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Factors That Influence the Perception of Higher Education Leaders in the Adoption Process of Instructional Technology and Distance Education

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by
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Approval Page

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Statement of Original Work

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Diego Tibaquirá
Name

March 21, 2020
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Acknowledgments

To my mom: “The woman that gave everything for me to have everything.”

I’m sorry that you are not here to share this triumph with me, but this is for you and BECAUSE of you. I hope this accomplishment brings a big smile to your face. In our last conversations I told you that your legacy will be the path and opportunities you had afforded me and your granddaughters. Because of you I’m where I’m today and I’m who I’m today. Your granddaughters will have a more prosperous life because you gave me the opportunity to a more prosperous life. May the Lord keep you in a much better place and you will forever be in our hearts and thoughts. We will hug next time we see each other.

To my wife: they say that behind every man there is a great woman, but behind this man there is an incredible, admirable, Wonder Woman. You are an extraordinary wife, mom, stepmom, friend, companion, supporter, cheerleader, cook, and much much more. I wouldn’t be a tenth of the man I’m without you and your unconditional support.

To my daughters: I’m incredibly blessed to have the opportunity of being a girls’ dad. The three of you give me strength to keep going, to keep fighting and to keep achieving. I want to be a role model for you to keep going and achieving. EDUCATION is the only thing I can give you that no one can take away. Education is the ultimate equalizer and what will give you a weapon in the fight against inequality. Take it as far as you can.

To MCSC ’93: My Manhattan Center for Science and Math friends and the memories made. Many events, many share memories later we are still going strong. I hope that we get the opportunity to make many more.

Frank, Judy, Jeff, Analynn, Edith, Fior, Hiliana, Giliana, Diego, Eri, Ingrid, Anthony, Marggie, Felix

September 29, 2012 – Giliana's Baby Shower

December 30, 2010 – Reunion

February 16, 2013 – Fior's Birthday

Summer 2011-2019 – Mejia's BBQ

Abstract

Factors That Influence the Perception of Higher Education Leaders in the Adoption Process of Instructional Technology and Distance Education. Diego Tibaquirá, 2020: Applied Dissertation, Nova Southeastern University, Abraham S. Fischler College of Education and School of Criminal Justice. Keywords: technology integration, technology uses in education, information technology, educational innovation

The problem addressed by this study was that many administrators at institutions of higher learning are faced with the task of finding ways to provide the latest technologies while being extremely constricted by budgets and the rising cost of education. The purpose of this study was to determine the factors that influence the perceptions of higher education leaders in the adoption process of Instructional Technology and Distance Education. This included an examination of the decision-making process and what determined if Instructional Technology and Distance Education were either implemented or upgraded at various higher learning institutions.

The researcher implemented a mixed-methods design in order to conduct the research in this case study. Participants completed a survey containing quantitative scaled-style questions and qualitative open-ended questions to obtain their perceptions regarding adoption of instructional technology. For this particular study, purposeful sampling was established by selecting the chief executive officers, chief information officers, chief information security officers, directors of technology, or deans within technology departments of institutions of higher learning as the key participants in this study.

The research gave some themes for predominant factors in the decision-making process for Instructional Technology and Distance Education. There was an all-encompassing theme of convenient innovations that enhance education, enduring from the three main themes of flexibility, increased student engagement, and improved time efficiency. Six supporting themes that also entered into the decision-making process included adopting technology that (a) makes education accessible and therefore reaches a more varied student body, (b) provides flexible course delivery formats so that higher education can be fit into busy student schedules rather than vice versa, (c) empowers education through its ability to be personalized, (d) facilitates faculty-student communication, (e) reduces costs, and (f) improves educational quality. Future research directions include (a) having a larger sample size to conduct the survey to be able to gain a deeper understanding of the factors that influence the perception of higher education leaders in the adoption process of instructional technology and distance education and (b) determining if the perception of higher education leaders extends or is affected by other stakeholder groups such as staff, faculty, or vendors.

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Chapter 1: Introduction

In the landscape of Instructional Technology and Distance Education, there was a need to ascertain how opinion leaders and stakeholders make decisions regarding the diffusion of the technology needed and used for instruction and how online learning and distance education is diffused, maintained, and planned for future growth. Leaders at higher learning institutions regularly deal with frequent fluctuating budgets and administer all the resources required to run an institution, including the funding for technology that can encompass upgrading and maintaining computer systems, upgrading classroom and learning centers, purchasing software licenses, and making sure faculty and students have the necessary equipment to have a learning environment conducive to learning. Under these circumstances, with the rapid growth of technology and the constant and rapid change of it, one may question how leaders work to keep abreast and providing the latest technologies for use. Higher learning institutions that might be located within the same geographical area and have an equivalent amount of resources might differ in the composition, diffusion, and innovativeness of their technology usage.

Statement of the Problem

Diffusion of innovation theory is the process of spreading new ideas, practices, or technologies (Murray, 2009). In today's world, information and communication technology is regularly utilized by higher learning institutions in order to conduct daily operations that can include clerical and administrative work, as well as teaching and learning (Mkhize, Mtsweni, & Buthelezi, 2016). Many administrators at institutions of higher learning are faced with the task of finding ways to provide the latest technologies while being extremely constricted by budgets and the rising cost of education. However, if resources are available, then what factors play a role in the decision-making process for

administrators to attain up-to-date technology? Do personal perceptions of innovation matter and affect the way that the process is done? How do administrators find the correct or most appropriate balance to ensure that the adequate and necessary equipment, hardware, software, and platforms are obtained, properly installed, and operational and that the end user have the necessary training to use the equipment to the fullest? These inquiries formed the basis for research of the current thesis document.

Institutions can be located in the same geographic area, as well as have the same budget and staffing infrastructure, but might be greatly separated when it comes to their technological infrastructure (Dungan, 2017). How can there be such a disparity in the use, diffusion, and application of technology between institutions? In addition, the demographics and ethnocultural construct of higher learning institutions can influence the decisions of opinion leaders when making a choice and deciding on diffusion of Instructional Technology and Distance Education. Opinion leaders need to be more culturally competent and understand the make-up of their Institutions (Grady, 2014). Another area of interest is how the type of organization can influence the adoption of new technology. For instance, liberal and conservative organizations can have differences based on their values on how to disseminate innovations (Duncan, 2015).

Background and justification. As opinion leaders and administrators of higher learning institutions prepare to make decisions regarding the diffusion of Instructional Technology and Distance Education, the determination to welcome an innovation as well as the process of adopting an innovation might be affected by the individual's very own perceptions of the innovation in place (Mkhize et al., 2016). In diffusion of innovation, there is an individual blame bias implying that, if something goes wrong, then the individual is to blame and not the system (Liao, 2005). The pro-innovation bias is defined

as the inference that an innovation must be implemented by all members and that the innovation should be diffused faster, and, in some cases, the innovation should be reinvented and not rejected (Liao, 2005). As a facilitator of the learning progression, technology is used like any other tool in the educational performance or application of skills (Aparicio, Bacao, & Oliveira, 2016) to ensure that the proper technology is available is paramount.

The ultimate goal of diffusion of Instructional Technology and Distance Education should be student learning (Hsu, 2016). The decrease in government funding to public institutions of higher learning (Abedi, 2009) means tough decisions have to be made, and this may affect the way administrators allocate funds and look at innovation of technology. Does innovation of technology suffer in the wake of staff reducing, administrative expenses cuts, and increased tuition (Abedi, 2009) while expecting enrollment to increase?

Deficiencies in the evidence. Studies show that administrators understand the need to integrate technologies (Hsu, 2016), but budget limitations might play a factor in decision making to innovate. Administrators and opinion leaders might need to expand their domain and consult with multiple stakeholders in order to make the proper decisions when working on diffusion of Instructional Technology and Distance Education at higher learning institutions. According to Brito (2017), one's intention to perform is inherently related to one's attitude toward the act; therefore, the intention to innovate is inherently related to the attitude toward it. Many scholarly studies have focused on the effects of budgets and the availability of resources in the adoption of new technology.

Others have shown interest in demographic background and physical location of administrators when implementing or adopting new technological advancements.

Although limited, some researchers have attempted to examine the role of cultural norms and background in organizations. Even though many leaders and administrators often receive training on diversity, in recent years, this has focused on awareness instead of providing leaders with the competencies required to understand how differences may help or hinder an organization's performance (Grady, 2014). However, few research studies have considered the aspects that influence the perception of higher education leaders in the adoption process of instructional technology.

Audience. The findings of this study may benefit leaders of technology, colleges' chief information officers, and administrators in charge of purchasing, updating, upgrading, and implementing educational technology and distance education programs. This study might help higher learning institution leaders who would like to implement diffusion of Instructional Technology and Distance Education in a more efficient manner. Higher learning institutions might gather invaluable information regarding the different variables that influence diffusion of innovation of Instructional Technology and Distance Education. Students who currently attend higher learning institutions are bound to be the ones impacted the most by having the latest technology being distributed and available.

Definition of Terms

The following section includes definitions of major concepts that were utilized for the purpose of this applied dissertation.

Asynchronous education. This term addresses the process by which education is conveyed in a non-live presentation, which allows facilitates communication to occur between students and faculty members and other students on their own timetable (Black, 2010). The greatest cost of using asynchronous technology in teaching and learning involves undeveloped people skills. The skills of cooperation and tolerance, which are

essential skills that develop slowly and painfully, are frequently short circuited when the individual can just go back to the solitude of a computer screen (Rose, 2017).

Diffusion. According to Dearing and Cox (2018), this term refers to a social process that takes place amongst individuals as a reaction to finding out about an innovation. Diffusion encompasses an innovation that is passed on via specific networks over a period of time amongst the social system members. The typical dependent variable in diffusion research is time of adoption.

Diffusion of innovation. This term refers to a special type of dissemination in which the messages are related with new concepts. The process through which partakers produce and distribute information with one another to attain mutual comprehension and awareness is communication. There is a process in the innovation decision that requires multiple stages composed of (a) the stage of knowledge, (b) the stage of persuasiveness, (c) the stage of decision, (d) the stage of implementation, and (e) the stage of confirmation. The newness of the idea in the substance of the message gives diffusion its distinct appeal (Rogers, 2003).

Distance education. This term refers to institutional based, conventional instruction in which the group of learners is detached and in which interactive systems of telecommunications (e-mails, televisions, satellites, postal system, radios, telephones, video conferencing, and Internet) are utilized in order to link learners, instructors, and resources (Simonson, Schlosser, & Orellana, 2011).

Innovation. According to Silva and Guimarães (2016), without innovation, humanity does not progress. The idea of technological innovation may be commonly mistaken with the concept of innovation; however, as the authors stated, all high-tech innovation can be deemed an innovation, yet not every innovation is hi-tech. Innovation

is the conception of a new service that satisfies a prevailing or forgoing need. Innovation is a technical strategy, new approach, engineering, desire and management or commercial activity involved in the advertising or promotion of a recent (or enhanced) product or the first use commercially of a recent (or enhanced) process or equipment (Silva & Guimarães, 2016).

Instructional technology. This term refers to any usage of computer technology, networked telecommunications or multimedia with the resolution of enhancing student training or assessment. It might be part as well of the management of academic information, facts and figures. The concept may be applicable even if an activity is taken place in a face-to-face environment (typical live classroom locale) or among entities that are residing or located two or more distant locations separated geographically (Gagne, 1987; Markova, 2011).

Opinion leaders. This term refers to consumers who exert disproportionate influence on the purchase decisions of other consumers (Mak, 2008). Opinion leaders become an important part of marketing strategies by word of mouth, and they become early adopters through whom other customers can obtain product recommendation. An opinion leader's influence can be so vast that, if he or she recommends or fails to recommend a new product, the result can have an enormous impact on adopting it or not adopting (Mak, 2008).

Synchronous education. This term refers to real-time learning in distance education environment or instruction happening in person (located in the same place at the same time). Synchronous, distance education technology is used to deliver real-time learning instructions with a live instructor, such as located at a different place but at the same time (Dunn et al., 2014).

Purpose of the Study

The purpose of this study was to determine the factors that influence the perceptions of higher education leaders in the adoption process of Instructional Technology and Distance Education. This included an examination of the decision-making process and what determined if Instructional Technology and Distance Education were either implemented or upgraded at various higher learning institutions.

Chapter 2: Literature Review

For several years, researchers have sought to examine the reasons why the process of adoption and diffusion of innovation often vary across different social systems. To that end, the diffusion of innovation theory developed by Rogers (2003) has been implemented in many studies, theories, and models to understand this phenomenon. In this section, the researcher presented a review of the literature to explore this topic further.

Gap in Knowledge

As institutions are faced with doing more with less resources due to budget cuts and short staffing (Abedi, 2009), they need to maintain a level of innovation in technology to keep with the requirements of industry and making sure that students are prepared for the current challenges. Introduction of new technologies can create opportunities for increased productivity, but, in general, higher learning administrators do not have incentives to adopt more productive behaviors (Abedi, 2009). By not adapting and adopting new more productive technologies, productivity at colleges can actually erode (Abedi, 2009). Institutions should embrace an expansion of the e-learning environments to keep up with the increasingly competitive global market (Birch & Burnett, 2009). Diffusion of innovation in distance education should be made more interactive, enriched, inclusive, equitable, flexible, and convenient (Birch & Burnett, 2009). Instead, there is a lack of systems reliability, technological problems, and malfunctions that include slow down times and bandwidth problems.

One of the major stops in the continuing development of adopting educational technology is an apparent lack of time and deleterious influence on academic workload (Birch & Burnett, 2009). Also, the lack of a clear process to help with the development of

e-learning environments might discourage those who want to implement new technologies. Proper administrative support is necessary for the adoption of an innovation. There is a need to build an environment that foments confidence, inventiveness, and cooperation (Singh & Hardaker, 2014). To help the innovation of new technologies, administrative support is an imperative component. In the process of advancing innovation there must be attention paid to the fact that ineffective implementation of information and communication technology can be an issue to make sure that technology is being effectively adopted and diff used (Dintoe, 2018). In reality, adopting innovations without appropriate testing and practical applications can be problematic (Balas & Chapman, 2018). All stakeholders involved in the usage of a new technology should be involved in the process of selecting the innovation to be used.

Theory of Diffusion of Innovation

The theory of diffusion of innovation was developed by Everett M. Rogers in 1962. It is one of the oldest theories in social science, and it provides a theoretical structure to examine the effects of diffusion and how an idea can expand and be spread through a population (Cooper, 2015). Models of reform such as Roger's theory of diffusion of innovation identified characteristics related to the diffusion of innovations coming from distinct fields, including technology (Szabo & Sobon, 2003). An examination of the available literature has shown certain generalities of the current practices related to adoption of new technology. One of these topics is that higher learning institutions continue to face ongoing challenges due to rapid changes in technology and an ever-evolving student population. Although there have been significant efforts made to identify best practices for the adoption of innovations, there is still a deficiency of clear perception of the underlying practices and procedures that may

affect the process of adopting new technology.

Research has also shown that successful adoption of an innovation may also depend on whether or not the participants within the organization actively contribute in the innovation (Rogers, 2003). Regardless of their stage, all the different types of innovators significantly contribute to occurrences of changes in their respective organizations. In general, Rogers (2003) described a string of predominant generalizations regarding strategies for innovations and change. According to Rogers, innovators should take the following steps in order to ensure successful change: (a) have as much contact as possible with clients, (b) ensure the innovation in question serves to meet client needs, (c) orient themselves to meet those needs, (d) be empathetic to the target population, (e) foster credibility and work with and through opinion leaders as much as possible, and (f) gather feedback from clients regarding the innovation (Coleman-Prisco, 2016). Innovators can at times be viewed as rebels within an organization because their views do not always conform to the overall tendencies. Change in an organization can happen organically from an innovator following an unusual route or mainly trying something new or different. Diffusion process may be rapidly accelerated if adopters are opinion leaders which could also lead to everyone adopting in a faster manner (Valente & Davis, 1999). Opinion leaders who are in the position to set the agenda for change should be the ones to adopt first.

Diffusion of innovation process. According to Rogers (2003), the diffusion of innovation follows a process to help determine how a new concept goes from idea to adoption. What steps are required for a new product to garner the necessary support from all stake holders in order to be adopted and diffused? The diffusion of innovation has been used to examine the dissemination of new goods, concepts, and practices (Liao,

2005), and this theoretical framework can be used to examine how administrators make decisions in regard to technology. Diffusion of innovation theory describes the process one must follow in order to spread ideas, practices and/or technologies into a system (Murray, 2009).

Parts of the research in this study revolved around the model of the innovation-decision process, as stated by Rogers (2003). The innovation-decision process is the procedure that a decision maker goes through starting at the knowledge of the innovation, going into the formation of an attitude toward such innovation, getting to a decision to either agree to take or discard the innovation, going into the deployment of the new technology, and lastly going into the confirmation of the decision made. These make the five stages in an innovation-decision process (Rogers, 2003). Figure 1 shows the innovation-decision process that is composed of a series of actions and choices taken over a time span in which an individual (i.e., decision maker) or an organization assesses a new concept and then makes the resolution to integrate the entire new idea or parts of it.

Knowledge. In this stage, an innovator or decision maker is made aware of the existence of the new idea or technology. Within the knowledge stage, there is a sense of awareness first, then a level of how-to follow-ups that shows how the innovation would work, and finally a principles' knowledge might be needed to ensure proper use of a new idea.

Persuasion. In this stage, the innovator or decision maker takes either an encouraging or unfavorable posture toward the innovation. In this stage, the beliefs and ideas toward the innovation develop.

Decision. This stage happens, hopefully, after a trial period of the new idea or technology. The innovator or decision maker has a chance to further review, revise, and

engage in activities that provide an enhance understanding of the new technology or innovation and the way it would impact their organizations either positively or negatively. In this stage, a decision then is made to adopt or discard the new innovation, idea, or technology.

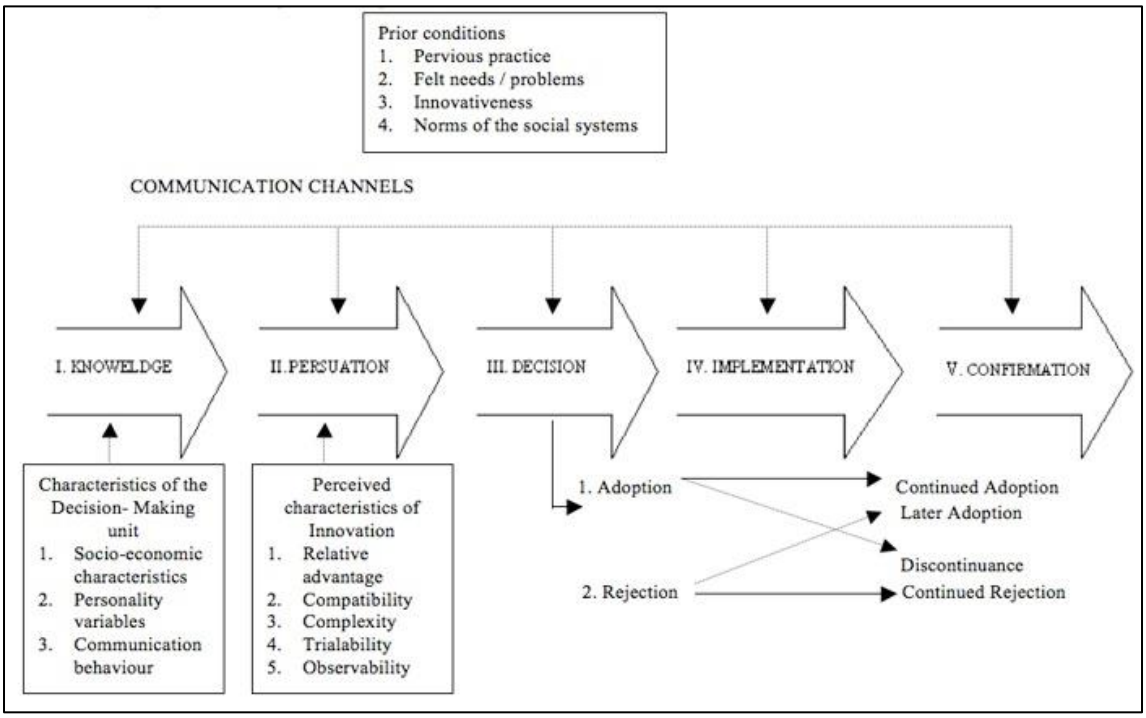

Figure 1. A model of five stages in the innovation-decision process (Rogers, 2003).

