography. He became the first person to master the grammar of print and topography, in large part because he was highly literate in both English and French. This allowed him to detach the values and assumptions of typography in telegram messages between France and America—in other words, he knew that traditional grammar did not apply (McLuhan, 1994).

This example underscores McLuhan's contention that media are languages with their own structures and frameworks that can be examined accordingly. He asserts that media have impacts in that they constantly shape and re-shape how people, societies, and cultures see and comprehend the world. In his view, the purpose of media studies is to make what is invisible be visible: the impacts of media innovations are the messages they convey (McLuhan, 1994). Based on his studies in New Criticism, McLuhan contended that technologies are to words as the encompassing culture is to a poem: the former get their meaning from the context formed by the latter. Like Harold Innis (1951), whose work contributed much to the field of media and communication theory, McLuhan looked to the broader culture and society in which a medium passes on its messages in order to distinguish the pattern of the medium's effects (McLuhan, 1994).

"Hot" and "Cool" Media

In *Understanding Media*, McLuhan additionally expresses that distinctive media invite various degrees of participation on the part of the person who chooses to use any given medium. He describes some media as "hot" in that they improve one single sense: when viewing a film, for example, a person does not have to apply much exertion in filling in details being communicated. McLuhan describes other media as "cool": he argues that, in contrast to film, television requires more effort on the part of the viewer to determine the meaning (McLuhan, 1994). Similarly, comics rely on an insignificant presentation of visual detail that requires a high level of reader exertion to fill in the details that the cartoonist choose not to depict (McLuhan, 1994). A movie, according to McLuhan, is in this way said to be "hot," requesting the viewer's consideration by intensifying one single sense to "top quality," whereas a comic book is "cool," as its "low definition" requires the reader to more consciously participate in order to extricate value (p. 22).

Hot media normally allows for complete involvement without a powerful boost by engaging one sense—sight or sound, for example—over the others. For instance, print immerse the reader in a visual space, fully engaging the visual sense directly and consistently. This supports analytical precision, quantitative investigation, and consecutive requesting. In addition to print media, McLuhan categorizes radio, film, lecture, and photography as “hot” media. Cool media, on the other hand, are those that give a small association a considerable boost. They require substantial participation from the users, including the perception of abstract patterning and simultaneous comprehension of all parts. Therefore, according to McLuhan, mediums such as television and seminars are “cool” (McLuhan, 1994). McLuhan's "hot" and "cool" exist on a non-linear continuum rather than as dichotomous terms. Whereas film and television share a

general format, their demand on the viewer has shifted over time. In the 1960s, film was considered hot media that require no active participation from the receiver for the message to be conveyed clearly, television in the 1960s was considered as a cool media that provided low sensory data to the viewer, thereby demanding more attention from them. As television technology has improved over the decades, it has slowly become a hot medium. In other words, media should be distinguished as “hot” or “cool” based on their effects and on their attempt to capture the experience of the user. Therefore, a medium’s hotness or coolness depends not only on its nature and form, but also on how it is being used.

Building on McLuhan

Media environmentalists ground much of their work in McLuhan’s *Understanding Media: The Extensions of Man*, especially his examinations of composed articulation in contrast to oral coupling, the effect of print, and the likely outcomes of optional orality. McLuhan’s work has helped such researchers to constitute a new range of open connection. Moss and Shank (2002) build on McLuhan’s work to better understand “communication in these more technologically sophisticated times” (n.p.). Feenberg and Bakardjieva (2004) analyze the possibility of virtual groups by drawing a parallel to McLuhan’s ideas about the effect of print to consider whether a comparable impact could be found in online groups (p. 39). Similarly, the qualities of oral societies that McLuhan (1994) highlights give researchers a purposeful way to investigate online discussions, and his idea of optional media gives them the possible reason for the examination (pp. 37-38). Schmidt (2003) uses McLuhan’s media hypothesis as a foundation for his investigation of Russian cyber culture and artistic talk in online chat rooms and journals. Fernback (2003) examines online urban legends, finding a mix of oral articulation, fables, and composed structures (2003). Mejjias (2001) investigates the production of virtual reality,

featuring the physical and irrelevant measurements of innovation. Furthermore, many researchers reference *Understanding Media: The Extensions of Man* when discussing modes of correspondence. Kibby (2005) utilizes optional media as the theoretical foundation for his investigation of online fables formed over email, and Cali (2000) looks at the rationale of electronic archives and how their analytical reasoning varies from those connected to printed variants of discourses. Cali draws on McLuhan's remarks about the protection of content and his commentaries regarding published works.

McLuhan's (1994) view of a medium as something that connects a person outside of themselves—to another person or the world—provides a foundation for not only research into media environments but also into media as part educational ones. Media in the educational setting requires an active creation of content and communication, of educators who can receive and understand such communications and the technology that make it happen. McLuhan (1994) theorized that the world would become a global village where people are interconnected through technology, becoming one international community. Over time, television—the revolutionary technology of the 1960s, when McLuhan was writing his book—developed in part into the audiovisual media that have been integrated into teaching practices across educational levels and between local and global communities. He also posited that there would be a major shift in technology, from writing and print in the past to electronic media in the present (Gushue, n.d.). At present, the internet serves as the hybrid energy of these technologies; it combines the unique traits of hard-copy writing and electronic speed to create a single product such as email communication. Internet user engagement, also known as audience participation, drives the popularity of a medium like email. McLuhan also proposed that social communication through media technologies shape both the society and its members (Flew, 2017). Today's methods of

communication are embedded in the technological forms that influence what and how people think (Flew, 2017). How technologies—including educational ones—develop depends on how people use the medium and how in turn they transform and reshape human behavior and social interaction.

In this regard, the use of technology in the classroom as a medium of instruction can help in the enhancement of student performance. Several studies found that students in the 21st century performed better in the classroom with the accompaniment of different technological media, including PowerPoint Presentations (Susskind, 2004) and social networking sites such as Facebook (Rackham & Firpo, 2011). Susskind (2004) found that students had more positive attitudes towards a class and greater self-efficacy when attending lectures accompanied by PowerPoint multimedia. Rackham and Firpo (2011) also found in their five-month study that the use of the social media platform Facebook as a learning resource provided students an easy-to-use and familiar platform where they could share and generate knowledge. These findings support McLuhan's theory that what and how people think is shaped by their familiarity with and exposure to the unique ways that media structured the messages.

McLuhan's concept of hot and cold media can also be applied to the use of PowerPoint presentation and social media, particularly Facebook in class. As PowerPoint presentations require students to fully pay attention in order to grasp its content, it is considered a hot media. However, it should also be noted that depending on how the teacher is using the medium, it can be considered as a cool media, especially if it has content that would require students to actively participate. This illustrates McLuhan's theory that hotness or coolness of a medium is dynamic and dependent on its users. On the other hand, Facebook is a social media platform that needs user interaction and participation for students to understand the message. If students do not

engage in this platform, the content of this medium is not be conveyed to them; hence social media platforms are considered a cool media. Social media needs real-time engagement from its users so that its message is sent to the target users. Today, education leaders can use McLuhan's ideas to view technology on the hot and cool media spectrum and to make technology choices that incorporate both students' engagement and interaction in real time, either in person, online, or in a hybrid form. The field of higher education leadership faces huge changes in terms of technology use, and one aspect of good leadership will be how we enhance our use of technology in our teaching.

Education Leadership and Technology in Higher Education

The field of higher education has become increasingly complex and dynamic in recent years, suggesting a need for effective leadership. As a result, researchers have been particularly interested in the role of education leadership specifically in this field, especially with regard to technology in educational settings. Spendlove (2007) studied the capabilities of such leadership, hypothesizing that knowledge, attitude, and behavior are the key determinants of effective technology leadership in higher education. After conducting semi-structured interviews of Pro-Vice-Chancellors drawn from 10 universities in the UK, Spendlove found that experience of university life and academic credibility are the main predictors of these leaders implementing technology at the university level (Spendlove, 2007). The study also emphasized the leaders' teaching activities, as well as the importance of their negotiation and communication skills. Spendlove's study distinguishes university technology leadership from business leadership, making it particularly relevant to our understanding of the pedagogical use of technology in higher education.

Another critical leadership competency with regard to higher education leadership is the ability to integrate technology into learning. Lepinski (2005) examined various outcomes of and factors underpinning the use of technology in higher education. Approximately 193 students pursuing an Introductory Psychology course at Mesa Community College took part in the study, which revealed that ethnicity, gender, and course content are the key determinants of learning outcomes when technology is used in learning. Dey et al. (2009) have since supported this finding in their work on the impact of using new technologies to record and deliver college lectures. The authors' central claim is that the use of technology, especially internet video formats, expands instructional alternatives for faculties, thereby leapfrogging the challenges of traditional classrooms. The results of the study demonstrate that the use of video as an instructional approach improves the transfer of lecture content and enables leaders to respond more positively to individual video presentations (Dey et al., 2009). Their results also show that a student's perception of the lecture's image and presentation quality play crucial roles in enhancing knowledge transfer as rooted in Erving Goffman's dramaturgy of pedagogy (1959). However, the interaction between lecturer's vision and student's perception of the relevance of the content of presentations remains unclear.

In a closely related study, Turney et al. (2009) explore the role of technology to direct learning in institutions of higher education. The authors primarily argue that advancements in technology seem to offer an excellent opportunity for higher education leaders to enhance teaching and learning. They highlighted how students can use search engines such as Google Scholar to access digital information that is relevant to their field of study. Furthermore, students are able to conduct online surveys and questionnaires with participants globally, making it easy for them to access data that would otherwise require a physical visit. Similarly, adult students

can also interact with students from other institutions with the aim of fostering a collaborative learning experience. The researchers noted with great concern, however, that university leaders hold divergent views on the use of technology as well as the extent to which such applications are tolerable in teaching (Turney et al., 2009). Ultimately, the study found that technology leadership enables students to be responsible for their research and employ the pace that best suits their learning needs.

Engaging Modern Innovation

The argument put forth by Turney et al., (2009) is premised on Bourdieu's theory of social change, (1986) which supports the use of social media platforms. McKnight et al. (2016) added credence to this argument, claiming that social media has become an integral part of modern learning and teaching for many students. Gifford (2010) expounded on the critical roles of technology in promoting effective leadership education, in particular how educators can integrate blog technology to improve students' critical thinking competencies and to meet the learning needs and expectations of contemporary students. Contrary to the video formats that Turney et al. (2009) suggested, Gifford (2010) promotes in the use of reflection blogs. The study sample included 125 students enrolled in a leadership course at various levels from 2007 to 2008. The study established that educators could incorporate Watson's reflective model (2011) into their blog posts to improve their critical thinking. Gifford (2010) concluded by recommending that educators should replace hardcopy or handwritten content with more innovative reflections posted to social media platforms such as Facebook, YouTube, and Twitter.

Odom et al. (2013) have since supported the findings by Gifford (2010) in their study on how students perceive the use of social media for teaching and learning in leadership classrooms. Odom and his colleagues argued that the use of social media in higher education leadership

classes has become highly prevalent. The authors aimed the study at finding out the students' degree of comfort and how frequently they use social media tools. The study revealed that the use of social media platforms, mostly Facebook, increases the effectiveness and quality of communication between instructors and their students (Odom et al., 2013). The results also demonstrate that students view Facebook as a social norm that enhances or increases access to information, eases collaboration, and bolsters relationships among classmates. McKnight et al. (2016) have also reported similar findings with the use of Facebook in promoting pedagogy, and Lipinski (2005) claims that modern social media platforms such as Facebook have made communication between teachers and students possible.

Contemporary innovations in technology have made it possible for adults to access academic materials on various platforms without the need for their physical presence in class. McKnight et al. (2016) found that technology has transformed the learning environment as well as positively impacted students' attitudes about learning. For instance, teachers can employ information communication technology to contact students about assignments as well as access individual student's assignment portals and award them marks based on their performance. McKnight et al. (2016) also found that digital platforms have outperformed the traditional learning environment in which learners had to use printed learning materials to access information. However, adopting the use of social media technologies also presents a problem, in that it may eliminate formal contact hours, thereby reducing the face-to-face interaction of students and instructors. To address this issue, Rabidoux and Rotmann (2018) assessed how educators could reinvent the traditional higher education learning environment. The authors note that the use of flipped classrooms has become a progressively more popular in higher education and argue that educators should use technology to flip their classrooms, as it enables them to

develop better interactions during contact hours (Rabidoux & Rottmann, 2018). The researchers encourage the use of technology, like recorded lectures, because they leave ample time for in-class interactions and makes instructional delivery more cost-effectively. Moreover, it promotes student-centered learning by encouraging higher-level critical thinking, peer-to-peer communication, customized education, participation, faculty freedom, faculty collaboration, and better outcomes. According to Rabidoux and Rottmann (2018), education is a continuous exercise that takes place both consciously and unconsciously, thereby supporting the progressive integration of innovative technology in learning.

Integrating Technology and Face-to-Face Instruction

Face-to-face education is the most traditional modality for teaching and learning, with the teacher and learners sharing information within the same physical classroom. In most cases, the teacher facilitates learning while students actively participate in the process. Face-to-face instruction is still the most common mode of learning in many institutions. According to Allen and Seaman (2016), over 78% of students globally are registered for face-to-face learning, but over the past several decades, the modern classroom setting has changed significantly. The demand for more quality and interactive learning has prompted many teachers to embrace technology within the face-to-face setting. Wingo, Ivankova, & Moss (2017) note the increasing significance of technology within face-to-face teaching and the overall learning process.

In addition to improving face-to-face teaching, technology has also increased the efficiency level of teachers who can use multiple platforms to relate to their students. In the case of adult learners in particular, teachers more fully engaging them through technology in a classroom setting. Engagement strongly influences learning, so the effective integration technology should drive educational systems. Similarly, the broader shift to correspondence

through emails, Skype, and other information communication platforms means that adult learners have already integrated technology into their own learning. According to Johnson et al. (2016), adult learners require an environment that enables them to harness the depth of their life experience to increase their critical thinking, a key skill in higher education. Engagement with lecturers, fellow students, and other stakeholders in the education system compel the adult students to actively participate in online learning activities, which by definition minimizes their physical contact with these same individuals. The use of modern information communication devices such as projectors and computers to display content to students has become a standard part of today's learning environment. The teacher remains physically present in the classroom, and students actively engage with the visual contents on the screen. Henrie, Halverson, & Graham (2015) note that student engagement through technology motivates them to learn. One of the major advantages of projected content is the opportunity to store the information and retrieve it on a future date, as opposed to relying on often imperfect note taking.

Integrating technology into face-to-face learning is not limited to projected information. Tanis (2012) and others have shown that teachers can use a variety of strategies to stimulate learning for adult students. One of the most effective strategies for encouraging learning in a classroom is through the use of interactive game technology, which necessitates participation in class activities. It is well established that students develop more interest in material that they believe has positive impacts on their lives, so game technology can be especially useful for building engagement with challenging material. According to Tanis (2012), students often consider policy and law as difficult and abstract concepts because they do not seem to relate to their daily lives. According to Bower, Lee, and Dalgarno (2017) gaming is one of the principal means through which a teacher can develop interest in such material, thus encouraging students

to embrace learning. Van Eck (2006) argues that the use of digital games in higher education will support student learning. He states that the games are powerful not in light of what they are, but rather in view of what they exemplify and what students are doing as they play. Despite the fact that games have been experimentally shown to decrease the level of scholarly aptitude, Van Eck (2006) claims that they exemplify settled standards and models of learning. For example, in learning-based games, the setting plays a significant role in how learning happens. The knowledge that learners are meant to acquire is identified in a straightforward way within the environment, so the learning is well-honed within the specific situation (Van Eck, 2006). Van Eck also reminds his readers that educational specialists have shown that play is an essential tool for socialization and learning, one that is basic to every human culture. Games use the rule of play as an instructional system by creating intellectual disequilibrium and determination: the degree to which the recreation thwarts the player's desires (creating psychological disequilibrium) without surpassing the limit of the player to succeed generally decides the degree to which the player is locked into the game. Interfacing with the game requires a consistent cycle of theory testing and updating on the part of the player. Games that are too easy to understand will not draw the player in, so games are more successful when they create a nonstop cycle of psychological disequilibrium and resettlement while simultaneously enabling the player to be effective.

In comparison between a Video Game-Based Learning Environment and a Traditional Learning Environment, Barron (2015) agreed with Van Eck's (2006) idea that educators should include games within class activities. When instructors integrate games as learning and teaching tools, students who investigate and play within these universes finish with a stronger capacity to make critical choices, because the virtual reality allows them to explore choices in regards to

whole environments without the danger of making harmful choices in real life. Barron (2015) reviews key scholarship in order to offer educators a thoughtful analysis of non-traditional teaching methods in the classroom. Of particular importance is Barab, Gresalfi, & Arici (2009) exploration of the possibility of transformational play through gaming in the classroom. They draw a connection between students' virtual achievements and real-life, beneficial experience. They link their ideas to back to Dewey's (1997) arrangement of learning. Dewey contends that training ought to be tied in with giving students the inspiration and ability to act within contextual settings wherein applying their abilities has some effect. Modern computer games provide a workable space for students to explore and implement their insights (Barron, 2015). When students play computer games in the classroom, they are put into a virtual world where their instructive foundation and aptitude enables them to clarify and solve problems and issues. Gee (2005) considers the multifaceted, challenging nature of most standard computer games. Grown-ups and children alike will invest time and money into computer games because they want to undertake tasks that are hard, long, and complex. He notes that student motivation is a key issue faced by educators, so educators should consider how games could inspire their students to not only master long, hard, and complex tasks, but also to appreciate them (Barron, 2015). Finally, Shaffer, Squire, Halverson, and Gee (2005) contend that K-12 programs as well as institutions of higher education ought to follow the lead of groups like the military, who use computer games to motivate and train their students (Barron, 2015). Barron (2015) highlights how all of these scholars ask educators not to spoon-feed their students but to instead teach more efficiently through the use of advanced technology tools that can bridge curriculum and the real world. Appendix [[##]] provides an overview of new trends in educational technology and the ways in which educators have implemented these tools to better facilitate classroom activities.

The Need for New Technology Education

As noted above, universities have invested heavily on Internet-based learning platforms to attract the growing demand for new technology education. A study conducted by Toven-Lindsey, Rhoads, and Lozano (2015) confirmed that the number of students that are seeking higher education increased, and their need to have new dynamic learning opportunities has become essential over the years and the trend is likely to remain high in the near future. Various reasons have been cited to be the cause of high demand for blended face-to face and online education. Among the possible reasons is the need to save time and resources. A survey conducted by Mohammadi (2015) established that it is relatively cheaper in terms of resources and time to offer blended classes. Attending classes physically requires that the students invest in transportation costs and books.

On the other hand, online learning would only require the students to avail internet-enabled devices to enable them to access the learning platforms. Other studies have focused on the negative contributions of online platforms to the quality of education. A study conducted by Mohammadi (2015) claimed that online learning has significantly affected the quality of education outcome. According to the study, students that learn through online platforms lack various life skills that they could have learned while in physical classrooms. Social skills are learned through interaction with other students through physical contact. However, online platforms cut off the social aspect of learning as students can only interact with electronic gadgets instead of creating a physical social network of friends to help in the development of social skills. This study is sharply opposed by studies that postulate that adult learners may not necessarily require physical contact to develop social skills. According to Boud, Cohen, and

Sampson (2014), social skills and online studies are completely different aspects of learning and that adult learners already have developed requisite social skills in their youth.

Adult learners in particular are the major beneficiaries of e-learning (Boud et al., 2014). This is because they are mature enough to handle the electronic devices and access the relevant sites with the right information that they need. The modern classroom setting has also embraced social media platforms to promote learning (White, 2016). As noted above, investment in technology education has increased accessibility to information and schools are striving to meet the educational needs of the target population (U.S. Department of Education, 2017). Given the popularity of social media, the use of these apps and sites to disseminate information can be a successful strategy. In this regard, mobile phones have come in handy to assist colleges to reach their students through their mobile devices.

For instance, many universities, including the one in my case study, require students to submit their social media links as Facebook in their application materials for the purpose of communication (U.S. Department of Education, 2017). Such methods of communication may be aimed at promoting learning for students by interactively connecting students with one another through chats. Chats become critically significant for students to learn from one another by sharing whatever they experience in life. The most important development in education technology is the use of online communication platforms between universities and students. This has been witnessed in the online payment of tuition and fees to the school accounts remotely. The school administration makes it possible to post the students' academic performance as well as the fee payment records of the students online. For instance, students often are required to create a student portal where important personal details of students as well as their academic records are posted for the purpose of giving students feedback on their progress (Kim & Ke,

2016). Feedback is imperative for the purpose of making decisions that pertain to the future of the students.

Different universities have assessed the needs of students and the job market to design and execute online learning programs and tools. VR-based learning has been applied in many fields of study including disciplines such as foreign language teaching (Huang, Rauch, & Liaw, 2010; Kim & Ke, 2016). It is considered the most effective emerging and interactive e-learning platforms for adult students. In a VR-based learning environment, the students and instructors can add, delete, edit and restructure the contents to meet the needs of the students, all while making abstract concepts simpler to understand. VR-based learning provides learners with a high level of realism. In line with the survey by the U.S. Department of Education (2017), realism motivates learners to remain focused on the studies because they can relate what they learn in classrooms to real-life situations. Students are better able to achieve successful outcomes than they have been before in the early stages of those environments. Adult learners have a more diverse set of needs than the traditional K-12 classroom can provide, and universities need to be able to provide a curriculum structure that attracts and retains these students. The flexibility that is afforded through the online interactivity described in many of these platforms is essential to their success.

The Positive Impact of Leadership Technology

Finally, a study by Orphanos and Orr (2014) sheds light on the impact of innovative leadership preparedness on educator's outcomes and experiences. Orphanos and his counterpart maintained that effective leadership affects school and student outcomes positively, though indirectly. The parameters of interest in the study were leadership, leadership practices, satisfaction, and job collaboration, and technology leadership. The study participants included

589 high school teachers whose principals underwent traditional training and 175 whose principals underwent excellent technology leadership training. The results of the study show that innovative leadership training has a statistically significant impact on online learning and teaching practices of school principals (Orphanos & Orr, 2014). The results also reveal a significant relationship between innovative leadership and an increase in teachers' collaboration through technological integration and job satisfaction. This study demonstrates that effective preparation program designs and improvements for education leaders are essential yet still lacking in many institutions of higher education.