Implementation. Once accepted, in this stage, the innovation or technology is fully deployed. Up to this point, the decision for a new innovation or technology has been theoretical, and, in this stage, action is actually taken. Issues with implementation might occur, and, at times, it happens because the individuals in charge of implementation might not have been involved in the knowledge, persuasion, and decision process. It is important to involve the leaders of the implementation team in the entire process to help smooth out the implementation process. Another way to avoid major issues is to implement in smaller segments and not an entire organization all at once.

Confirmation. At times, the decision to adopt or discard a new idea or technology

is not final. After a period of time following accepting and attempting to implement a new innovation or technology, an assessment can be made to see just how efficient the innovation is. A time frame should be set during the process to come back and evaluate the progress and then decide to either continue with the implementation (i.e., reinforcement of the innovation) or discontinue the implementation and seek another alternative. In the same manner, after a period of time, an innovation that was rejected can be looked at again for possible implementation. This could happen if another organization adopted the new innovation or technology and are having positive results.

Diffusion of innovation states that as a general process, innovation diffusion, is not constrained by the type of innovation, and it is the procedure utilized to make sure a new innovation is disseminated to widespread applications to all fields that foster innovations. Rogers (2003) stated that there are four core fundamentals in the process of diffusion: (a) the innovation, (b) the many different ways or forms utilized to diffuse the innovation, (c) time, and (d) the social system. The end results of diffusion are adoption, implementation, and institutionalization. In the framework of diffusion of innovation, there are five different groups of adopters: (a) innovators, (b) early adopters, (c) early majority, (d) late majority, and (e) laggards. According to Rogers, innovation diffusion is a process comprised of five steps that include knowledge, decision, persuasion, implementation, and confirmation.

When researching the attributes of an innovation, one of the topics to consider is the frequency of adopting of an innovation. In general, this is how quickly an innovation is adopted. In addition to this, the process of adopting an innovation may be explained by the following attributes: (a) relative advantage, (b) comparability, (c) complexity, (d) trialability, and (e) observability (Rogers, 2003). Relative advantage relates to the degree

to which an innovation is taken to be better than the idea it substitutes. It considers the possible economic gains of adopting a new innovation. On the other hand, comparability associates to the extent to which a new technology may compare to the past occurrences and personal history of those deciding to make the adoption. It takes into consideration the individual's sociocultural values, background, and beliefs to ensure it is more consistent with a proposed new technology.

The extent of difficulty of an innovation technology may often have a direct effect on the adoption of the innovation. Therefore, adopters must consider the complexity level of a proposed invention to ensure successful development. An equally important attribute is the opportunity to try and test innovative ideas, which will lead to faster adoption rates. Finally, the visible presentation of positive outcomes of adopting new technology address the attribute of observability of any new technology. In the process of creating high quality programs, adopting innovation and getting rid of obsolete practices is essential (Balas & Chapman, 2018). Similarly, timely recognition of a valuable innovation and its adoption are crucial. The following sections describe the categories associated with individuals who adopt innovation at various stages, as well as obstacles and biases associated with the diffusion of innovation.

When looking at the diffusion of innovation from an educational perspective, research has shown that teachers and administrators, at times, are involved in decisions that are more restrictive or do not allow for a complete process to occur (Dungan, 2017). At times, institutions are faced with decisions that are imposing because of budget restrictions, lack of knowledge on how to make a proper decision, or lack of knowledge on the proper instructional technology to adopt. Other areas to consider when innovation decisions are made might be political, from local legislature, school boards, or district

representatives, and local and state governments can have a big influence in how and when new innovations can be adopted. Diffusion of innovation should be mainly an elective decision based on how the innovation can and will enhanced programs and institutions. Rogers (2003) stated that getting a new idea adopted, even when it has obvious advantages, is difficult. Sometimes, adopting a new innovation can take a very long time, and, at times, by the time adoption occurs, the very innovation adopted may be obsolete. In that case, making the process faster, more efficient, and making sure the outcome is the best for the institution, can be a challenge.

Adopter categories. As shown in Figure 2, the categorizations of members of a social system on the basis of innovativeness include (a) innovators, (b) early adopters, (c) early majority, (d) late majority, and (e) laggards. Innovators are active seekers of new ideas. Early adopters consist of the highest percentage of opinion leaders and serve as the role models for other affiliates of the social system. These individuals are considered to be efficacious and discrete users of ideas that are new. Individuals in the early majority category adopt new ideas just before the average members of a system. Those in the late majority category adopt new ideas after the typical system's members, and the adoption can be because of financial reasons or peer pressure. These individuals are more skeptical and proceed with caution toward new ideas and innovations. The last individuals in a social system known to adopt innovations are called Laggards. This population may make adoption decisions based on necessity, and lateness in adoption could be related to resistance of new ideas or limited resources (Rogers, 2003).

Obstacles in the process of diffusing innovation. Although many educators and staff will agree that an innovation is a positive tool for an organization or classroom, the process of diffusing an innovation still faces various hindrances along the way. As noted

in the *International Journal of Education and Development*, as a universally well-recognized issue present in institutions of learning, ineffective implementation is beyond the scope of increased technological advances. One area that may hinder the adoption process is the level of compatibility of an innovation, which is recognized as the stage in which a new technology may be compatible with individual experiences (Dintoe, 2018). This term refers to the beliefs, experiences, values, and erudition of individual technology adopters. If the innovation is not adequate to the system, then the innovation will likely not be adopted.

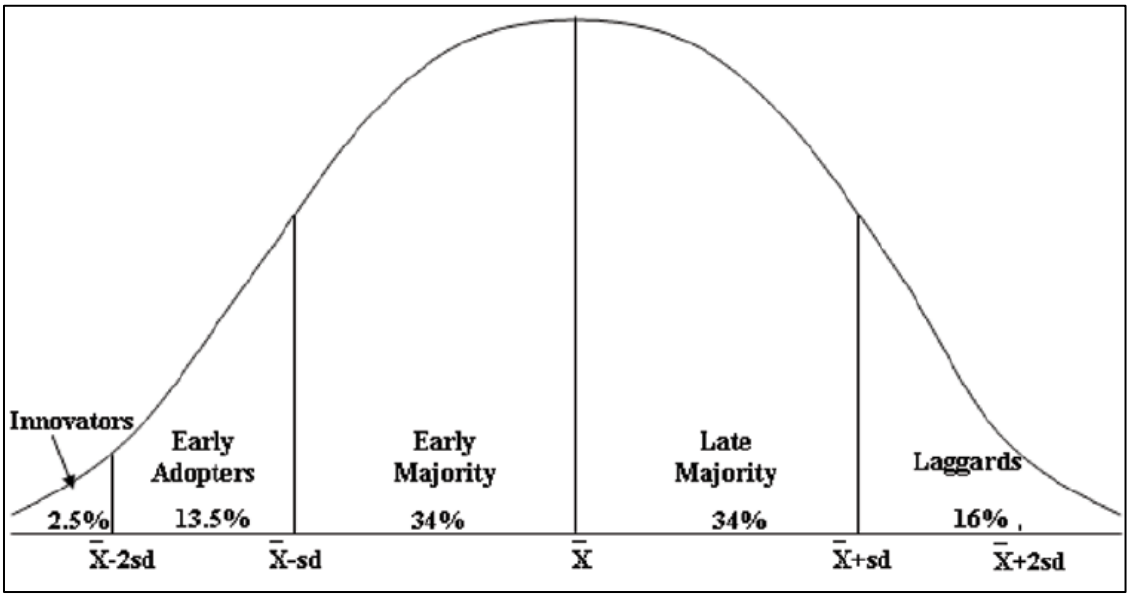

Figure 2. Adopter categorization on the basis of innovativeness (Rogers, 2003).

Pro-innovation bias. There is a need to remain neutral during the data-gathering process. The researcher should remain impartial to gather a better understanding of the ideas provided by the participants (Cooper, 2015). In the setting of pro-innovation bias, it is believed that an innovation should be diffused and adopted by all the members of a community or social system, that the innovation should be diffused rapidly and efficiently, and that the innovation should not be rejected or altered (Rogers, 2003). By

propagating this bias and not being careful, improper innovations can be adopted without looking for possible adjustments that can make the innovation more valuable and useful to the community or even reject an innovation that might have not worked in similar environments elsewhere. By protecting an organization from pro-innovation bias, an organization can shield itself from diffusion of ineffective, poorly designed, or misaligned organizational innovations.

Individual-blame bias. This is a propensity for diffusion research to side with the agent of change that is encouraging the innovation instead of siding with the communities that are the potential adopters of the innovation. Research that sides with change agencies rather than individuals promoting innovations is a source of this bias (Rogers, 2003). In this bias, individuals tend to be held responsible for the problems instead of looking at the system the individual is part of. In some cases, the root of a problem or issue within a community might lie in the system and not only in the individual. Although individual change can lead to better results many times, sometimes a systematic change is needed.

Instructional Technology

The old-fashioned way of imparting instruction is via the typical lecture. From the beginning of time, lecture has involved someone in front of a crowd delivering a message, instructions, knowledge, and so forth (Andrews, 2019). With no visual aids and no extras, actually up to 1879, the delivery had to be done with a loud voice because microphones were not invented yet (Encyclopedia.com, 2019). Although lecture-style instruction is still utilized in this day and age, the assistance of technology is heavily used. At first, in the live (synchronous) environment of a classroom, lecture hall, or auditorium, a simple slide show of images could aid a presenter in delivering a message in a more concrete manner.

From there, entire interactive presentations can be used to further assist a lecturer or presenter deliver a message in a more profound and interesting way that resonates and stays with the audience. Presenters or lectures can use interactive presentation software like PowerPoint or make use of audiovisuals (e.g., video and audio teaching aids). Once these tools became very effective in supporting instruction, then the idea of using these technologies for Distance Education (i.e., asynchronous) instruction was thought of and implemented. Some of the first forms of Distance Education utilized audio via radio communications, written communications using the regular snail mail (i.e., post office mail), and later the delivery of video became famous after the invention of the television and video (i.e., videotape) in the 1970s.

These first tools (post office mail, radio, and videotape) helped to revolutionized education because the separation of student/audience and teacher/presenter/lecturer was basically removed. There was no longer a direct need to be occupying the same space at the same time in order to receive instructions, lectures, or any other kind of information. Maybe the only restriction was that the delivery was more localized to a region, state or country, but it was still available to a larger domain of users. If we fast forward to the invention of the Internet in the 1990s, Distance Education really took off with the assistance of Instructional Technology (Baird, 2013).

With the Internet as an aid, and utilizing Instructional Technology, geographical barriers were torn down and the delivery of Instruction could be done around the world. With the Internet, individuals could have both synchronous and asynchronous communications, and the student-audience and teacher-presenter-lecturer could each be in opposite parts of the globe. Distance Education became more viable, and Institutions of Higher Learning started developing more programs that were partially or fully

delivered online, which helped to reach students who otherwise would not be able to start or complete their education. This new format of Distance Education made the access to instruction more flexible because of the effortlessly and swiftly available Internet connection. Learners now had the advantage of accessing information 24 hours a day and 7 days a week. This format at first became inherently important for the nontraditional Higher Learning student who worked, had a family, or assumed other responsibilities and had an inability to attend formal brick-and-mortar institutions either part time or full time.

The definition of instructional technology is "the theory and practice of design, development, utilization, management and evaluation of processes and resources for learning" (Seels & Richey, 1994, p. 11). Based on this description, the field of instructional technology can be described in five different domains: (a) design, (b) development, (c) utilization, (d) management, and (e) evaluation. These domains have an interrelationships that is connected to a central nucleus (Reiser & Ely, 1997). The term instructional technology can be used to describe the classroom demonstration of broadcast television documentaries or the accomplishing of instruction via programmed interactive computer simulations in virtual reality which integrates the process of instruction with assessment. In widespread usage, instructional technology denotes to the use of communications media (e.g., hardware and software) to aid people in the knowledge gathering process (Markova, 2011).

Instructional technology refers to utilizing multimedia, network communications, and computer technology to accomplish instruction or evaluations, and, in other cases, it can also pertain to the management of academic data (Markova, 2011). Instructional technology can be used in different environments for instruction, including the traditional face-to-face format or via distance education (Markova, 2011). Instructional technology

can refer to different media used for instruction, such as classroom presentations, showcases of audiovisual exhibitions, computer simulations, and the delivering of assessments (Markova, 2011). Instructional technology is the medium of communication that aids people learning, and it can be in the form of software, hardware or a combination of both.

Furthermore, instructional technology needs to be flexible, and teaching and learning tools need to be more available, cost effective, and practical. At the same time that the new technologies are created, they need to be designed to be more functional and capable of making learning achievable, but also ensure that the systems created are effective. Educators oversee and are responsible for creating the content, but delivering the content is the responsibility of well created and easy to use instructional technology tools. Instructional designers are hired by institutions to help with the creation, development, and diffusion of educational content while making full and effective use of instructional technology (Kanuka, 2006).

Over the years, investigators such as Seels and Richey (1994) have conducted detailed and thorough reviews of the evolving definition of the term *instructional technology* to describe the birth and evolution of this intricate arena. By doing so, the researchers were able to shed light on the various goals and educational objectives established by academic institutions in order to achieve overall student success. Review of the data indicated that, although the definition of instructional technology may have changed meanings over the years, there were certain terms that continuously appeared in many of the definitions. For instance, concepts such as systematic, resources, and processes occurred frequently since early definitions of the term in 1994 (Seels & Richey, 1994). On the contrary, as the field has evolved and technology advances occurred, there

are other concepts which have been eliminated from later definitions, including facilitation, control, and man/machine. Despite the differences in terminology, the end goal of the field of instructional technology has been to affect the learning process (Seels & Richey, 1994).

With the multiple and ongoing advancements in educational technology, the development of instructional technology has become its own field in which both designers and instructors must attempt to create up-to-date content utilizing various media channels to deliver same. As researchers have found, the art of developing instructional technology should involve maximizing the potential of the medium that will be employed (Finley, 2005). Furthermore, in the educational setting, those involved in the development of new techniques have the capacity to augment the efficiency and effectiveness of the educator in meeting the goals of instruction (Finley, 2005).

In the pursuit of better understanding and improving adoption of instructional technologies, some researchers have explored and developed theories that are rooted in psychology. As Saettler (1990) pointed out, the field has been influenced by cognitive science and behaviorism theory. However, it appears that instructional technology is indistinguishably tied to the advancement of new technologies and their application for educational purposes (West, 2003). As a discipline, instructional technology involves various aspects that include instructional design, distance learning, school media centers, and performance technology (West, 2003). In the last decade, the advancements witnessed in the fields of communication and connectivity have also created the opportunity for learners to construct personal meaning of various subjects.

Types of instructional technology. There exist many different types of instructional technology, and one main resource used in the modern era is the Internet.

Now, when utilizing the Internet, there are a couple of categories that go with it. Having Internet access itself is the first. In addition, having proper training in the use of the Internet is imperative in an educational setting to maximize the benefits of the technology. Lastly, having proper assistance while using the Internet is essential. All three areas form a well-rounded approach into making the use of the Internet as an instructional technology a fruitful success (Nicolino, 2007). Instructional technology can take many forms, including technical media such as audio and video teleconferencing, audio and video recordings, computers, correspondence via text, audio, visual graphics and multimedia systems (Finley, 2005). Instructional technology can be used to accomplished training in different forms, such as web-based training, visual literacy, and media certifications (West, 2003).

Instructional video technology has become widely popular among educators to help meet the needs of all students. By way of definition, instructional videos are relatively short videos that contain demonstrations or instructions, or both, on how to complete a detail task (Shipper, 2013). These instructional videos can be easily found on websites such as You Tube and can make a considerable and constructive impact on student learning. Once the student is assigned an instructional video, then he or she may be able to watch the video outside the classroom and when available. Therefore, the tool gives the students the opportunity to work based on their own schedule. Under these circumstances, instructional videos allow learning based on a student-centered approach to occur, which in turn can create the opportunity for learning to be more individualized (Allison, 2015). In addition to this learning tool, there has been an increase in visual instruction for educational purposes in the arena of instructional technology. As noted by Reiser and Ely (1997), visual instruction involves the teaching space use of motion

pictures, lantern slides, and other mechanisms such as still pictures, charts, wall maps, and items to aid with the enhancement of education through the visual experience.

Advantages. There are several documented advantages to the use of instructional technology. First, it can help instructors in a classroom setting maximize the instructional time and extend the instructional time by utilizing tools provided by instructional technologies. Second, instructional technology can also give instructors and students more control of the learning and the learning environment. Third, instructional technology offers an opportunity to use different modes of instruction to help deliver content and aid learners in the process of attaining knowledge (Allison, 2015).

One area that may be used to assess the benefits of implementing instructional technology is to review the response received from students in relation of how technology is utilized in the classroom. Some researchers have explored this and found that students benefit from use of technologies at their institutions of higher learning and liked the use of it. Furthermore, many students identified the convenience of new techniques as the most valuable reason to incorporate technology use in their courses (Kennedy, 2014). Benefits of web-based technologies and instructional technology in heightening student learning have been explored by prior researchers, which have yielded positive results. For instance, communication technologies have been shown to support learning be providing course information, study material, and assignments in a convenient manner, timely, and in functional formats (Liao, 2005).

The benefits and usage of instructional technology have not been confined only to classrooms within institutions of higher learning, but the new advances have also reached classrooms in kindergarten through Grade 12 across the nation. Many schools, including private and public, have relied upon instructional technologies to assist in the education

process and continue to do so presently. Some of the instructional technology activities used in the lower classrooms include but are not limited to word processing, spread sheets, Internet research, practice drills, solving problems, and analyzing data (Nicolino, 2007). In addition, many teachers now rely upon these advances to complete day-to-day tasks such as communicating with parents via e-mail communication to discuss their children's progress as well as preparing their daily lessons and communicating with colleagues.

Another way in which instructional technologies positively affect academic objectives is that it allows instructors to identify different learning styles amongst students. Without a doubt, each individual is unique and, therefore, possesses varying needs in order to receive and learn new information. As an instructor, one must be able to identify the different learning styles and subsequently adjust learning techniques and objectives accordingly. As noted by Nicolino (2007), as teachers incorporate various teaching techniques to attend to students' learning styles, a more independent thinker will be cultivated to develop an active participant in their learning process and goals.

A known example of an instructional technology tool that is very commonly used nowadays is Blackboard. As a tool, Blackboard has been used by many institutions to allow students access to their courses through the Internet. The site grants students the access to their respective courses and also allows access to electronic data such as course notes, slideshows, and presentation aids. More importantly, Blackboard serves as a link between students and professors because it allows them to communicate with each other via e-mail, discussions, or chat sessions (Nicolino, 2007). Learning instruments such as Blackboard greatly aid instructors in the process of identifying and adapting the learning objectives and teaching methods in response to the various personalities and learning

styles they may find in their classrooms. Similarly, it allows students to have open dialogue forum with their instructors and learning at their own pace.

Disadvantages. Similar to many other tools of educational instruction, instructional technology can also present some disadvantages. For instance, the disadvantages of instructional technology might include lack of access, lack of interaction, and learning barriers (Allison, 2015). Making sure that everyone has access to the technology is essential because if a learner does not have access to the Internet per se, then the learner will be at a disadvantage doing any work related to the necessary subject. Having a lack of interaction can become a disadvantage because of the loss of real time communication and instruction. A learner can become lost or fall behind in a topic and be unable to complete work because of it. Some learners might face learning barriers because of the lack of know how to properly utilize the instructional technology.

When considering the potential disadvantages of instructional technology, one must not limit the analysis only to the students receiving the information. Instead, consideration has been given to the instructors or educators tasked with presenting this information. Research has been conducted related to potential refusal by instructors to implement or use instructional technology due to difficulty applying new concepts to an existing methodology (Szabo & Sobon, 2003). This has led to a discussion regarding faculty resistance to implementation of instructional technology. When exploring this issue, some of the challenges identified that may prevent faculty approval of instructional technology have included the following: (a) time requirements related to educators learning how to shift the way they tech to a new format, (b) issues related to rate of change or adapting to change, (c) divergent needs in faculties, (d) rivalry between or within faculties, (e) rapidly changing technologies, and (f) communication issues and

viewpoints among those involved (Szabo & Sobon, 2003).

There is no doubt that the economic turmoil in the recent years has also significantly affected the way that higher learning institutions are organized and maintained. Many institutions have faced substantial budget reductions, which, in turn, have impacted the resources available to support educational programs. Despite these setbacks, institutions have also struggled to respond to ever-growing student demand for more academic opportunities. The institutions have relied upon advanced tools such as e-learning and improved integration of instructional technologies in order to meet these demands. However, some researchers have found that any effort by higher education administrators to do an increase on the function of instructional technologies in a sharply manner within their institutions will directly impact how most faculty members accomplish their tasks (Markova, 2011).

Through data questionnaires, some instructors have voiced personal concerns related to the adoption of instructional technologies in their classrooms. Some instructors may perceive that new instructional technologies could potentially modify their working system as well as the methods they employ to present course content. Instructors may also feel that new instructional technologies may alter the way in which they interact with student audiences, as well as their assessment of the students' progress related to course work (Markova, 2011). Any change in implementation of innovative instructional technologies in the setting of higher institutions with large and diverse student populations may result in varying responses from individual faculty members, as each individual will have different attitudes, opinions, and perceptions related to new advances.

Although some faculty members may have initially opposed adoption of advanced

concepts in the curriculum in part due to lack of proper training and economic funds, research has shown that the general attitudes of the faculty have shifted toward embracing instructional technology given the benefits this has for students (Markova, 2011). Many organizations have been able to meet these challenges by providing a boost to instructional environment with robust training, supplemental technical resources as needed, and ongoing communication tools (Kennedy, 2014).

Distance Education

In recent years, numerous institutions of higher education have opened up multitude of opportunities for students via distance education. Research studies conducted have demonstrated that approximately 62% of the 2- and 4-year higher education institutions are delivering distance education programs and modules, and enrollment in these courses exceeded 3.18 million in 2005 (Garcell, García, Glogauer, & Hobson, 2007). Distance education has been distinguished by four characteristics. First, distance education was disseminated through institutions. Second, separation based on geographic location was a characteristic in distance learning, and there could be a separation in time between instructors and students. Third, interactive telecommunications provides a way to interconnect the instructor with the population of leaners and allows the learners to interact with each other. Fourth, distance education, like any education, set the foundation for the emergence of a learning group, sometimes called a learning community that is comprise of learners, instructional resources, and an instructor or facilitator (Simonson et al., 2011, p. 126).

According to Schlosser and Simonson (2009), distance education is commonly described as institution-based formal instruction in which the group of learners is divided and where interactive telecommunications structures are utilized to link up students,

resources, and facilitators or teachers. There are four main components that help further the explanation of distance education:

1. Distance education is institutionally based: for the most part this indicates that the institution offering distance education is accredited. Programs of study include kindergarten to Grade 12, community college, college, and universities offering complete degree programs. There are trade schools as well that can offer training and certifications, but there is a call to ensure these organizations are properly accredited and offer programs in high quality.

2. Separation of teacher and student: Separation can be in terms of geographical location, time, and intellectual separation. Geographical separation means that teacher and students can be located far away from each other, but it can simply mean a separation in which teacher and student are not in the same classroom or building.

3. Interactive telecommunications: Interactivity can be synchronous (i.e., same time or video conferencing) or asynchronous (i.e., recorded for later use). This makes the information available to the learner at any time and in any place.

4. Sharing of video, voice, and data (e.g., learning experiences): Implies the use of electronic media like television, telephone, and the internet (Schlosser & Simonson, 2009). For the purpose of this dissertation, online courses were considered distance education (Ball, 2013).

Distance education dates to 1852 when courses and course work used to be delivered via U.S. Post Office mail and secretaries would mail their work and exercises once completed for review. At the beginning of the 1900s, distance education lengthened to include the use of radio communications, but faculty at the time did not feel that radio courses had the same impact as the most common face-to-face courses. The use of

television for delivery of distance education courses came in the 1930s. In the 1990s, with the invention of the Internet and the increasing speed, not only courses but also entire programs of study could be done in a rapid way and at a distance (Ball, 2013; Simonson, Smaldino, Albright, & Zvacek, 2009). E-learning reflects a vision to make use of the technology part of the everyday practice and administration of a university. Developing an e-learning center and an e-learning infrastructure that provides preparation, course or curriculum development assistance, and general support can be integral to the success of any e-learning environment (Al-Khasawneh & Obeidallah, 2015).

Environments that utilize online learning deliver an incredible prospect to increment the availability and access for students to higher education. In order to accomplish essential objective, the vigorous involvement and collaboration of the faculty is necessary from a broad spectrum of institutional settings (Shea, Pickett, & Li, 2005). The amount of participation of faculty members in distance education has a direct connection to their overall skill and capacity of using technology, their stance toward new technology trends, and how they view distance education in a larger scope, as well as demographic variables such as age and ethnicity. Institutions of higher learning should develop long-term plans to make distance education part of their core instructional platform and infuse this into the faculty's regular workload to help spread the reach of distance education. For a distance education program to be fruitful and to entice faculty to become part of it, institutions of higher learning need to provide onsite technical support, training, assistance in course and curriculum development specialized for distance education, and proper compensation (Tabata & Johnsrud, 2008).

Distance education offers an opportunity to magnify the reach of any institution

beyond their geographical location. Also, schools that are geographically inaccessible, such as remote rural areas, can provide their students with opportunities to take courses and programs without being physically present (Cavanaugh, 2001). Furthermore, distance education in rural settings is particularly essential because it provides an impetus for isolated students in such rural communities to access higher education (Klassen, 2010). Students at the high school level can also enroll in college or university courses, if they qualify, and start advancing their studies without having to set foot in the institution. Distance education offers a great advantage to students who cannot attend a traditional face-to-face program at a physical institution.

Students might be unable to attend traditional school for a number of different reasons, including students who experience sickness or financial issues, students who have been removed or cannot attend regular school because of disciplinary actions, student athletes who might have events and are unable to attend the physical classroom, and students who move regularly because of their parents or job responsibilities such as the military or government jobs (Fulton, 2002). Other reasons for distance education can include the designs of the schedules to allow students more flexibility. A student can work part time or full time and still attend school, and, because online education does not require that the full load of courses be taken online, most students find that a hybrid schedule in which they combine a mixture of online courses with face-to-face courses works best for them.

To be able to ensure that students will flourish as online learners, they should know or be aware of their particular learning style (Santo, 2006). In general, the rate at which students drop and get dropout from online courses have a tendency to be much higher than the traditional face-to-face courses, and this tends to happen because students

fail to recognize that online courses are more flexible but not easier. In an online environment, a bulk of the time management, organization, interaction, and participation falls on the student, and, by knowing their particular learning styles, students can better decide if online learning is for them or realize their strengths and weaknesses and, in this way, be more successful in an online learning environment. Santo (2006) made some remarks on some learning styles: (a) participant, where the learner is eager to participate; (b) avoidant, where the learner does the bare minimum; (c) independent, where the learner takes charge and likes to work alone with little to no supervision; (d) dependent, where the learner requires detailed instructions in order to complete the work; (e) collaborative, where the learner likes to work in groups; and (f) competitive, where the learner wants to be the best possible in the class or group. By understand the learning style, a student can be more successful.

Opinion Leadership

According to Valente and Pumpuang (2007), opinion leaders are people who influence the opinions, attitudes, beliefs, motivations, and behaviors of others. According to the authors, the roles and actions of leaders span multiple areas in society including political, social, economic, public health, education, living conditions and more. Opinion leaders have functions and responsibilities that become extremely important for the communities they represent in regard to implementation of new programs, ideas, and technologies. According to Valente and Pumpuang, there are five key functions and responsibilities in which opinion leaders play a role:

1. Opinion leaders provide legitimization to external change agents so that the community members they represent feel at ease and are trustworthy of the external entity.

2. Opinion leaders provide communications and serve as intermediaries between

the community they represent and the external agents in order to implement changes.

3. Opinion leaders act as role models for behavior change inside the communities they represent.

4. Opinion leaders will carry messages to the community.

5. Opinion leaders become the ones in charge once the external agency leaves, and, in this way, opinion leaders help institutionalizing programs (Valente & Pumpuang, 2007).

Some opinion leaders rejoice in the position in which they find themselves and relish in the acknowledgment that comes from being recognized as the leaders in their respective communities. Other opinion leaders might find themselves in an uncomfortable position and become more hesitant to implement new innovations (Valente & Davis, 1999). The selection of an opinion leader might take certain variables into account, such as the setting, if the opinion leader is accessible, and if the appropriate resources are available. As shown in Appendix A, Valente and Pumpuang (2007) identified 10 approaches to help recognize opinion leaders and to explain the benefits and drawbacks of each method.

Opinion leaders are taught about diversity and culture aspects of their organizations in order to make decisions. The opinion leaders are part of a social system that comprise a set of interrelated units that are all involved in a joint problem solving to find the best solution for a common goal (Rogers, 2003). The members of the social system are not the same and differ in behavior. Opinion leaders need to have a good understanding of the culture of their organizations in order to make more informed decisions and find solutions that apply to the individual organization or community. For the same reason, opinion leaders need to be aware of the demographics of their

organization or community to be able to understand the needs of the population and in return make more inclusive decisions in regard to infusion of innovations that would be more favorable to all.

Adoption of Instructional Technology and Distance Education

When the adoption of Instructional Technology and Distance Education occurs, there are some considerations that have to be taken into account. For example, the support provided to use informational technology has to be at a high level because if it is not, then such support may actually cost more than the hardware and software needed to produce a learning unit (DiMaria-Ghalili, Ostrow, & Rodney, 2005). Instructional technology allows for students to take distance education courses and participate in such class via their personal computers. By implementing instructional technology to deliver distance education, the cost of delivery of instruction is more effective and recruitment of students go from local to global instead of just teaching students within a geographical location. Instructional technology and distance education can help to break those geographical barriers, and instruction can be delivered anywhere in the globe. This increases the way institutions create revenue and are able to build more programs. For students, this is an incredible opportunity to obtain an education in a timely manner anywhere and at any time (DiMaria-Ghalili et al., 2005). Distance education can lead to high-quality, highly individualized instruction and create communities of learners that can share experiences beyond the limitations of time and space (Besser & Bonn, 1996).

With the increasing growth in the usage of information technology in the world of business, educators have seen the need to adapt and add instructional technology to the delivery of their courses and ensure that they can provide distance education to make the content more readily available to students. In this realm, the instructional technology

provides the medium to facilitate and provide courses via distance education (Sanderson, 1998). Educators need to be current in the literature relating to the adoption of Instructional Technology and Distance Education and be up to date with the expected changes and current trends to be able to incorporate such changes and trends into the curriculum. Educators need to be able to anticipate business needs and make predictions about technology to offer the best curriculum available and provide students what they would need in order to be prepared for the real world (Sanderson, 1998).

Johnsrud, Harada, and Tabata (2005) found that 11 factors can increase the participation of faculty members in distance education that relates directly with the type of instructional technology used and the level of training and expertise of the users: those who develop distance education courses to deliver instruction (i.e., instructional designers and faculty) and those who take the courses (i.e., students). The 11 factors include a feel or sense that (a) their technology skills are adequate, (b) technology is important to conducting their professional work, (c) their self-image is enhanced by using technological innovations, (d) they have the skills needed to teach distance education, (e) the quality of distance education instruction and learning is as good as face-to-face instruction, (f) distance education is compatible with their work style, (g) distance education is easy to use, (h) they are able to see the results of distance educational delivery, (i) they have opportunities to first try out distance education, (j) they assign to using software in their professional work, and (k) they assign the use of e-resources in their professional work.

In the same research, five factors were found to relate to why faculty would be hesitant to participate in distance education delivery. Faculty wanted to make sure that the technology was available to support all needs for distance education delivery, that the

institution had a vested interest in distance education, that teaching and taking distance education courses used a volunteer approach, and that the advantages of using the technology far outweighed the disadvantages. Faculty members in general did not had a bad view of distance education and instructional technology, but they preferred not to engage in it. The five factors were (a) resources are available to support their technology needs, (b) institution values distance education, (c) distance education is voluntary, (d) sharing their experiences in using distance educational technologies, and (e) the advantages of distance education outweigh the disadvantages (Johnsrud et al., 2005).

In general, the adoption of Instructional Technology and Distance Education enhances flexibility, allows for the limitation of learning boundaries, and allows for a greater number of ideas to be brought to people (Heath, 1996). The multitude of technologies available brings on a very powerful tool to make the connection between the students and faculty and, in this way, reaches students who are continuing their education or provides training for adults. The more adept that faculty members are in the different types of instructional technologies to deliver instruction, the better the learning process becomes. Instructional technologies offer the capability of presenting information to students in a much better and organized manner and are available on demand at any time, which can lead to more learning in less time and with greater retention (Heath, 1996).

Research Questions

Several research questions were applicable to this study and looked to explore the ways in which Instructional Technology and Distance Education was either adopted or rejected:

1. What factors are most predominant when making the decision of adopting or rejecting Instructional Technology and Distance Education?

2. What are the attitudes of individual leaders and administrators toward the usage of Instructional Technology and Distance Education?

3. How does an individual leader's practice and personal experience with application of Instructional Technology and Distance Education impact his or her support toward new practices?

Chapter 3: Methodology

Research Design

The aim of this research study was to evaluate the adoption process of Instructional Technology and Distance Education at institutions of higher learning. The researcher implemented a mixed-methods design in order to conduct the research in this case study because there are benefits to both a nonexperimental descriptive design as well as a descriptive design to address the research questions. The use of a mixed-methods design allowed the researcher to use the benefits of both quantitative and qualitative research, thereby exploring the research questions more in depth. The mixed-method design also allowed the researcher to use the results of quantitative generalizability along with the details from the open-ended questions that were provided to the participants to obtain a more detailed and comprehensive picture of the occurrence.

Participants

Population. The population targeted for this study included chief executive officers, chief information officers, chief information security officers, directors of technology, or deans within technology departments of institutions of higher learning. An email was sent out to over 200 possible participants. The email included the link to the web-based survey tool using Survey Monkey. This study was conducted with the assistance of various administrators at higher learning institutions. Individuals were identified by contacting each higher learning institution in different areas with focus on those institutions with course offerings involving distance education. It was expected that the group would include both male and female individuals who held administrative or directorial positions within their respective organizations.

The researcher used purposeful sampling as it allowed for the intentional selection

of individuals to learn or understand the central phenomenon (Creswell, 2008). Furthermore, Creswell (2007) defined purposeful sampling as selecting individuals and sites for study because they could decisively apprise an understanding of the research problem and central phenomenon in the study. The research included higher learning institutions that provided educational training to its residents. These higher learning institutions were managed by a number of administrators in positions such as chief executive officers, chief information officers, chief information security officers, directors of technology, or deans of their various academic departments. At the same time, the departments were composed of tenured faculty and adjunct faculty to impart each subject.

Sample. The sampling was composed of the respondents to the email that contained the survey. There was an expectation of 30 to 50 minimum responses. An e-mail invitation to participate in the study was forwarded to selected individuals from various higher learning institutions (see Appendix B). The email included the link to the web-based survey tool using Survey Monkey. For this particular study, purposeful sampling was established by selecting the chief executive officers, chief information officers, chief information security officers, directors of technology, or deans within technology departments of institutions of higher learning as the key participants in this study. These individuals, as opinion leaders, played a vital role in the decision-making process within their respective organizations necessary to enterprise, create, equip and organize the processes necessary to implement new technology within their respective campuses. Individuals in upper administration were targeted because they were directly responsible for facilitating and implementing education innovations or transforming existing organization practices (Kotter, 1995). This concept is consistent with Rogers'

(2003) belief of opinion leaders within organizations who, due to their access to information and organization leadership, are able to exert influence over other school staff in order to promote institutionalization of an innovation.

As noted, the participants selected for this study held the highest levels of authority within their respective institutions. Many researchers have found that leaders of an organization hold one of the most important positions within an organization as they determine the values, vision and trajectory of the work community (Kouzes & Posner, 2012). Under these circumstances, the leadership style and background of the individual holding this position may help to mold the innovativeness and technological culture followed by the rest of the team. According to Kouzes and Posner (2012), there are certain attributes that higher administrators and organization leaders must hold, including competence and confidence in the business specialty as well as clinical, technological, and administrative expertise when directing their respective organizations. In addition, global leadership features such as deep self-awareness, culturally diverse, humility, lifelong learning and curiosity, honesty, acts with integrity, well-spoken, insightful, open to criticism and good negotiator were added as vital leadership attributes (Clawson, 2009).

Once the individuals were identified as outlined above, a standardized e-mail communication was forwarded to all participants in the study. The purpose of the e-mail communication was to explain the subject study in more detail as well as the written questionnaire. A formal invitation to participate in the study was also attached to the initial e-mail. After participants confirmed their interest in participating in the study via e-mail response, they were then e-mailed back confirming their participation. At the same time, the participants received the study's subject questionnaire to complete.

Instruments

Survey description. In order to collect necessary data for the study, a modified cross-section survey tool (see Appendix C) was utilized to examine the variable that could influence the adoption of innovation by opinion leaders. The first section of the study was devoted to and focused on the demographic information of participants, which was followed by innovation-decision adoption and attitudes toward innovation technology. The study aimed to follow a quantitative framework that was also supported by the theoretical framework of Rogers' (2003) diffusion of innovations. A quantitative survey method was implemented, as it allowed for scaled questions to identify importance in questions and responses in relationship to the diffusion theory.

Utilizing a demographic questionnaire document as a tool, a detailed description of the study's participants was collected. By obtaining each individual's identifying information, such as age, gender, race, highest level of education, and past experiences, the survey served as a tool for more comprehensive understanding of the partakers involved in the study. In addition to the scaled-style questionnaire portion of the survey, a section with open-ended questions was also included. The open-ended questions were employed, as this format allowed participants to provide their personal perceptions and experiences beyond the constraints of the researcher's personal experiences (Creswell, 2008).

The data-collection instrument was a modified version of the one utilized by Coleman-Prisco (2016). Appendix D contains the email requesting and receiving permission to use and modify the instrument to fit the requirements of this research. The survey used in this study was entitled "Perception of Higher Education Leaders in the Adoption Process of Instructional Technology and Distance Education Survey." The

survey was divided into four parts: (a) demographic information, which was used to collect important demographic information to help conduct the study; (b) adoption process, which was used to collect data on the process by which individuals select Instructional Technology and Distance Education; (c) attitudes toward instructional technology, which was used to collect data related to the attitudes about utilizing instructional technology; and (d) overall experience, which was used to collect data regarding the overall experience with Instructional Technology and Distance Education.

Part 1: Demographic information. The survey instrument commenced with a series of questions relating to demographics. The purpose of this section was to capture information such as gender, age range, professional title, highest degree held, years of experience in higher education, and a self-assessment of computer expertise.

Part 2: Innovation-decision process indicator. Lichty (2000) developed the innovation-decision process indicator as a tool to place innovators in one of five stages of Rogers' (2003) innovation decision process regarding the adoption of new technology. There were 15 items in this section, and they all corresponded to the five stages of the innovation-decision process. The 15 items fell into the following stages of the innovation-decision process: (a) knowledge (Items 1 to 3), (b) persuasion (Items 4 to 6), (c) decision (Items 7 to 9), (d) implementation (Items 10 to 12), and (e) confirmation (Items 13 to 15). All 15 items are listed in Appendix C with a modification from the Office of Education Research to Instructional Technology and Distance Education to fit this study.

Part 3: Instructional technology and distance education attributes. This section used a 5-point Likert scale ranging from *strongly disagree* to *strongly agree* and captured the attributes in regard to Instructional Technology and Distance Education and perceived

characteristics from the diffusion of innovations framework.

Part 4: Instructional technology and distance education adoption and support. This section provided an opportunity for participants to reflect and respond on their overall experience with the Instructional Technology and Distance Education.

Validity. As a researcher, one should always strive to obtain results that are consistent and accurately represent the characteristics or features one is attempting to measure. One item that can be used to evaluate the measurement method is validity. There are three different measurements that are generally used to evaluate the validity of a survey instruments, including content validity, criterion validity, and construct validity (Muijs, 2011). The researcher corroborated the credibility of the research by using two different types of data to collect information to include (a) the closed-ended questions and (b) open-ended questions. According to Coleman-Frisco (2016), the instrument had been tested for validity.