Theories of How to Teach Adult Learners

As mentioned above, adult student's level of critical thinking is imperative for their concentration and success in education. In this sense, the core focus for the teacher is to enhance the students' level of critical thinking and retain their concentration at school. To achieve this, incorporation of the customized learning process through the computer-aided programs can significantly create a difference. Turney et al. (2009) sought to evaluate the impacts of the teachers' involvement in the digital activities in class and the effects on the performance of the adult students. According to this study, teachers with interest in digital content and the need to engage the learners at every step of learning have successfully promoted learning in adult Students while an interest in digital content may be foundational for educators to use technology successfully with adult learners, they must also consider the proven theories of adult learning that enhance the learning process when put into practice. The adult learning theories are best grouped into three broad categories; instrumental learning theory, transformational learning theory, and humanistic theory

Instrumental Learning Theory

Brookfield's theory (2005) of critical thinking is based on four essential processes; the first process is the conceptual awareness and deciding what to observe and consider in different circumstances. Adult learning begins with the ability to be aware of what is taking place in the context of the situation in relation to values, cultural issues, and the environmental impacts. The second category is the exploration and imagination process. This includes thinking and imagining alternative ways of doing things. In adult learning, this process is crucial in the exploration of key academic concepts and projects. Instructors can make use of this concept to help learners to develop critical thinking and problem-solving techniques. The third of Brookfield's four critical thinking processes are the assumption recognition and analysis. This involves analyzing assumptions that learners make about the situations as well as evaluating the beliefs behind the assumptions. For adult learning, making assumptions about situations is a crucial part of learning. Teachers can use the concept to create interest in learning in the students. Finally, reflective skepticism process is crucial for adult learning. The process enables to develop the skill of questioning, analyzing, and reflecting on the rationale for decisions.

Transformational Learning Theory

It is instrumental in the adult learning process to be more analytical and reflective in nature, thus developing the skills of making rational decisions. Mezirow (1991) more specifically identifies the value of engaging educational technology for adult learners as a way of exchanging and transforming their knowledge and experience to the consciousness level. Mezirow indicated that when adults study in a welcoming environment with advanced technology, their personality, self-concept, and self-development are all enhanced.

Mezirow's transformational theory requires educators to improve their communicative skills by overcoming internal and external conflicts, which can be determined using rational discourse (Christie, Carey, Robertson, & Grainger, 2015). Mezirow insists that intelligent conversation with more explanation and discussion with students using technology has many advantages, such as more open, accurate information, freedom from coercion or distorting self-deception, and critical thinking. Mezirow's transformational theory greatly influenced perceptions about the adult education. According to this theory, the teachers have a responsibility to connect with the adult learners through structured communication platforms that are engaging, interactive, and motivating.

Humanistic Learning Theory

Adult learners might require special attention from the professors as compared to the young students. They could be undergoing serious social challenges such as relationship problems, economic hardship, and political instability. As such, they ought to learn in an environment that is more customized and learner-centered. According to Kolb (2005), instructors must devise teaching methods that are conducive to the students rather than what is professionally recommended. While a lecturer might be tempted to use only the syllabus and the course book to pass information to the students, the art of learning what the students want and are comfortable with in class is instrumental (Kolb, 2005). Adult learners have different learning abilities and needs. As the humanist Bourdieu (1990) indicated in his theory of habitus that associated the role of the instructor with creating an organization that is a learning environment; an environment that is more focused on ensuring that the students are comfortable with the environment of learning. According to Yang, Watkins, and Marsick (2004), there is a difference between a learning organization and a class; a learning organization focuses on the overall

conditions that stimulate students' urge to learn. This falls under the category of humanistic theory as discussed above.

Globalization of Adult Learning

In education, E-learning is a response to the challenges caused by the expanded globalization of instruction. This model makes training accessible to everyone, regardless of individual disabilities, societal position or socioeconomic status, and so on. Science and Technology Education (STE) have made some prominent advances, although it still has a long way to go (Potkonjak et al., 2016). Two examples of STE advances are the Maker Movement and Massive Open Online Courses (MOOCs). In the Maker Movement, as Axup et al. (2014) outlines, gatherings of interested individuals can assemble around specially appointed group ventures. Inventors, do-it-yourself creators, and hobbyists drive this movement, specifically challenging consumerism of mass-produced products. Influenced by the tech industry, some primary examples of "maker" products include 3D printing and virtual reality platforms. Still other "makers" congregate around artisanal interests such as jewelry making. Regardless of the topic, the Maker Movement is primed to spur innovation in technology and manufacturing, as it requires the utilization of new methodologies and instruments to support their continued collaborative effort (Potkonjak et al., 2016).

Similarly, MOOCs allow for online client gatherings for students and educators alike, in which virtual labs create space for beginners as well as mid-level training. Advances in personal computer (PC) designs, virtual reality, and virtual universes (learning management systems such as Canvas, edX, or Coursera used for online courses) decrease the limitations between what must be done in reality and what is possible in the virtual world (Potkonjak et al., 2016). EdX, for

example, combines course offerings from institutions such as Harvard, MIT, Berkeley, and Boston University—and anyone, anywhere can enroll.

Technology Usage in Higher Education

The traditional classroom has been shifted more toward online and hybrid courses, where students can decide how they study and the time that they can attend a face-to-face classroom. Moreover, the nature of the 9am to 5pm workday and the need to improve both professionally and academically has prompted adult students to seek ways of successfully blending education and career. Technological growth in the modern world has significantly contributed to the success of online education among adult students. Subsequently, many adult students have opted to engage in virtual learning as a way of bypassing the need to fit daytime classes into busy work schedules in order to acquire much-needed professional development. Virtual learning consists of the student interacting with the professors and learning materials online, without physical contact. In most cases, students make prior arrangements with the learning institutions and faculty to interact with them virtually; however, many programs also exist that have been designed specifically to be offered online.

Technologies can be designed to meet the individual needs of students to promote literacy growth. Despite the added cost of education when using supplemental technology, many students have opted to embrace it since the educational outcome in adults has been positively received. According to the National Research Council (2008), technologies for learning can be classified into ten broad categories. These categories include hypertext and hypermedia, multimedia, serious games, conventional computer-based training, virtual learning, and inquiry-based information retrieval, among others. The modern student finds online learning as the most

effective means of solving the time-career constraint. Other studies have confirmed that some students resort to online education because it offers them a variety of ways of accessing information rather than physical appearance in class. According to Bouhnik and Marcus (2006), 23% of students in the U.S. are online students, giving them the opportunity to engage in other activities to make ends meet. Interestingly, the number of students taking online classes has been on the rise in the recent past, as universities can reach a wider audience when they opt to advertise their schools and courses offered online. Despite the crucial role that online learning has played in the education sector, there are flaws related to online learning that have raised concerns over the past years (Bouhnik & Marcus, 2006).

Research studies have established that some courses cannot be taken online given the nature of the content and the need to have physical interaction with the lecturers and the learning materials. For instance, medical courses require the students to have physical contact and practical application of the knowledge they have gained in class. According to Cook (2007), medical students must take practice tests in real life situations to practice their knowledge and skills (Cook, 2007). In this regard, it would be ineffective learning if medical students only opted for online learning. Besides, online students have greater access to information when completing assessments, and therefore it is unknown to the professor if they are monitoring progress or academic dishonesty. This is the reason some institutions prefer to offer virtual learning opportunities for some courses, but not all of them.

E-learning in Higher Education

The growth in modern information communication technology has expanded the scope and nature of learning in the current educational setting. Clark and Mayer (2016) defined e-learning as the process of gaining knowledge via electronic media. Typically, students and

teachers use computers connected through the internet to communicate, disseminate learning materials, and give feedback (Clark & Mayer, 2016). This “next generation” classroom can be defined by the nature of learning, the teaching methods, and the effectiveness of the content learned in solving modern problems. The primary objective of gaining knowledge is to use the skills to benefit society, and technology is instrumental in defining how that knowledge is gained (Clark & Mayer, 2016). For many people, a classroom can be defined as a physical facility that is filled with human beings with the intent of learning. In simple terms, a classroom ought to have a teacher, students, and the learning materials. However, the traditional classroom has been reimagined into connections across virtual space, allowing for greater flexibility and differentiation.

Technology is used as a component of the modern classroom in order to give students an opportunity to explore the world around them. More often than not, students engage with mobile technology in everyday communication with friends and relatives on their phones. Such interactions can be converted into learning sessions to benefit both the students and the people with whom they communicate (Clark & Mayer, 2016). Appropriate use of technology in the classroom requires the teacher to be creative and skilled in various computer applications. With regards to e-learning, there are three significant ways through which learning can take place (Clark & Mayer, 2016).

First is the situation where the students have simultaneous online interactive sessions with the teacher over a long distance. Here, the student has direct contact with the teacher. This mode of e-learning can be termed as interactive e-learning (Sandars, 2006). It is interactive in the sense that the teacher and the students have time to discuss, demonstrate, illustrate, and present contents using visuals such as graphics, charts, and diagrams. One advantage of such type of e-

learning is that the teacher and the learners create a personal bond that can help the student to gain more knowledge as compared to other forms of e-learning.

The second form of e-learning is a simulation. Like interactive e-learning, simulation e-learning is highly interactive in nature, with the use of graphics, videos, audios, and gamification being the core. Here, the teacher can choose to be more creative and include 3D components to promote learning (Allen, 2016). For instance, new software training is a course that requires simulation learning because the student will be required to interact with the software environment as much as possible. Simulation e-learning is anchored on the need to portray concepts through various media such as graphics and texts. The students are then exposed to the practical application of the knowledge by interacting with the simulation environment.

The third form of e-learning is text-driven learning. In this case the content is simple and includes graphics, texts, and simple text questions. The teacher can also use PowerPoint presentations in this case. This form of online learning is used with learners that have not developed a sophisticated understanding of the use of interactive learning and therefore, need simple communication to gain experience in online learning. Students who do not have the requisite technology to engage in more sophisticated forms of e-learning (their own laptop or desktop computer, a microphone and video camera attached to that computer) may also opt for text-driven learning because it is easier to complete assignments using public computers.

Types of E-learning

Established universities all over the world have opted to use various e-learning tools (Czerkowski & Lyman, 2015). For instance, VoiceThread is extensively used in universities to expand learning opportunities. A VoiceThread is an active discussion tool that allows students and teachers to have both audio and video streams for discussions via internet forums. This

technology is applied by universities such as the University of Arizona (Czerkawski & Lyman, 2015). Here, the instructors and students can engage one another in candid academic discussions, dialogues, and dissemination of information using their video, images, texts, and voices (Delmas, 2017). This form of online learning can be more effective if the students and the instructors are creative enough to vary their mode of delivery and reception of content (Fox, 2017). Schools that intend to use VoiceThread create accounts for all the students and allowing them to sign in using their university credentials to access the learning materials (Czerkawski & Lyman, 2015).

VoiceThread is an exciting e-learning tool because it provides students with the opportunity to share, comment, and contribute to a learning session in progress as long as the student has an account like figure 10.00. The major advantages of VoiceThread are that it is interactive and captures both images and videos for face-to-face learning (Delmas, 2017). In addition, VoiceThreads are learner-centered; the discussions are free and open for all students.

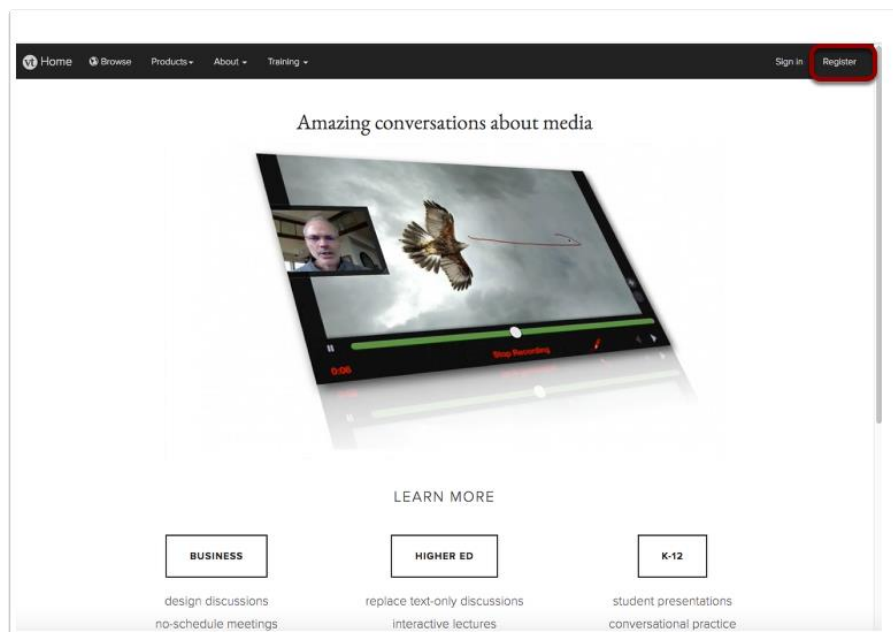


Figure 3. The landing page for VoiceThread.

Panopto has also invaded the modern e-learning setting where students or instructors can record and upload relevant videos see figure 12.00. Instructors can record critical lectures and present them in form of videos and images, including lecture slides, to the class and be made available for the length of the course in case students need to review it. If students need to record their computer screen in order to document a process they have been learning how to do, they can also use Panopto. A study by Boellstorff (2015) found that many institutions that have focused on creating interactive learning settings have created various platforms where instructors and students can share education materials in the form of videos. Here is the website <http://www.panopto.com/>.

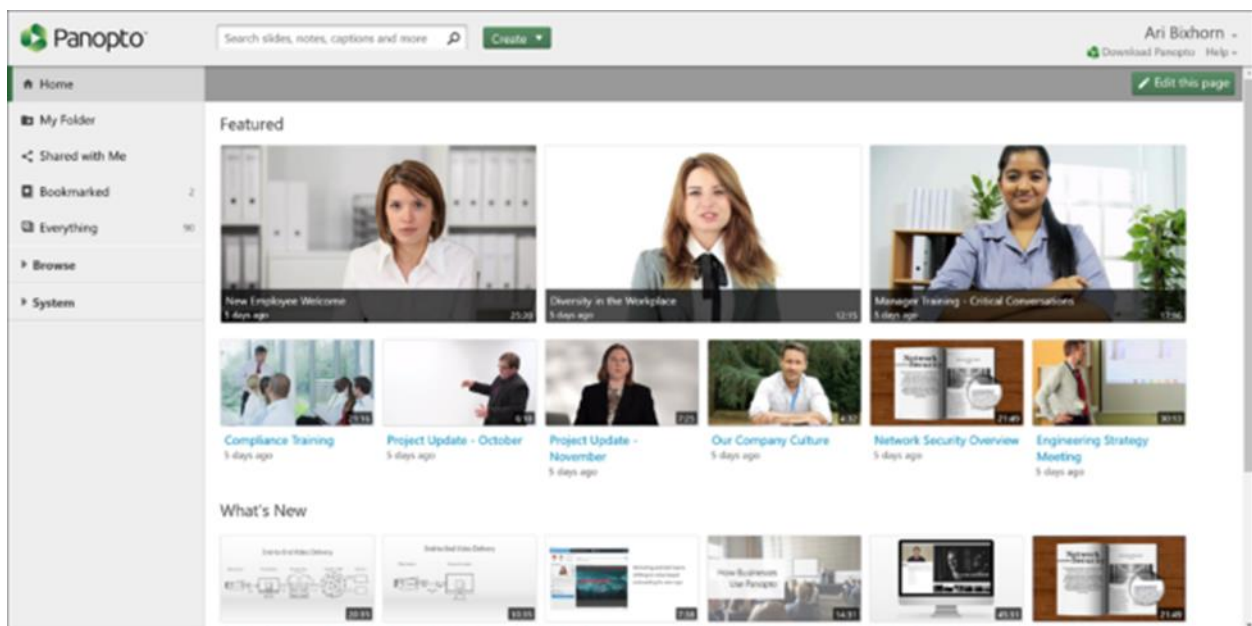


Figure 4. The landing page for Panopto.

Besides stimulating learning in students, this form of e-learning saves time for lectures as the instructor only acts a guide and facilitator in the whole learning process while the learners take the responsibility of researching and gathering relevant information. Panopto is a key to modern video learning in the classroom. It has improved e-learning through making interactions

richer and by creating a record of the content (West & Turner, 2016). As well, University of ST. Thomas (UST) has created a canvas Campus where the various departments can post interactive classroom learning and research. additionally, UST has created a flipped classroom where professors record and share details of the lectures that are coming in advance to help students to prepare well before the scheduled class time (West & Turner, 2016). This mode of learning is useful in that it provides learners with an overview of what to expect in the upcoming class. Subsequently, learners can conduct research and revise various areas of the content that will be discussed in the next lecture.

Adult education has also been enhanced through programs suggested above, such as Massive Open Online Course (MOOCs). MOOCs are modern online programs that are openly accessible to anyone that can access the internet to participate in the learning process (Deacon, Small, & Walji, 2016). The participants ought to have access to the internet and the MOOC homepage before they can participate in the course being offered. MOOCs provide participants with learning materials that are relevant to conventional education environments such as lecture notes, videos, study materials, and quizzes. Also, MOOCs provide interactive user forums where students can freely engage with each other through questions, discussions, demonstrations, and illustrations of different academic contents. It is prudent to note that MOOCs do not charge the students for the course, but the students have to have access to reliable and robust internet connections (Deacon, Small, & Walji, 2016).

The concept of MOOCs was born in 2008 among the open educational resources movement. Connectivists' theory played the most significant role in developing the platform for students and other people that might be interested in online learning (Deacon, Small, & Walji, 2016). The idea started with the network relationship concept, which prompted the connectivists

to think of shifting the capacity of the internet from a merely interactive platform to a real academic platform for educational transformation (Deacon, Small, & Walji, 2016).

Many providers of such programs have emerged in the recent past and are offering the program in collaboration with global universities. Providers such as edX, Udacity, and Coursera have collaborated with renowned universities to provide students with free access to academic materials. Udacity is non-profit organization that offers massive online courses in line with the company's desire to be a great help for students (Kleinsmith, 2017). Similarly, edX is a massive online course provider that hosts online university courses in a wide range of fields to students globally. It runs a free edX open source software platform for students. Finally, Coursera is an online learning platform where learners are exposed to relevant contents such as videos and images that can enhance learning (Kleinsmith, 2017).

While the curricula provided by MOOCs may not be applicable for all courses in the traditional classroom, it has been instrumental in providing students with a platform where they can add their own knowledge to the classroom content. The significant advantages of these programs are that they are free and provide access to students to explore new areas of specialization and thus expanding knowledge. Adult learners can significantly gain from MOOC programs since they will have access to information from a variety of online sources, which is critical for research projects and other coursework. Moreover, some professors have opted to use such platforms to share knowledge with students regardless of their backgrounds and university affiliation; for example, curriculum used by Ivy League professors becomes accessible to anyone who wants to learn it at their own pace. Despite the expanded access to course content, Kaplan and Haenlein (2016) noted that MOOCs do have some flaws. According to Kaplan and Haenlein (2016), this program has a low completion rate because it lacks close monitoring on what the

students do. Furthermore, if the classes are self-paced with automated assessments, students lose the benefit of being able to ask questions or meet with a professor outside of class time.

Gaps in the Literature

Although there is some research being done pertaining to technology use specifically within the leadership education field, there is relatively none about the best use of technologies in traditional classroom leadership courses at the graduate level. My proposed research study aims to fill this gap by examining the current technology techniques of teaching adult learners in higher education in a leadership training program in a Midwestern university. My research will focus primarily on instructors' familiarity with and use of technology, identifying which technologies are most applicable to a leadership training program and identifying students' perceptions of technology use and whether their perceptions affect their learning outcomes.

Summary

Bourdieu (1986) considers such a classroom as the stage where teachers are actors who perform lessons for students as witnesses. More recently, however, teaching and learning strategies have developed to use advanced technology to replace the old-fashioned "chalk and talk" method. Technology becomes important in leadership higher education because leaders are expected to be knowledgeable about the forefront of technological innovation. Orphanos & Orr (2014) conducted a study in the UK that shows that the leaders who use technology make a student's academic life more exciting and have more academic credibility.

Additionally, face-to-face classrooms can be enriched with technology to make learning real and interactive. Learning institutions have invested in technology to make learning more engaging, collaborative, and real to students. E-learning has been instrumental in the modern face-to-face classroom, with instructors integrating technology in their lessons. Modern

applications and platforms enrich the learning process for students through increasing engagement between students and teachers, customizing lessons to each individual student's level of comprehension, and applying knowledge in "real-world" settings. With the explosion of academic enhancing technology, blended and online classes are becoming more and more popular as students are better able to achieve successful outcomes than ever before. Adult learners have a more diverse set of needs than the traditional K-12 classroom can provide, and universities need to be able to provide a curriculum structure that attracts and retains these students. The flexibility that is afforded through the online interactivity described in many of these platforms is essential to their success.

Furthermore, the implementation of leadership technology allows leaders to integrate technology within class activities like Facebook, YouTube, Google Scholar, blogs, and Twitter. Adult learning is one crucial area in higher education, because adults need more engagement while in the classroom to be critical thinkers using digital activities. Educators should consider three theories as they choose technologies to implement in the classroom, including instrumental learning theory, transformational learning theory, and humanist learning theory. Finally, we have global learning platforms that have become widespread in the education field, such as e-learning, the Maker Movement, and Massive Open Online Courses (MOOCs). These communities have leveraged the possibilities that accompany bringing together minds from different geographic areas in the virtual universe.

In the next chapter, I will lay out my methodology for studying how educational leadership at the graduate level uses technology, including how I designed my qualitative case study and tested its validity.

Chapter 3: Methodology

The purpose of the study was to explore how professors currently use of technology in a graduate-level leadership program and to understand their students' experiences with and preferences toward educational technologies. In the late 20th century, educators began to use Information and Communication Technologies (ICT) in a way that made classroom learning more exciting and attractive for students. Advanced technology replaced traditional “chalk and talk” lectures and overhead transparencies, with PowerPoint emerging as a primary way of presenting information (Atkins-Sayre, Hopkins, Mohundro, & Sayre, 1998). Students preferred having PowerPoint in their classrooms, because it made class interesting, it improved the class organization, and it helped them scaffold their notetaking. Hardin (2007) and Jones (2003) each determined that, when teachers use PowerPoint as a part of class activities in a way that makes sense to learners, it efficiently enhances their learning experience. Today, educators have a wide array of technologies to choose from beyond basic PowerPoint, as can be seen in Appendix A. Advances in educational technologies provide educators with new ways of presenting the information, from using animation presentation software to making pop quizzes that students answer on their phones to engaging students through virtual reality (VR). Moreover, using a variety of technologies in class and online adds more joy to the learning environment and increases interactions between students.

In book *Rethinking Pedagogy for a Digital Age*, Bethham & Sharpe (2013) discuss ways to integrate digital tools into educational activities. Of note for my research, they provide three approaches for framing teaching methods in order to make class activities more effective when using technology: “associative, constructive, and situative” (p. 31). Associative learning tasks build competencies step-by-step, initially through basic “stimulus-response conditioning” (p.

287), requiring highly focused objectives on the part of the educator, as well as the creation of “individualized pathways matched to performance” for the learner (p. 287). Constructivist learning tasks, including those that use technology, depend on the “roles and significance of other people” (p. 287). When learners engage with others, each participant has a role to play and different experiences to share that enhance the “learning, collaboration, social meaning-making and developing self-reliance” (p. 287). Constructivism encourages “experimentation and shared discovery,” as opposed to the highly structured objectives of associativism (p. 287).

Technologies that encourage reflection and “ownership of the task” are highly valued within the constructive approach (p. 287). Situative instruction contains fewer formal learning activities in favor of hands-on learning. Beetham & Sharpe (2013) describe it as when the learning environment mirrors the environment in which the student will eventually work. For such learning, students benefit from educational activities in which the “authenticity of the activity ... depends on the authentic context” (p. 287). For all of these approaches, the authors emphasize the importance of the locus of control. The associative educator prefers to have the control to direct students to focus on the skill or concept at hand, whereas constructive and situative educators insist on giving students autonomy “to make sense of the task and its requirements for themselves” (Beetham & Sharpe, 2007, pp. 32-33). My case study was informed by these three different approaches to presenting information, as well as my own interest in students’ responses to each approach. Therefore, I developed the following research questions:

- In what ways are professors currently using technology within adult learning activities in a selected higher education leadership program?
- What are students’ perceptions of the current technology use in this program? What other technologies would they prefer or recommend be implemented?

To answer these questions, I conducted qualitative research, using the instrumental case study approach. This chapter will describe my rationale for this research design, including my sample selection process, as well as my data collection and analysis procedures.

Research Design

Instrumental Case Study Approach

For this research, I used the qualitative instrumental case study approach, because according to Stake (1995), it allows the researcher to reach beyond a particular phenomenon in order to understand and evaluate the effects of the issues being studied. Yin (2009) describes this approach as an “empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (qtd. in Merriam 2009, p 40). Both Creswell (2013) and Merriam (2009) define the case study as the in-depth description and analysis of either a single case or multiple cases. They both also point out that this approach has been used for research in the fields of social science, psychology, medicine, and education. According to Merriam (2009) and to Stake (1981), the instrumental case study allows the researcher to obtain knowledge that is different than other research-derived knowledge in four specific ways. Such knowledge is:

- more concrete, because it resonates with our own experience and is more vivid, concrete, and sensory than abstract;
- more contextual, because our experiences are rooted in context making it distinguishable from the abstract, formal knowledge derived from other research designs;
- more developed by reader interpretation, because readers bring their own experience and understanding to a case study, allowing new data for the case to be added to old data, leading to stronger generalizations; and

- more grounded in reference populations as determined by the reader, because unlike traditional research, the reader participates in extending their own generalizations to the reference population.

In order to garner this type of rich knowledge, researchers understand the methodological history of this approach.

Prior to the 1980s, researchers did not view what we now call a case study as a clear type of methodology. During the 1980s, the work of Yin (1984), Stake (1988), and Merriam (1988) began to focus on the “unit of analysis not the topic of investigation” (Merriam, 2009, p.41). The phenomenon at the core of their work became known as the case study, and it is especially useful for conducting research that looks at four types of information:

1. Research that focuses on a single unit of analysis, such as one specific program, or one specific type of classroom learner, or one group of learners selected on the basis of typicality or uniqueness (Merriam, 2009; Stake, 2006).
2. Research with finite data collection perimeters, such as a limit on the time or number of people involved. If there is not a limiting factor—for instance, any number or type of people could be interviewed—then the phenomenon does not qualify as a case study (Merriam, 2009, p.41).
3. Research into an “instance of some process, issue, or concern” (Merriam, 2009, p.41).
4. Research in which the researcher is more interested “in insight, discovery, and interpretation than hypothesis testing” (p.42).

My research questions have several limitations that focused my research on a single program, and they seek insights into a particular aspect of education; therefore, the methodology that best fit my work was the qualitative case study approach.

All research methodologies have their own difficulties, which researchers must take into account. The key limitations of the case study approach, as outlined by Creswell (2013), that relate to my research are:

- Identifying whether the bounded system being studied is one or multiple cases and understanding if the case or cases is worthy of study.
- Considering that when the researcher chooses to study one case, the results are more in-depth analysis than multiple cases, but they are also less “generalizability” (Creswell, 2013, p. 101) than research into multiple cases.
- Presenting and explaining the data’s in-depth picture of the case limits some of the case’s value.
- Selecting a single-case approach requires the researcher to “establish a rationale for the purposeful sampling strategy for selecting the case and gathering information about the case” (Creswell, 2013, p. 102).

In the next two sections, I will provide the rationale for my sampling strategy and information about the specific case that I studied.

Sampling Strategy

This case study used purposeful sampling, which Merriam (2009) identifies as grounded in the assumption that the researchers need “to discover, understand and gain more insight which he/she must select a sample from which the most can be learned” (Merriam, 2009, p. 77).

Merriam (2009) and Patton (2002) each argue that what makes purposeful sampling powerful is that the selection yields information-rich cases for in-depth study. Such cases allow the researcher to gain and learn a great deal about the issues (Merriam, 2009). For this study, I used snowball sampling (network sampling), which is a way of locating and choosing key participants

who easily meet the criteria that the researcher has select for the study (Merriam, 2009). After identifying a few possible participants, I asked them to refer me to other students who study in the same major. Similarly, I asked my committee chair to refer me to a faculty member whom I should interview, because they have knowledge and experience with technology use in higher education. By drawing on key parts of a network, my sample size ‘snowballed,’ giving me a stronger participant sample group.

Information about the Case Studied

The faculty and students whom I interviewed are a part of the doctoral-level program in Educational Leadership and Learning at a large, private, non-profit, catholic university in the midwestern. The university currently enrolls roughly 10,000 undergraduate and graduate students. Its mission includes a focus on social innovation and caring for the common good. The program is well established and well respected, and it seeks to engage future educational leaders who will advocate for continuous improvement, systematic reform and social justice within educational institutions and communities. The program allows students flexible learning experiences through face-to-face, online and hybrid courses. It supports adult learners in a range of educational roles, from Student Affairs professionals to clinical, adjunct, and tenure-track faculty to deans and other administrators. The program typically has 75 students enrolled in it, and there are 7 faculty members affiliated with it as of 2020).

Data Collection and Analysis

This study explores how technology is currently used in the graduate-level leadership program and to what extent its use positively impacts students’ learning experiences in order to gain a deeper understanding of and to identifying how technology can improve teaching within the field of leadership training as well as benefit the students in such programs. For my

qualitative instrumental case study, I used personal interviews with faculty and students. The project drew on Beckman et al. (2014)—especially their examination of students' practices as seen through their own point of view—to comprehend the complex connections adult learners have with educational technology. This knowledge is essential for understanding adult learners' triumphs and challenges within the modern classroom (Ellis, Goodyear, Bliuc, & Ellis, 2011). For my data collection procedure, I followed the process outlined by Creswell (2013): planning the study, interviewing participants, transcribing interviews, analyzing the data, checking the data validity, and considering both reliability and generalizability factors. All of my data was collected through personal interviews with faculty affiliated with the program and graduate students currently enrolled in it.

Data Collection

The snowball sampling strategy resulted in a participant group made up of four faculty members and eight students, all of whom I initially contacted through email. The participation invitation sent to each potential participant included information about the study's Institutional Review Board approval. The final participant group consisted of two female and two male faculty (see Appendix B) and five female and three male students (see Appendix C).

Participants' ages were not identified, as age was not a variable for this study. All of the faculty participants had expertise in the use of technologies in hybrid and online educational platforms. All of the student participants worked in the education industry and had taken both hybrid and online courses; they were enrolled in two different cohorts. After generating a list of comprehensive interview questions for each group (see Appendices D and E), I collected participant responses through personal interviews. All participants received a copy of their respective interview questions in advance so that they had time to thoughtfully consider their

responses. The faculty participants all received the same ten open-ended questions, and the student participants all received the same eight open-ended questions.

During the Spring and Summer of 2019, I conducted semi-structured, one-on-one interviews. All of the interviews were conducted remotely, using the technology tool Zoom, which includes both audio-video and chat functions. They were scheduled at times selected by the participants. I received consent to record each participant's interview; Zoom has audio-visual call recording built in, and I also used a digital voice recorder as a back-up. Each interview took between 60 and 90 minutes, as the length of responses varied between participants. I began each interview with a description of the process, after which I provided a brief history of the graduate-level program in educational leadership at the participants' university. Then, I proceeded to ask the participant the questions in order; as they responded, I kept notes about my observations of the individual's feelings and emotions as they spoke. After each meeting, I used the digital recording to create a transcript of the interview. As I read the transcripts, I used memo-writing to record my thoughts. The resulting transcripts and memos, as well as my during-interview observational notes, became the foundational data for my case study.

Data Analysis

Stake's (1995) analytical model indicated that researchers could begin the analysis process at any moment during the study. Accordingly, my analysis of data took place during and after interviews. As each interview was scheduled at a time selected by the participant, I did not limit myself to rigid sequence regarding whose data I analyzed first. Instead, I worked with the data as I conducted individual interviews and completed individual transcriptions. I then read through each transcript multiple times, analyzing participant answers and coding them for emergent themes. In qualitative research, coding involves taking notes on the transcripts and

highlighting key ideas in order to identify recurring issues, themes, and subthemes. As I coded the transcripts, I noted themes within individual participant's answers and then those that occurred across participants' responses. I gave each theme a different color for easy referencing. After I reached saturation with the transcripts, I built one list of emerging themes for the faculty and another for the students; under each theme, I wrote about how the various participants spoke as they shared their ideas and reflected on their experiences. When these lists were fully saturated, I analyzed them for commonalities across each respective group of participants. This resulted in the three emergent faculty themes and four emergent student themes, which I will discuss in depth in Chapter Four.

Validity

Evaluating the validity of the case study outcomes is a key part of the research process, as both Creswell (2013) and Miller (2000) point out. Creswell identifies validation as the researcher's efforts to evaluate the accuracy and trustworthiness of their process, participants, and findings. Qualitative researchers have eight validation strategies which can be used in a variety of combinations to evaluate the validity of their results: prolonged engagement and persistent observation; triangulation; peer review debriefing; negative case analysis; clarifying researcher bias; member checking; rich, thick description; and external audits (Creswell, 2013, p. 251-2). I used two strategies to validate my data: triangulation and clarifying researcher bias.

Triangulation

My data collection process resulted in multiple sources of information, including the transcripts, memos and audio-visual recordings. In order to validate my findings, I triangulated my finding across these sources. In qualitative research, triangulation is the act of verifying the data through multiple sources of information, which validates the emergent themes and

perspectives (Creswell, 2013). When researchers “locate evidence to document a code or theme in different sources of data, they are triangulating information, [which] provides validity to the study” (p. 251). Triangulating my data revealed similarities within the participant groups’ (faculty, students) responses, as well as across the responses from all participant. For example, there was agreement between the faculty and the students regarding the ways in which the graduate-level educational leadership program offered classes: all participants mentioned that the university offered face-to-face, online, and hybrid courses to fit students’ needs. Therefore, since I have multiple respondents who shared similar information, I can reasonably trust that what they said was true and accurate to the program. I frequently tested the validity of my findings through triangulation.

Clarifying Researcher Biases

I also tested the validity of my findings by clarifying my biases as a researcher. Creswell (2013) stresses the significant of researchers clarifying all of their biases before starting their research, as doing so will help in how they approach the study, thereby adding validity to their results. Creswell identifies many factors that influence the researcher, including “comments, experiences, and biases” (p. 244). Therefore, I recorded my own prejudices and personal perspectives in a document prior to developing my research questions. I identified three biases to be aware of during the research process:

1. I have been a graduate student in an educational leadership graduate program.
2. I come from a different country, which is really far behind the United States when it comes to the use of technology in education.
3. I have some knowledge of some of the technology by the participants, and I some technology tools that I want to see used more in higher education.

In order to maintain the validity of my research, I worked at not comparing my knowledge to the participants' knowledge. I intentionally conducted myself formally in all communications with participants, especially during the interviews. I focused on having the participants only answer the questions from their own point of view, thus minimizing my own opinions—or others, as well—contaminating their responses. I also attempted to avoid bias during the research process by frequently reviewing my notes and deleting or revising any biased comments. Finally, I asked multiple individuals to read and critique the study over the course of my writing process.

Ethics and Confidentiality

Confidentiality of the potential participants and the data I collected is very important. All participants reviewed and signed a consent form prior to participating in the study. Their participation in the study was voluntary, and they could withdraw from it at any time. The consent form stated that, if consent was withdrawn, all information about that participant would be deleted. Over the course of the study, no participants chose to withdraw their consent. The consent form also included details about the study's rationale, method, and interviewee-role description. It described the risks and benefits of participation as well. Participants were assured of their confidentiality and that their identities would remain anonymous. To protect their identities, I assigned each participant a pseudonym, which I then used throughout the process. I also created several documents to protect my data and saved these records in different places. My choice to use the Zoom conference software was a result of the participants' requests, as it made it easier for them to meet with me any time and from anywhere.

Summary

Educators now utilize many ways of teaching with technology, including associative, constructive, and situative approaches. Associative teaching builds competencies step-by-step in

a guided fashion; constructive teaching centers around social-meaning making and co-creation, or joint discovery; and situative teaching aligns the educational environment mirrors the student's future work environment. In order to explore the ways in which faculty approach the use of technology in a graduate-level educational leadership program, and to understand their students' experiences with and response to those choices, I developed an instrumental case study. This qualitative research design methodology enables researchers to explain individual stories based on the experience and perspective of those involved in them. I developed interview questions to identify how faculty used technology to enhance student learning experience and to improve their own teaching. My student interview questions focused on their perceptions of how the technology used enhanced their interactions within and engagement with their learning environment, as well as their preferences with regard to technology and their learning experience. Integral to the research process is the validation of results; I used triangulation to ensure the trustworthiness of my data, and I clarified my own biases before and throughout the research process. I also built multiple safeguards into the study to ensure my participants' confidentiality. In Chapter Four, I will go over the themes that emerged from the case study and discuss what they suggest about the use of technology in graduate-level education in an educational leadership program.

Chapter 4: Results

Through this case study, I investigated how faculty and students perceived the use of technology in an educational leadership doctoral program. I sought to understand how the faculty currently uses technology and what factors influence their decisions to incorporate certain technologies over others in their curriculum. Equally important was the perspectives about and desires for technology use in the classroom on the part of the students enrolled in the program. The data analysis process revealed eight themes: three major themes emerged from the faculty interviews and four from the student interviews.

Faculty Themes

1. Technology as a tool for student engagement and motivation.
2. Technology as a student-centered pedagogical tool.
3. Technology as a tool for measuring student understanding in real time.

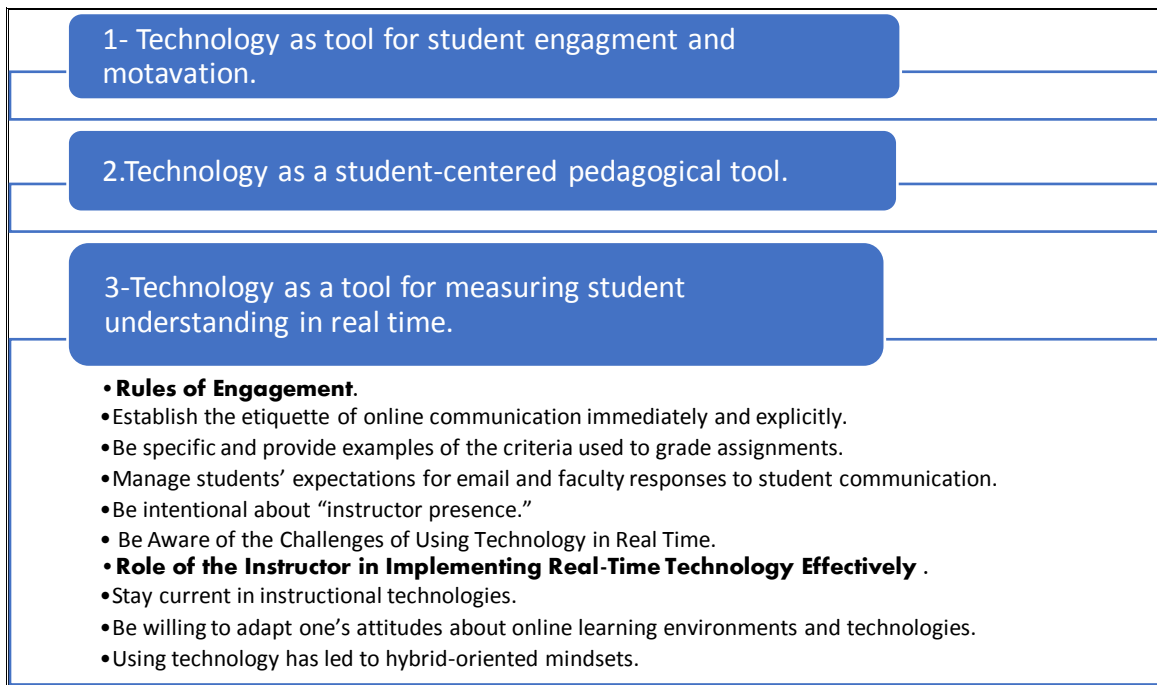


Figure 1. Presenting the result of faculties themes and sub themes

Student Themes

1. Value of Synchronous Engagement with Classmates and Instructors.
2. Value of Visual Media in Facilitating Active Learning.
3. Link between instructor Proficiency and Student Educational Experience.
4. Criteria for Effectively Integrating Technology into Student Learning.

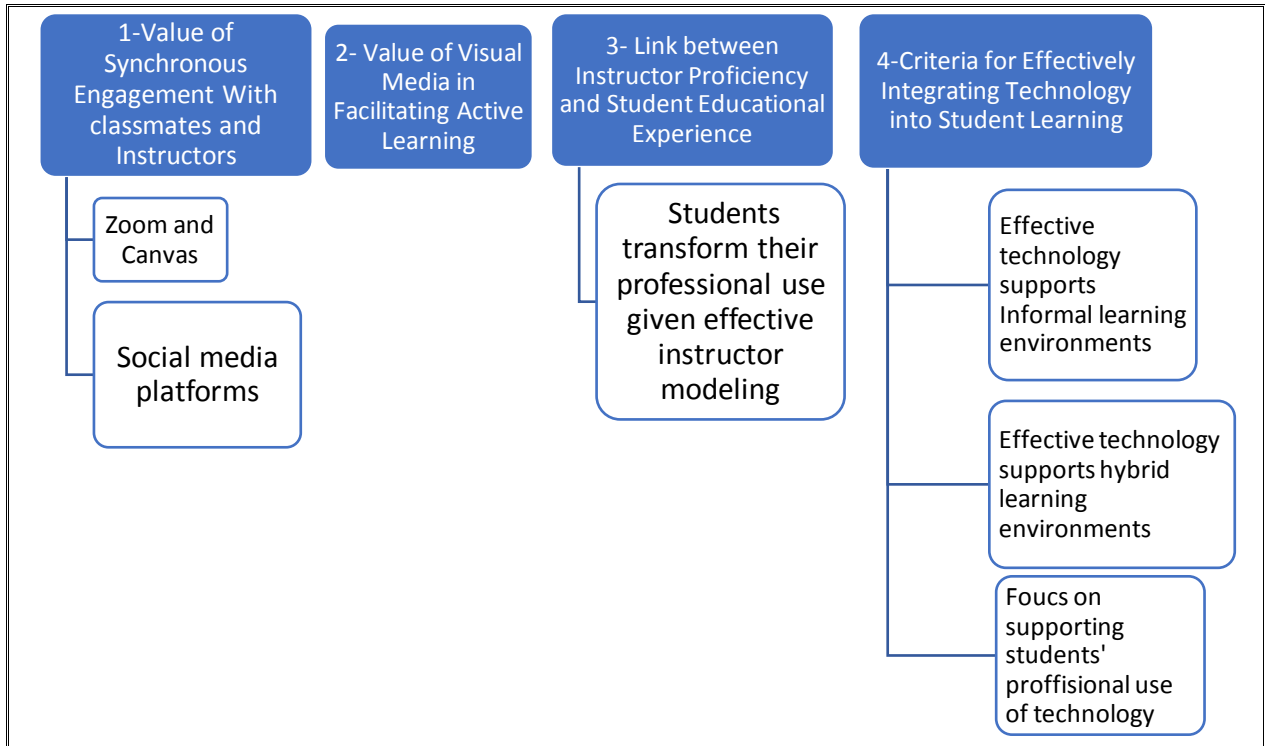


Figure 2. Shows the themes and sub themes from students’ interview

In addition to discussing each theme in depth, I will share the students’ feedback regarding how technology is used in the program, based on their responses to my final interview question (see Appendix E). This chapter concludes with a comparison of the eight emergent themes.

Faculty Themes

Theme 1: Technology as a Tool for Students' Engagement and Motivation

The faculty participants preferred technologies that fostered student engagement and motivation. They used a variety of technologies to engage and motivate their students. Regardless of the technology selected, as Dr. Samantha insisted, it must “increase and enhance student motivation to learn.” For the faculty, technology should transform the students’ learning experiences. In Dr. Samantha’s view, “the challenge is to not skip the rock over the surface of the lake, but to immerse the students in it.” At its best, for Dr. Samantha, educational technology “provides a simulated or experiential approach to learning, allowing students to become fully immersed in an idea before they have to look at it from a more technical or theoretical level.” As more technologies become available, faculty want to ensure that they are using ones that replicate successful face-to-face modalities. Dr. Brendel, for example, described one of his low-tech activities, “a technique called chalk talk in class, where I write a question in a face-to-face classroom in the middle of the board, and then I bring students up to the board and have them respond to the question on the blackboard, using images.” Over the past several decades, the traditional chalkboard lecture has been replaced by many educators with PowerPoint and other digital presentation programs. Both Dr. Julie and Dr. James used PowerPoint. For Dr. Julie, PowerPoint let her “follow what I have planned.... I usually use an image to convey the concept that I'm talking about, and then most of my information is delivered verbally.” She supplemented her verbal lecture either physically or digitally, “so that whatever I'm delivering verbally, the students can go back and have something to go back to reference.” For her, “the technology of PowerPoint, [is] to in my mind make a connection between images and concepts for students, and then supplement that with concepts on paper.” The goal of Dr. Brendel’s use of “chalk and

talk” and of Dr. Julie’s and Dr. James’s use of PowerPoint was to engage the students in their lecture. For Dr. Brendel, technology is valuable when it can “replicate that online.”

This desire to use technology to engage students lead Dr. Brendel and others to use interactive technology in their classrooms, three of the four faculties shared their use of text-based educational engagement tools. Dr. Brendel used the program Backchannel Chat, which allowed students to discuss the class in live time. He had his students anonymously post “questions, reactions, comments that you feel you can't make in the moment in class.” Then, throughout the session, “I look at that feed every 15 minutes or so, check it with the class. It's a public feed so everyone can see everything that's on it.” Sometimes, Dr. Brendel used the program as a kind of think-pair-share activity by starting a discussion with "I want you first to respond to the Backchannel Chat feed.” He found that this technology allowed his students to “think carefully and then choose their words and read them before they press the send button.” Similarly, Dr. Julie employed a text-based program called Mentimeter that let her students respond to online polls. She found that this supported their engagement and promoted their participation, because “they can text their response instead of raising their hand and sharing it that way.” With Mentimeter, the student’s response “shows up on the screen in a word cloud or some other way.” Dr. James also used online text-based tools, including a “Jeopardy game, [in which] I would ask questions in Jeopardy and students would answer those questions.”

Three of the faculty members found that students were more engaged when they integrated YouTube into their classrooms. Dr. Samantha thought that the continued popularity of YouTube was “because of the how to's.” She used YouTube and similar tools “inside class [and] outside the class.” Dr. James used YouTube “from time to time,” and Dr. Julie used it “all the time.” She found it particularly valuable when “the author [that we’re reading] is alive, they've

done some kind of interview or presentation that's on YouTube, so I can pull up a 10-minute clip of that person speaking.”