To avoid bias, the researcher included data from multiple participants, which brought a deepness of perspectives. Using closed-ended questions and open-ended questions helped to validate the instrument (Coleman-Prisco, 2016). The original instrument was created and utilized by Coleman-Prisco and tested for validity (Coleman-Prisco, 2016). Although the study followed a random sampling selection process, the expected population of participants was composed of individuals who shared similar job positions and responsibilities; therefore, the group as a whole was very similar. Another issue that can affect the validity in research may be a lack of interest by the participants to provide data. The researcher attempted to reduce the threat to internal validity of selection by selecting individuals who possessed the same level of expertise in the area being researched (Creswell, 2008).

Reliability. In addition to considering the validity of the data that a researcher intends to collect, one must also ensure reliability of the data. Reliability intends to measure the consistency of a measurement used to collect information, and this may be accomplished through test-retest reliability, internal consistency, and interrater reliability. As further noted by Creswell (2008), the researcher's goal with the instrument selected was to obtain scores that were stable and consistent. Reliability across the whole survey instrument was completed to confirm that the questions presented addressed each individual concept. Test-retest data were not available because, as per restrictions of the Institutional Review Board, the researcher did not have access to the personal identity of participants and could, therefore, not request that they take the survey a second time.

Moreover, interrater reliability did not apply because this research was based on participant self-report rather than raters whose interrater reliability could be tested. Coleman-Prisco (2016) indicated that, aside from the instrument, the sample itself has to be reliable. The sample was selected based on the researcher's access and the immediate problem of practice. Although random sampling is always more desirable, convenience sampling is an acceptable alternative in educational research (Muijs, 2011). The main risks to the sample reliability are in regard to the attitude and willingness of participants, as well as the implementation method of the survey (Coleman-Prisco, 2016).

The aim was to use Cronbach's α statistics to measure the reliability of the quantitative data. Cronbach's alpha is used to examine the reliability or the internal consistency for responses to a survey that includes conceptually-related statements presented with a Likert-scaled array of responses or with dichotomously scored statements and was administrated only once (O'Sullivan, Rassel, Berner, & DeVance, 2017). Cronbach's alpha is a common reliability test that views each response within

each set of conceptually related statements as a retest of a response to another item. The Cronbach's formula generates all of the test-retest pairs of correlations and calculates the mean as the reliability index *alpha* (Cronbach's alpha or α is not synonymous with the *alpha* of hypothesis testing significance levels). Cronbach's α statistics can only range from 0 to 1. The closer the value of the statistic is to 1, the greater the reliability of the database. Values of .70+ reflect adequately reliable data. Cronbach's α statistics are presented in Chapter 4 in the section that presents the results of the quantitative data.

Procedures

Data collection. After completing the first step of identifying the opinion leaders in their respective institutions, the recruiting process was accomplished by sending email invitations to each potential participant. This initial electronic communication contained a detailed and comprehensive explanation of the subject study. The task of data collection for this research project was conducted over a period of time utilizing the Perception of Higher Education Leaders in the Adoption Process of Instructional Technology and Distance Education Survey tool, which was provided to participants via electronic message. The data obtained were entered into an Excel file and screened for any incomplete data sets. An email was sent out to over 200 possible participants. The email included the link to the web-based survey tool using Survey Monkey.

The research survey was immediately available for participants to complete. The survey remained available for a period of 15 days after the initial email invitation. Two email reminders were sent to the participants, one after 5 days and another after 10 days. Following this process, the participants received a total of three emails consisting of an introductory email with the survey link followed by a reminder on the fifth day and a second reminder on the 10th day. The survey closed 15 days after the initial email. Data

for the subject study were then collected from the itemized survey provided to all participants selected for this study via e-mail communication. Appropriate measures were taken and implemented by the study researcher in order to ensure the dependability and credibility of the data collected. The data were collected in various formats including nominal (i.e., demographic information) and open-ended questions.

A quantitative survey method was used for the initial portion of the study, which was followed by qualitative open-ended questions for the participants to respond to without restrictions. The quantitative survey method easily fit in with the study as it fittingly utilized scale questions to easily identify the significance in questions and responses in direct relationship to the theory (Coleman-Prisco, 2016). The second part of the questionnaire involved the use of a section devoted to open-ended questions that were shared with participants via e-mail correspondence. These open-ended questions allowed participants to provide their individual perspectives and experiences beyond the constraints of the researcher's personal experiences or perspectives (Creswell, 2008). Furthermore, the open-ended questions provided the opportunity for participants to identify potential concerns that may not have been previously considered by the investigator.

Data analysis. The analysis of data involved a review of the demographic information provided by participants through a questionnaire. This was part of the quantitative data analysis, which allowed for a check for the "normality" as well as any "outliers" among the participants selected for the study. Generally, an innovation can be described as an idea or exercise that is perceived as a new practice by either an individual or organization. Taking a step further, innovativeness relates to how early in the process of adoption of these new ideas and exercises the subject individual or organization is

likely to accept the change.

Part 1: Demographic information. This section was used to develop a frequency distribution of demographic information that would present averages, spreads, and standard deviations of age, professional position, and years in higher education.

Part 2: Innovation-decision process indicator. For this section, analysis of variance (ANOVA) was used to help determine if Instructional Technology and Distance Education adoption was significantly different across demographic distributions. The ANOVA investigates the presence of some overall significance that could exist somewhere among the various levels of independent variables (Coleman-Prisco, 2016). To answer Research Question 1, the researcher used responses to Part 1 of the survey, responses to the 15 items in Part 2 of the survey, and responses to Items 1, 2, 5, and 6 in Part 4 of the survey.

Part 3: Instructional technology and distance education attributes. This section included a set of Likert-type questions regarding Instructional Technology and Distance Education attributes regarding innovation and adoption. The ANOVA was used to determine if there were significant differences across professionals' beliefs about the attributes of Instructional Technology and Distance Education as an innovation. Research Question 2 was answered by responses to Items 1 through 8 in Part 3 of the survey.

Part 4: Instructional technology and distance education adoption and support. MaxQDA software was utilized to analyze the data obtained from Part 4. To answer Research Question 3, the researcher used responses to the 15 items in Part 2 of the survey and responses to Items 3, 4, 7, and 8 in Part 4 of the survey.

According to Creswell (2008), mixed methods are especially useful in understanding potential contradictions between quantitative results and qualitative

findings. The researcher used the qualitative findings from responses to items in Parts 2 and 4 of the survey to explain more in detail the quantitative findings from responses to items in Part 3 of the survey.

Limitations

As a researcher, one of the goals is to be able to draw conclusions regarding the possible impact of specific variables on the study group, which is known as internal validity. The second goal is be able to make inferences involving the general population, which is known as external validity. As in many other studies, limitations occurred in this study. The main anticipated limitation for this study involved the population selected to participate in the study, which was a relatively small size. Under these circumstances, the most noticeable limitation for this research project involved the small sample size of population to be interviewed, which could potentially lead to skewed results.

Creswell (2008) warned that smaller sample sizes have the potential error of yielding different results when generalized to larger populations, thereby decreasing trustworthiness and transferability of the study. External validity may be difficult to achieve with the study limitation of potentially small population size, which may make quantitative findings not generalizable to other populations beyond the sample size used for this study. The researcher attempted to address any threat to internal validity by limiting the time frame between the beginning of the experiment and the end of the survey to 15 days. Other potential threats to internal validity were prevented by restricting the duration of the experiment (i.e., survey) to a short period of time.

Chapter 4: Results

Online learning and hybrid models of course delivery are regular features in the contemporary higher educational landscape (Burns, Duncan, Sweeney, North, & Ellegood, 2013), along with a corresponding proliferation of tools to enhance Instructional Technology and Distance Education (Vlachopoulos & Makri, 2019). Despite this proliferation, surprisingly little is known about the factors that influence the process of adopting Instructional Technology and Distance Education, either in favor of or rejection of any specific tool, outside of the role of budgetary constraints (Singh & Hardaker, 2014). The purpose of this mixed-method study was to identify the factors that influenced the perceptions of higher education leaders in the adoption process of Instructional Technology and Distance Education.

Analysis focused on a close examination of the decision-making process and what determined if Instructional Technology and Distance Education tools were either implemented or upgraded at various higher learning institutions. This mixed-method study examined both quantitative and qualitative data. The results in this chapter are presented in seven sections. The first section describes demographics characteristics. The second section introduces data analysis. Sections 3, 4, and 5 present results for Research Questions 1, 2, and 3, respectively. The sixth section presents closing comments. The seventh section is a summary of the highlights.

Demographic Characteristics

Table 1 outlines the demographic characteristics of the 45 participants. The modal woman was 50 to 59 years old, White, held a master's degree, identified her professional title as Dean, had worked in academia for 16 to 20 years, and rated her computer skills as above average. Almost half of the women listed their professional title as something other

than those listed; these titles included four directorships: Academic Director (Participant 32), Director (Participant 37), District Director (Participant 44), and District Director of Testing (Participant 35). The remaining women all listed their title as Associate Dean (Participants 28, 29, 30, 31, 33, 36, 38, and 39). It is important to note the women were approximately split on holding a master's degree versus a doctorate.

The modal man was 40 to 49 years old, Hispanic, held a master's degree, identified his professional title as other, had worked in academia for 16 to 20 years, and rated his computer skills as above average. Compared to the female participants, men were younger, more likely to be Hispanic, and were more likely to hold a master's degree instead of a doctorate. Identical to the women, almost half of the men listed their professional title as 'other' than those listed; these titles included four higher administrative posts of Vice Provost (Participant 7), Associate Dean (Participant 24), Chair (Participant 15), and Department Chairperson (Participant 26); three directorships: Director (Participant 10), Director of Assessment, Evaluation, and Testing (Participant 17), and Director of Learning Resources (Participant 11); and one instructional designer: Senior Instructional Designer (Participant 25).

Approach to Addressing the Research Questions

This section of the chapter begins the presentation of the results of data analysis. Findings are presented in sequence of the three research questions without a rationale or discussion. Each section lists the research question, briefly explains the analytical approach used, and then presents the results of analysis as evidence. Research Question 1 was addressed with both quantitative and qualitative analyses. Research Question 2 was addressed with quantitative analyses. Research Question 3 was addressed with qualitative analyses.

Table 1

Demographic Characteristics

	Women (*n* = 18)			Men (*n* = 27)		
	No.	%	Cum. %	No.	%	Cum. %
Age group						
30 to 39 years	2	11.1	11.1	2	7.4	7.4
40 to 49 years	6	33.3	44.4	16	59.3	66.7
50 to 59 years	8	44.4	88.9	5	18.5	85.2
60 to 69 years	2	11.1	100.0	4	14.8	100.0
Ethnicity						
White	11	61.1	61.1	10	37.0	37.0
Hispanic or Latino	3	16.7	77.8	13	48.1	85.2
Black or African American	3	16.7	94.4	2	7.4	92.6
Asian-Pacific Islander	1	5.6	100.0	2	7.4	100.0
Highest degree						
Master's	10	55.6	55.6	22	81.5	81.5
Doctorate	8	44.4	100.0	5	18.5	100.0
Professional title						
Other	8	44.4	44.4	12	44.4	44.4
Chief executive officer	1	5.6	50.0	1	3.7	48.1
Chief information officer	1	5.6	55.6			
Director of technology	2	11.1	66.7	6	22.2	70.4
Provost	1	5.6	72.2			
Dean	5	27.8	100.0	8	29.6	100.0
Years worked in higher education						
3 to 5 years				1	3.7	3.7
6 to 10 years	3	16.7	16.7	2	7.4	11.1
11 to 15 years	2	11.1	27.8	3	11.1	22.2
16 to 20 years	6	33.3	61.1	9	33.3	55.6
21 to 25 years	3	16.7	77.8	6	22.2	77.8
+25 years	4	22.2	100.0	6	22.2	100.0
Computer skills rating						
Average	2	11.1	11.1	2	7.4	7.4
Above average	12	66.7	77.8	15	55.6	63.0
Expert	4	22.2	100.0	10	37.0	100.0

Research Question 1. Research Question 1 was as follows: What factors are most predominant when making the decision of adopting or rejecting Instructional Technology and Distance Education? Results for Research Question 1 are presented in

three parts. The first part reports the quantitative findings of a repeated measures ANOVA test that was used to determine if participants reported different levels of the stages of the Instructional Technology and Distance Education decision-making process. The second part reports the quantitative findings of a series of 1x2 MANOVA tests that were conducted to determine if the stages of the Instructional Technology and Distance Education decision-making process differed significantly across the demographic characteristics of gender, age, ethnicity, and education. The third part reports the findings from qualitative analysis based on responses to Items 1, 2, 5, and 6 in Part 4 of the survey.

Quantitative data were screened for entry errors and missing data points. Because the data were collected with an online survey, there were no entry errors. However, there were a few missing data points scattered throughout; however, they did not show any systematic pattern. Non-categorical variables were screened for normality, linearity, outliers and homoscedasticity (Tabachnick & Fidell, 2018; Warner, 2013). The data did not show any substantial departures from statistical normality, which justified the use of parametric inferential statistical tests. All analyses were done with the Statistical Package for the Social Sciences, Version 25. Statistical significance was set at alpha = .05. Qualitative data handling is described in the third part of this section.

Summated scales for the stages of the instructional technology and distance education decision-making process. For Research Question 1, this study used Lichty's (2000) survey to measure each participant's place in the five stages of Rogers' (2003) innovation-decision process of adoption of new technology. Lichty's survey has 15 survey items in total. The reliability of the innovation-decision process of adoption data was good, Cronbach's $\alpha = .81$. Each stage is measured by three survey items. According

to Rogers, the five stages of the decision-making process are (a) knowledge, (b) persuasion, (c) decision, (d) implementation, and (e) confirmation. Knowledge was measured by agreement with such statements as, “I am considering the advantages and disadvantages of Instructional Technology and Distance Education technology” (Items 1-3). Persuasion was measured by agreement with such statements as, “I have secured the technical assistance I need to effectively implement Instructional Technology and Distance Education materials” (Items 4-6). Decision was measured by agreement with such statements as, “I think about ways to implement Instructional Technology and Distance Education in my institution” (Items 7-9). Implementation was measured by agreement with such statements as, “I have secured funding to support my efforts with Instructional Technology and Distance Education” (Items 10-12). Finally, confirmation was measured by agreement with such statements as, “I am currently using Instructional Technology and Distance Education in my institution” (Items 13-15).

The response choice for each item was *agree* or *disagree*. Each *agree* response was given the numeric value of 1 for the statement. Participants who did not agree with a statement were given the numeric score of 0 for the statement. For analysis, for each participant, the numbers of *agree* responses for each stage of the decision process were summed. The possible range of scores for each stage was therefore 0 to 3. That is, a participant who did not agree with any of the three items for a stage had a total stage score of 0, whereas a participant who agreed with all three items had a total stage score of 3. Scores for each stage of the Instructional Technology and Distance Education decision-making process were labeled as a summated scale: Knowledge summated scale, Persuasion summated scale, Decision summated scale, Implementation summated scale, and Confirm summated scale.

Summated scales means for the stages of the instructional technology and distance education decision-making process. Figure 3 illustrates the means of the summated scales of the five stages of the Instructional Technology and Distance Education decision-making process. In descending order, the stages of the Instructional Technology and Distance Education decision-making process were Knowledge summated scale (*M* = 2.21, *SD* = 0.77), Decision summated scale (*M* = 2.17, *SD* = 0.71), Confirm summated scale (*M* = 2.10, *SD* = 0.67), Implementation summated scale (*M* = 2.03, *SD* = 0.86), and Persuasion summated scale (*M* = 1.44, *SD* = 0.57). Figure 3 shows that the means for knowledge, decision, confirm, and implementation were close in value and only decreased gradually, whereas the mean for persuasion was lower.

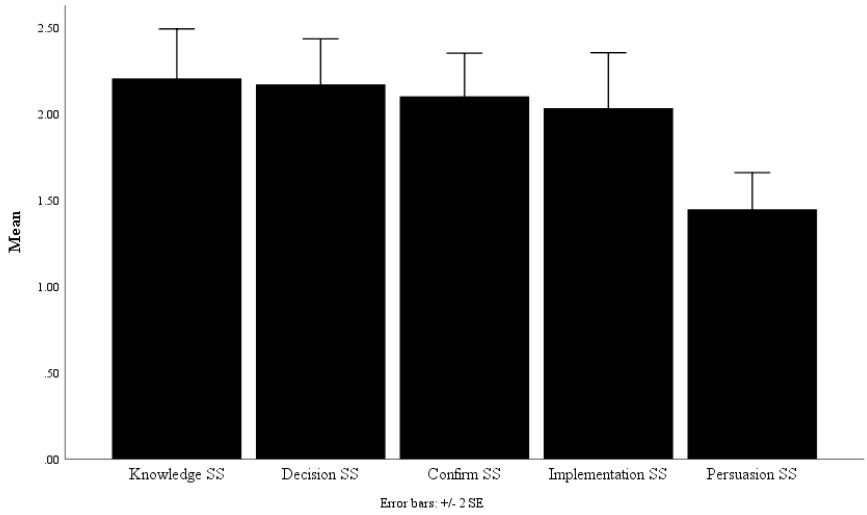

Figure 3. Means for the five stages of the instructional technology and distance education decision-making process summated scales. SS = Summated scales.

Results of the repeated measures ANOVA. This is the part that reports the quantitative findings of a repeated measures ANOVA test. A repeated measures ANOVA test was used to determine if the means of the five stages of the Instructional Technology and Distance Education decision-making process illustrated in Figure 3 were significantly different. Repeated measures ANOVAs compare three or more conceptually related

dependent variables measured at the same time to see if they are significantly different (Tabachnick & Fidell, 2018), making this the appropriate test to answer Research Question 1 about the predominant decision-making factors. The output includes Wilks Lambda (Wilks' λ) and the ANOVA *F* statistic. Wilks' λ is a ratio of the within group variance divided by the total variance. It is interpreted in the opposite manner of interpreting the *F* statistic insofar as smaller Wilks' λ statistics are more likely to correspond to significant differences. The statistical significance of Wilks' λ is interpreted with the ANOVA *F* statistic, which is the ratio of variance between the groups divided by the variance within the groups and is always positive. If there is roughly comparable variance between and within the groups that are being compared, the *F* ratio is close to the value of 1 and the groups are assumed to be from the same population. Higher values of *F* statistics reflect greater difference between at least two of the groups. An assumption of the repeated measures ANOVA test is sphericity (Warner, 2013). Sphericity is the condition of equal variances across all group contrasts, e.g., in the current study, this assumption is met if the variances of the five stages of the Instructional Technology and Distance Education decision-making process did not differ significantly. Measures of the degree to which the sample variance-covariance matrix departs from sphericity are *epsilon* statistics. The highest value of *epsilon* is 1, indicating no departure from sphericity.

In the current study, the assumption of sphericity was examined by comparisons of two versions of the *epsilon* index, the Greenhouse-Geisser and Huynh-Feldt *epsilon* statistics. These two *epsilon* values are used to make downward adjustments to the degrees of freedom used to determine the critical value of *F* for significance tests. The significance of sphericity output agreed with the Greenhouse-Geisser and Huynh-Feldt

epsilon statistics, and the sphericity *F* statistic was reported. Effect sizes were measured with partial eta squared ($p\eta^2$), which is the amount of variance in the dependent variable that is explained by the corresponding independent variable (Tabachnick & Fidell, 2018; i.e., in the current study, $p\eta^2$ reflects the amount of variance in the means that is explained by the stages of the Instructional Technology and Distance Education decision-making process); $p\eta^2$ values are interpreted categorically as indicative of small (0.01), moderate (0.06), or large effects (0.14).

The repeated measures ANOVA hypotheses were as follows:

H_0: Pairs of means of the Instructional Technology and Distance Education decision-making process were not significantly different.

H_1: Pairs of means of the Instructional Technology and Distance Education decision-making process were significantly different.

Results of the repeated measures ANOVA showed that pairs of means of the Instructional Technology and Distance Education decision-making process were significantly different: Value = 40, F = 922 [exact statistic], Hypothesis df = 4, Error df = 25, Partial eta squared = .596, p = .000. The null hypothesis that pairs of means of the Instructional Technology and Distance Education decision-making process were not significantly different was rejected. The $p\eta^2$ statistic indicates that the effect of the different stages was very large.