All four of the faculty participants engaged their students through the video conferencing software Zoom. Dr. James characterized Zoom as a “tool of the future” that improves continuously and that fosters robust synchronous engagement: he said “when there are breakout sessions, and we use synchronous sessions, [...] it's like a classroom without being in a classroom. One advantage of Zoom is, it gives the effect of face to face feeling which is huge for communication and interaction.” Dr. Julie also found Zoom effective, “I think Zoom and things of that nature, that allow us to interact synchronously, and to get as much of the face to face effect as possible, those things are huge.” Beyond the classroom, Dr. Samantha liked the ability to engage with both faculty and students virtually when there is no time to meet in person. In particular, she found it valuable to engage with students remotely: “I use it constantly to communicate with [students], and [to] talk to them, either in person or [through] a recording.” Dr. Brendel recorded his class sessions through Zoom “to the cloud so that those who can't be at the meetings have access to that.”

One key aspect of student engagement and motivation is dialogue between classmates and with the instructor. As Dr. Samantha stated, dialogue is “the primary teaching tool” of doctoral programs. For her, virtual conferencing became a valuable technology for working with her students. “I meet with students, we look at their text, we discuss it, we co-write online a little bit. I record it, they get the Zoom link, they make the changes, we move on.” For Dr. Julie tools such as Zoom transform “what online learning can look like, taking us from anachronistic discussion boards where you're just sitting at the computer by yourself and then someone types back; [now] we're allowed to actually dialogue in real time.”

Two of the faculty engaged their students in particularly innovative ways through the use of gaming technologies and virtual reality. As Dr. Samantha put it, “Gaming is a strong concept in pedagogy ... [The] core concept of gaming is that by simulated experience and play, we can start getting an idea of what something must have felt like or been like.” Simulations and virtual reality thus function as a special form of experiential learning. Dr. Samantha described a classroom application: “Now you can put on virtual reality goggles and read the Diary of Ann Frank and put on the VR equipment and take yourself up the steps to go into Ann Frank’s house where she was hiding. You see? But it’s still about experience.” Her use of such simulations was a means for her students to engage in critical decision-making and problem-solving processes. Dr. Samantha reflected on how this technology engages and motivates students:

Before you learn the distancing academic concepts, you first immerse yourselves into an alternate reality and then based on that alternate reality, you become someone else. You learn to think like that someone else. You develop compassion, excitement, curiosity, adventure. This is what engages.

For Dr. Julie, simulation technologies “help students feel like ... what’s happening in the education part of their life lines up with what’s happening in the social part of their life.” She used “pop culture” as way of simulating information by “incorporating a lot of pop culture stuff into my teaching, and so like I use a lot of GIFs on my slides that have pictures of like, Britney Spears or Black Panther or things like that.” By drawing on her own knowledge of pop culture, her “teaching [was] engaging and relevant” and gave her students “ways to hook their memory of a concept to something that they might not have associated with that concept necessarily.”

Theme 2: Technology as a Student-Centered Pedagogical Tool

All of the faculties found technology to be a helpful way to build more student-centered learning. In particular, it offered instructors a variety of ways to equalizing student engagement. For Dr. Brendel, his use of Backchannel Chat was often successful in engaging quieter or more introverted students. “It’s easy to find out what extroverts think because they’ll always answer the questions, and they’ll always be the first to contribute to discussion.” The anonymous, text-based technology provided the less extroverted students with opportunities to provide immediate feedback to instructors’ and classmates’ course contributions, while lowering the risk that they associated with “raising their hands.” This promoted students’ learning by giving them the confidence to express their ideas without being recognized. As Dr. Brendel put it, “anything that increases the ability of students anonymously to respond in the moment in class is really helpful.” Dr. Julie also used technology to equalize student participation. In hybrid courses, she liked that it “allowed the online students to engage in the same way as the students who are in the classroom. It feels like everyone’s participating in the same way, whether I’m at home or in the classroom.” Dr. James valued digital engagement because it was “involving [...] because you have to be very specific knowing that students may not have a chance to ask a question like we do right now.” Technology also played a valuable role in allowing students time to think before responding, which fostered dialogue in the classroom. Dr. Brendel, like other faculty participants, preferred technologies that gave students time to reflect and process their thoughts before engaging in discussions. “I’m an introvert myself,” Dr. Brendel observed, and he knew that many students, like him, needed time “to think, process, work it out in my head, often read what other people have said. So, if I had part of class time being able to do that, that would be really helpful to me.” Text-based response technologies let such students respond in their own

time. Furthermore, Dr. Brendel addressed how such technologies allow “students for whom English is not their first language [...] more time to process information.”

All of the faculty participants implemented apps to center student learning inside and outside the classroom. Whenever Dr. Brendel started using a new teaching tool, he would ask himself, “Is there an app for that?” For him, app-based technology gave students more access to information, “rather than me having to do everything every time and be always in control.” Unfortunately, many of his preferred teaching tools did not have user-friendly apps, but “anything that has an app to it, I’m more drawn to as an instructional tool because it’s just easier for students to use.” Dr. Samantha also saw the value of apps to enhance learning, and like Dr. Brendel, she was concerned about which “ones are most valuable in education and how and can and should they be used? Or how might they be used?” She did use non-educational apps “like Pinterest” to facilitate student-centered learning, and she was always “looking for high quality apps for high leverage teaching strategies.” Dr. Julie advocated for an app for the learning management system Canvas “for staying in touch with students ... And for us to interact with them, and to build what we do.” For her, “seeing the announcement I just sent to students, [being] able to access it on their phone, I think it’s important for us to meet students where they are.” Dr. James had recently experimented with the social media app Twitter: “I requested my students do [use Twitter] for classes last time and I asked them to tweet. So I was very much involved, because I have to show the example, and I tweeted.” Dr. Julie was considering the apps potential for student-centered learning experiences:

I see Twitter as a place to share your learning and have dialogue with people, so I could see at some point, either allowing or encouraging students to tweet about what they’re learning and share it with the world that way.

Dr. Brendel had been using social media in the form of Facebook to support his students for several years. He used “a Facebook page for students [to] keep them informed of what was happening” in his course. All four faculty participants also indicated that they used the LinkedIn app to share news of professional accomplishments.

Theme 3: Technology as a Tool for Measuring Student Understanding in Real Time

Faculty also preferred technologies that allowed them to measure students’ understanding in real time, rather than waiting until students submitted formal assignments. Dr. Brendel said technology helped improve his teaching by permitting him to obtain an “immediate sense of how students [were] understanding the material.” He used digital forums to “ask a question online and have students immediately reply,” allowing him to “tell within 15 seconds ... how well the class has understood it.” Dr. James assessed student learning through “short assessments, you may send them a quick survey, or a poll.” Dr. Julie also agreed that technology offered a valuable way to “kind of do a formative assessment of where the class is.” She also appreciated the way in which text-message responses allowed students to see in real time how others were thinking, “especially in a large class. When everyone can text their response in [it] allows the students to see in real time sort of where everyone's at.” Dr. Samantha used students’ real-time feedback to analyze and diagnose their learning strengths and challenges by “using a variety of tools to provide high quality feedback, ... [to] analyze how things went and diagnose student learning, [by] being more flexible in providing assisted learning when it's needed, as it's needed, So kind of real time.” She added that real-time tools allow the instructor to “set the learning up. You can set the table.” To set learning up in real-time through the use of technology, instructors need to establish the course rules of engagement and to prepare for potential technical

challenges. The faculty also discussed their own roles as instructors when working to effectively implement real-time technology tools.

Rules of Engagement

Establish the etiquette of online communication immediately and explicitly. Dr. Brendel establishes the etiquette at the beginning of the semester, before the technological tools are used. He models for his students how they should interact with each other online:

You can disagree with each other. I want you to disagree with each other. But you have to disagree with the content, say what's wrong with the content using evidence and so on. You don't call someone an idiot or someone's post stupid. You instead have to say, 'Well, I think that the evidence around this point is not very strong because there is this other evidence that contradicts it.'

Both Dr. Brendel and Dr. Julie found it valuable to clarify expectations for students' contributions to discussions, so that students participated digitally in a timely manner. Otherwise, as Dr. Brendel noted, "You just don't hear from them. Or you hear from them maybe 90 seconds before their response time is due." Dr. Julie established clearly that it's the student's "responsibility to keep their eye on Canvas. I will communicate changes that I make as well, but there is this sort of expectation ... that it's their responsibility to see and read and come prepared to class." Dr. Julie also started her courses by stating that she would be "using the institutional email as a way to communicate with students" and clarifying that while "they can expect me to communicate back with them [in other spaces], ... I also expect them to read my emails and communicate with me that way." Both of these instructors also have clear expectations about student preparedness in terms of the technology needed to participate in class. Dr. Brendel outlines his expectation that "the primary thing they should have is a computer, a laptop, or right

now, students can use their own phones or iPad present in the class. At the same time, we want them to have some headsets.” Dr. Julie affirmed that “one of the things I’ve learned is that we will need to require them to have a headset, so that they have the best audio experience and are able to participate in the same way.” For hybrid course, she also established rules for her distance learners to help them to be present with the group.

Things like try to be in a silent room don't attend class from a coffee shop where there's a lot of ambient noise, if possible don't have pets on your lap or children. They should be expected to be as present in class as the in-person students are, right? Like no one's got a dog on their lap in class, unless it's an emotional support animal or whatever.

For both Dr. Julie and Dr. Brendel, establishing etiquette immediately and explicitly made teaching with technology in real time more effective.

Be specific and provide examples of the criteria used to grade assignments. Faculty learned through experience to become specific and clear about the criteria used to grade writing assignments and other projects digitally. Over the course of teaching with technology, Dr. Brendel found that he became “more and more specific in the ways that I describe what constitutes an A, what constitutes a B, what constitutes a C, and then what is an A-, a B+, B-, C+, and so on.” In order to “to give specific ... examples of what A- work or B+ work looks like,” he created hyperlinks to online, anonymous samples of previous students’ work, with their permission. Technology made it easy to “set up immediate links to files of previous student work.” To better facilitate this, he “always get the student's permission to let me do this. I say, ‘Do you mind if I post this in a future course as an example of an A paper?’” Dr. Samantha used similar processes to help students understand the qualities of successful dissertation paperwork so that current students could learn from their peers. When students “see a PowerPoint [from] a

student who just graduated last week with an honors dissertation,” she has observed her students “learn both about methods and analysis and ... about the habits of a scholar.”

Manage students’ expectations for email and faculty responses to student communication. Faculty also found it necessary to manage students’ expectations for their student-engagement outside of class time. For Dr. Julie, who used the university’s official email to communicate with students, she had to establish the expectation that students communicate with her through that specific channel. Because digital communication can happen in real time, Dr. Brendel observed that it is “easy for [students] to expect I'm going to read [their message] immediately and respond immediately, so I have to have policies ... that give students a realistic expectation of when they can expect a post to be responded to.” Rather than respond every single student post in the learning management system, Dr. Brendel responded to students’ posts in summary form: “So I'm going to deal with every student posting and give a reaction. I'm going to post, but it's going to be a summary of my responses to all of the student postings.”

Be intentional about “instructor presence.” All of the faculty participants shared the importance of being intentional about their online presence, especially in terms of fostering student engagement and interactions. Dr. James identified that there are “three kind of presence that you as an instructor should have, so students learn better.” First is teaching presence; “students should know you are present and teaching.” Second is cognitive presence, and the third “social presence. And that's key. You don't have to be too serious all the time. Social presence, you can say to students, some questions, just ask them, how they are doing.” Dr. Brendel indicated that students’ perception of instructors’ online presence was a significant factor in students’ perceptions of course quality and effectiveness. In his experience,

in an online context, the students feeling that the teacher is present is the biggest factor in making them feel that it's been a good course. So, if they feel that I'm really available, reading everything and responding quickly, that will help them get a sense that, yes, this is a good online experience.

To do this successfully with emerging technologies, Dr. Brendel experiments with different tools. At the time of the case study, he was working with the “Panopto feature on Zoom to do ... video responses rather than just typing. I like to post a video response once a week ... so people see my face talking.”

While instructor presence is important in all educational settings, the faculty participants identified the need to be especially intentional about it in co-located courses so that students both online and in the brick-and-mortar classroom are equally engaged. Dr. James found co-located courses “more complicated. Why? Because I have students that are facing me in class, and they have virtual students also, online students.” To solve this, he taught in a classroom with “three screens, huge screens, so I can see students at once in the class and the other ones.” Dr. Samantha approached her use of technology in co-located courses by asking, “How do you keep an intimacy going between the online and the on-campus learner. How can somebody coming and attending virtually feel as if they were there?” For Dr. Julie, there is a technical aspect to this, as well: “When we do small groups, I have to think about okay someone in the room needs to host the online person, who’s that going to be?”

Be aware of the challenges of using technology in real time. Measuring student understanding through technology in real-time requires that faculty be aware of the challenges that arise from using such tools. Most of the faculty participants had experienced technical challenges in their work with educational technology tools. Dr. James noted an instance when

“some students are unable to join the class because ... they couldn't access the link.” If the student does not set up their technology prior to class starting, then such an issue is challenging to resolve:

If they don't email you ahead of time, there's no way for you to go back to the email and do your best and incorporate them in the class. So, if they're lost, they cannot join the class, likely they won't join the class until the end.

This type of difficulty impacts the learning of others. For Dr. Julie, when “there is like a technical difficulty with a virtual attendee, I have to step away from teaching to manage that. And that takes away from the experience of all of the students, so that's a challenge that you know.” As mentioned earlier, Dr. James uses three screens to bring his virtual students into the brick-and-mortar classroom. This brings up challenges with sight lines: “I have to place myself somewhere the camera will pick me and pick the rest of the class. But if they move to the camera cannot get them.”

For Dr. Samantha, a major challenge is the institution's limited investment in technology. She described one classroom in which she taught:

There's one little dinky camera on top of the Smart Board aimed at the students. So, if I stand too close to the screen, I have to jump up [because] the students wouldn't see me. I'm not mic-ed up and there isn't a mic box that goes around so that there's sound problems and there's camera problems and to overcome these, I have to always be aware of where my body is and whether or not it's visible to the online and on-campus student.

Dr. Julie expressed similar concerns. “We're facing this dilemma of having told students that they can attend our courses virtually, or complete an entire program mostly virtually, but we don't yet have the hardware, like cameras and microphones.” Another challenge related to this is

the time that mastering the technology takes away from student-contact time. Dr. Julie shared one the difficulty of teaching a hybrid class: “I struggle a little bit with feeling like I lose some time in class when I'm managing technology when I've got virtual attendees.” Dr. Samantha noted “the challenge with being lost and the time invested to master technology,” as well as the instructor’s “risk and ... vulnerability is higher with technology because more can go wrong.” When things go wrong, even for an instructor well versed in the technology, there are challenges with “the personnel who could help you. By the time you declare a classroom emergency and they send someone up, 30 minutes has gone by.”

Role of the Instructor in Implementing Real-Time Technology Effectively

Stay current in instructional technologies. All of the faculty participants agreed that they need to stay updated and current with new technology. Dr. Julie said “we do need to stay current in our knowledge of technology and we need to, again as I said, meet students where they are. And not teach like it's 1985, or even 2002. We need to teach like it's 2019.” For her, this was not only “to improve students’ experiences, [but] also to improve access to higher education.” She viewed it as her own “responsibility to keep up with what technologies are out there, so that my teaching stays fresh and relevant.”

Each of the faculty participants accomplished this in their own way. They identified several strategies for staying current on instructional technologies and applications. Dr. Julie used the university training center for e-learning: “[I’m] not terribly well versed in it, but I'm getting there because I'm working with ... an instructional designer with [the center for e-learning], and so she's teaching me some of those things.” She also maintained an awareness of “listservs [where] people are sharing best practices or things that they've learned.” Dr. Brendel also relied on collegial support from a professional listserv that he could query about educational

technology. Typically, he would “usually get several responses and suggestions from people, so that’s really helpful. I depend on that listserv and those colleagues to keep me informed.” He also turned to younger people to stay current; “I’ve learned, like most parents, from my kids. ... We [also] depend on younger colleagues to keep us up-to-date.” Similarly, Dr. Julie appreciated a colleague who was “so adept at thinking about technologies and apps and things that she wants to use in the classroom.” She particularly valued “being a part of a department where everyone, most of us, are committed to staying in the know with kind of new technologies.” In addition to colleagues, Dr. Samantha found that her students were “excellent teachers. I keep watching what they’re doing and I ask them what they’re doing.”

The faculty participants also found other ways to stay current. Dr. James took technology courses, going so far as “to get a certificate in online teaching.” When attending professional conferences, Dr. Brendel often choose to “go to sessions where a new piece of software is being demonstrated, a new app and how it can be used in an interactive environment.” Dr. Julie stayed current by reading “books about online pedagogy and virtual pedagogy.”

Be willing to adapt one’s attitudes about online learning environments and technologies. Some faculty participants were originally skeptical of teaching in online contexts due to their perceptions that the quality of online courses could not compete with real-time, face-to-face learning environments. Dr. Brendel recounted his own experience.

When online education first started to become a possibility, ... I felt that a live face-to-face classroom was the best kind of classroom because I could read how students were responding. I could see who was falling asleep. I could get a sense of whether people were engaged or disengaged.

As he learned about the technology tools that allow educators to measure student understanding in real-time, he “really changed my thinking on that.” His willingness to adapt his attitude allowed him...

...to realize that online does some things really, really well that the classroom doesn't.

Online gives you time to think and process information and sort of go over whatever it is you're thinking before you commit to a chatroom comment. So, it slows things down for students in a way that's often really helpful to them.

Dr. James shared how teaching in online and hybrid contexts shifted his understanding of the different pedagogies for these environments: “I wanted to teach a traditional class, which is two hours or two hours and a half. And [the instructional designer] said no. For an online class, it shouldn't go over ninety minutes.” Teaching through technology requires that instructors be willing to seek additional training and information for delivering content in online and hybrid contexts. Like Dr. Julie, Dr. James worked with the university's center for e-learning:

For me to design an online course, there are some frameworks that the university may be using. You can't do that at home, especially when we are using Zoom. Still a program or department is really really helpful. When I built one of my first biography, I had to sit down with the instructional designer to help me put the course together.

For the faculty participants, their willingness to adapt their attitudes lead to more effective use of real-time tools in their graduate-level educational leadership program.

Using technology has led to hybrid-oriented mindsets. As the faculty participants shifted from traditional face-to-face instruction to hybrid and online courses, their mindset about educational environments and course planning shifted. After his initial resistance to digital educational models, Dr. Brendel came to realize that “the optimal educational environment is the

hybrid one, where you have both elements present.” His philosophical shift led to a more complex way of viewing education:

I realized that saying face-to-face classrooms are always better, that's the wrong way of thinking about it. The face-to-face classroom has some benefits that are great, so it allows for an immediate response, and sometimes you really can feel the energy build up in a class. But the online environment has some real benefits to it, the way it slows down thought and allows students to formulate responses and so on.

Similarly, Dr. Julie experienced a shift in her course planning because she had to ensure that in-class handouts were posted on Canvas before class began so that online students had access to the same materials as face-to-face students. She found that her “brain [had] to prep for class differently than it [had] in the past. ... it means I can't just sort of do it the way I've always done it, it requires some critical thinking.” This critical thinking, as Dr. James noted, requires a significant time investment, “It takes a long time—more time—to prepare an online course than to prepare a traditional course.” Dr. Samantha observed that “it’s mind shift” that started with personalized computer technology. Technological changes over the past several decades have helped teachers prepare their class material more easily; Dr. Samantha explained, “Quite a bit of [the changes] helped teachers improve their syllabi, create better looking assignments, keep track of grade books, any kind of activity that you would normally think of as teachers' work.”

The hybridization of ‘teacher’s work’ also led to a reduction in the physical materiality of education. For Dr. Samantha, this led her to cull outdated materials: “So I actually started a couple years ago every summer throwing out a bunch of paper stuff. Keep telling myself, ‘You can let go of this stuff now. If you don't have an electronic copy, it's too old anyway.’” Shifting to electronic copies also reduces the use of paper. For Dr. Brendel this meant that he “moved

more and more to a paperless teaching environment.” In the past, like many faculty members, he asked students to purchase both books and a course materials packet for his classes. With the move to a hybrid mindset, he made his “reading list ... a series of hyperlinks, [which has] really helped me as a teacher in a lot of ways.” Furthermore, “instead of having to write down the name of a book and tell [my students] where to find it in the library, I can just google it ..., and ... send them the hyperlink.”

In addition to Dr. Brendel’s shift to a hybrid mindset transforming his course material distribution, he also noticed that “as I got more into it technology, I realized this has some fantastic benefits for face-to-face instruction.” As with the other faculty, it expanded how he presented content to his students. The use of real-time technology in the educational setting led him to “love ... being able to bring in YouTube videos, to access the web very quickly and show people resources that are out there.” For the four faculty participants, the use of technology in the graduate-level educational leadership program allowed them to build more effective student engagement into their pedagogical tools. By implementing real-time measurements of student understanding, they each grew to appreciate the benefits of technology within their educational setting.

Student Themes

Theme 1: Value of Synchronous Engagement with Classmates and Instructors

Just as the faculty participants valued the real-time opportunities for engagement through technology, so too did the student participants value technologies that facilitated synchronous interactions within and beyond the classroom setting. They indicated that the mode of course delivery (online, hybrid, or face-to-face) was not as important as the ways in which technologies were deployed. For Mick, “it's not about if there is technology or if there's not technology, but if

there's an opportunity to make the learning more engaging, more authentic, and more connected to what we're doing." Cheryl felt similarly: "there needs to be fluidity. But it's not as much about the technology, for me, as it is about the interaction." Many online learning management systems include asynchronous discussion tools, the adult learners preferred technologies that facilitated interactivity and human engagement. As one student participant observed, asynchronous interactions did not feel as "authentic" as "sitting in a real classroom with other people." Moreover, the students felt their own responses were less authentic, because they could "pull out a textbook and get a textbook response." Sarah observed that while online courses had their advantages, she preferred face-to-face learning. Mick and Emily agreed, even considering the convenience of online courses. Mick shared that "the most enjoyable experiences I've had in our doctoral program didn't involve technology. They involved the face-to-face time that we had with one another. [These] interactions were face-to-face and personal." For Emily, technology in an educational setting was about trade-offs: "Online courses save time and connect people when they cannot make it, even though it's not my first option I prefer face- to face learning."

Some students appreciated interactive technology that provided opportunities for hesitant or quiet students to interact with course discussions. Dan said, "I think the interactive platforms are just going to become more and more common. I think they really lend themselves to discussions." He noticed that "Once there's a prompt or something you can link to that helps ease some of the tension of starting a discussion and then those [who can be a little bit hesitant to ... respond] will have something to talk about." One technology tool that students valued for its synchronous interactivity was online polling. Dan observed that "it allows people to anonymously respond and then [the instructor] uses that for follow up discussions. They can post a question from reading or from class curriculum, offer a poll and then use that to stimulate

further discussion.” A technology that stimulated synchronous engagement for Cheryl was when instructors showed videos: “I’m engaged by a video. Well, it’s easy to slap up a video. But I’m also engaged by the interaction that comes following the video. That’s what I need.” In addition to valuing general technologies within the educational setting, the student participants noted the effectiveness of Zoom and Canvas and of social media platforms for facilitating synchronous engagement.

Zoom and Canvas. All eight students liked the use of Zoom web-based video conferencing as a tool for synchronous interactions. They all included it when discussing some technologies that they enjoyed their professors using for teaching. This technology offered the most for visual discussions between students who were in class and online, and it allowed students to have more interactions. For example, according to Dan, “we do virtual lectures and discussions with classmates via Zoom. [It enables] being ... in a class if I can’t be there physically and also being able to interact with students in other places.” Other students mention the group breakout rooms as a way to both support student learning and promote relationships between students. Mick described how:

Professors had structured opportunities to use Zoom to break us into individual breakout groups, discuss, and then come back to the large group. Zoom makes us feel connected, more voices were involved, increased engagement that it allowed for true engagement and collaboration.

Similarly, Tom insisted that breakout sessions in Zoom “can [let us] have our discussions, and I like how we can have our chats going on behind the scenes. So it’s not the same as being in person, but it’s pretty darn close ... and pretty convenient.” Furthermore, students report positive experience with Zoom because it has the flexibility of recording the entire lecture and allows

them to go back to the lecture any time, from anywhere. If someone missed the class, they would go the recorded lecture to catch up with the study. For Cheryl, “having that flexibility to meet as a group on Zoom and record it and go back if we need it is huge.” Emily appreciated that it was “good for communication if [I] cannot come to class.”

Student participants also commented on the value of the Canvas learning management system. Faculty posted key course elements to Canvas: the syllabus, videos, course readings, handouts, and other teaching and learning materials. Students could check their university email in Canvas and could stay up to date about the schedule through class announcements. Other students enjoyed how Canvas fostered a sense of ownership of their own learning. As one student noted, Canvas “has helped me to kind of take more ownership of what I am learning and kind of go, oh I see how I can use this. I'm just able to access it.”

Social media platforms. With the emergence of social media platforms over the last decade or so, educators have sought ways to incorporate it into the learning environment. For some of the student participants, such platforms offered the opportunity for valuable, real-time educational discourse. For example, Dan valued Twitter-based conversations. Sarah liked creating “closed groups” on Facebook “for academic reasons to share knowledge.” Mick reflected that:

One thing that I think would be very interesting, especially with doctoral work, where you are digging into very deep topics and conversations, would be to learn more about the perspectives of even classmates and cohort members through the use of social media and to find out what else is happening in the world.

Similarly, Heather valued the use of Twitter “not only as a marketing tool, but also as a continual online learning with others outside of those that are sitting in your room.” She felt that the

doctoral program could leverage this technology more by “really encouraging those online conversations via Twitter or whatever, kind of like you do with conferences, [to] continue in the learning versus just inside the classroom, [to] start engaging people outside of your classroom environment on the same topic.” Heather added that she “engages in Twitter a lot more when I’m at conferences than I do normally.”

Dan also valued the role of a variety of social media as reflection and interaction tools. In particular, he found FlipGrid to be “a social media variation where you post a video and then other people are adding, then somebody else has to react to it. I like social media that allows quicker back-and-forth where people are live.” Moly supported the use of variety of social media, such as Twitter, Facebook, Instagram, and LinkedIn. For her, these tools were useful because they “give you a sense of what is out there and what people are talking about. ... Also they’re a way to recruit participants for things. You know, if you need to kind of test ideas. You get instant feedback.” As an educator, Tom had had very positive experiences with social media as a tool for feedback in educational activities. He reflected at length on the value of engaging his own students in synchronous educational discourse:

[In] engineering class, ... I would say, "Hey, let's tweet ... Take a picture, tweet it out, use different hashtags, and then see who chimes in." And it was really interesting ... We had engineers from California, Ohio, random people that were professional engineers interacting with my ninth-grade students. And I had to stress and tell them, "It doesn't come down to how many followers you have. Just try different hashtags and see who picks up on that." And it was really powerful activity for us, and we got to interact with some people [and] share our work.

Both as students and as educators themselves, most of the participants valued social media platforms as tools to create synchronous interactions.

There were also some participants who expressed concerns about using social media. For example, Cheryl felt that “social media is used maybe not primarily but in many ways for advertising. I don't see social media as a great source of education. It's maybe a link to getting to the education. But even there, I would minimize that personally.” Similarly, Emily felt that social media was less rather than more valuable as an educational tool. She said that “as the teacher, I'm always against social media. ... I think it distracts the person, and ... it's not a source that you can use inside the classroom.”

It is also important to note that student participants identified that synchronous interactions via technology present problems within the learning environment. Access to hardware technology presented limitations to learning for some students. For example, Sarah pointed out that:

If I don't have the cell phone I can miss and actually, you may not have a cell phone. That happened when I had just come here from my master's degree. We went in class and then we had to do kind of a survey and the professor said, "We are using our cell phones." I didn't have cell phone, so everyone was doing it so, so fast. One student who was from I think Vietnam. We didn't have cell phones, so we didn't participate.

Another participant complained about students using their device for their personal use:

“Sometimes I have seen my friends, they'll be checking their emails and everything.” While these challenges should be addressed by instructors, all of the participants expressed that they ultimately valued those technology tools that effectively enhanced synchronous interactions within the learning environment.

Theme 2: Value of Visual Media in Facilitating Active Learning

All of the participants expressed that they valued visual media, as it actively engaged them as learners. This was particularly notable in their ambivalence toward PowerPoint. This regular feature in higher educational contexts only incited positive comments when instructors used it to present videos and other visual media. Heather did not find PowerPoint useful for learning course content, as she “rarely learned anything from the PowerPoint aspect. . . . There’s very rare opportunities where I’ve actually gone back and re-looked at those print offs or those slides from those classes.” Emily acknowledged that PowerPoint could be “a good tool to use just because you can use pictures and I’m a visual learner.” However, she felt that there were “a lot of technologies similar to PowerPoint that we can use instead.” When identifying the value of PowerPoint, student participants pointed to it as a tool for presenting videos or visual images. Cheryl felt that it could be “a great way to present or to create a graphic organizer.” Dan found PowerPoint had “to have videos and the key points, and pictures” to be somewhat engaging. Sarah said that PowerPoint could be “good for presenting info.” None of them demonstrated the excitement that they showed when they discussed technology more visually engaging tools such as Zoom and other visually rich tools.

Most of the student participants indicated that technology that presented visual information was an essential part of their learning because it made learning easier and more engaging. Dan appreciated when he could “hear somebody discuss a concept.” Video discussions through Zoom enhanced his learning because “seeing my classmates responses in real time, it forces you to pay attention to what’s happening and to prepare you to comment and react.” For Heather, videos were an effective way to reinforce course objectives.

I think that YouTube videos or videos of things where you're hearing stories as it relates to the course content, more about reinforcing the reading or the materials by hearing hands-on tangible stories that connect the materials together.

Mick also likes video clips as a learning tool, as they help students “to learn perspectives from connecting with others.” For Cheryl, “informational videos [are] a good informational piece that leads us into discussion. They're thought-provoking videos specifically designed to challenge our thinking. And they get us into discussion.” Because she is a visual learner, Emily prefers “when [instructors] use pictures, when they use videos ... when they use something that I can see ... that's when I learn more.” Moly felt more engaged by technologies that let her “look at stuff more than just listening to it.” One type of popular visual media particularly helped facilitate active learning for Tom: “TedTalk [style lectures] ... really built a foundation for having deeper conversations.” Ultimately, all of the student participants valued visual media technologies because they consistently facilitated active learning.

Theme 3: Link between Instructor Proficiency and Student Educational Experience

The interviews revealed that students had both positive and negative experiences with faculty use of technology. They saw a link between instructor proficiency with selected technologies and their own learning experience. Some participant praised the thoughtful use of technology that effectively promoted student learning. For example, Cheryl described how one professor:

put forth a really good effort to blend the small groups. She would have somebody in the classroom. She always wanted to include the online members with the ones who were in the classroom. ... I think it is good for us [those online] to interact with people that are in the room as well and not the same people all the time.

Tom appreciated how some faculty thoughtfully built digital materials that instigated deep discussion.

I really appreciated [was the professors who] created lectures, in [what] looked like a professional TV studio. ... they recorded these ... I wouldn't say TED Talks ... just hearing those two scholars give a mini TED Talk, prior to class on that coming Saturday, it really built a foundation for having deeper conversations. So that's some of the back-end work that really helped.

Mick expressed his positive experience with faculty who “were very thoughtful about their use of technology.” For his first distance learning course, which had students from across and outside of the United States, the instructor used Zoom to “record of our conversations. It was always nice to be able to go back and review what was said.” For Moly, the faculty’s use of technology was inspiring:

It's been fun to watch different professors use technology in different ways and so I feel like I've learned a lot, but as I think about potentially having a career in teaching at the graduate level, that I'm really appreciative of watching them do this.

In addition to seeing technology use modeled well, Moly felt that the faculty effectively used pictures and videos as technology tools to facilitate the learning goals:

Some of the things that we talked about in classes, pretty much most of it are new to me, so when they try to explain it more by using the PowerPoints or videos or Ted Talks or other stuff that they used like technology, I think it makes it easier for me to learn and understand what they're trying to explain.

On the other hand, students also expressed frustrations with the how some faculty handled the technology glitches that sometimes caused a delay or interfered with engagement

and interaction. Tom said that while “some of [the faculty] have been effective, others have been less effective.” Cheryl felt that transitions into the breakout session were critical:

Sometimes when you're transitioning into that breakout session, if it's not really smooth and if it's not pre-established, then you've almost lost the groove. Like, they're teaching and there's all this stuff and they give you directions about what you're [going to] talk about when you get to the small group. And then you have a five- to ten-minute delay while they get the technology set up. Well, by the time you actually get into the breakout session, you're like, "What were we supposed to talk about, again?"

Similarly, Heather found that “students zooming in is always a challenge, it seems like, for the instructors to manage that. And I find it a lot of times cuts into course content time because there's always some sort of glitch or logistical issue.”

Students transform their professional use given effective instructor modeling.

Several student participants indicated that well modeled technology use in their program classes led them to transform their own use of technology within their own professional settings. For example, Emily shared that “when I see a model of it then I like to try it on my own. [An instructor] was working with Poll Everywhere, something she doesn't always do. ... I can see how it works and what some of the struggles with it are.” Heather appreciated when instructors used YouTube and wanted to implement it within her teaching activities:

I think about [if] I designed a course for our resident advisors around diversity, and actually I designed it in X class. And so it was a mixture of videos and reflections. And so it was watch this video on vulnerability ... and then there was a reflection question.

Cheryl learned new ways of using google, video, and other technology from seeing one of the professors use it class.

I use Google [Docs] a lot ... that has been a really great collaborative tool. I feel like I learned a lot about that in this course of my doctoral studies and have brought that back to my school and use it now with my teaching staff. I have also used some of those, the videos. I'll bring in, like I said, Ted Talks. Some of the applications like Powtoons, it does not enhance my learning as much as it enhances my work environment, which is an application of my learning because I'm in leadership.”

When faculty are use educational technology effectively, their students go on to enhance their own instruction with such tools.

Theme 4: Criteria for Effectively Integrating Technology into Student Learning

The student participants shared a variety of criteria for how technology had been and could be integrated into the learning environment. One major criterion that many student participants valued was technology that enabled connections. For instance, Cheryl valued technology that allowed for interaction with other people.

Small group activities where they ask us to create a graphic organizer, that's my thing. I love to be creative. I love the interaction. And I feel like I learn so much from those other people that those are the kind of activities that work for me.

Tom also wanted technology that “allows me to link and connect with other people that otherwise I would not be able to if it weren't for that technology.” Similarly, Emily preferred “when it brings people together to have conversation, whether it's writing posts and commenting or being able to meet virtually.” Mick shared that he “preferred technology that opens doors and provides access to either different people that we wouldn't normally have access to or different sources of information that we wouldn't normally have access to it.”

Mick's point raised another criterion for effectively integrating technology into student learning: "Technology provides accessibility so having access and using the technology increase that access is fantastic." His experience went beyond the classroom to how the university supported student learning:

Yesterday I was online. I was looking for an article that I needed to request via interlibrary loan. I was able to log on, chat with the library because I wasn't able to get it the way it should work. They were able to walk me through the steps, and it was very streamlined and efficient. So I appreciate the fact that I didn't have to drive in to the library to figure that issue out. I was able to figure it out on my own at home with some assistance of technology and other people. It allows us to bring easy access to so many different tools and hopefully not the same tool for everyone, but a variety of tools so everyone can get what they need.

Emily supported the idea that technology needed to provide accessibility across distance:

"Google Docs is one of the technologies that I really, really encourage professors and students to use. ... because you can access Google anywhere anytime and it's really accessible." Moly preferred that faculty used technology that provide more freedom for self-paced learning:

Technology [that] allows me to go at my own pace, which either means I can go back to it, or I can move ahead, I like that. So like when Canvas, when modules are open, and I can kind of jump ahead if I want, that's been great.

Emily also wanted technology usage to be thoughtful about pacing; for her, this had to do with the length of videos used as instructional tools: "I think videos that actually will help [are] brief and short, where they deliver the message that they want to use."

Effective technology supports informal learning environments. All of the student participants valued technologies that effectively fostered informal learning environments. Dan felt that “For some of the topics ... we could have better discussions if they used some of the more informal social media style format.” Heather wanted faculty to “really explore the variety of platforms that are out there.” Mick pointed out that formative assessments could be done through informal activities, such as “the use of quick survey tools. It's a way to gather feedback from students very quickly, and then the instructor would be able to adjust the instruction based on that feedback.” Cheryl also “found some other app, which was the same concept of polling your audience or polling your class” that was “meaningful” to her as a learner. Both Dan and Moly suggested tools that let instructors present information in informal ways. Dan enjoyed FlipQuiz: “I've always thought that that's kind of fun too. ... And if you get a wrong answer on something, you're more likely to learn the right answer.” Moly mentioned GoAnimate:

It does take a lot of time, but it's kind of a fun way to just make the course a little bit more interactive and engaging. And so you can make basically animations of yourself. It keeps people awake and engaged. People laughed, and then you've got their attention. Whether low- or high-tech, the criterion for the student participants was the engagement factor, which they associated with more informal learning environments. Cheryl reflected on how low-tech tools can be used together informally to pace activities: “The videos and activities that we do in class, for me, lead us to the discussion. They lead to the conversation. ... Honestly, we've used Google Docs very well in this program because it helps us to collaborate.” Moly reflected on apps that let the instructor “get some quick information across or have a little fun.” She appreciated when “professors...assign small groups to do things and then you get to be creative. I mean, and the small groups used technology to be creative with things.”

Creativity and engagement mattered to Mick and Tom, as well. For Mick, using “niche technologies” that “allowed me to look at something from a different perspective” enhanced his learning. Tom shared the impact of faculty using technology to lighten the intensity of certain topics and therefore enhance learning:

[The professor] threw some GIFs on there. And that let the floodgates open, so we all had fun with that. It just spiced things up. I liked that. And knowing that she took things lightly, whereas things get pretty thick pretty quick with some of the stuff that we're studying.

For both Tom and Sarah, creative technology like virtual reality technology made the learning environment more informal in ways that enhanced learning. Tom had experience with Engage, “an online platform, where you can go anywhere at any time. But what's amazing with this stuff, is they have ... I wouldn't call a group, a chat room or anything, but ... a learning environment.”

Sarah imagined great possibilities for virtual reality software in educational settings:

You can be here, and you see in the White House. Or you visit Rome, or you visit Europe. I would think that would be really something that is really good to bring to class if you have to study about Africa or my country, Uganda ... people can really see where the country is.

All of the student participants wanted educational technology that supported informal learning environments, as this was a key criterion for supporting student learning for them.

Effective technology supports hybrid learning environments. The student participants wanted the faculty and doctoral program to integrate technology tools that facilitated hybrid courses, which they found valuable for two key reasons: one, the flexibility for students to attend online when unable to come to class, and two, the ability to still have the in-person interactions

that can build relationships most effectively. For Dan, “the most powerful use of technology happens in a blended environment, [where] there's something that's online and something that's in person.” But to be effective, faculty need to “work on more meaningful blending of the technology, ... a more thoughtful implementation of how the technology is used, as the gold standard of being very thoughtful and methodical about how the technology can enhance the learning.” Tom found that the online learning management tool helped him to like both online and hybrid learning environments, although as mentioned earlier, his experiences “depended on teachers’ creativity and skills of using technology.” The learning management technology made him “much more proactive, and on top of things, ... making sure I don't fall behind in that online environment. So I do appreciate the online learning environment.” For Sarah, technology-supported hybridity brought value to her learning both because she could “decide to be online basically or to once in a while come in class,” while also letting her “meet some other students from other cohorts that I didn't know.”

In particular, the student participants appreciated the flexible connectivity offered by technology like Zoom. For Dan, hybrid courses supported by Zoom were “very convenient ... you can be in the class or you can be online. I don't want Zoom online only, because I value interaction.” When the program shifted from the “face-to-face ... weekend” model to the Zoom “online learning model, it worked for me, I think, because we still met synchronously. We still had that effect of being in the room with other people.” Emily also appreciated blended courses using Zoom, especially “when the teacher is able to facilitate it in such a way that you have those folks, it feels like they're in the middle of the room. ... They can see us easily, and you can kind of have the conversation.” For Moly, video conferencing technology “took a little getting used to” when “trying to develop enough rapport with classmates and with professors via Zoom link.”

But the technology effectively enabled students to get “used to having class that way [such] that we're sometimes more talkative when we're online than we're in class. Because we're just used to kind of how that feels. I've enjoyed it.” When educational technology meets key criteria, the student participants appreciated its integration into their learning.

Focus on supporting students' professional use of technology. As current and future professionals in the field of education, the student participants all focused on the importance of the program supporting their own professional use of technology. Cheryl appreciated the courses that she took on technology, where the professor “taught us so many things. What could I identify right now?... different video apps, I think, were really good. ... I learned how to do videos and so then I kinda transferred that into my own knowledge.” Heather wanted a similar opportunity: “I think maybe I need a course on what other opportunities are out there.” Emily felt that “there's a lot of technology popping up, especially with the younger generation that we need to know more about ... 'cause by 2025, by 2030, I think there's gonna be a whole bunch of new technology that we don't know about.” For Tom, using technology in educational settings was about “just trying new things.” In his own professional work, this was his philosophy:

If we do one project using one technology tool, okay. We'll do another project, but now the rule is you can't use that one we just used. You need to try a different one this time.

So just try to build a skill set within my students.

He integrated that into his own learning within the program: “In those instances where I do get the opportunity for some innovation, and some creativity, then I ... That's where I see an opportunity to pounce.” Sarah found such creativity in her colleagues to be helpful in focusing her own learning: “One of the students uploaded a [YouTube] video that he did and then we could see it. And we could review and to go back and see it.” She wanted the program

“encourage such things.” For the student participants, the criteria for effectively integrating technology into their learning program included the need for the program to focus on encouraging their own professional skills with the technology.

Student Feedback Regarding Technology Use

The student interview question ended with an invitation for the participant to share any final thoughts. Many of their answers included feedback about how the educational leadership program could use technology more effectively. That feedback is summarized here; much of it aligns with themes found in both faculty and student themes and will be analyzed further in the next section.

Emily observed that both students and instructors need strong technology skills: “I think it's time for us to use more technology, get more familiar with technology, incorporate that inside the classroom. . . . I would really like teachers to use technology inside the classroom.” Sarah also hoped that the some of the faculty would expand their understanding of the range of educational technology available:

Some of the professors, they have only one way when they use technology. Sometimes, they only use, they send you an outline copy of the book or the PowerPoint and you just look at it at the same time you talk or you look at it.

Dan similarly noted that the need for more varied technology use:

I would really appreciate if they can dig deeper and they can look for other kind of platforms to use inside the classroom to either present or teach or even when they lecture, they can use different kinds of platforms. . . . I would love to see that.

Many of the student participants underscored their advice with the fact that, as Dan put it,

“[Technology] would make the learning process easier, faster, and I think it's reality that you

cannot say no to [it] right now because it's part of the learning process.” Cheryl reflected on what she suspected was one of the underlying problems with acting on this feedback:

It's a challenge because of having to train themselves. ... I don't know if [the institution] really gives them a thorough training, but it doesn't appear that they've had much training.

And I, again, not trying to be critical of them, 'cause I know how hard it is.

Cheryl's awareness of the challenges faced by their educators was echoed by Heather, who felt that the institution could “invest some time and some faculty development around the use of technology in the classroom, primarily around getting away from the PowerPoints and using some other forms of technology.”

The student participants generally advised that the institution should recognize the faculty's ability to adopt new technologies and support the faculty through training and opportunities to try new technologies their own. This would allow the faculty to learn more effective ways of using educational technology. The student participants also observed that the faculty was already doing valuable things that should remain in place or be improved. Dan commented that the program was “making good strides in finding ways to allow technology to keep the student's experience as engaging in real time as possible... using technology to enliven lectures, connect students, and make sure they're engaged in the moment... needs to continue to increase.” For Cheryl, there was also the concern that the program “need balance in technology in doctoral work as well. Technology is ... an anticipatory set. It gets me interested, but that's not the real learning and the real learning comes in the interaction that follows.”

Many of the student participants also brought up that instructor proficiency with many technology tools was important in training the students to be similarly proficient and effective in their own use of technology. For Mick, although the program had “prepared us well to use the

technology we need to be successful independently,” it had not successfully taught the students how to “use technology to connect with one another. I think that that is a gap that could be explored and would be beneficial and could enhance these sorts of programs.” Moly brought up the students in higher education have backgrounds with technology:

Sometimes, especially in the doctoral program, there are students who are not young, and I'm talking about students who are 60, 70 years old. Some of those people, they don't really know how to use technology inside the classroom, so what I'm thinking about, there's some[thing], I think, the professor [needs to address] before he asks students to use technology.

Heather wanted more “faculty development for the faculty ... not only to use it themselves to deliver course content, but to teach us about how to be more engaging teachers, educators, learners about the different formats of technology that are out there.” Stronger faculty development with regard to technology could lead to stronger engagement for those enrolled in the program. Emily put it this way:

Just don't be afraid to try new things, and stay excited, stay engaged, and share. Whatever that looks like to share with other people, so they can learn from what you had to go through. And I hope to do the same thing.

The student participants wanted the program faculty to use a variety of educational technology effectively not only because it would enhance their own learning, but also because it would help them to do the same for their own students.

Comparison of Themes

The findings revealed several places where the faculty and students viewed educational technology differently, from the role of tools like PowerPoint to the possibilities of new tools like social media platforms. They all discussed the importance of faculty staying current with technology trends, but there were some differences in how the faculty and students viewed this shared theme. Ultimately, there were many similarities between how these two groups perceived technology as a pedagogical tool in the graduate-level educational leadership program: current educational tools held value when they were used proficiently to allow for flexibility, to foster interactions, and to engage all learners.

My research questions grew out of my observations about the use of PowerPoint within this particular program. The case study confirmed what I observed: faculty and students perceived this technology differently. For the faculty, it was a useful tool that enhanced their teaching. One of Dr. Julie's responses captured the faculty's general thinking:

I've always used PowerPoint as a way to organize my thinking about what we'll do in the class. I used to always print out a paper schedule as well, and then realized that it sort of became unnecessary, that if I used the PowerPoint and follow what I have planned, that that works out well.