Planned comparisons were run with paired samples *t* tests, listed in Table 2, to identify the specific pairs of stages that differed from each other. The *p* values on the table show that there were four statistically significant differences, labeled Pairs 1 to 4. The Knowledge summated scale, Decision summated scale, Confirm summated scale, and Implementation summated scale means were all significantly higher than the

Persuasion summated scale mean. The null hypothesis was rejected for these four tests and retained for the remaining tests, although the difference in perspective between knowledge and implementation showed a clear trend toward significance.

Table 2

Results of Research Question 1 Planned Comparisons With Paired Samples t Tests

		Paired differences							
					95% CI of Diff				
		M	*SD*	*SEM*	*LB*	*UB*	*t*	*df*	*p*
Pair 1	Knowledge SS - Persuasion SS	.72	.89	.16	.40	1.04	4.58	31	.000
Pair 2	Decision SS - Persuasion SS	-.73	.76	.13	-.99	-.46	-5.49	32	.000
Pair 3	Confirm SS - Persuasion SS	-.55	.71	.12	-.80	-.29	-4.41	32	.000
Pair 4	Implementation SS - Persuasion SS	-.53	.88	.15	-.85	-.21	-3.42	31	.002
Pair 5	Knowledge SS - Implementation SS	.28	.85	.14	-.010	.56	1.96	35	.058
Pair 6	Decision SS - Implementation SS	.19	.74	.12	-.06	.43	1.56	36	.128
Pair 7	Knowledge SS - Confirm SS	.14	.80	.13	-.13	.41	1.04	35	.304
Pair 8	Implementation SS - Confirm SS	-.11	.68	.11	-.35	.12	-1.00	34	.324
Pair 9	Decision SS - Confirm SS	.11	.75	.12	-.14	.36	.89	35	.379
Pair 10	Knowledge SS - Decision SS	.11	.84	.14	-.17	.39	.78	36	.440

Note. *M*: Mean difference between means. *SD*: standard deviation of mean difference. *SEM*: Standard error of mean difference. *95% CI of Diff*: 95% confidence interval of the difference between means. *LB* = lower bound of the 95% CI. *UB* = upper bound of the 95% CI. SS = Summated scale.

Results of multivariate ANOVA (MANOVA) tests. This is the second part, which reports the quantitative findings of a series of 1x2 MANOVA tests that were conducted to determine if the stages of the Instructional Technology and Distance Education decision-

making process differed significantly by the demographics characteristics of gender, age, ethnicity, and education. Like ANOVA tests, it is designed to test the statistical significance of group differences (Tabachnick & Fidell, 2018). A MANOVA test examines two or more related dependent variables simultaneously, such as the five stages of adoption, unlike ANOVA, and is therefore a multivariate test. In contrast, an ANOVA test is a univariate test because it only examines one dependent variable at a time. The MANOVA was appropriate to use to see if the stages of the Instructional Technology and Distance Education decision-making process differed significantly by the demographics characteristics of gender, age, ethnicity, and education because the dependent variables (i.e., the five stages of adoption) were closely related and the effects of demographic characteristics (i.e., gender, age, ethnicity, and education) can be tested in the MANOVA calculations as independent variables.

The MANOVA is preferred over several separate ANOVAs for several reasons (Tabachnick & Fidell, 2018). The results of MANOVA may be more informative than a series of ANOVA tests because MANOVA takes intercorrelations among the dependent variables into account by creating a new ‘composite’ dependent variable that maximizes group differences. The advantage is that this helps to establish whether each of the original dependent variables represents a conceptually distinct, independent outcome or intercorrelations among the original dependent variables suggest that they actually represent multiple measures of just one or perhaps two conceptually distinct outcomes. Finally, complex phenomena, such as the process of making decisions about Instructional Technology and Distance Education that have substantial financial and pedagogic implications for higher learning institutions, are more accurate when measured in multiple ways, as in the 5 stages of the Instructional Technology and Distance Education

decision-making process examined in the current study.

The MANOVA is more complex than ANOVA and yields more tabular output. In Step 1, the overall multivariate hypothesis is tested. The MANOVA null hypothesis is that the population mean vectors are equal: H_0: $\mu_1 = \mu_2 = \mu_3 = \ldots \mu_k$. It can be stated as H_0: The difference between (the levels of the independent variable) in the multivariate dependent variable was not statistically significant. *Wilks* λ is the most commonly used test statistic to evaluate the significance of this hypothesis. If the null hypothesis is retained, the convention is to conclude that the independent variable, in the current study the four demographic characteristics of gender, age, ethnicity, or education, had no effect and stop the analysis at this point.

However, when the overall multivariate test is statistically significant, Step 2 determines which dependent variables were affected by the demographic characteristic with a series of ANOVA tests. In Step 3, any univariate ANOVA test that results in statistical significance is followed by planned comparisons to identify the specific differences. In the current study, planned comparisons were not used because the demographic characteristics were reduced into dichotomous measures to enhance interpretation, as explained below. That is, because any significant difference referred to the two levels of the dichotomous variable, more complex planned comparisons were unnecessary.

Two of the four demographic variables used to address this portion of Research Question 1 were collapsed into dichotomous categorical variables for the MANOVA analyses, and two did not require transformation because they were already dichotomous. Table 1 shows that age was originally measured at four levels. Dichotomous groups were created by combining participants who were 30 to 49 years old into the group of younger

participants, and participants who were 50 to 69 years old into the group of older participants. Table 1 shows that ethnicity was originally measured at four levels. Dichotomous groups were created by creating a group that was composed of Whites and a group that was composed of Hispanics, African Americans, and Asians. This choice was made to have an acceptably comparable number of participants in the two ethnic groups. Gender originally included a third level, self-defined, but no one chose it (see Table 1), so it was already dichotomous. The highest degree held also originally included a third level, 'other,' but no one chose it (see Table 1) so it was already dichotomous as well.

The MANOVA hypotheses were as follows:

H_0: The difference in the multivariate dependent variable between the two levels of the demographic variable was not statistically significant.

H_1: The difference in the multivariate dependent variable between the two levels of the demographic variable was statistically significant.

Table 3 lists the gender descriptive statistics. It shows that the two stages of the Instructional Technology and Distance Education decision-making process that most differed between men and women were the Decision summated scale and the Implementation summated scale. For both stages, women were in greater agreement than were men. For gender, output of the MANOVA shows the difference in the multivariate dependent variable of stages between men and women was not statistically significant: Value = .874, $F = 0.66$ [exact statistic], Hypothesis $df = 5$, Error $df = 23$, Partial eta squared = .126, $p = .654$. The MANOVA null hypothesis for gender was retained, and, by convention, the analysis was stopped here. For age, the output on the MANOVA shows that the difference in the multivariate dependent variable of stages between the younger

and older participants was statistically significant: Value = .641, F = 2.58 [exact statistic], Hypothesis df = 5, Error df = 23, Partial eta squared = .359, p = .054. The MANOVA null hypothesis for age was rejected.

Table 3

Descriptive Statistics for Five Stages of Decision Making Across Gender

Scale	Gender	Mean	*SD*	No.
Knowledge SS	Men	2.26	.80	19
	Women	2.10	.73	10
	Total	2.20	.77	29
Persuasion SS	Men	1.42	.60	19
	Women	1.50	.52	10
	Total	1.44	.57	29
Decision SS	Men	2.05	.77	19
	Women	2.40	.51	10
	Total	2.17	.71	29
Implementation SS	Men	1.94	.91	19
	Women	2.20	.78	10
	Total	2.03	.86	29
Confirm SS	Men	2.10	.73	19
	Women	2.10	.56	10
	Total	2.10	.67	29

Table 4 lists the age descriptive statistics (i.e., mean, standard deviation, and number) and the results of the univariate ANOVA tests in Step 2 of the MANOVA analysis (i.e., F, p, and $p\eta^2$). Although the effect of age was large, $p\eta^2$ = .36, the p values show that the Confirm summated scale was the only stage that showed a trend toward a statistically significant difference between younger and older participants. Older participants were in less agreement about confirming the Instructional Technology and

Distance Education decision-making process than were younger participants. However, the difference did not quite reach statistical significance. Table 4 also shows that the younger and older participants differed the most on the Confirm summated scale and Implementation summated scale measures, with younger participants in greater agreement than older participants for both stages.

Table 4

Descriptive Statistics and Univariate Results for Five Stages of Decision Making Across Dichotomous Age Groups

Scale	Age	Mean	*SD*	No.	*F*	*p*	$p\eta^2$
Knowledge SS	<50 yrs.	2.35	.78	17			
	50+ yrs.	2.00	.73	12			
	Total	2.20	.77	29	1.49	.233	.052
Persuasion SS	<50 yrs.	1.35	.60	17			
	50+ yrs.	1.58	.51	12			
	Total	1.44	.57	29	1.14	.294	.041
Decision SS	<50 yrs.	2.11	.78	17			
	50+ yrs.	2.25	.62	12			
	Total	2.17	.71	29	0.23	.630	.009
Implementation SS	<50 yrs.	2.23	.83	17			
	50+ yrs.	1.75	.86	12			
	Total	2.03	.86	29	2.31	.140	.079
Confirm SS	<50 yrs.	2.29	.58	17			
	50+ yrs.	1.83	.71	12			
	Total	2.10	.67	29	3.60	.068	.118

Note. SS = Summated scale.

For ethnicity, the output on the MANOVA shows that the difference between the White group and the Hispanic, African American, and Asian group of participants on the multivariate dependent variable of stages was not statistically significant: Value = 819, *F*

= 1.02 [exact statistic], Hypothesis *df* = 5, Error *df* = 23, partial eta squared = .181, *p* = .429. The MANOVA null hypothesis for ethnicity was retained, and, by convention, the analysis was stopped here. Table 5 lists the ethnicity descriptive statistics. The data show that the stage of the Instructional Technology and Distance Education decision-making process that most differed between the two racial groups was the Persuasion summated scale. Whites were in greater agreement with persuasion items than were Hispanics, African Americans, and Asians.

Table 5

Descriptive Statistics for Five Stages of Decision Making Across Dichotomous Ethnic Groups

Scale	Ethnicity	Mean	*SD*	No.
Knowledge SS	White	2.31	.70	16
	Hispanic, AA, Asian	2.07	.86	13
	Total	2.20	.77	29
Persuasion SS	White	1.62	.61	16
	Hispanic, AA, Asian	1.23	.43	13
	Total	1.44	.57	29
Decision SS	White	2.18	.75	16
	Hispanic, AA, Asian	2.15	.68	13
	Total	2.17	.71	29
Implementation SS	White	2.00	.89	16
	Hispanic, AA, Asian	2.07	.86	13
	Total	2.03	.86	29
Confirm SS	White	2.18	.65	16
	Hispanic, AA, Asian	2.00	.70	13
	Total	2.10	.67	29

Note. SS = Summated scale. AA = African American.

For highest degree, the output statistics on the MANOVA for education show that

the difference in the multivariate dependent variable of stages between participants who held master's degrees or doctorates was not statistically significant: Value = .790, *F* = 1.22 [exact statistic], Hypothesis *df* = 5, Error *df* = 23, partial eta squared = .210, *p* = .330. The MANOVA null hypothesis for the highest degree was retained, and, by convention, the analysis was stopped here. Table 6 lists the education-degree descriptive statistics. The two stages of the Instructional Technology and Distance Education decision-making process that most differed between participants who held different higher degrees were the Decision summated scale and the Confirm summated scale. For both stages, participants who held master's degrees were in greater agreement than were participants who held doctorates.

Qualitative findings. This is the third part of the results for Research Question 1, which reports the qualitative findings from analysis based on narrative responses to Open-Ended Survey Items 1, 2, 5, and 6 in Part 4 of the survey. The unabridged content of these responses is listed in Item 1 in Appendix E, Item 2 in Appendix F, Item 5 in Appendix G, and Item 6 in Appendix H.

Qualitative analytical process. The qualitative portion of this study used phenomenological analysis to distill the essence of the participants' professional approaches to their decisions about Instructional Technology and Distance Education by identifying their shared experiences (O'Sullivan et al., 2016). Narrative data from eight open-ended questions (see unbridged listings in Appendices E to L) were analyzed in eight analytical steps. First, the data were collected with the online survey service, Survey Monkey, downloaded, and verbatim comments were reformatted into tabular form. Demographic data were not collected on college and universities, which are hereafter generically called institutions of higher learning. Second, the data were read repeatedly to

familiarize the researcher with the narrative material.

Table 6

Descriptive Statistics for 5 Stages of Decision Making Across Dichotomous Highest Degree Groups

Scale	Highest degree held	Mean	*SD*	No.
Knowledge SS	Master's	2.28	.71	21
	Doctorate	2.00	.92	8
	Total	2.20	.77	29
Persuasion SS	Master's	1.42	.59	21
	Doctorate	1.50	.53	8
	Total	1.44	.57	29
Decision SS	Master's	2.28	.71	21
	Doctorate	1.87	.64	8
	Total	2.17	.71	29
Implementation SS	Master's	2.04	.86	21
	Doctorate	2.00	.92	8
	Total	2.03	.86	29
Confirm SS	Master's	2.19	.74	21
	Doctorate	1.87	.35	8
	Total	2.10	.67	29

Note. SS = Summated scale.

Third, the coding process began. In open coding, words, phrases, and sentences were labeled categorically until the entire text was coded. Steps 2 and 3 were repeated until data saturation. Fourth, axial coding was used to identify connections between open codes and to identify the most salient themes (i.e., those with the most support from the commentary. Fifth, emergent themes were organized further into overarching, main, and supporting themes. These revealed the shared or lived experiences based on similarities across the participants. Sixth, selective coding was used to identify representative

evidence of themes to present in the body of the text, relegating the bulk of the evidence to Appendices E to L. Seventh, the evidence garnered from selective coding was incorporated into text that highlighted the themes. Eighth, the data were labeled as confirming or disconfirming the evidence from published literature and reviewed for suggestions of future studies; the results of Step 8 are presented in Chapter 5.

These data met the criteria for credibility, transferability, dependability, and confirmability as follows. Credibility is the qualitative counterpart to internal validity. Credibility was established in the current study with the strategies of extensive solicitation of commentary, analytical data saturation, and researcher reflexivity. Transferability is the qualitative counterpart to external validity. Transferability was established in the current study by seeking variability among the participants during the participant selection process (e.g., sampling from a broad array of administrators in a Southern state) and with extensive cross-participant triangulation during data analysis. Dependability is the qualitative counterpart to reliability. Dependability in the current study was also established through extensive cross-participant triangulation. Confirmability is the qualitative counterpart to objectivity; it was established by collecting commentary without researcher presence (that might have otherwise influenced the participants) and through researcher reflexivity.

In general, reflexivity is the process by which a researcher explores their own biases, values, and assumptions (Creswell, 2008). Without a doubt, when selecting the topic for this research paper, there was a personal interest in further examining the topic of selecting instructional technology in higher learning centers. This is because the researcher has served as a professor in the field of Computer Science for many years. After selecting the topic, he elected to maintain all responses anonymous as to not exert

any influence on the responses received from each participant. However, as expected, he holds certain opinions and thoughts regarding the subject. In his position as a professor, there is no considerable possibility of being able to select any innovation or technology to apply in the classroom. Instead, it is most likely decided by individuals in higher positions of leadership within the organization. Nevertheless, the researcher has witnessed how the decision whether to implement new technology or innovation in the classroom may affect the students. As such, having a better understanding of the factors that may play a role in the process of making such decisions is of great importance and highly influenced my selection of this research topic.

Current use of instructional technology and distance education. To establish a baseline that provides a framework for the evidence of factors that influence the Instructional Technology and Distance Education decision-making process, this section first presents terminology and evidence on the general uses of Instructional Technology and Distance Education:

1. Assessment and Learning in Knowledge Spaces (ALEKS): an online tutoring and assessment program.

2. Application Programming Interface (API): a set of functions and procedures allowing the creation of applications that access the features or data of an operating system, application, or other service.

3. Augmented Reality: technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view.

4. Virtual Reality: computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted

with sensors.

5. Articulate: Cloud-based e-learning platform that helps firms build online courses.

6. Blackboard Learn (BBL): Web-based server software which features course management, customizable open architecture, and scalable design that allows integration with student information systems and authentication protocols.

7. Campus Chief Information Officer: the chief information officer of a specific college campus.

8. Center for Institution and Organization Learning (CIOL): prepares employees to develop the skills needed for current jobs, assist them in effectively responding to job changes and prepare them for future job requirements.

9. Crestron devices: Audiovisual automation and integration equipment.

10. Center for Teaching Excellence and Learning (CTEL): offers professional development to employees.

11. Desire to Learn (D2L): learning management system, which is a cloud-based software used by schools, higher education, and businesses for online and blended classroom learning.

12. F/K/A: formerly known as.

13. Google Docs: Cloud-based word processor included as part of a free, web-based software.

14. Lecture Capture Software: The process of recording classroom lectures as videos, and making them available for students to review after the class.

15. Learning Management System (LMS): software application for the administration, documentation, tracking, reporting, and delivery of educational courses,

training programs, or learning and development programs (e.g., BBL, D2L, Canvas).

16. Online: Virtual College.

17. MyMathLab: Online homework, tutorial, and assessment product, designed to improve the mathematical capacities of all higher education students, one student at a time.

18. Open Educational Resources (OER): freely accessible, openly licensed text, media, and other digital assets that are useful for teaching, learning, and assessing as well as for research purposes.

19. Quality Matters (QM): A nationally recognized, faculty-driven, peer-review process used to ensure the quality of online and blended course designs.

20. Respondus Lockdown Browser: Software used to secure proctored assessments in a testing center.

21. Safe Assign: Plagiarism prevention service offered by Blackboard.

22. Smarthinking: An academic online tutoring service provided by Pearson Education.

23. SoftChalk: E-learning software allows institutions to create engaging, interactive, and personalized online lessons.

24. TurnItIn: Internet-based plagiarism detection service.

25. YouTube: Video-sharing platform.

Because cost influences availability (i.e., an institution of higher learning will only purchase Instructional Technology and Distance Education technology that it can afford to purchase) and availability impacts use, general use is followed by the role of the institution's budget as a factor.

On the question of general use (see Appendix E), 13 participants (10, 17, 18, 20,

26, 30, 35, 37, 38, 40, 43, 44, and 45) failed to answer this question (29%). Remaining participants commented on general uses of Instructional Technology and Distance Education technology with standard answers (primarily in Appendix E, with fleeting references in Appendices F to L) and references to specific instructional technologies and software. Participant 4 summarized the influence of particular types of Instructional Technology and Distance Education technology on the decision-making process with idealized expectations: “Instructional technologies should be used to allow the learner to do more than simply transmit knowledge; rather, to engage more deeply in processing the knowledge, skill, or behavior.”

To that end of employing Instructional Technology and Distance Education to engage educational stakeholders more deeply, the institutions of higher learning surveyed in this study used Instructional Technology and Distance Education broadly, from wholly online applications to blended or hybrid classes to face-to-face hybrid classes and even traditional brick-and-mortar, face-to-face classes (see Appendix E). Commentary tended to lack clarifying examples. For example, Participant 5 described use simply as follows: “We offer online education and hybrid face-to-face/online courses. We also make available to the faculty a variety of instructional technology software and programs.” Participant 7 described use as follows: “Continuous evaluation of new Instructional Technology and Distance Education tools for the purpose of introducing to faculty for use in classroom.” Participant 12’s response was also fairly standard: “I have implemented both instruction technology and distant education in the past and plan to integrate them again in course planning. [I am] currently writing a grant to support instruction technology to be embedded in different disciplines.” Participant 2 listed several uses: “Learning management systems, proctoring services, course design

methodologies, etc., for use in the delivery of fully online classes." In some institutions of higher learning, Instructional Technology and Distance Education was used "as the sole method of instruction" (Participant 1) "because this is what the students expect and the way the educational market is moving" (Participant 5), as shown in Appendix E.

Current budget as a factor in the instructional technology and distance education decision-making process. Budget data were primarily drawn from Appendix H (with more intermittent references in Appendices E to G and I to L). The question in Appendix H was whether the budget was a factor in deciding on Instructional Technology and Distance Education. Nine participants (10, 15, 30, 35, 37, 40, 43, 44, and 45; 20%) did not answer. Seven participants answered negatively without elaboration (3, 14, 21, 23, 26, 31, 39; 15%), and two participants (25 and 38) equivocated, for a total of nine participants who said budget was immaterial to the decision process (20%). Thirteen participants answered affirmatively without elaboration (2, 7, 8, 9, 13, 16, 17, 19, 24, 27, 29, 36, and 42; 29%), whereas 14 more answered affirmatively and elaborated (31%), for a total of 27 participants who said budget was important to the decision-making process (60%).