But for many of the students, it was outdated and relied upon too much. As Heather put it, "I rarely learned anything from the PowerPoint aspect, and I can't even—there's very rare opportunities where I've actually gone back and re-looked at those print offs or those slides from those classes." As the data above shows, the students not only found PowerPoint unhelpful, they also felt that relying in it hindered the faculty from engaging with newer, better options. As Emily said, "There are a lot of technologies similar to PowerPoint that we can use instead." The

newer technologies, like social media, were also something that the participants viewed differently.

Whereas the divide over PowerPoint was fairly clear between the two groups, the division between how social media was viewed was not. Some faculty and some students saw little value in social media such as Twitter and Facebook, whereas other members of each group saw them as a way to enhance learning. Three faculty members and two students did not value the use of social media for class activities. As Cheryl put it, “social media is used maybe not primarily but in many ways for advertising. I don't see social media as a great source of education. It's maybe a link to getting to the education. But even there, I would minimize [it].” Emily echoed this sentiment from her perspective as a teacher:

I've been always against social media inside the classroom. As the teacher, I'm always against social media and stuff. ... it distracts the person, and it's not really helpful or it's not a source that you can use inside the classroom. ... I would totally disagree with having social media inside the classroom.

Dr. James did not hold as negative a view, but he had only started to consider using social media as a learning space: “I could see at some point, either allowing or encouraging students to tweet about what they're learning and share it with the world that way.” Although Dr. Brendel had created Facebook course pages, his intention was only to keep students apprised of course updates. All four faculty participants did indicate that they used the social media platform LinkedIn, but only to share news of professional accomplishments; none had used it for teaching purposes.

In contrast, most of the student participants encouraged the use of Facebook or Twitter for class engagement. For example, Dan valued Twitter-based conversations. Sarah liked

creating “closed groups” on Facebook for “for academic reasons to share knowledge.” Mick reflected on the possibilities opened up by social media: “with doctoral work, where you are digging into very deep topics and conversations, [it] would be [interesting] to find out what else is happening in the world.” Heather similarly valued the “continual online learning with others outside of those that are sitting in your room” that Twitter offered. She advised that “the program could improve [by] encouraging those online conversations through via Twitter [to] start engaging people outside of your classroom environment on the same topic.” Similarly, Moly viewed social media tools more generally as helpful because they can “give you a sense of what is out there and what people are talking about. ... If you need to kind of test ideas, you get instant feedback.” Dan echoed this: “I like social media that allows quicker back an’ forth where people are live.” Based on his own use of social media as the instructor, Tom had the strongest sense of the value of these tools pedagogically, reflecting that “social media is very powerful [because students get] to interact with some people, share our work.”

Despite these different perceptions of PowerPoint and social media, all of the participants believed that it was critical for those in the field of education to stay current with instructional technologies. The faculty participants shared that they did this through online communities, such as listservs, by working with younger colleagues, and by reading books on online and virtual pedagogies. Similarly, the student participants learned from their colleagues, especially those in their classes in the program. They also stayed current by exploring new technologies when completing course work. Tom in particular found it valuable when instructors gave students “a green light, and then that's when I get to go have fun... those instances [are an] opportunity for some innovation, and some creativity.” Some of the student participants liked to take courses to improve their knowledge of using technology. Cheryl appreciated courses that she had taken on

technology offered by the faculty, and Heather hoped to take such a course, especially if it helped her to learn alternatives to PowerPoint.

All of the case study participants valued technology that effectively facilitated engagement and interaction. The faculty and student participants all shared that they found Zoom to be a successful online tool in this regard. Dr. Brendel, Dr. James, Mick, and Tom all explicitly shared that Zoom allowed for valuable small- and large-group discussions in real-time, and most other participants mentioned Zoom positively during their interview. Dan mentioned that video conferencing enhanced his learning because “seeing my classmates responses in real time, it forces you to pay attention to what's happening and to prepare you to comment and react.” In addition to video conferencing, the students found that they learned well through visual-technologies, such as TedTalks, YouTube videos related to course objectives, and even instructor-developed video lectures recorded ahead of time and posted to the online learning management system. One faculty member in particular leveraged the pedagogical value of visual media by integrating gaming technologies into her course. Dr. Samantha described her use of virtual reality simulations as a form of experiential learning wherein students engaged in critical decision-making and problem-solving processes by “immersing yourselves into an alternate reality ... you become someone else. You learn to think like that someone else. You develop compassion, excitement, curiosity, adventure. This is what engages.” Simulations and virtual reality thus function as a special form of experiential learning. Sarah directly referenced this technology as an effective way to deepen student learning. Overall, the case study participants all placed value on technology that used video to engage students.

The data also showed that app-based technology added meaningful convince and informality to the learning environment. As Dr. Brendel put it, whenever he uses a new teaching

tool, he asks himself, “Is there an app for that?” Drs. Samantha and Julie echoed Dr. Brendel, as they felt that—in Dr. Julie’s words—“it’s important for us to meet students where they are.”

Indeed, the student participants had the same idea; they all discussed using apps in one way or another. Cheryl discussed the connectivity of apps in an educational setting: “I found some other app, which was the same concept of polling your audience or polling your class, whatever it was. And those were meaningful, too.” Dr. Brendel discussed using polling technology to encourage engagement by the more introverted and quieter students. Many of the participants thought of technology as useful in this way. They also viewed it as offering students opportunities to provide immediate, anonymous feedback to instructors and classmates. Dan hypothesized that “interactive platforms are just going to become more and more common. I think they really lend themselves to discussions,” especially because “once there's a prompt or something you can link to that helps ease some of the tension of starting a discussion and then [more hesitant] people will have something to talk about and react too.”

Another similarity across the themes was the effect of user proficiency and technical limitations in an educational setting. As Tom put it, the student “My experience with both blended and online courses are dependent on teachers creativity and skills using technology.” Mick expressed how the faculty who taught his first online course were “very thoughtful about their use of technology [including] recording of our conversations. It was always nice to be able to go back and review what was said.” Moly found faculty proficiency impacted both her content learning and her own technological proficiency. Similarly, the faculty observed the need for student proficiency with technology for success within the learning environment. Dr. James shared his frustration with instances when “students are unable to join the class because ... they couldn’t access the link. Then, if they don’t email you ahead of time, there's no way for you to

... incorporate them in the class.” Dr. James’ concern went beyond student technical proficiency and also addressed the limitations of the technology, a concern echoed by both Drs. Samantha and Julie when they described the technical specifications of the physical classrooms. All of the participants felt the effects—some positive, some negative—created by user proficiency with and institutional investment in technology.

The final idea present in the themes of both faculty and students was the value of hybrid courses as educational settings. Both sets of respondents felt that courses that blended in-person and online participation allowed for more flexibility while still allowing for effective student-to-student and student-to-instructor interactions. When discussing their preference for this model, many student participants reiterated the need for instructor proficiency with the technology. As Emily put it, “when the teacher is able to facilitate it in such a way that you have those folks, it feels like they’re in the middle of the room, and they can see us easily, and you can kind of have the conversation.” For Dr. Brendel and other faculty participants, the hybrid course became “the optimal educational environment,” as it the “powerful elements “contain[ed in] face-to face and online environments.” Sarah’s comment captured the value repeated most often regarding hybrid courses:

Now that we have blended classes, you can either decide to be online basically or to once in a while come in class. I really like that. I mean, there's that flexibility that you can always have. Then it has then enabled me to meet some other students from other cohorts that I didn't know.

Moly, Dan, Cheryl, and Tom all referenced both the flexibility and their interactions with students in person and online when discussing technologies like Zoom. For all of the case study participants, technology held pedagogical value when it was used proficiently to engage students,

to provide meaningful interactions, and to offer flexible learning environments. While they did not all agree about the place of social media or PowerPoint in educational settings, they did all see the need for both faculty and students to stay current with instructional technology.

Summary

This chapter analyzed the emergent themes from both the faculty members' and students' thoughts in response to my interview questions regarding the pedagogical use of technology in their graduate-level educational leadership program. The professors' viewed technology as a tool for student engagement and motivation and for measuring student understanding in real time. They also used it as a student-centered pedagogical tool. The students valued technologies that facilitated synchronous interactions within and beyond the classroom, as well as those that used visual media to facilitate learning. They saw a clear link between faculty proficiency with technology and their own educational experience. Their responses also showed several criteria that they used to evaluate the effective integration of technology into their learning environment. The students' responses to my final interview question yielded clear feedback about how the educational leadership program could continue to incorporate technology meaningfully. Finally, I compared the similarities and differences that emerged from my data analysis of the faculty and student themes. In the next chapter, I will provide a theoretical framework for understanding my findings, as well as recommendations for further study into technology usage within higher educational settings.

Chapter 5: Theoretical Framework

In order to best understand the views and uses of technology in the educational leadership program studied, I focused my research on two primary questions:

- 1- In what ways are professors currently using technology within adult learning activities in the selected higher education leadership program?
- 2- What are students' perceptions of the current technology use in this program? What other technologies would they recommend be implemented based on their own learning preferences?

My data analysis of the participants' responses revealed seven themes.

Faculty Themes

1. Technology as a tool for student engagement and motivation.
2. Technology as a tool for measuring student understanding in real time.
3. Technology as a student-centered pedagogical tool.

Student Themes

1. Value of synchronous engagement with classmates and instructors.
2. Dislike of technologies that do not facilitate active learning.
3. Link between instructor proficiency and student educational experience.
4. Value of visual media in facilitating active learning.

In this chapter, I will focus on the theoretical framework that I used to analyze my data. My framework is built through several theories: adult learning theories, as seen through instrumental learning theory, transformational theory, and humanist theory; the dramaturgy of pedagogy theory as laid out by Erving Goffman (1959); and most significantly, the theory of social structuration and education as formulated by Pierre Bourdieu (1986). These theories work

together to build a theoretical framework for understanding students' perceptions of the use of technology used in their educational leadership program, what other technologies they would prefer or recommend be implemented by the program, and the ways that the program's professors used technology within adult learning activities. This study's findings revealed that the participants like the use of technology in class activities when it was instrumental in allowing for interactions with others. In addition, the faculty participants recognized the rapid changes in the field of education that were transforming class activities and the learning environment. After applying key adult learning theories to my findings, I will discuss them in terms of the dramaturgy of pedagogy's conceptions of "appearance" and "symbolic interaction." Building on these theories, I will complete my theoretical framework by applying Pierre Bourdieu's concept of "habitus" to the case study data. Then, I will return to McLuhan's conception of 'hot' and 'cool' media and this case study underscores the importance of technology use in the field of higher education.

Findings in Terms of Adult Learning Theories

Instrumental Learning Theory

Stephen D. Brookfield (2005) outlines the critical thinking process in four stages: assumptions and recognition; the analysis of learners' assumptions about situations and the evaluation of the beliefs behind those assumptions; assumptions become a conceptual way to create student interest in learning; and reflective skepticism enables the development of questioning, analyzing, and reflecting on decision-making rationale (2005). All four stages of Brookfield's theory are evident in the data that resulted from my case study.

In terms of the first stage of instrumental learning theory, participant assumptions became visible within their conceptual awareness of their technology use, especially through their

comments about their decision-making process and what they considered in different circumstances. Faculty prepared and provided engaging learning environments using different technology tools to enhance students' participation and interaction in order to meet learning objectives. The case study data reveal that faculty members instructed activities and gave directions for students to participate, using a variety of technological tools. Dr. Brendel, for example, used "chalk talks" and "visual chatrooms" for introducing his ideas on the board or by technology and to give students direction regarding his activity plan. For example, after outlining his rules of engagement regarding the tool Backchannel Chat, Dr. Brendel used it to "check it with the class" and to "kick off the discussion by posing a question to the class and then saying, 'I want you first to respond to the Backchannel Chat feed.'" Dr. Brendel preferred Backchannel Chat as a teaching "tool because [the students] can think carefully and then choose their words and read them before they press the send button." He recognized that his preference for this type of tool was rooted in his own experiences as a learner: "I just like to think, process, work it out in my head, often read what other people have said. So, if I had part of class time being able to do that, that would be really helpful to me." Other faculty participants also chose online software that allowed their students to think and process their answers first, then reflect and participate in course discussions. In order to engage them through technology, Dr. Julie selected "Mentimeter, which is online poll software" because it let her "ask students a question and then they can give a response and then it shows up on the screen." Dr. Julie used this type of tool "to kind of engage students where they can text their response instead of raising their hand and sharing it that way." The use of Zoom online conference software raised awareness between students and faculty through dialogue. As Dr. Samantha stated, dialogue is "the primary teaching tool" of doctoral programs, and virtual conferencing is key: "I meet with students [online], we look at their text,

we discuss it, and we co-write online a little bit. I record it, they get the Zoom link, they make the changes, we move on.” Dr. Julie also discussed her considerations regarding using Zoom; it “allowed us to interact synchronously and to get as much of the face-to-face effect as possible, as those things are huge.” Such tools, she observed, transform “what online learning can look like, taking us from anachronistic discussion boards ... to actual dialogue in real time.” The student participants also discussed their own assumptions about Zoom as a learning tool. Several referenced how the group breakout room feature supported their learning and promoted interaction. Mick observed that instructors “structured opportunities to use Zoom to break us into individual breakout groups, discuss, and then come back to the large group. Zoom makes us feel connected; more voices were involved. [It] increased engagement [because] it allowed for true ... collaboration.” Dan stated that the use of video conferencing in the educational environment allowed him “to interact with students in other places.” On the whole, the case study participant responses captured the underlying assumptions that drove their conceptual awareness of how technology tools facilitated student engagement.

The second stage is the exploration and imagination process, which allows adult learners to use their imagination and knowledge for doing things. According to Brookfield (2005), this process is important for both learners and instructors because it leads them to explore academic concepts in new ways, which results in developing critical thinking and problem-solving skills. Several participants identified innovative ways that technology could be used for engaging with course content. One such way was the use of gaming technologies like virtual reality. Dr. Samantha, for instance, used virtual reality simulations as form of experiential learning for her students, explaining how users can “first immerse [themselves] into an alternate reality and then based on that alternate reality, [they] become someone else...[developing] compassion,

excitement, curiosity, adventure. This is what engages.” Sarah mentioned this strategy in one of her answers, as well. Dr. Julie shared a lower tech innovation; she liked to incorporate images from real life in order to deepen students’ understanding of key concepts. For example, she said, “I incorporate a lot of pop culture stuff into my teaching, and so like I use a lot of gifs on my slides.... [I] like ways to hook their memory of a concept to something that they might not have associated with that concept necessarily.” The student participants also preferred having the opportunity to explore their imaginations and creativity in using technology. Tom expressed his excitement around technology tools, as he could do “some pretty interesting-looking things on Google Slides” Effectively, what he did was use his ability and imagination to introduce information in new way, commenting: “So, for me, I'll do all of my work in Google, and then I'll transfer it into Microsoft Word or a PDF and then submit things that way.” He explained how he determined which technology tools with a lot of self-confidence:

So if a teacher says, ‘Okay, you're going to make a presentation,’...then I establish, ‘Is this an online environment? What's the experience for the end user going to be? Am I going to struggle? Is there going to be lagging within Zoom, or is this going to be in downtown, on campus?’ Then, that'll determine which tool I use. And then, who's my audience?

Many of the participants, both faculty and students, shared their preference for learning tools that were exciting and imaginative.

The third and the fourth critical thinking processes of Brookfield’s theory are interrelated: people think first, then reflect. The process of thinking critically enables a person to develop the skills of questioning, analyzing, and reflecting on the rationale for decisions. As seen above, both the student and faculty participants liked technology that supported discussion and interaction

and that allowed students time to process their thoughts. For instance, when instructors provided interactive technology, it simulated critical thinking, as it let students process their ideas before introducing them to the class. In sharing his rationale for using Backchannel Chat, Dr. Brendel observed that it gave students time to immerse themselves into an idea, and then reflect about it: "So, I'll say, 'Think about this for 90 seconds and give your initial response to this discussion question on the Backchannel Chat feed.'" Furthermore, it let him monitor student ideas for topics to return to: "if there's a question coming up or something people want to revisit or a reaction that's surprising, then we talk about that in the class." The student participants also liked technology that allowed for thinking time, as some needed to ease into a discussion. One of Dan's responses articulated this clearly: "My classmates can be a little bit hesitant. Once there's ... something you can link ... then those people will have something to talk about and react to." Another way of engaging critical thinking and analysis is by the use of polling technology, in which each student thinks of an answer and posts it, and then everyone comes together for a discussion. Posting the information using polling technology gives students time to think, analyze, and react, which leads to richer discussion. This process was again visible in one of Dan's responses:

[For] the class discussions, where they will take a poll, it allows people to anonymously respond, and then they use that for follow-up discussions. They can post a question from reading or from class curriculum, offer a poll, and then use that to stimulate further discussion.

Another technology choice that fit Brookfield's third and fourth stages was the use of videos to enhance students' thinking. Cheryl explained that "I'm engaged by a video. But I'm also engaged

by the interaction that comes following the video.” Brookfield’s (2005) instrumental learning theory provides one theoretical framework for understanding the data from the case study.

Transformational Learning Theory

People have a strong desire to make meaning of their daily lives, because there are no enduring truths: change is nonstop, and we have no guarantees for what we know or believe. It becomes a reality in adulthood that we build up an increasingly critical worldview as we look for approaches to comprehend our world (Mezirow & Associates, 2000). This extends to how we “negotiate and act upon our own purposes, values, feelings and meanings rather than those we have uncritically assimilated from others” (Taylor, 2017, p. 8.). As Edward Taylor notes, adult learners must work toward “developing more reliable beliefs, exploring and validating their fidelity, and making informed decisions [that] are fundamental to the adult learning process” (2017, p. 5). This transformational learning then is a process of constructing and appropriating new and revised interpretations of what the meaning of an experience in the world is.

Transformational learning theory is considered exclusively an adult learning theory (Taylor, 2017). It is grounded in human communication where “learning is understood as the process of using a prior interpretation to construe a new or revised interpretation of the meaning of one’s experience in order to guide future action” (Mezirow, 1996, p. 162). The transformative process is both formed and circumscribed by a frame of reference. Taylor explains these frames of reference as “structures of assumptions and expectations that frame an individual’s tacit points of view and influence their thinking, beliefs, and actions,” (2017, p. 5). He continues, “It is the revision of a frame of reference in concert with reflection on experience that is addressed by the theory of transformation—a paradigmatic shift,” (2017, p. 5). According to Mezirow (2000), the

transformative learning happens when teachers provide an activity that involves critical reflection on student experience and engagement in dialogue with others.

Student and faculty participants in this study experienced a transformation in their respective learning and teaching styles because of the use of technology. The use of visual technology, as understood in this study, transformed students' knowledge and faculty members' teaching strategies to achieve new levels of engagement and interaction, specifically with regard to visual technologies as a primary tool for engaging students. Dr. James shared that he used "YouTube videos," "presentation online [tools], [such as] PowerPoint," and a "Jeopardy game" to transform his students' learning experience. Dr. Julie limited her use of PowerPoint as a visual technology that helped her "follow what I have planned" and so that she had "an image to convey the concept that I'm talking about." It also offered her students "something to go back to reference." Zoom online conferencing was also useful as an engagement tool. Zoom transformed the methods of interaction and engagement to be online, so that if students or faculty members could not attend the brick-and-mortar class session, then individuals could still have the feeling of being in class. Faculty members characterized Zoom as a "tool of the future," as Dr. James put it. The tool transformed how instructors facilitated hybrid courses, as Dr. James could "see when they come in, when they leave. ... I can talk to them ... it's really complete, it's like a classroom without being in a classroom." For Dr. Samantha, technology more generally transformed the student learning experience, as long as the instructor did not "skip the rock over the surface of the lake, but [used it] to immerse the students in [the learning]." She pointed out that "one use of technology is ... to provide a simulated or experiential approach to learning, allowing students to become fully immersed in an idea before they have to look at it from a more technical or theoretical level."

Humanistic Learning Theory

The humanistic perspective is an approach in education that emphasizes empathy and stresses the good in human behavior. This approach allows educators to focus on ways to help improve an individual's self-image or self-esteem, which makes students feel worthwhile (Kolb, 2005). Students should have a learning environment that morally fits their education needs (Veugelers, 2011). One of the humanist aspects of this perspective is a moral sensitivity to feel and understand students' needs. According to Veugelers (2011), teachers should focus on their students' learning and help them overcome their learning obstacles, especially when educators see how students position themselves (e.g., talkative or quiet) and encourage the interaction and discussion that gives meaning to their experience and the world around them. The data from this study indicated that professors used technology to assist their teaching and students' learning to create a learning environment that is more customized and student-centered. According to Dr. Brendel, technology helped improve his teaching by permitting him to obtain an "immediate sense of how students [were] understanding the material." Dr. Julie also agreed with the idea of using students' responses as a way to evaluate their learning and her teaching, stating that, "text-message responses allowed students to see in real time where everyone's at, and it allows the faculty member to do a formative assessment of where the class is." Dr. Samantha also used students' real-time feedback to analyze and diagnose their learning. Dr. Brendel found that technology was often successful in engaging quieter students, and "students for whom English is not their first language." He added that technology helped him "to hear what quieter students think. It's easy to find out what extroverts think because they'll always ... be the first to contribute to discussion." It also provided students with opportunities to provide immediate, anonymous feedback to instructors' and classmates' course contributions, but lowered the risk

that they associated with “raising their hands.” This promoted students’ learning because it gave them the confidence to respond, comment, and express their ideas without being recognized. The technology allowed the faculty to humanize learning within the educational setting.

The Dramaturgy of Pedagogy

The use of technology within the adult learning setting of the educational leadership program changes the environmental spaces in which students and instructors perform learning.

Sociologist Erving Goffman (1922-1982) established the idea of dramaturgy as:

pertaining to the overall texture of performance, created by the relationships and interactions between verbal, visual, sonic and physical properties, suggests a collapsing of distinctions between ‘internal structures’ and ‘external elements’ and presses to the fore the involvement of the spectator in a process of observation, comparison, selection and interpretation. (as cited in Bolton, 2009, p. 5)

Goffman identified what he called “front stages” and “back stages.” Amid our regular day to day existence, we spend a substantial portion of our lives on the front stage, where we get the opportunity to convey our lines and perform. Any place where we act before others, including the classroom, is the front stage. At times, we are permitted to withdraw to the backstage, where we don’t need to act. We can be our genuine selves in these private spaces, and we can rehearse and plan for our time on the front stage (Bolton, 2009). Within his theory of pedagogical dramaturgy, Goffman (1959) conceptualized two key ideas: appearance and symbolic interacting. The appearance of a classroom, the way that it is presented, and the interaction within it says a lot. For example, the traditional classroom, prior to the recent rise of online interactions, contained a teacher who interacted formally with their students and who lectured from the front of the room. Students were expected to sit and listen intently. In contrast, the

modern classroom has a very different appearance. The contemporary classroom contains an active teacher leading exciting activities that integrate advanced technologies. Symbolic interactions, the second concept in Goffman's proposed theory, refer to both the physical and online interactions that happen. In the second of these spaces, educators have more flexible roles and are able to work more closely with their students, which is essential for student learning. In Goffman's view, educators are the actors on the stage who should "perform" the lessons in a way that engage the students in the educational setting (Bolton, 2009).

Appearance

In a recent blog post grounded on Goffman's theory, Ashley Crossman (2019) defines appearance as things that "portray to the audience the performer's social statuses. Appearance also tells us of the individual's temporary social state or role, for example, whether he is engaging in work (by wearing a uniform), informal recreation, or a formal social activity." Similarly, this study's findings reveal that the presentation and appearance of the classroom—just as much as that of an individual—changed the manner of activities performed in it. With the significant shift in technology usage, the higher education classroom appearance comes from how leadership in the form of the instructor implement that technology. The classroom becomes a hybrid space, using a mix of face-to-face and online participation. Dr. Brendel, for instance, described the hybrid learning environment as "optimal"; the benefits of this format, he explained, were that "the face-to-face classroom...allows for an immediate response, and sometimes you really can feel the energy build up in a class. But the online environment ... slows down thought and allows students to formulate responses."

Students also saw the blended environment as powerful, as Mick commented, "the most powerful use of technology happens in a blended environment." Like Dr. Brendel, he perceived

value in the technology-enhanced learning environment, but he felt that the doctoral program still needed to work on the most effective appearance of the hybrid space:

There's something that's online and something that's in person as opposed to taking these elements and mixing them together, where certain elements of any one structure, any one modular assignment, has both online elements and in-person elements. So, working on more meaningful blending of the technology, a more thoughtful implementation of how the technology is used, is the gold standard of being very thoughtful and methodical about how the technology can enhance the learning.

In considering the ways in which the hybrid environment could be improved, the various participants also reflected on the two major ways in which the use of blended courses were beneficial: flexibility being the first, that when students were unable to come to class in person, they could attend online; and second, the physical interaction in a traditional classroom still allowed for building meaningful relationships between both students and their instructors. Sarah, noted that the hybrid form “enabled me to meet some other students from other cohorts that I didn't know.” Dan addressed the importance of not sacrificing the brick-and-mortar option, “because I value interaction.” Cheryl addressed the change in appearance as the program shifted from the “face-to-face, [meeting] in a weekend model” to “online learning model.” For her, the environment remained effective “because we still met synchronously. We still had that effect of being in the room with other people.” Emily and Moly echoed Cheryl and Dan’s observations, as well. For Tom, however, the hybrid environment caused his “routine to shift. I’m constantly aware of due dates, I’m much more engaged with the online learning system, and I’m finding myself be much more proactive, ... making sure I don’t fall behind in that online environment.”

The classroom is not the only part of education that can have an “appearance.” Goffman (1974) and Denzin (2002) describe the appearance of activities as the scripting of behavior presented by students and professors through the media, which guide and organize their experience. Additionally, both professors and students, as actors, have to present their knowledge to meet the requirements and the goals of their teaching and learning in real situations before the class (face-to-face or online), which then become “theatrical like in their construction” (Denzin, 2002, p.107). The data in this study reveals that the implementing educational technology tools caused the learning activities appearance to change and improve to fit both teaching and learning requirements. The faculty used new technology with new appearances within hybrid courses activities. Conference video software, along with their breakout room features for students to discuss ideas and then come back to share them with the larger group, have become essential tools. For instance, the use of Zoom became popular, as it made synchronous online activities a part of the learning environment. As has been discussed previously, all of the participants found value in activities facilitated through this tool. In particular, the student participants mentioned the group breakout rooms as way of expressing their ideas, which supported their learning and promoted the relationship between themselves and their peers. Ultimately, in the words of Tom, “it's not the same as being in person, but it's pretty darn close.”

Denzin (2002) claimed that when the performers (students and professors) come together, they manage their appearance by controlling impressions, “[contriving] illusions, [keeping] front and back stages separate, and [deploying] various dramaturgical skills, thereby turning each interactional episode into a tiny moment of staged, dramatic theater” (2002, p. 107). In this study, students shared that appearance in class activities had two groups of people: those inside the physical classroom, and those online. Moly discussed how the appearance of two distinctly

different groups interacted: “[The instructor] always wanted to include the online members with the ones who were in the classroom. So she was always trying to mix the groups very well.”

Recording a conversation is another new appearance for class activity, which Tom talked about:

“What [professors] did is they created lectures...It looked like a professional TV studio and they recorded this mini TED Talk.” According to him, this process of video lecture interaction gave

him and his fellows students time to “really [build] a foundation for having deeper

conversations.” This new activity appearances also meant that students could go back in case

they missed the class or wanted to check their understanding of the material. According to Bernie

Hogan (2010), good technology presents things to the user that the user finds relevant or

interesting. Mick called it a “thoughtful use of technology from the recording of our

conversations, it was always nice to be able to go back and review what was said.”

Over the years, presenting information has had many different appearances, and become easier while being fundamentally changed. For example, one professor had previously printed

out physical agendas for the session’s activities, but more recently she was able to replace that

practice with PowerPoint, explaining: “I use the PowerPoint and follow what I have planned, that

works out well.” Dr. Brendel also explored how his use of technology changed his teaching

methods: “One thing I’ve noticed though is that my use of technology has very much changed

how I do my face-to-face instruction as well.” Technology provides new appearance for

activities, allowing students to interact freely with no judgment, as Dr. Brendel explained: “The

main way I’ve used social media and technology in my face-to-face instruction has been building

on its capacity to be anonymous,” adding, “I find that the anonymity of social media is a great

thing...and I also like the fact that everybody’s participation or opportunity to participate is

essentially the same.” Additionally, the polling software that has been discussed was another

new, interesting activities' appearance made possible by technology. Both Dr. Julie and Dr. Brendel posed questions using online tools to engage students. Recent gaming technologies, such as virtual reality, have also been identified as tools for engaging students with course content in innovative ways. Dr. Samantha used of simulations as a means for students to engage in critical decision-making and problem-solving processes. Many of the students discussed interactive platforms, which were, according to Dan, "going to become more and more common. I think they really lend themselves to discussions." Visualization is also an important teaching tool; many students agreed that they like to see information presented through visual-based technology. Like Tom's preference for the TEDTalk style videos, Sarah, Moly, and Emily all referenced video as another way that technology could make learning activities more effective.

Even with these positive experiences in using technology, there are still some challenges that come with the new learning appearance. Students expressed frustrations with the challenges caused by instructor skill that sometimes caused a delay or interfered with engagement and interaction. Tom noted his "different experiences with different teachers. [I] watch them either be really successful with it or [they] struggle significantly in this type of learning." Moly remarked that she sometimes felt frustrated during ill-prepared transitions to breakout sessions:

If it's not really smooth and if it's not pre-established, then you've almost lost the groove. Like, they're teaching and there's all this stuff and they give you directions about what you're [going to] talk about when you get to the small group. And then you have a five to ten-minute delay while they get the technology set up. Well, by the time you actually get into the breakout session, you're like, "What were we supposed to talk about, again?"

Other students echoed Tom's and Moly's observations, as well. Heather made a comment that also raised the issue that "there's always some sort of glitch or logistical issue with the students who are Zooming in from a different location."

In addition, these shifts in appearance also affected the methods of class preparation when instructors were creating hybrid courses. The integration of Canvas, an online learning management system, meant that the faculty participants needed to post the information required for the lesson online before class to prepare both in-person students and online attendees. The faculty also experienced changes to their preparation for class activities; Dr. Julie shared that "my brain has to prep for class differently than it has in the past." Dr. Brendel also expressed his changed attitude toward class preparation: "I've noticed, though...that my use of technology has very much changed how I do my face-to-face instruction." For example, to facilitate the real-time text-based messages, "when students come in, I've [opened] a tool called Today's Meet." Dr. James offered that these changes also meant that "it takes a long time ... [I need] more time to prepare an online course than to prepare a traditional course."

The case study data revealed that over time, the faculty participants became more comfortable with new classroom appearances—hybrid courses and technology-driven activities—despite the challenges that the hybrid environment and new technology tools brought. Similarly, the student participants enjoyed the new appearance of their educational environment. They liked physically interacting with their colleagues as well as the convenience of the online portions of their hybrid courses; this newer, more flexible environment allowed them more freedom to participate in class from anywhere. The students hoped to continue seeing the appearance improve.

Symbolic Interaction

Interaction is strong element in building foundations for social exchange in both learning and teaching. As Sharon Preves and Denise Stephenson (2009) point out, “education is a social exchange in which sociologists have a responsibility to tend to...dramaturgical processes” (p. 46). This study suggests that teachers have this same responsibility to attend to dramaturgical processes unfolding in their own classrooms. Interactions can be both physical, while attending face-to-face in a classroom, or digital, through video conferencing technology. How instructors choose to encourage digital interactions impacted the learning environment. For instance, Cheryl reflected on an technology tool that they had encountered previously in the program: “We had the discussion boards, [with] all of these long responses that you have to read and respond to ... big thumbs down as far as I'm concerned.” In contrast, students felt that some technologies facilitated more participation and direct interactions. Heather shared that “In our schools, there are platforms that allow direct interactions similar to polling technology. Poll Everywhere is one, Kahoot is one, Pear Deck is another one” (see Appendix A). This kind of technology provides students with the opportunity think on their own, then to interact in engaging ways, often while responding anonymously. Dr. Brendel summarized the value of such interactions: “Online gives you time to think and process information and sort of go over whatever it is you're thinking before you commit to a chatroom comment. So, it slows things down for students in a way that's often really helpful.” Students agreed that the use of various technologies was great for discussion-driven interactions, because they helped students to overcome their fear of verbally answering questions. In fact, they wanted to see more of this type of learning activity, as Dan pointed out: “you can post something that's provocative or something from a reading and then

have students react to it using technology... that kind of a format would be what I would recommend leveraging more.”

According to Goffman (1959), the process of communication is the central quality of the human social environment. Social interaction at any level depends on communication (as cited in Little, 2016). The case study data shows that discussion is a primary part of the interactions that support learning and teaching between students and faculty. Therefore, educational technology needs to effectively facilitate discussion-driven interactions, to let participants “actually dialogue in real time,” as Dr. Julie put it.

Social Structuration and Education

Humanist Pierre Bourdieu established the far-reaching “hypothesis of society” (1986). While Michel Foucault (1980) considers power to be 'universal' and beyond organization or structure, Bourdieu (1986) considers it to be socially and emblematically made, and always re-legitimized through an interchange of office and structure. Bourdieu's approach is valuable in breaking down how power develops and how social change happens (Eyben, Harris, & Pettit, 2006). The fundamental way that the latter happens is through what he calls “habitus,” or the mingled standards that guide, conduct, and make decisions. Habitus is “the way society becomes deposited in persons in the form of lasting dispositions, or trained capacities and structured propensities to think, feel, and act in determined ways, which then guide them” (Wacquant, 2005, p. 318). It is organized by a person's past and current conditions, such as one's family foundation and educational encounters. It is also organizing, because a person's habitus shapes their present and future considerations and practices (Maton, 2008). In his hypothesis of society Bourdieu (1990) further explores the idea of habitus. He uses “field” as a spatial metaphor to define the structure of social arenas and the individuals that occupy them. He then describes

“habitus” as structured systems of networks of social connections, where individuals of varying positions maneuver, vying for stakes, resources, and access. “Individuals encounter power differently, depending on which field they are in at any given moment,” so the area that affects habitus and the idea of habitus are bound to the field (Gaventa, 2003, p. 6). Both the field and the social aspects inside the field, and how they add to and advance the field, are critical to building up a comprehension of a person's habitus (Maton, 2008). Similarly, the power within a field is the capital, which embodies all types of power, regardless of whether they are material, social, or representative. People and gatherings draw upon their financial, social, and representative resources in a request to expect and improve their position in the field (Grenfell, 2009).

The results from this study reveal many changes in the field of higher education leadership program that have the potential to transform the traditional habitus of instructors and learners by shifting the structured networks within the learning environment. There is a greater blend of face-to-face and online courses than ever before. Within the case studied, Dan noted that:

a number of students are online from different states and different areas [but are still] part of the program, which is fantastic. It allows them to interact with students face-to-face and hear the professors' lectures live, which is great. Recording the class sessions and allowing you to look at it later, I think is great. I think that the university [in the study] is making good strides here.

The faculty participants also experienced the shift that resulted from connecting with students in both face-to-face and digital spaces. Technology change has allowed communication between professors and students to become easier. Dr. Samantha said, “Virtual conferencing is a primary tool of mine in working with doctoral students.”

Technology also, as many responses alluded to, also allowed for a shift in capital as anonymity within the learning environment becomes more viable. My data explored the idea of technologies that incorporate anonymity as a new habit that both professors and students liked to use. According to Bourdieu (1984) and Reay (2004), habitus is embodied: it is not made exclusively out of mental attitudes and perceptions. Bourdieu (1986) demonstrated that habitus was communicated through strong ways of “standing, talking, walking, and feeling and thinking” (p. 432). Individual connections to dominant culture are passed on in scope of activities including, “eating, talking, and gesturing” (p. 432). Bourdieu, in his work, emphasized the constraints and requests that impose themselves in individuals, while the habitus takes into consideration the individual that guides it and inclines people toward specific ways of behaving (as cited in Reay, 2004). Thus habitus is in part engraved in the body of biological person. Anonymity is an essential element that establishes and promotes students’ learning, because it gives them the confidence to respond, comment, and express their ideas without fear of being recognized. Dr. Brendel used technology to build anonymity into the discussions in his courses, because “anything that increases the ability of students anonymously to respond in the moment in class is really helpful.” One purpose of education is to give students the feeling of being unique and of having the capacity to create a new reality through consciousness and planning; types of capital should be gathered and exchanged from one field of education and then transferred to other disciplines (Navarro, 2006, p. 17). Thus, professors look forward to using new and different strategies in technology, which change the habit of teaching their classes.

New technologies, like virtual reality in the case of Dr. Samantha for instance, can change the way professors deliver information, and at the same time students can be more engaged and enjoy the learning environment. Dr. Samantha insisted that the use of technology

should be a primary tool for teaching and learning. She particularly emphasized “gaming,” which “is a strong concept in in pedagogy [because] by simulated experience and play, we can start getting an idea of what something must have felt like or been like....And so this has engaged the student, but also [taught the] concepts.” Thus, we see virtual reality as a new habitus learning-teaching environment, where students immerse themselves into experiencing reality through technology, by which they would achieve an experiential learning goal. Sarah in particular hoped that this tool would be used more in class activities: “I would think that [virtual reality] would be really something that is really good to bring to class.” Tom was also interested to see more informal technology, such as virtual reality, used to help students learn and interaction; he suggested that the program explore “Engage, [an] amazing ... software [that] records in 3D ... and you can bring in interactive elements.” The faculty participants also sought technology tools to transform their teaching and their students’ learning. Dr. Samantha shared that she looked for “different ideas like [YouTube videos], inside class, outside the class.” Dr. James and Dr. Julie also employed YouTube, with Dr. James admitting to using that platform “from time to time,” and Dr. Julie admitting to using it “all the time.” The frequent references to the value of Zoom video conferencing on the part of all participants underscored the value of it as a new means of effective engagement for both faculty and students.

Social structuration and education, as used in this study, explores the professors’ use of and the students’ experience with technology as a means to enhance teaching and learning in a graduate-level educational leadership program. It helps to shed the light on students’ and professors’ experiences using technology for teaching and learning purpose. Using such a theory enables the researcher to analyze every interviewee’s words and obtain strong and meaningful data through an inductive analytical process (Caswell, 2012).

Discussion and Interpretation

Marshall McLuhan (1994) suggests that the media, not the substance that they convey, ought to be the focal point of the study. He introduces the idea that the medium affects a society by its characteristics instead of the content (McLuhan, 1994). McLuhan provides the light bulb, the TV, and the daily paper as examples. None of these are mediums have content; however, they all have social impact, because they provide services to the community (e.g., without the light bulb, people will live in darkness). McLuhan noticed that all media has qualities that engage users in various ways. According to him, each medium incorporates itself into what we already are, and its content is continued from previous mediums (McLuhan, 1994). McLuhan (1994) indicated that for the millennium generation, the internet is the medium continuum that carries traces of myriad previous mediums that came before it, such as printing, radio, and film. This is evident when Dr. Brendel discussed his use of the software Backchannel Chat, which replaced a “tool called Today's Meet, which is not available anymore.” Similarly, as Dr. James noted, “When I began teaching online, we used Adobe Clinic, [and an] asynchronous kind of teaching, meaning that you wouldn't see the students.” These tools have been replaced with less complicated tools and synchronous video conferencing tools, like Zoom. The effect of every medium is to some degree restricted to the previous social condition, since it just adds itself to the existing processes (McLuhan, 1994). Therefore, different societies might diversely be transformed by the same media. The data in the study shows that synchronous video conferencing software transformed the way that participants interacted during class sessions and in other program-related interactions. As Mick put it, “Zoom makes us feel connected, more voices were involved, ... it allowed for true engagement and collaboration.”

McLuhan (1994) believed that media influence shapes and re-shapes how people, societies, and cultures see and comprehend the world. In his view, the purpose of media studies is to make what is invisible be visible; the impacts of media innovations are the messages they convey. The technologies identified in the study reshaped the classroom environment, most especially through the advent of hybrid courses that allowed for student participants the choice to be either digitally or physically present for class sessions. As well, technology led to new activities and changed course preparation patterns. McLuhan (1994) employs an analogy in which technologies are to words as the encompassing culture is to a poem: the first gets their meaning from the context formed by the second. Here, like Harold Innis, whose work contributed much to the field of media and communication theory, McLuhan is looking to the broader culture and society through which a medium passes on its messages to distinguish pattern of the medium's effects (McLuhan, 1994). This led to his notion of 'hot' and 'cool' media: films are 'hot' in that they improve one single sense—a person does not have to apply much exertion in filling in the details of the movie image, whereas comics are 'cool' in that their limited presentation of visual detail requires a high level of exertion—the reader must fill in the details not depicted by the artist (McLuhan, 1994).

In a hybrid educational setting, as seen in this case study, the face-to-face classroom activities would be considered as hot media, as they allow for physical interaction and more engagement. Student participants did not value 'hot' asynchronous discussions, because they wanted to be more actively engaged. While students enjoyed the convenience and flexibility of asynchronous online learning platforms, they preferred technologies that facilitated interactivity and human engagement. As Cheryl observed, asynchronous interactions did not feel as "authentic" as "sitting in a real classroom with other people." Moreover, the students felt their

asynchronous responses were less authentic, because they could, as Heather put it, “pull out a textbook and get a textbook response.” Sarah observed that while online courses had their advantages, she preferred face-to-face learning. Mick and Emily agreed that, even given the convenient aspects of online courses, they preferred the in-person interactions. Unlike the asynchronous tools, cool media tools are those that give a small association considerable boost. They require more active participation from the users, including the perception of abstract patterning and simultaneous comprehension of all parts. Mediums like Zoom video conferencing and Backchannel Chat, therefore, would be ‘cool’ in McLuhan’s view. These technology tools transform the classroom environment into a space where students and faculty can meet online and engage in real time in interactive learning activities.

McLuhan's notions of ‘hot’ and ‘cool’ media exist on a continuum; they are more effectively estimated on a scale than in dichotomous terms. In one sense, McLuhan (1994) could view a medium such as Zoom as ‘cool’ media because it connects a person outside of themselves to another person or the world. Media used within the face-to-face educational setting is the ‘hot’ media that requires an active creation of content, interaction, engagement, and communication—a person who can receive and understand the communication sent from others—and the technology that allows this communication to happen. McLuhan predicted that the world would become a global village where people are interconnected through technology, creating one international community. Over time, audio and visual media and videos, from PowerPoint to YouTube, have been introduced into teaching practices. Additionally, the ways people currently communicate through technological forms influence what and how people think (Flew, 2017). McLuhan determined that social communication through media technologies shape both the society and its members (Flew, 2017). This meant that how technologies developed depends on

the people's use of the medium and in turn, that development slowly transforms and reshapes human behavior and social interactions. This is visible in the use of technology in the educational leadership program in the case study; the technology integrated into the classroom was as a medium of instruction that supported and enhanced students' interactions and engagements. As the technology changed, so too did the instructors' behaviors in terms of planning and implementation. Several studies found that students in the 21st century performed better in classrooms that utilized technological media such as PowerPoint Presentations (Susskind, 2004) and social networking sites like Facebook (Ractham & Firpo, 2011). Susskind (2004) found that students had a more positive attitude towards the class and greater self-efficacy when attending lectures accompanied by PowerPoint multimedia. Rackham and Firpo (2011) also found in their five-month study that the use of the social media platform Facebook as a learning resource provided students an easy-to-use and familiar platform where they could share and generate knowledge. These findings support McLuhan's theory that what and how people think is shaped and influenced by the familiarity and exposure to the unique ways that media structured the messages. These ideas were also born out in my case study of the pedagogical use of technology in a graduate-level educational leadership program.

Recommendations for Higher Education Institutions

Based on both students' and faculty's responses and the level of technological expertise revealed by the data reveal, there are new, possibly more effective ways of teaching and learning in higher education through the use of rich technology platforms. The data suggests that educators in higher education endeavor to learn and implement technology tools to improve their teaching and their students learning. However, based on the themes that emerged from the data,

higher education could improve the use of technology within their learning environments. Below are eight recommendations for such improvement. Institutions of higher education should:

- Provide more and on-going training with new technologies, as they are continually being update and expanded.
- Know the technological abilities of their faculty in order to determine how best to facilitate faculty use of technology in a way make sense for their teaching.
- Recognize those faculty members who are already using technology effectively to support student engagement and learning. This recognition should be shared with both the institution's faculty and its student body.
- Work with students and faculty to identify outdated and ineffective technology.
- Focus on the most important areas of learning and teaching, highlighting the current use of technology.
- Send faculty to educational technology conferences to keep them update about new technology and how they teach using those technologies.
- Seek innovative ways to present information.
- Consider the classroom as a laboratory where both faculty and students experiment with technology and learn from each other.

Recommendations for Further Research

This study presents researchers with several future lines of inquiry, especially considering constantly changing landscape of technology itself, as well as its use in educational settings.

Adult learning within higher education is critical field of study; the use of technology within that space should likewise receive in-depth study. Based on the themes that emerged from my data, I recommend that researchers explore the following questions:

- How is and can virtual reality be used as an educational tool? In particular, how can professors in leadership courses improve adult learning through its application?
- What kinds of emerging technologies could ease the training and understand for not-yet-invented technology?
- How can institutions encourage their faculty to implement the technologies available within their class activities?
- Why do some faculty implement educational technologies, but others do not? Why does this continue to be an issue even at institutions where faculty has received training in the use and implementation of such technologies?

Conclusion

The purpose of this research was to explore the ways that professors are currently using technologies within adult learning activities in a higher educational leadership program, as well as student perceptions of the technology used in that program and the technologies that they would prefer to see implemented. In order to address these questions, I developed an instrumental case study (Creswell, 2012) to provide the participants in my research a voice in sharing their experiences with the use of technology in a graduate-level educational leadership setting. In this study, I collected data from twelve research participants: eight students and four faculty, all of whom were in the doctoral program in educational leadership at a medium-sized, midwestern university. The qualitative approach of the instrumental case study methodology led to in-depth, one-on-one interviews for the data collection. I relied on snowball sampling (Merriam, 2009) to gather study participants. The faculty participants meet two criteria: they taught in the leadership program, and they were knowledgeable about using technology in an educational setting. The student participants meet two similar criteria: they were enrolled in the

program, and they had experienced three kinds of course delivery—face-to-face, online, and hybrid.