Over half of the participants, 60%, said budget was a consideration in the decision-making process, and could be ordered from those whose declarations were the most emphatic to those whose comments were the least emphatic. For example, when asked about the importance of budget, Participant 12 answered with great emphasis, "Definitely!" and identified a standard institutional response: "We are working on a grant that will hopefully support online tutoring to our students." Participant 6 was nearly as emphatic, "Absolutely," and then addressed a critical consideration: "The cost of Instructional Technology and Distance Education platforms is ever increasing." Steadily

increasing costs “have caused us to be more diligent in the selection of key platforms, as well as evaluating how we can use a single platform for multiple purposes,” the latter point showing that the flexibility with which an Instructional Technology and Distance Education tool can be applied for many purposes was a factor in the decision-making process. Participant 41 acknowledged with less emphasis by stating, “The budget always plays a role in the implementation of these technologies.” However, Instructional Technology and Distance Education is here to stay. Institutions of higher learning know it and are responding in kind, indicated by comments like those from Participant 41, who added, “Fortunately, the college is very responsive to requests and ideas towards improving teaching technologies in the classrooms and for distance education.” Participant 1 agreed but was matter of fact:

> Budget is always a factor, but we will search for alternate sources of funding or cheaper alternatives to get what is needed for our students. Instructional technologies are rarely cheap, but offering a course online does cost less in overhead than offering it on campus.

Participant 5 described budgetary considerations as “a minor factor” on the rationale that “cost/benefit analysis favors the introduction of Instructional Technology and Distance Education.” One reason that cost/benefit analyses favor Instructional Technology and Distance Education is because its costs can be passed along. Participant 33 stated the following:

> The college uses distance education in order to increase enrollment. Distance education is considered more profitable to the institution because it reduces the physical footprint. However, the result of this is that increased costs are passed on to the student. (e.g., Internet access, computer, access to educational software

tools, online testing fees, etc.)

Value of instructional technology and distance education as a factor in the decision-making process. Figure 4 illustrates the themes for the predominant factors in the Instructional Technology and Distance Education decision-making process that emerged from a phenomenological analysis of the qualitative data in Appendices E to H. The base of the schematic shows that the overarching theme of the participants' perspectives was that Instructional Technology and Distance Education technology is a set of "convenient innovations that enhance education." Instructional Technology and Distance Education is more than an attractive, contemporary convenience; it is the cutting-edge approach to education. The term *convenient* was chosen because of the sheer number of times it appears in the narrative commentaries (see Appendices E to L). The term *innovation* was chosen because constant advancement is essential to remain competitive: Institutions of higher learning must "keep up with current higher education trends" (Participant 12, Appendix G) that are, in turn, based on digital tools that are undergoing constant evolution.

Because "students feel comfortable using the [Instructional Technology and Distance Education] technology" (Participant 9, Appendix G), institutions of higher learning must also "constantly adapt to student needs" and Instructional Technology and Distance Education helps them keep up (Participant 6, Appendix G). The evidence shows that, for most of the participants, the convenient innovations that enhance education are the new panacea, as they are for Participant 16: "I believe that technology enhances every field, including education. It also prepares the students with required workforce skills. Finally, it adds convenience for both, the student and the professor" (see Appendix G). The overarching theme of convenient innovations that enhance education was

reciprocally related to three specific enhancements that constituted main themes: flexibility, increased student engagement, and improved time efficiency. A variety of supporting themes emerged from the main themes, illustrated as smaller squares above with the main themes (see Figure 4).

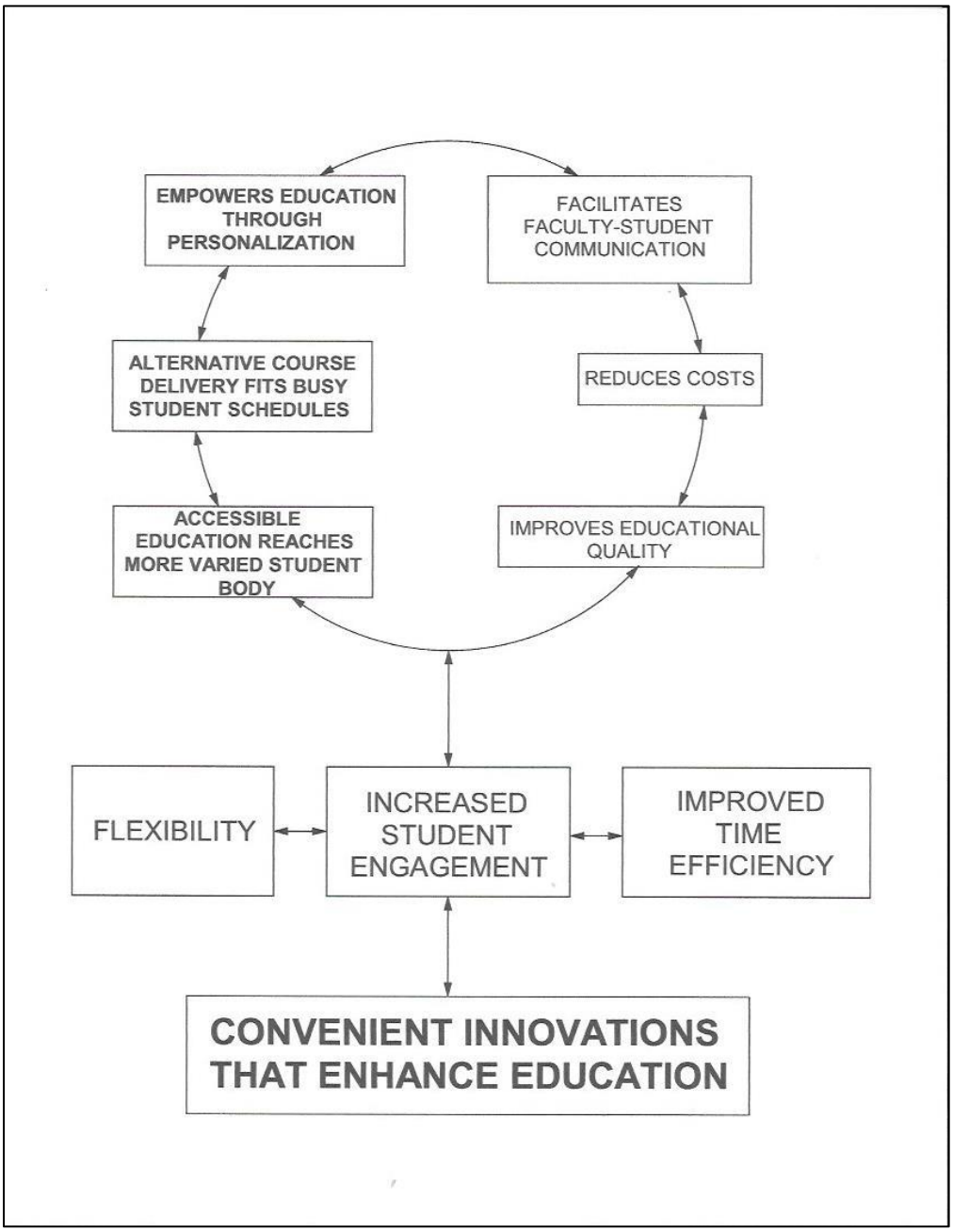

Figure 4. Thematic schematic of predominant factors in decision-making process for instructional technology and distance education.

All of the themes in Figure 4 are connected with double-headed arrows because they were all interrelated; both major and minor themes influence each other reciprocally. For example, Participant 12 illustrated this reciprocity or interrelatedness with the following comment:

> Distance education allows learning to fit around family and work demands [supporting theme: alternative course delivery fits busy student schedules]. It also allows for different pace of learning [main theme: improved time efficiency; supporting theme: empowers education through personalization]. Instruction technology increases communication and facilitates resolution of problems [supporting theme: facilitates faculty-student communication] and is easily integrated in various subject areas [main theme: flexibility].

The resulting convenience increases student engagement.

Another example of the web of reciprocity among the themes illustrated in Figure 4 is how the flexibility afforded by the Instructional Technology and Distance Education educational experience increases student engagement because education can be accommodated into busy, pre-existing personal and professional schedules. This gives institutions of higher learning access to a more varied student body and, reciprocally, provides students with access to institutions of higher learning that they might be unable to access otherwise. Once given access, according to this study's participants (see Appendices E to L), students are particularly engaged in the educational process from stimulating Instructional Technology and Distance Education visual, audible, and sometime even tactile lessons. The scope of the tools is far-reaching. It ranges from open educational resources and entertaining educational YouTube videos to virtual worlds, such as technology that superimposes a computer-generated image on a user's view of

the real world (i.e., Augmented Reality) or that simulates three-dimensional environments with which a person can interact in a seemingly real, physical way (i.e., Virtual Reality). In addition to fitting into a student's busy personal and professional schedules, the flexibility of Instructional Technology and Distance Education improves the time efficiency of education in numerous other ways. Online learning management systems facilitate faculty-student communication while they provide materials that allow a student to practice and receive immediate feedback on their progress in the absence of faculty.

Although the bulk of the evidence is listed in Appendices E to H, this section presents select evidence from the narrative commentary for the main and supporting themes that, in turn, argue for the overarching theme of Instructional Technology and Distance Education as convenient innovations that enhance education. Evidence for individual themes is given with the caveat that many comments showed the reciprocity of the main themes. One example of the interrelatedness is Participant 28's observation that Instructional Technology and Distance Education:

> Is valuable because it gives you the flexibility when it comes to deliver the course. It frees up time for both the students and instructors so they can complete course activities during times that are more convenient. Also, it allows the institution to leverage emerging technology to deliver course content more effectively. (see Appendix F)

Main theme: Flexibility. There was a tremendous amount of evidence that the Instructional Technology and Distance Education flexibility "is valuable to the learner because it fills a need for flexibility and varied learning styles" (Participant 14, Appendix F), which, because today's academics view flexibility as a need, was a major factor in the

decision-making process. Participant 11 stated, “Instructional Technology allows us to diversify the way we teach and reach many more students” (see Appendix F) and is chosen accordingly. Participant 11 added, “When combined with other strategies in the classroom, specific technology can be very powerful” (see Appendix F), so the decision-making process also considers how a new Instructional Technology and Distance Education technology fits with those already used by the institution of higher learning. Yet, the flexibility of Instructional Technology and Distance Education is no panacea. Participant 14 believes that “Instructional Technology and Distance Education adds flexibility [and] therefore convenience for the learner. From an instructional perspective, it does not save time or money, if done properly (see Appendix G). See Appendices E to H for more evidence.

Main theme: Increased student engagement. Nearly a quarter of the participants (1, 5, 6, 9, 14, 16, 23, 31, 32, and 41, 22%) characterized Instructional Technology and Distance Education directly with terms such as “enhancing” and “facilitating” education. For Participant 16, Instructional Technology and Distance Education “enhances the learning process” (see Appendix F). Participant 22 stated, “These tools enhance instruction and allow delivery of learning materials/content whether face to face or fully online” (see Appendix F). Participant 41 is “closely associated with technology. As such, I am always looking forward to implementing these technologies in the classrooms that would enhance the learning and teaching experience for our students” (see Appendix G). Participant 25 uses Instructional Technology and Distance Education to engage students because of its “student convenience and self-confidence building,” which together offer “more opportunities for student success. Whenever open educational resources are available, they are a great cost-saving measure” (see Appendix G). Participant 39 waxed

eloquently: “We implement technology for reasons of quality (i.e., adaptivity of the software and the richness of the resources that are included) and convenience (see Appendix G).

On the other hand, Instructional Technology and Distance Education could reduce professors to mere facilitators or worse, individuals no longer able to find work in the academic sector because sophisticated algorithms and virtual realities have stolen center stage from living, breathing, more fallible humans. Participant 33 noted candidly, “There is a fear among faculty that Instructional Technology and Distance Education are being used as a way of standardizing content and teaching strategies (thus stifling innovation and reducing faculty positions) in the name of easy replication and assessment. Professors essentially become passive course managers rather than active, creative teachers” (see Appendix G). See Appendices E to H for more evidence.

Main theme: Improved time efficiency. Many participants felt that Instructional Technology and Distance Education is convenient because it reduces face-to-face course time, which, although true of many digital tools, was a factor in the decision-making process. Participant 1 declared unequivocally that lack of time is “one of the biggest obstacles for our students” (see Appendix F). Participant 1 said that the technology of blended course offerings and fully online offerings allows her to address the students’ biggest obstacles by saving time. Participant 26 pointed out, “Many of our students have copious demands on their time (e.g., work and family). This technology allows our students to learn when it is convenient for them without having to be in a traditional classroom.” This is one way Instructional Technology and Distance Education improves time efficiency as it simultaneously makes education accessible to those who otherwise lack access; Participant 42 uses the tools of Instructional Technology and Distance

Education “because they make the classes sessions more efficient and even practical” (see Appendix G). Participant 15 likes how the flexibility of Instructional Technology and Distance Education takes advantage of time, adapts to individual needs related to time, enables a review of contents anytime, and operates in complement with classroom teaching (see Appendix F). Finally, saving time applies to individual classes as well as obtaining one’s degree: “Instructional Technology and Distance Education is a way to attract additional students and to provide flexibility in course scheduling so students can complete their programs faster (Participant 5, Appendix F). On the other hand, Instructional Technology and Distance Education also ushers in new time demands, which made participants like 24 uneasy: “My worry is the time required to educate users, both students and faculty” (see Appendix G). See Appendices E to H for more evidence.

Supporting theme: Accessible education reaches more varied student body. This supporting theme represents evidence that Instructional Technology and Distance Education simultaneously makes higher education accessible to those who might otherwise lack access to it and, correspondingly, allows institutions of higher learning to reach a more varied student body. Participant 1 stated directly that Instructional Technology and Distance Education “can serve students who are otherwise unable to earn a degree, whether through providing additional support in learning the material or through providing the option to take a course online/blended” (see Appendix G). Participant 29 felt that Instructional Technology and Distance Education “is necessary at our institution with our diverse and long-distance populations in multiple locations around the world” (see Appendix G). Though labeled as a supporting theme, institutions of higher learning must reach and engage a more varied student body to remain competitive with other institutions. Because Instructional Technology and Distance

Education “is a way to attract additional students” (Participant 5, Appendix F) and “helps the institution to reach a greater number of students who would have not been able to attend the institution otherwise” (Participant 41, Appendix F), this is a critical consideration in the Instructional Technology and Distance Education adoption process. See Appendices E to H for more evidence.

Supporting theme: Alternative course delivery fits busy student schedules. Instructional Technology and Distance Education saves time. It removes the time to takes to attend class at specified times in a physical location shared by classmates and professor, to hand in one’s homework during that narrow class time slot, and to meet with the professor during closely truncated office hours. According to the participants, the technology improves time efficiency by enabling alternative course delivery formats that allow students to fit their education into their personal and professional schedules while forestalling the need to travel to and from a physical location (i.e., school). Participant 13 put it directly: Instructional Technology and Distance Education “allows us to be more flexible in our course delivery modalities” (see Appendix F). Participant 6 pointed out how “distance learning provides additional flexibility, particularly for adults and working students” by providing “different learning modalities for our students” (see Appendix F). See Appendices E to H for more evidence.

In addition to the various learning management system formats that enable professors to tailor courses into hybrid and online courses, with or without face-to-face components, Instructional Technology and Distance Education “provides the user with supplemental instruction capability beyond the capacity of traditional materials” (Participant 17, Appendix F). Participant 39 gave the examples of ALEKS and MyMathLab: “We believe that they provide students a platform to do outside-of-class

work with additional support that traditional homework from a textbook cannot provide" (see Appendix E). Participant 42 cited the example of Crestron devices as a form of instructional technology that support the day-by-day class sessions" (see Appendix E). See Appendices E to H for more evidence.

Supporting theme: Empowers education through personalization. This supporting theme is that Instructional Technology and Distance Education lets both faculty members and students tailor a student's education. Personalization not only includes fitting education into one's schedule instead of the other way around (i.e., supporting theme: alternative course delivery fits busy student schedules). It also includes fairly seamless tailoring to fit a student's current learning needs as well as personal learning style. According to Participant 33, much of Instructional Technology and Distance Education at this point "can be tailored in some way to meet the needs of individual students [which] enhances student learning outside of the classroom (see Appendix F). Instructional Technology and Distance Education can personalize education because it enables students "to do more than could be done in a physical environment, for example practice lab skills, take different decision paths, or explore or practice a skill" (Participant 4, Appendix F). Along the same lines, Participant 8 noted, "Instructional Technology and Distance Education allow students to work at home at their own pace and time restraints" (see Appendix F). This is partly attributed to "on-demand student access to course materials" (Participant 9, Appendix F). These pedagogic approaches to engaging students, by empowering them though personalization, were never possible before Instructional Technology and Distance Education.

Students are so empowered, in fact, they may not need faculty as often (another example of the main theme of improved time efficiency, in this case on behalf of faculty).

Participant 1 stated, “Instructional technologies make it possible for students to practice a concept without the assistance of their professor or classroom, reinforcing what is needed for course outcomes or even industry certifications” (see Appendix F). Participant 39 summed up the engaging empowerment of Instructional Technology and Distance Education by declaring the following:

> The two most important benefits that online technology provides are (a) the immediate feedback provided to students and (b) the reduction in workload of faculty, specifically the grading of homework. In the case of ALEKS, its greatest asset is that it is adaptive and can tailor the student work based on need. (see Appendix F)

The ALEKS program is just one among countless examples. See Appendices E to H for more evidence.

Less evidence emerged for the three remaining supporting themes because these ideas were addressed less frequently. This infrequency suggests that participants were less sure about their perspectives on these topics or felt less certain about direct relationships between them and Instructional Technology and Distance Education.

Supporting theme: Facilitates faculty-student communication. Participant 9 said Instructional Technology and Distance Education “enhances the interaction and communication between faculty and students” (see Appendix G). Participant 12 succinctly but opaquely said that Instructional Technology and Distance Education promoted the “facilitation of information sharing” (see Appendix G), which could mean facilitated faculty-student communication. See Appendices E to H for more evidence.

Supporting theme: Reduces costs. The ability of Instructional Technology and Distance Education to reduce the costs of education in institutions of higher learning is

another example of the reciprocity of Instructional Technology and Distance Education themes. For Participant 28, there are two main arguments in favor of Instructional Technology and Distance Education: “convenience and cost. Utilizing some of the current tools allows me to keep costs down for the students and adds convenience with the online portion of the course” (see Appendix. G). Participant 33 reported, “Distance education is considered more profitable to the institution because it reduces the physical footprint” compared to a brick-and-mortar campus (see presentation of perspective on the budget previously presented in this chapter and in Appendix H and Appendices E to G).

Supporting theme: Improves educational quality. This supporting theme refers to the improved quality of the Instructional Technology and Distance Education-supported education compared to the limitations and time constrictions of the standard brick-and-mortar education; the evidence of this section overlaps with the evidence of empowering students by personalizing their education. Participant 39 waxed the most eloquently: “We implement technology for reasons of quality,” which included its flexibility, richness, and convenience (see Appendix G).

An element of enhanced quality is exposure to Instructional Technology and Distance Education itself. Contemporary students need to learn more than just their proverbial ABCs. They need to be taught technology too, just like any other academic subject, because technology is here to stay and requires skill sets that were unimaginable just decades ago. Accordingly, “students are increasingly incorporating technology into day-to-day life so instruction should keep up to ensure students are engaged and graduate job ready” (Participant 7, Appendix G). To this end, participants like 31 “use D2L and publisher content to give instructional technology students access to virtualization and simulation” (see Appendix E). Participant 42 noted, “The usage of both approaches

provides my institution with the tools for facing the future of the educational process" (see Appendix F). Instructional Technology and Distance Education is here to stay. Students expect the latest Instructional Technology and Distance Education tools from institutions of higher learning. Participants like 27 noted that Instructional Technology and Distance Education translated into "more positive outcomes for student success" (see Appendix G): Participant 21 was supremely succinct by saying only, "Quality" (see Appendix G).

Other than listing new tools, the proffered evidence of Instructional Technology and Distance Education as increasing educational quality was scant. For example, simply meeting the criteria of Instructional Technology and Distance Education technology does not guarantee its pedagogical quality. Ignoring the added burden on faculty, Participant 1 pointed out the following:

> Quality is always a concern. Some distance education materials are not quality, although they may be cost effective. I have used open educational resources on more than one occasion, and they were far more burdensome from an instructional perspective, but they also provided students an opportunity to meet the learning outcomes without additional expenses, again addressing a student obstacle such as money. (see Appendix G)

Similarly, amidst the glowing if not glib reviews (see Appendices E to L), Participant 33 warned that Instructional Technology and Distance Education technology is not automatically high quality. Moreover, this problem is exacerbated by too little effort to evaluate Instructional Technology and Distance Education quality critically:

> A huge problem with the use of instructional technology in the classroom is a lack of discussion about what makes pedagogical sense regarding student learning.

> This is a particular problem in a discipline like English, where most of the software is little more than a glorified electronic version of grammar handbooks that we know aren't good at helping students write better. In fact, we've known this since 1980. Making web versions of old textbooks is not innovation. As it relates to distance education, most of the online models rely on standardized course content that do not allow for innovation of any kind. It makes no sense. (see Appendix L)

Of final note on qualitative themes of value in this section, few participants alluded to increased student learning. The few references were also imprecise, such as Participant 16: "Yes, the school enhances the delivery of its courses by incorporating technology tools and software to increase student success." Participant 16 says Instructional Technology and Distance Education is "used to increase student success" but does not claim directly that it actually does increase student success (see Appendix E). It was notable to this researcher-educator that so few participants addressed if, and if so how, Instructional Technology and Distance Education improves student learning. It may be that improved learning was too implicit an assumption to mention. But it raises important questions about the basis of the appeal of Instructional Technology and Distance Education.

Answer to Research Question 1. The results of quantitative analysis from the repeated measures ANOVA showed that knowledge was the most important factor in the Instructional Technology and Distance Education decision process. However, the Knowledge summated scale mean was close in value to the means for the Decision summated scale, Confirm summated scale, and Implementation summated scale. All four means were significantly higher than for the Persuasion summated scale. The quantitative

evidence from the MANOVA tests that examined the role of demographic characteristics showed that gender, ethnicity, and highest degree attained did not influence perspectives about the stages of the Instructional Technology and Distance Education decision-making process. However, age had a statistically significant effect; however, none of the five stages of the Instructional Technology and Distance Education decision-making process reached significance, although the Confirm summated scale showed a strong statistical trend. Older participants were in less agreement about confirming the Instructional Technology and Distance Education decision-making process than were younger participants.

The results of qualitative analysis for Research Question 1 suggested that the predominant factors in the Instructional Technology and Distance Education decision process were reflected in the construct or overarching theme of Instructional Technology and Distance Education as a set of convenient innovations that enhance education. The overarching theme was girded on the three main themes of flexibility, increased student engagement, and improved time efficiency. These concepts were reinforced by six supporting themes: accessible education reaches a more varied student body, alternative course delivery fits busy student schedules, empowers education through personalization, facilitates faculty-student communication, reduces costs, and improves educational quality.

Research Question 2. Research Question 2 was as follows: What are the attitudes of individual leaders and administrators toward the usage of Instructional Technology and Distance Education? It was of interest to determine if there are significant differences across professionals' beliefs about the attributes of Instructional Technology and Distance Education as an innovation. For Research Question 2, a series of independent *t*

tests was run to compare attitude in participants across gender, age, ethnicity, and highest degree to determine if there were significant differences across professionals' attitudes.

Summated scales for attitudes about using instructional technology and distance education. For Research Question 2, participants were asked to indicate their level of agreement with eight survey statements by choosing one response from a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Sample survey statements were as follows: "I believe Instructional Technology and Distance Education are better than traditional learning materials," "Instructional Technology and Distance Education enhance the way instruction is delivered at my institution," and "My students benefit from using Instructional Technology and Distance Education." The reliability of the attitude data was good, Cronbach's $\alpha = .88$. For analysis, for each participant, the mean of the numeric values of all eight responses was generated and labeled the Instructional Technology and Distance Education Attitude Summated scale. Each participant's mean fell on the same numeric range of the original Likert scale of 1 to 5. The mean was chosen as the value for the Instructional Technology and Distance Education Attitude Summated scale because this range was closer in value to the possible range of the stage summated scales than the sum of the responses would have been. The higher the value of the Attitude summated scale score, the more positive the participant felt about the use of Instructional Technology and Distance Education for instructional purposes. Descriptive statistics for attitude showed that the average attitude fell close to the Likert scale category of *agree*: $M = 3.87$, $SD = 0.62$, *Minimum* = 1, *Maximum* = 4.88.

For comparisons of differences for Research Question 2, an independent samples *t* test was appropriate because it is used to compare the difference in a continuous dependent variable (e.g., attitude) across two groups created by a dichotomous,

categorical independent variable (e.g., gender; Tabachnick & Fidell, 2018). Each participant is only included in one of the groups. Effect sizes were calculated using Cohen's *d* to assess the magnitude and practical importance of results (Tabachnick & Fidell, 2018) regardless of statistical significance. Cohen's *d* divides the average (mean) difference between means by the standard deviation and is interpreted as small (*d* = .20), medium (*d* = .50), or large (*d* = .80). The hypotheses for the independent samples *t* tests were as follows: H_0: The difference in mean attitude was not statistically significant. H_1: The difference in mean attitude was statistically significant.

For gender, Figure 5 shows that the mean attitudes that Instructional Technology and Distance Education improves the education that one can receive from institutions of higher learning were close in value, both reflecting the Likert category of *agree* as follows: men: *M* = 3.74, *SD* = 0.71, *n* = 25 men; women: *M* = 4.05, *SD* = 0.41, *n* = 17 women. Results of the *t* tests showed that the difference in mean attitude between men and women was not statistically significant, *t*(40) = -1.64, *p* = .107, 95% confidence interval of the difference = -0.70, 0.07. The null hypothesis was retained. However, the effect of gender on attitudes was medium, Cohen's *d* = .55.

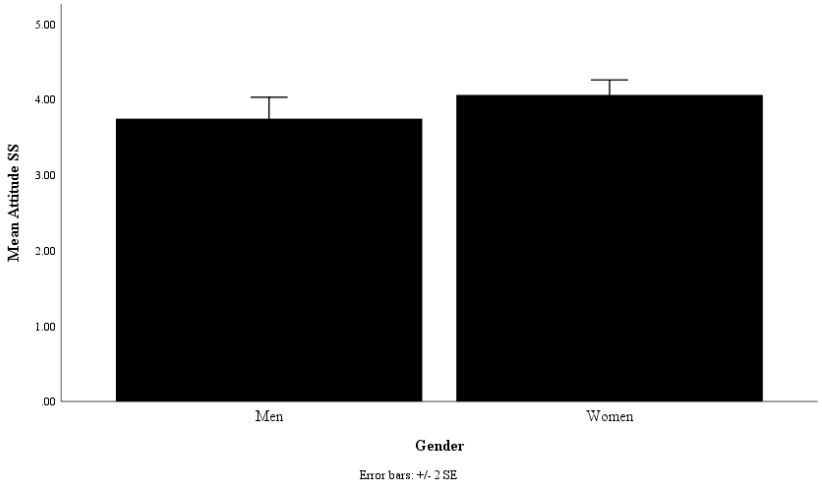

Figure 5. Mean attitudes that instructional technology and distance education improves the education of institutions of higher learning between men and women.

For age, Figure 6 shows that the mean attitudes that Instructional Technology and Distance Education improves the education that one can receive from institutions of higher learning were close in value and reflected the Likert category of *agree* as follows: younger participants under 50 years of age: $M = 3.96$, $SD = 0.38$, $n = 24$; older participants 50+ years of age: $M = 3.75$, $SD = 0.84$, $n = 18$. Results of the t tests showed that the difference in mean attitude between younger and older participants was not statistically significant, $t(40) = 1.10$, $p = .276$, 95% confidence interval of the difference = -0.17, 0.60. The null hypothesis was retained. Moreover, the effect of age on attitudes was small, Cohen's $d = .34$.

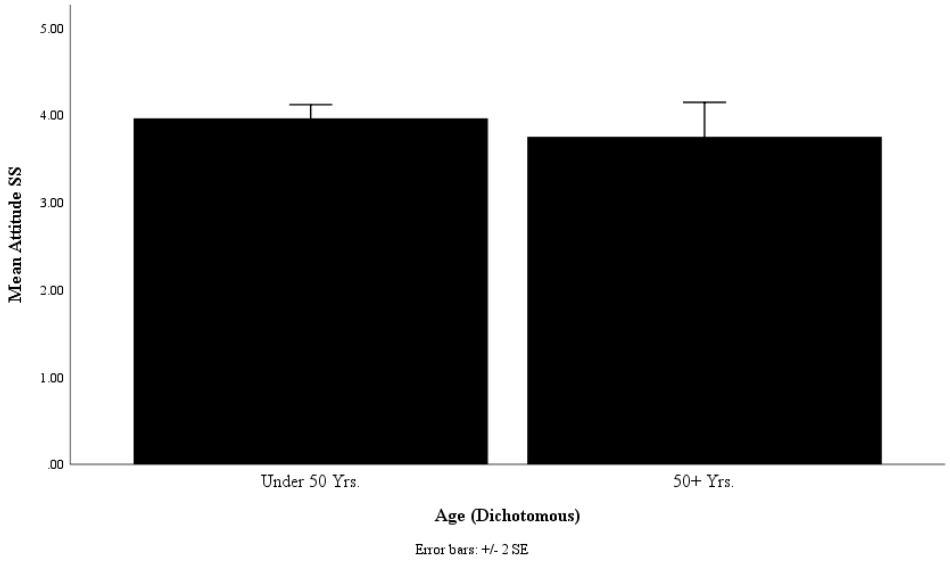

Figure 6. Mean attitudes that instructional technology and distance education improves the education of institutions of higher learning across younger and older participants.

For ethnicity, Figure 7 shows that the mean attitudes that Instructional Technology and Distance Education improves the education that one can receive from institutions of higher learning were identical in value, and again reflected the Likert category of *agree* as follows: White: $M = 3.86$, $SD = 0.83$, $n = 19$; Hispanics, African Americans, and Asians: $M = 3.87$, $SD = 0.39$, $n = 23$. Correspondingly, the t test result showed that the difference in mean attitude between the two groups was not statistically

significant, $t(40) = -0.04$, $p = .969$, 95% confidence interval of the difference = -0.40, 0.38. The null hypothesis was retained. The effect of ethnicity on attitudes was negligible, Cohen's $d = .02$.

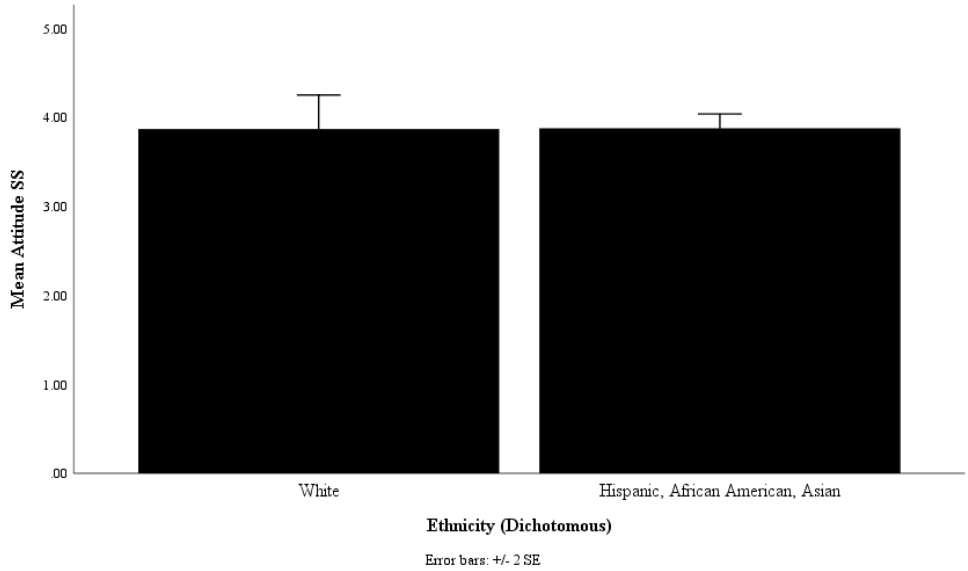

Figure 7. Mean attitudes that instructional technology and distance education improves the education of institutions of higher learning across participant ethnicity.

Finally, for highest degree, Figure 8 shows that the mean attitudes that Instructional Technology and Distance Education improves the education that one can receive from institutions of higher learning were identical in value and again reflected the Likert category of *agree* as follows: master's degree holders: $M = 3.86$, $SD = 0.68$, $n = 29$; doctoral degree holders: $M = 3.88$, $SD = 0.46$, $n = 13$. Results of the t tests showed that the difference in mean attitude between participants who held master's degrees versus doctorates was not statistically significant, $t(40) = -0.90$, $p = .929$, 95% confidence interval of the difference = -0.44, 0.40. The null hypothesis was retained. The effect of degree status on attitudes was negligible, Cohen's $d = .02$.

Answer to Research Question 2. Research Question 2 was as follows: What are the attitudes of individual leaders and administrators toward the usage of Instructional

Technology and Distance Education? The results of quantitative analysis showed that most participants had a positive to a very positive attitude about Instructional Technology and Distance Education, based on participant consensus in agreeing with attitude survey statements. Results of *t* tests showed that attitude was unaffected by gender, age, ethnicity, and educational level.

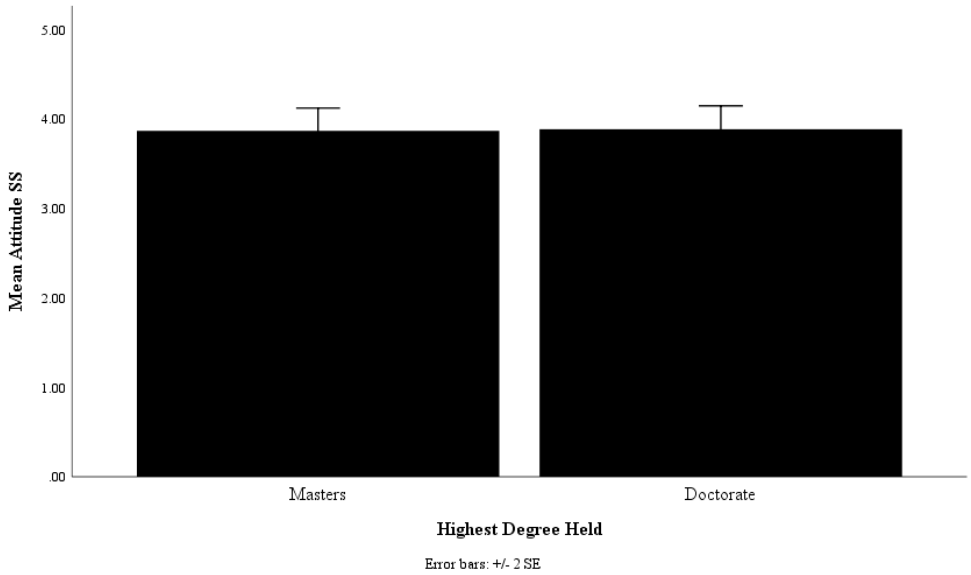

Figure 8. Mean attitudes that instructional technology and distance education improves the education of institutions of higher learning across highest degree held.

Research Question 3. Research Question 3 was as follows: How does an individual leader's practice and personal experience with application of Instructional Technology and Distance Education impact his or her support toward new practices? To answer Research Question 3, the researcher examined narrative responses to Items 3, 4, 7, and 8 in Part 4 of the survey. The unabridged content of these responses is listed in Item 7 in Appendix I, Item 3 in Appendix J, Item 4 in Appendix K, and Item 8 in Appendix L.

One of the demographic questions asked participants to rate their computer skills. On the survey, they were asked to choose one response from a categorical array of

novice, below average, average, above average, or expert. Table 1 showed that none of the participants rated themselves as novices or below average. Figure 9 shows the distribution of men and women across the average, above average, and expert categories. The majority of both men and women characterized their skills as above average (15 of the men, 56%; 12 of the women, 68%). More men than women characterized themselves as experts (10 of the men, 37%; 4 of the women, 22%). Two men and women each characterized their computer skills as average, 7% of the men; 11% of the women).

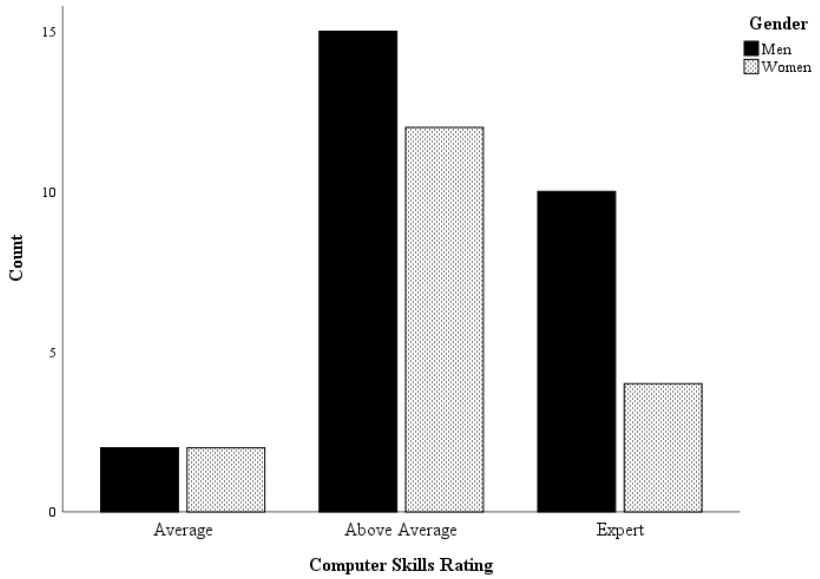

Figure 9. Numbers of men and women by computer skill rating.

Unabridged commentary in Appendix I shows that only 12 participants provided narrative information on their prior experience (27%). Of those, nine participants agreed that their prior experience played a role in deciding to implement and use Instructional Technology and Distance Education. A former faculty member, Participant 6, gave an example of how her prior experience aided her decision-making process: “I always base my decisions on two key questions: How will this technology make the faculty more effective? How will this technology support our students?” These two major classes of stakeholders, faculty and students, are perhaps the broadest factors that contribute to the

Instructional Technology and Distance Education decision-making process.

Participants 1 and 33 both noted that their prior experience and computer skill sets made them more skeptical than their colleagues with respect to Instructional Technology and Distance Education quality. For example, Participant 1 noted the following:

> I am slightly more skeptical than some of my non-tech colleagues if a vendor cannot explain a technical part of the product or service to me, especially if I am concerned about its ability to consistently, reliably, and safely serve our student population.

The other three participants who responded to the question of prior experience reported a lack of it (Participants 5, 18, and 32; see Appendix I).

Participants were forthcoming about the nature of institutional support for Instructional Technology and Distance Education (unabridged narratives are listed in Appendices J and K) and, similar to their commentary about the general uses of Instructional Technology and Distance Education, showed tremendous consensus of experience. A few representative quotes are presented here. Participant 4 believed that the "faculty must have all supports they need in order to effectively leverage the technology tools in support of student achievement of the outcomes." Participant 1 said her institution "has a well-educated instructional design team that assists in adopting and learning new instructional technologies." However, the reason she knew that her institution was "committed to the successful implementation of instructional technology" is from its consistency in "offering professional development and providing access to an instructional design team;" this made her feel strongly supported. Participant 19 listed Network, Media, and campus chief information officers are sources of support. Participant 33 said that his institution's Center for Teaching Excellence and Learning

provided Instructional Technology and Distance Education professional-development activities and best practices. Participant 33 added the following:

> In terms of the use of technology in the wake of Florida development education reform (SB 1720 in 2014), the Center for Postsecondary Success has worked with every Florida college to collect data regarding the use of strategies (including the use of instructional technology) to address the needs of students who would before have been classified as not college-ready.

Participant 12 provided further details pertaining to student support: "Some of the instructional support available: curriculum-based assessment, class observation performance, established faculty-student meeting schedule, monitoring student progress, student referral services, data collection and maintenance of data, class reading instruction, and standard-based instructions."