All of the participant interviews yielded rich data. After transcribing the interviews, I read data several times to label codes and create summaries. I then analyzed the codes line-by-line, grouping them into categories and identifying emergent themes. The findings, as laid out in Chapter Four, revealed that the faculty viewed technology as a tool for student engagement and motivation and for measuring student understanding in real time. They also used technology as a student-centered pedagogical tool. The students valued technologies that facilitated synchronous interactions within and beyond the classroom, as well as those that used visual media to facilitate learning. They saw a clear link between faculty proficiency with technology and their own educational experience. Their responses also showed several criteria that they used to evaluate the effective integration of technology into their learning environment. Deeper analysis of these themes revealed the effectiveness of shifting educational leadership settings toward hybrid courses.

In Chapter Five, I applied three adult learning theories, Goffman's (1959) dramaturgy of pedagogy theory, and Bourdieu's (1980) social structuration and education theory to the data to establish a theoretical framework with which to answer the case study's research questions. The data revealed that there has been a significant shift in educational leadership program toward blended courses and that faculty used technology to facilitate interaction and engagement. As a result, this case study contributes to the literature regarding the experiences of students' and faculty's use of technology. It also adds to the body of knowledge about relationship between students experience with technology and the technological skills of the faculty delivering ideas through that technology.

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Appendix A

New Trends of Technology in Classroom Activities

There are several classroom technologies that instructors can use to promote learning. It is the responsibility of the students to enquire from the lecturers the technologies that they intend to use during the semester to allow them to prepare adequately for the classes. Among the most common tools are real-time boards, virtual reality, and TES Teach among others.

Real-time Boards

These devices are an online whiteboard that allow for visual group joint effort. They include pictures, mockups, illustrations, recordings, sticky notes, office archives and Google Drive documents on an endless canvas, so that students can examine the material with classmates and enjoy the real time visual cooperation without the need for emails. These interactive screens are commonly used in the classroom to help students to gather information through collaboration and networking. According to Toven-Lindsey, Rhoads, and Lozano (2015), real-time boards are instrumental when integrated in a classroom setting together with SmartBoard (a specific real-time board product) for more explanation if needed. The teacher ought to understand the most effective method for integrating RealTime Boards to display contents for the students to view (Buzkan, Ersoy, Çiço, & Ceni, 2016). One of the key advantages of RealTime board is that the information is shareable, making it easy to be used collaboratively (Buzkan et al., 2016). In addition, it is easy to integrate it with Google Docs, where students can easily move from the board to the shared Google Docs on a personal device. This technology is applied in Beder University, AEPOKA University, and University of Tirana, Albania (Buzkan et al., 2016). For



Figure A2. Using Vyond for an animated presentation.

Powtoon. This web-based animation software is similar to Vyond in that it allows users to create animated presentations. The users can choose the content and the themes of the videos and animations based on the level of the learners as in figure 3.00 (Syafitri, Asib, & Sumardi, 2018). In the context of adult learners, the instructor can import relevant images, voice-overs, and videos for class presentations. It is one of the most effective ways of creating an interesting learning environment (Syafitri et al., 2018). Powtoon has been used successfully in The State University of New Jersey, Loyola University Chicago, and Griffith University among many others. Tutorials for PowToon online animated presentation software creator.

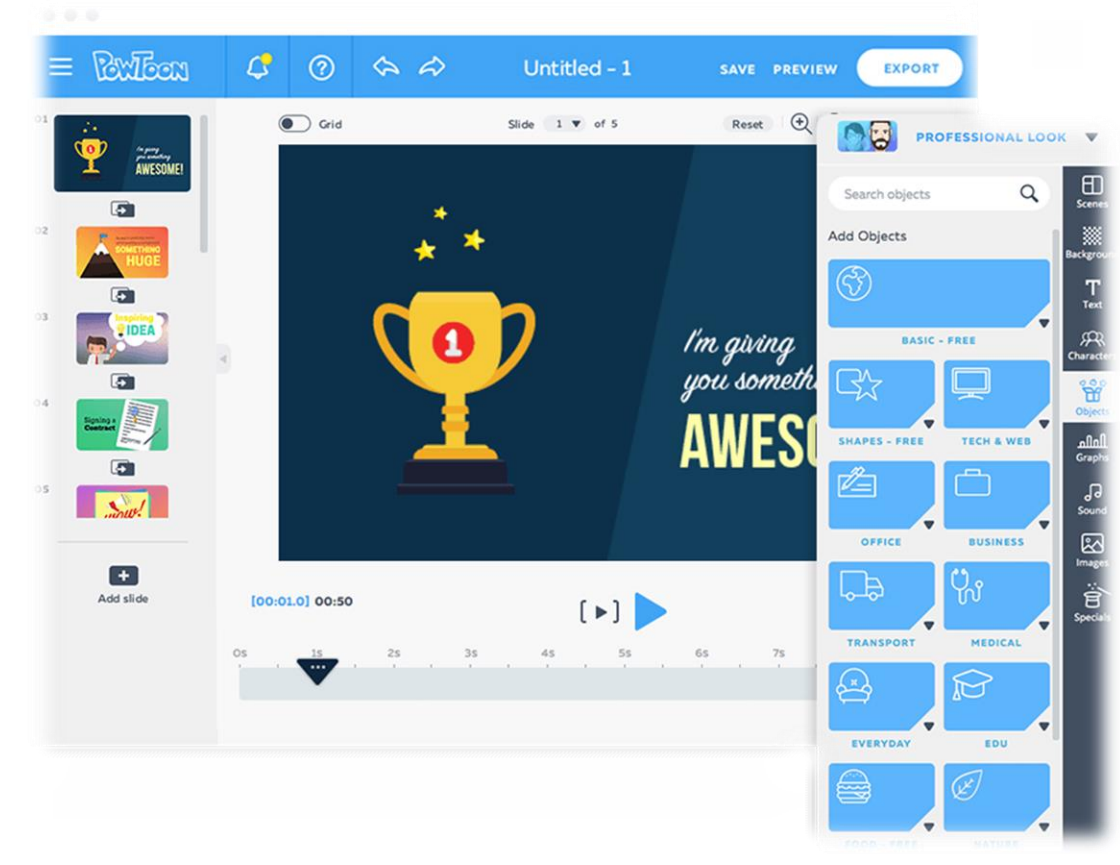


Figure A3. A PowToon webpage. <https://www.powtoon.com/tutorials/>

Class Virtual Reality

This milestone technology for the modern classroom setting is increasingly applied in various areas of specialization including medical, industrial training, commercial training, and gaming, among others. The virtual reality adaptation can be applied in different technologies such as haptic devices, stereo graphics, and adaptive content (Hilliges et al., 2016). In a classroom setting, virtual reality can be used to simulate learning by incorporating audio and visual components in a particular area of interest (figure 4.00). For example, virtual reality can be designed to mimic a whole equipped laboratory with all the resources to complete an assignment. Virtual reality promotes visualization of items that they have encountered in other learning materials such as books (Billinghurst & Duenser, 2012). Visual learning is one way that

instructors can use to reinforce the ideas taught in class. It helps students to visualize complex mechanisms that they have learned in books and other materials. Billinghurst and Duenser (2012) noted that virtual reality can be successfully used to engage students in complex studies that require field studies such as geography, history, or literature.

Here, the student can visit any place on the globe through virtual field trips while they are in classroom. As adult students, virtual reality will be of great help in saving time and resources when they need to make long-distance trips to geographical areas for studies (Attewell, 2005). The instructor can provide the required equipment and “bring the field to the classroom.” As the students engage in the virtual geographical visits, they gain experience in using technology to navigate around towns and cities. Most instructors use Google Expedition Applications on regular devices such as smartphones and computers to access the physical locations to learn about them (Hilliges et al., 2016). Teachers also have a greater role in creating an environment that promotes learning through innovative and creative means.



Figure A4. A student using virtual reality.

Padlet

Another great application for collecting relevant academic content from YouTube videos, files, and images is Padlet. It is a versatile tool that is easy to use by teachers. Students can be prompted to record their voices, videos, or text in the box (Kleinsmith, 2017). Additionally, students can add a hyperlink to the text or videos for easy access by others later. Padlet allows students to collect and actively share information about topics of interest. A teacher may opt to use a classroom Padlet Wall as an open space for students to engage in group discussions and project works See figure 5.00. In essence, Padlet is more of a paper, but on a website; thus, allowing students to be proactive online in classroom discussions.



Figure A5. A student’s Padlet wall.

TES Teach

This modern technology allows teachers to interactively engage students through online platforms to learn. Adult students require a platform where they can unleash their potential by actively engaging with the online platform. TES Teach allows the teacher to create a lesson and presentation online (Byrum & Holschuh, 2017). This technology has been applied in many universities such as Harvard. TES Teach Blendspace is a wonderful tool that allows instructors to effectively collect and share academic resources with students virtually (Byrum & Holschuh,

2017). The tool can be used for all types of assignments by creating a board that includes videos and documents, websites, and other critical learning materials. See figure 6.00

This tool can also be vital for adult students that would like to present their contents to class for evaluation or assessment (Kleinsmith, 2017). The integration of Padlet with TES Teach has been applied in numerous universities including University of Sussex, Griffith University, and Rowan University among others (Kleinsmith, 2017). A survey by Leu, Hagerman, and Hartman (2018) confirmed that teachers have started using the tool to create and share lessons with their fellow teachers globally. This is an important step towards promoting collaborative teaching where teachers can share ideas and contents with a goal of improving the quality of education. A link tutorial for making digital lessons.

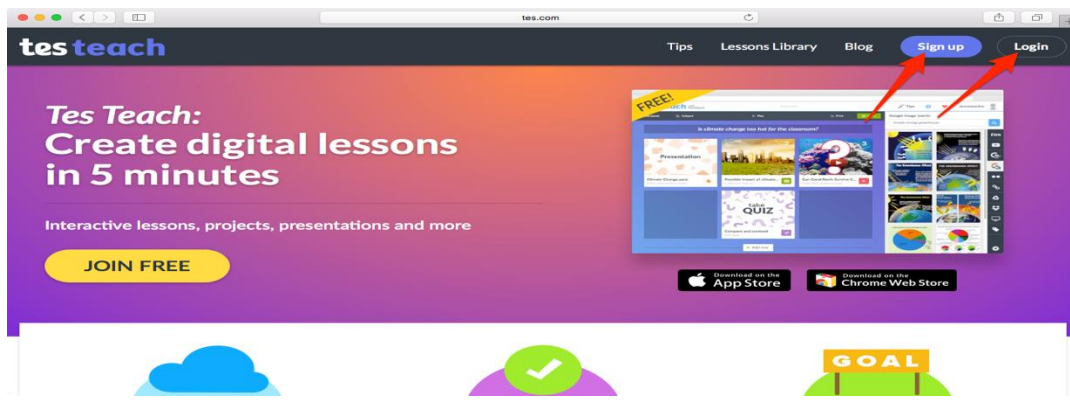


Figure A6. The landing page for TES Teach. https://www.youtube.com/watch?v=O-iDA8n_RZM

One-to-One (1:1)

This is a paperless learning environment where teachers and students interact without using any writing materials as in figure 7.00. Students use technology on devices to acquire knowledge and skills in various topics of study. For the purpose of learning, students are registered with login details and are allowed to access the internet, digital course materials, and e-books (Varlotta, 2017). This program is also known as a “universal classroom,” whereby

students can access class materials through laptops and other electronic gadgets such as smartphones anywhere anytime. The program requires students to have access to portable electronic devices so that they are able to read and respond to class contents online regardless of the time and place (Varlotta, 2017). The learning experience of the students is carefully nurtured by exposing students to a variety of sites and sources of information. Adult students can effectively make use of this program to promote learning at their level of education. One-to-one programs focus on the available resources to enable students to access various sites with relevant academic content with the intent of expanding their learning experience beyond classroom settings. According to Datko (2018), this platform allows each student to read, respond, and ask questions relevant to their areas of discussion while other students are able to see everyone's work.

For example, videos are one of the functionalities of the 1:1 platform. Here, the teacher can pause the videos for the students to watch multiple times for the purpose of assisting students with learning difficulties (Leu, Hagerman, & Hartman, 2018). It is also prudent to mention that one-to-one technology can be used to differentiate the assignments that are delivered to students at the same time based on their individual progress. For instance, assignments delivered through the use of this adaptive technology give each student the content that they need to be successful; it is not a "one-size-fits-all" approach (Wesely & Plummer, 2017). In math, students can access sites like IXL.com, which allows students to access and tackle only questions based on the level of the student in that subject. This is particularly effective for a class with varied learning ability (Wesely & Plummer, 2017). The instructor can use the adaptive technology to categorize the content and assignments that they give students to motivate students with learning delays, while simultaneously providing the faster learners the opportunity to learn more. Learning

environments in education have changed greatly in the recent past. Multimedia authoring tools have been in use in institutions that focus on technology. These tools allow students and teacher to use hyperlinks to link together sources, illustrations, and other important content (Clark & Mayer, 2016). This technology aids students and teachers to create a link between content on the website and the source of the information. The links are critically important because it helps readers to access the source of information used for academic purposes.



Figure A7. A one-to-one classroom.

FlipQuiz

One of the most modern interactive technology games that teachers and students can use in a classroom setting is called FlipQuiz. FlipQuiz offers instructors a platform where they can create their gameshow-style boards for test reviews. The boards can pique interest in learning for students when the teacher can fill the quiz board and compete for points. Each quiz board can accommodate up to five questions see figure 8.00. More interestingly, the boards can be saved

online and retrieved for future reference. According to Barnes (2017), adult students use these gameshows as a way of passing time as well as gaining critical thinking skills. As the student reads out the questions displayed on the screen, they develop the skill of thinking critically. Furthermore, as the student continues practicing with the game, they are encoding the information into long-term memory through repetition. When students finished answering the questions, they can see the variety of answers on the screen; teachers can then engage students in a discussion about the correct answer, which supports their critical thinking. Students have the opportunity to defend their logic and engage with different perspectives. Critical thinking skills are key to completing successful assignments as well as succeeding in a career (Clark & Mayer, 2016). Therefore, this classroom technology is designed with the aim of ensuring that students remain proactive during the learning process. Here are a YouTube video of more explanation about the program <https://www.youtube.com/watch?v=LBPsx7jCVtw>.

| SOLAR SYSTEM REVIEW | | | | |
|---------------------|----------------------|---------|--------------------------|--------------------|
| SOLAR SYSTEM | BOYFRIEND REVOLUTION | PLANETS | CONSTELLATIONS AND STARS | PHASES OF THE MOON |
| 100 | 100 | 100 | 100 | 100 |
| 200 | 200 | 200 | 200 | 200 |
| 300 | 300 | 300 | 300 | 300 |
| 400 | 400 | 400 | 400 | 400 |
| 500 | 500 | 500 | 500 | 500 |

Figure A8. A FlipQuiz.

Kahoot!

Another free game-based learning program, Kahoot!, is commonly used by students across the globe for discovery and sharing of ideas, the symbol of Kahoot in figure 9.00. Kahoot! is interesting because it can be used for any subject for students of any age (Graham, 2015). To play a Kahoot! the student does not need registration or account creation as most interactive learning

platforms require. The platform is carefully designed to enable the users to learn with fun.

According to Graham (2015), over 25 million people, including students are using Kahoot! One of the unique features of Kahoot! is that the users have the opportunity to decide on what they want to learn and how the game will be played. In essence, the users are at liberty to choose the level of difficulty of the games to adapt it to their own learning pace (Byrum & Holschuh, 2017). For adult students, Kahoot! can be one of the most interactive and interesting games that provide them with challenging tasks.

The steps of playing Kahoot! starts with the choice of the game to play. The user has to choose from the millions of available games or create your own game depending on the subject and the content that the user intends to cover (Graham, 2015). The second stage is to launch the game so that other users can access and play with you. It is important to choose a game that has greater influence on others. To achieve this, an instructor can create a game that captures relevant content from class so that many students at the same level of education can join and play for the purpose of learning. Similarly, a student user can also create a game in areas that they feel need closer attention by teachers to enable them to join the game and help them to learn. Studies have confirmed that Kahoot! has attracted many students because it gives students feedback immediately after they complete a game (Graham, 2015; Zarzycka-Piskorz, 2016). Zarzycka-Piskorz notes that after each game, the users can click on feedback and results to get the final results, which are downloadable and can be saved for future reference. For More information of how to use Kahoot in the link <https://www.youtube.com/watch?v=rZUew1wIQts>.



Figure A9. The Kahoot! logo.

E-texts

E-texts have become a common platform in modern education settings. E-texts is not only a reading but also annotation tool which engages both teachers and students, as they can see each other comments and questions to answer or share ideas (Gibbs, 2016). Students have a variety of sources of information that they can use in learning situations to simulate knowledge sharing. E-books and e-readers for adults have played a key role in promoting learning among adult learners. An e-book allows students and instructors to access books online and read the required contents either in a classroom setting or on their electronic devices (Gibbs, 2016).

While access can be limited, depending on the authors and publishers of the books, the platform is critically important in providing students with reliable sources of information for learning. A recent global study indicated that many students still preferred print texts over the e-texts. However, the majority of students preferred to use e-texts for shorter readings that require

reviews. According to Datko (2018), community college readers can use the basic skills that focus on developing the students' deeper text analysis through annotation assignments (Datko, 2018). The study notes that such interventions help students by adding a social dimension to their readings; the teacher can provide them with an annotated version of the text to help them focus their attention and create dialogue surrounding the content (Datko, 2018). Some of the most commonly used tools for annotation of texts include a web-based-open source platform with a simple to use built-in user interface. According to Datko (2018), annotation tools can be used to enhance reading comprehension and assignment instructions.

They can also be used as alternatives to the traditional discussions in the classroom settings. Students and teacher can engage in discussions, during which they can share and respond to each other's questions (Datko, 2018). Using e-books not only allows students to access information, but also enables them to bookmark pertinent passages that they have read to return to in the future. Similarly, e-books allow the readers to access the books temporarily and read about whatever subject one wants to read for relatively cheaper prices (Kung, Gordon, Lin, & Partow-Navid, 2018). Instead of someone buying the books from the publishers for information that is contained only on a few pages, it becomes relatively cost-effective when the reader only needs access to relevant chapters. For adult learners, e-texts are the most efficient means of accessing academic content online because it reduces the physical space for keeping books such as library books.

Appendix B

Faculty Participant Profiles

All names have been changed.

| Pseudonym | Biography | Select Course Experience |
|--------------|---|---|
| Dr. Brendel | <p>He is a male professor in his 70s who has been teaching for 27 years. He has worked across the university within many schools and departments. One of his areas is generally improving teaching, so he does a lot of workshops for departments and through the Faculty Development Center. He teaches courses in the School of Education on leadership, different aspects of leadership.</p> | <ul style="list-style-type: none"> - Leadership and the Practice of Critical Reflection (online) - Leadership and Social Justice - Using narratives in Leadership - Social Change and Leadership - Adult Learning and the Practice of Leadership |
| Dr. James | <p>He is a male professor in his 50s, originally from the Congo. He has a background in philosophy, theology, and education. He taught in California for a few years before joining a midwestern public university. He has taught at the university in the case study for the last 12 or 13 years.</p> | <ul style="list-style-type: none"> - Power, Freedom and Change. (face-to-face) - Ethical Dimensions of Leadership (face-to-face) |
| Dr. Samantha | <p>She is female professor in her 60s. She serves as a tenured member of the core doctoral faculty with expertise in leadership, communication, research, and the scholarship of teaching, including extensive experience in online and virtual learning</p> | <p>Myriad graduate-level and dissertation courses</p> |

| | | |
|------------------|---|--|
| | <p>environments. She has worked at the university for 20 years.</p> | |
| <p>Dr. Julie</p> | <p>She is a female professor in her 40s. She worked in higher education as a student affairs educator in a variety of roles for about 10 years. After receiving her master's degree at from the university in the case study, she received a PhD in higher education from a public university in the Midwest. She now directs the program where she received her master's degree. She has taught as an adjunct and a tenure-track faculty member at the university for seven years.</p> | <ul style="list-style-type: none"> - Introductory course in program - Principles of Adult Learning - Research Paradigms |

Appendix C

Student Participant Profiles

All names have been changed.

| Pseudonym | Biography |
|-----------|---|
| Dan | He is a male student in his 40s. He teaches high school social studies. He taught at a suburban public high school since 1996. Previously, he taught in a couple of other places before that. In his second year in the doctoral program. |
| Mick | He is a male student in his 50s. He is currently the assistant superintendent of teaching and learning for a school district in the Midwest. He has been in the education profession for about 24 years and served as a classroom teacher, a special educator, a principal, and now a district administrator. |
| Tom | He is a male student in his 40s. He is in his sixteenth year as a teacher. He has been a middle and high school engineering and technology teacher as well as a wood shop teacher. He is in his first year at a suburban public high school. He has taught in the neighborhood of 30 different classes, most of them incorporating some sort of technology. |
| Heather | She is a female student in her 40s. She is a doctoral student in the Education Leadership and Learning program. She is a Student Affairs professional and an adjunct instructor. |
| Cheryl | She is a female student in her 40s. She is student in doctoral leadership program. She is a school principle. |
| Moly | She is a female student in her 30s. She is in first cohort of the doctoral program. She is two years into the program. She has a background in higher |

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| | education and in youth development. |
| Emily | She is a female student in her 30s. She is student in doctoral program. She is a kindergarten teacher. She has been in the teaching field for three years. |
| Sarah | She is a female student in her 30s. She is from Uganda and she is a nun with the Sisters of the Immaculate Heart in Uganda. She is a doctoral student. She is a high school teacher. She has been teaching for seven years. In the middle of the doctoral program, she went back to Uganda, where she was a high school principal for a year, then returned to the program. |

Appendix D

Faculty Interview Questions

1. What courses do you teach in the educational leadership doctoral program?
2. How do you incorporate technology and learning?
3. What do you see as the three most promising technologies on the horizon for today's educational environment?
4. How do they help you improve your teaching?
5. How do they help students learn better?
6. Are there technology standards or tools to be met by students in their learning?
7. What are the challenges you (or other faculty at the University) experience with using technology to teach?
8. Discuss how you use technology at home and in your personal life. What social media do you use? Are there apps or games you enjoy? How might familiarity with these translate into future technology in the classroom?
9. How do you keep your technology skills current?
10. Is there anything else you want me to know about?

Appendix E

Student Interview Questions

1. What strategies do your teachers use to enable you to learn by using technology?
2. What kind of technology do you prefer during class activities?
3. What kind of technology do you use personally to enrich your learning (during individual studying)?
4. Would you like to see more teachers using this technology in the classroom setting?
5. What do you know about future trends and tools in learning with technology?
6. What technology makes your learning easier and/or more exciting?
7. Specifically, regarding PowerPoint, what would you add or change to improve your learning?
8. Social media has exploded with popularity; do you have any ideas that incorporate these platforms within class activities?