Table 7 summarizes the participant narrative comments in Appendices J and K by listing the 19 types of institutional support and the participant numbers of those who mentioned them. The first eight supports are listed by the numbers of participants in the study who mentioned the supports. In descending order, from the most frequently cited support to the least frequently cited support, participants included instructional design teams, n = 14 participants; training, especially from vendors, n = 13 participants; digital support, n = 11 participants; formal professional development workshops, n = 10 participants; support from instructional technology staff, n = 6 participants (note that it was unclear whether participants meant instructional technology staff or informational technology staff). Less than five participants each included Center for Institution and Organization Learning trainings, dedicated helpdesks, and Center for Teaching Excellence and Learning workshops.

Table 7

Summary of Institutional Supports for Instructional Technology and Distance Education

Institutional support	Participant number
Instructional design team	1, 2, 3, 7, 9, 19, 20, 23, 25, 28, 31, 38, 39, 41
Training: vendors, subject matter experts, presentations by experts	3, 4, 5, 7, 9, 14, 16, 20, 21, 28, 29, 34, 39
Digital technical support, virtual access to advisors, tutors and faculty	6, 9, 17, 21, 22, 25, 26, 27, 29, 32, 34
Professional development and training	1, 5, 14, 16, 17, 19, 21, 33, 38, 39
Instructional technology staff	3, 29, 31, 36, 38, 41
Center for institution and organization learning trainings	9, 17, 22, 32
Helpdesk, dedicated	13, 26, 42
Center for teaching excellence and learning workshops	25, 33
Acquisition of hardware and software	5
Colleagues	44
Funding to attend conferences	1
Job aids	4
Legal departmental support	36
Ongoing feedback	4
Open educational resources	28
Physical space allocation	5
Quality matters	23
Support personnel	5
Technical support for students	9

The remaining 11 types of institutional support and numbers of participants who mentioned them were listed in alphabetical order. One participant included these. In

contrast to the long list of institutional supports (Table 7, Appendices J and K), two participants did not receive assistance. Participant 8 is "self-taught." Participant 11 described institutional support as "very little to none" and, as such, "the institution needs to make a greater effort at increasing support on campuses. Most of the time, I teach myself how to use the technology by speaking to colleagues, playing with the tool, and watching videos via YouTube" (see Appendix J).

Answer to Research Question 3. Research Question 3 was as follows: How does an individual leader's practice and personal experience with application of Instructional Technology and Distance Education impact his or her support toward new practices? The majority of participants who provided narrative data on prior experience said that it impacted their support toward new practices. Participants identified the most frequent institutional supports as instructional design teams; training from vendors, digital support, professional development, and instructional technology staff support.

Closing Comments

Participants were invited to leave some closing comments, and a third of them did (see Appendix L). Digital technology, whether Instructional Technology and Distance Education or otherwise, is here to stay and firmly lodged in higher education. Participant 5 was equivocal; she regretted the loss of the face-to-face social element available on the college campus but conceded that digital technology is here to stay:

> Although traditional campus life and physical presence in a classroom are very valuable experiences, technology and distance education constitutes an imperative today. The world is changing, not necessarily for the best, but we cannot stop this trend. We must embrace it.

Participant 11 ended with a warning that provided a counterpoint to several

uncritical, glowing remarks about Instructional Technology and Distance Education gathered in this study: “Instructional technology is many times hailed as the solution to many of today’s educational problems. It is not, in my opinion. It can solve many problems, but only when used to address specific issues in the classroom.”

Although this study unearthed numerous factors that influence the decision process, the evidence also suggested a factor that may always run interference: the human factor. For example, Participant 19 descried the digitally uncooperative faculty in his experience:

> One challenge we find is the lack of faculty willing to adopt new technology. Faculty may be set in their traditional ways that they are not be open to adopting or using a new technology because it requires training and familiarity with the new technology tool.

Participant 41 seconded Participant 19’s motion:

> Unfortunately, there is sometimes a strong resistance towards using technology in the classrooms. This is mostly because of fears of technology that exist and also instructors become comfortable with their conventional teaching methods which they have used for the previous several years.

Further evidence of the human factor produced by this study suggested that recalcitrance is not limited to faculty who might be set in their ways. Students might be set in their ways as well. In counterpoint to the claims throughout the narrative portions of this study that students expect and embrace Instructional Technology and Distance Education, Participant 12 thinks differently: “I noticed that some students do not feel comfortable with any other method on instruction or relationship than face to face.” In the final analysis, Participant 22 rivets the pedagogical attention back to center:

.I have over 35+ years in instructional technology and distance education. I follow a variety of listservs, read journal articles, and attend conferences whenever possible to stay up on trends. Regardless of the technology, the goal and mission is to provide students with learning opportunities. There are trends in pedagogy on how to best deliver learning outcomes regardless of technology. It isn't the tool. It is the pedagogy.

Summary

The purpose of this mixed-method study was to identify the factors that influence the perceptions of higher education leaders in the adoption process of Instructional Technology and Distance Education: $N = 45$ participants. The modal woman was 50 to 59 years old, White, held a master's degree, identified her professional title as dean, had worked in academia 16 to 20 years, and rated her computer skills as above average, $n =$ 18 women. The modal man was 40 to 49 years old, Hispanic, held a master's degree, identified his professional title as other, had worked in academia 16 to 20 years, and rated his computer skills as above average, $n = 27$ men.

Answer to Research Question 1. Research Question 1 was as follows: What factors are most predominant when making the decision of adopting or rejecting Instructional Technology and Distance Education? The results of quantitative analysis from the repeated measures ANOVA showed that knowledge was the most important factor in the Instructional Technology and Distance Education decision process, although the Knowledge summated scale, Decision summated scale, Confirm summated scale, and Implementation summated scale means were close in value. All four means were significantly higher than for the Persuasion summated scale. The quantitative evidence from the MANOVA tests that examined the impacts of demographic characteristics

showed that gender, ethnicity, and highest degree attained did not influence perspectives about the stages of the Instructional Technology and Distance Education decision-making process. However, age had a statistically significant effect. However, none of the five stages of the Instructional Technology and Distance Education decision-making process reached significance, although the Confirm summated scale showed a strong statistical trend, with older participants in less agreement about the confirming stage of the Instructional Technology and Distance Education decision-making process than were younger participants.

The results of qualitative analysis for Research Question 1 suggested that the predominant factors in the Instructional Technology and Distance Education decision process corresponded to the overarching theme of convenient innovations that enhance education, fixed on the three main themes of flexibility, increased student engagement, and improved time efficiency. Six supporting themes that also entered into the decision-making process included adopting technology that (a) makes education accessible and therefore reaches a more varied student body, (b) provides flexible course delivery formats so that higher education can be fit into busy student schedules rather than vice versa, (c) empowers education through its ability to be personalized, (d) facilitates faculty-student communication, (e) reduces costs, and (f) improves educational quality.

Answer to Research Question 2. Research Question 2 was as follows: What are the attitudes of individual leaders and administrators toward the usage of Instructional Technology and Distance Education? The results of quantitative analysis showed that most participants had a positive to a very positive attitude about Instructional Technology and Distance Education, based on participant consensus in agreeing with attitude survey statements. Results of *t* tests showed that attitude was unaffected by gender, age,

ethnicity, and educational level.

Answer to Research Question 3. Research Question 3 was as follows: How does an individual leader's practice and personal experience with application of Instructional Technology and Distance Education impact his or her support toward new practices? The majority of participants who provided narrative data on prior experience said that it impacted their support toward new practices. Participants identified the most frequent institutional supports as instructional design teams; training from vendors, digital support, professional development, and instructional technology staff support.

Chapter 5: Discussion

Introduction

The problem addressed in this study involved the factors that influence the perception of higher education leaders in the adoption process of Instructional Technology and Distance Education. The current research sought to expand on prior investigations that explored how many administrators at institutions of higher learning are faced with the task of finding ways to provide the latest technologies while being extremely constricted by budgets and the rising cost of education. The study included an examination of the decision-making process and what determines if Instructional Technology and Distance Education are either implemented or upgraded at various higher learning institutions. Implementing Instructional Technology and Distance Education can be a way to help non-traditional students a convenient way to complete their programs of study. In the long run, all students can benefit from a robust usage of Instructional Technology and Distance Education to make their schedules more flexible and this can aid institutions of higher learning improve retention and graduation rates.

Summary of Findings

Chapter 4 presented information that emerged from the survey that was targeted towards administrators and opinion leaders at institutions of higher learning vis-à-vis their process for adoption and dissemination of Instructional Technology and Distance Education. A modified cross-section survey tool (see Appendix C) was utilized to examine the variable that could influence the adoption of innovation by opinion leaders. The survey was divided into four parts: (a) demographic information, which collected important demographic information that helped conduct the study; (b) adoption process, which was used to collect data on the process by which individuals select Instructional

Technology and Distance Education; (c) attitudes toward instructional technology, which was used to collect data related to the individual's attitudes towards utilizing instructional technology; and (d) overall experience, which was used to collect data regarding the overall experience with Instructional Technology and Distance Education. The first section of the study was devoted and focused on the demographic information of participants, which was followed by innovation-decision adoption and attitudes toward innovation technology. The study was aimed to follow a quantitative framework which is also supported by the theoretical framework of Rogers' (2003) diffusion of innovations. A quantitative survey method was implemented, as it allowed for scaled questions to identify importance in questions and responses in relationship to the diffusion theory. In addition to the scaled-style questionnaire portion of the survey, a section with open-ended questions was included as well. The open-ended questions was employed as this format allowed for participants to provide their personal perception and experiences beyond the constraints of the researcher's personal experiences (Creswell, 2008).

The second section aimed at evaluating the adoption process itself as described by the responses provided by each participant. The results demonstrated that knowledge was the most valuable factor in the Instructional Technology and Distance Education decision process. Although there was some variance in responses depending upon the participant's gender, ethnicity, and highest degree obtained, these aspects did not significantly change the overall result.

The third section involved an assessment of the participants' attitudes towards the adoption and usage of new technologies. The use of a 5-point Likert scale of agreement demonstrated an overall favorable attitude by participants. In addition, the responses to open-ended questions were also complimentary towards the adoption process of

technology in education. Based upon these results, it can be concluded that participants most likely see individuals who use Instructional Technology and Distance Education technology as being innovators. The results appeared to be consistent across all participants with no significant differences in scores based upon age, gender, or ethnicity. This was an overall positive and reassuring finding from the research conducted.

The fourth section of this study attempted to examine the leaders' overall experience with the adoption of innovation and technologies. Based upon the narrative responses received, it was evident that many of the participants agreed that advances in higher learning institutions via the adoption of new technologies is somewhat inevitable in the world we live in today. The participants described a supportive attitude towards the advancement; however, they also reminded the researcher that some individuals still wish to maintain the classical or traditional style and method of teaching in some of these institutions.

Interpretation of Findings

Part 4 of the survey was composed of eight open-ended questions that were provided in order to allow the survey participants to further reflect and share individual and personal experiences, incidents, anecdotes, and stories regarding the process of implementation, diffusion, and adoption of Instructional Technology and Distance Education. This section provided some closing commentary apropos the topic of this study. One common theme was the recognition that the usage of digital technology to aid instruction and education in general is here to stay. Some participants bemoaned that the traditional face-to-face classroom interaction is dwindling down and realized that Instructional Technology and Distance Education are becoming major components of our education systems and finding ways to improve the process by which diffusion and

adoption of these new technologies is done becomes even more imperative. Participants shared that prior experience with Instructional Technology and Distance Education aided in the decision to diffuse and adopt new technologies. Two main ideas utilized to make the decision to implement were as follows: How does the technology make faculty more effective? How does the technology help students?

Another area of interest was the overwhelming response that, in order to be successful in any implementation, diffusion, and adoption of a new technology, proper support needs to be a corner stone of it. Setting up a department that is in charge of aiding those that are to use the new implemented technology will be of great benefit. At the same time, providing instruction to learn how to use the tools and proper techniques for use will make adoption of new technologies more efficient and yield better results overall. The need for proper training and support before implementing an innovation is something we can expect to see as a core requirement in any field of work or studies. Based upon the researcher's own work experience, the effective adoption and usage of a new program, book, or teaching technique will be affected by the amount of preparation, guidance, and support given to those disseminating the information. At the same time, this may become a source conflict between leadership/administrators and professors, if the latter are not involved in the planning and decision-making process for adopting new technologies.

On the other hand, the data obtained appeared to indicate a somewhat unexpected discovery. Specifically, through their responses, leaders of institutions indicated that budget and the costs of acquiring new technologies were not necessarily a major consideration. This is somewhat contradictory to what we had previously learned through prior research studies. For many years, academic literature pointed to budgetary factors as

a decisive factor when choosing whether to purchase new educational technologies. However, the research data collected reflected a different approach. Specifically, the participants' responses showed that budget was immaterial or a non-factor to the decision process. It should be noted that although this was the reflection by the majority of participants, there were still responses that showed that budget continued to play an important role in the implementation of these technologies.

Implications of Findings

The literature review strengthens the vision that technology is here to stay and that Institutions are to enfold an expansion of the online learning environments to keep up with the increasingly competitive global market (Birch & Burnett, 2009). As time progresses, it is undeniable that we are much more reliant on technology and the way of the brick-and-mortar-only design of education is fading. Institutions of higher learning need to implement, adapt, and adopt Instructional Technology and Distance Education for multiple reasons, including providing students more flexibility to stay in school and complete their programs of study. Furthermore, nontraditional students and traditional students alike can take advantage of the benefits of utilizing Instructional Technology and Distance Education.

Another notable area in the data is that all the respondents characterized themselves as average, above average, and experts on the following item: "Rate Your Computer Skills." As a matter of fact, of the 45 participants, four said they had average computer skills, 27 responded as having above average computer skills, and 14 described themselves as possessing expert computer skills. These numbers tell us that opinion leaders and administrators in charge of making decisions regarding the needs to improve, upgrade, and the adoption process of Instructional Technology and Distance Education

have high expertise in technology that can aid them to provide the best support needed at their institutions.

The research gave some themes for predominant factors in the decision-making process for Instructional Technology and Distance Education. There was an all-encompassing theme of convenient innovations that enhance education, enduring from the three main themes of flexibility, increased student engagement, and improved time efficiency. Six supporting themes that also entered into the decision-making process included adopting technology that (a) makes education accessible and therefore reaches a more varied student body, (b) provides flexible course delivery formats so that higher education can be fit into busy student schedules rather than vice versa, (c) empowers education through its ability to be personalized, (d) facilitates faculty-student communication, (e) reduces costs, and (f) improves educational quality.

The convenient innovations that enhance education gives a vision that Instructional Technology and Distance Education is a solution to enhance education. Every field can use it to make the delivery of their content more vibrant and readily available to the students. Regardless of the discipline of study, Instructional Technology and Distance Education provides a way to deliver a richer and more wholesome curriculum. In the face-to-face and blended environment, Instructional Technology and Distance Education provides tools and skills to aid classroom instruction. It provides professors the opportunity to maximize classroom instruction time by complementing it with information available after class, all the time, in a constantly available format (i.e., web page or a learning management system). For courses that are taught fully online, then Instructional Technology and Distance Education provides a way to make courses more engaging and, in the long run, as fruitful as a face-to-face course while providing

students flexibility and a wider opportunity to complete a program of study on time. Another area that convenient innovations that enhance education provides is that, by applying and using Instructional Technology and Distance Education, students gain important digital skills that can translate to any job or occupation. Students get skills that prepare them for the workforce because, in today's day and age, digital literacy is essential no matter what line of work a person chooses.

Instructional Technology and Distance Education provide flexibility, increased student engagement, and improved time efficiency and these helps students maximize their time while involved with the curriculum. Instructional Technology and Distance Education (a) makes education accessible and therefore reaches a more varied student body, (b) provides flexible course delivery formats so that higher education can be fit into busy student schedules rather than vice versa, (c) empowers education through its ability to be personalized, (d) facilitates faculty-student communication, (e) reduces costs, and (f) improves educational quality

Limitations

As a researcher, one of the goals is to be able to draw conclusions regarding the possible impact of specific variables on the study group, which is known as internal validity. The second goal is to be able to make inferences involving the general population, which is known as external validity. As in many other studies, limitations were present in this study. The main anticipated limitation for this study involved the population that was selected to participate in the study. Under these circumstances, the most noticeable limitation for this research project was the sample size of population that answered the survey, which could of have potentially led to skewed results. In addition to this, the researcher evaluated any potential differences in the adoption process amongst

institutional leaders depending upon their age. Despite having a small sample size, analysis of the questionnaire responses revealed older participants were in less agreement about confirming the Instructional Technology and Distance Education decision-making process when compared to the younger participants. It should be noted, however, that this difference did not reach statistical significance. However, it is another example of benefits for further research of this topic with a larger number of participants, which would optimistically allow future investigations to explore age differences further.

Creswell (2008) warned that smaller sample sizes have the potential error of yielding different results when generalized to larger populations, thereby decreasing trustworthiness and transferability of the study. External validity may be difficult to achieve with the study limitation of potentially small population size, which may make quantitative findings not generalizable to other populations beyond the sample size used for this study. The researcher attempted to address any threat to internal validity by limiting the time frame between the beginning of the experiment and the end of the survey to 15 days. Other potential threats to internal validity were prevented by restricting the duration of the experiment (i.e., survey) to a short period of time.

Future Research Directions

The researcher makes the following recommendations for further research:

1. Larger sample size to conduct the survey to be able to gain a deeper understanding of the Factors That Influence the Perception of Higher Education Leaders in the Adoption Process of Instructional Technology and Distance Education.

2. With more time and resources, the expansion of the geographic locations of the Institutions survey might provide better results. Attempt to get more Institutions of Higher Education from across the country to participate in the study.

3. Include a question on the survey regarding the size of the institution where administrators work and see if there is any correlation.

4. Is there a minimum or maximum amount of innovations that would be adopted at once or in a predetermined time period (a month, a semester, or a calendar year)?

5. Determine if the perception of higher education leaders extends or is affected by other stakeholder groups such as staff, faculty, or vendors.

This study was set to help understand the thought process that administrators and opinion leaders go through to make decisions about implementing and adopting Instructional Technology and Distance Education. This study took time to find out why some administrators and opinion leaders support and adopt Instructional Technology and Distance Education. Budgets came out as one of the main factors in the Instructional Technology and Distance Education adoption decision making process. There are five stages of innovation decision process regarding the adoption of new technology (Rogers, 2003), and this study used the innovation-decision process indicator, developed by Lichty (2000), as a tool to place innovators in one of the stages of innovation decision process. There are 15 items included in the tool, and they all correspond to the five stages of the innovation-decision process. The 15 items fall into the following stages of the innovation-decision process: (a) knowledge (Items 1 to 3), (b) persuasion (Items 4 to 6), (c) decision (Items 7 to 9), (d) implementation (Items 10 to 12), and (e) confirmation (Items 13 to 15). Through this study, it was determined that knowledge was one of the most important factors in the Instructional Technology and Distance Education adoption decision making process. Persuasion was determined to be the least important factor in the Instructional Technology and Distance Education adoption decision-making process.

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Appendix A

Methods, Techniques, Advantages, Disadvantages, and Instruments Used for Identifying Opinion Leaders

Methods, Techniques, Advantages, Disadvantages, and Instruments

Used for Identifying Opinion Leaders

Methods	Techniques	Advantages	Disadvantages	Instrument
Celebrities	Recruit well-known people who are national,	Easy to implement, Preexisting opinion	Contradictory personal behavior,	Media or individuals identify
Self-selection	Volunteers are recruited through solicitation	Easy to implement, Low cost	Selection bias, Uncertain ability	Individuals volunteer for
Self-identification	Surveys use a leadership scale and those scoring above some threshold are	Easy to implement, Preexisting opinion leaders	Selection bias, Validity of self-reporting	When you interact with colleagues, do you give or receive
Staff selected	Leaders selected based on community observation	Easy to implement	Staff misperceptions, Leaders may lack	Staff determines which persons appear to be opinion
Positional Approach	Persons who occupy leadership positions such as clergy, elected officials, media, and	Easy to implement, Preexisting opinion leaders	May not be leaders for the community, Lack of motivation, Lack of relevance	1. Do you hold and elected office or position of leadership?
Judge's ratings	Knowledgeable community members identify leaders	Easy to implement; Trusted by community	Dependent on the selection of raters and their ability to rate	Persons who are knowledgeable identify leaders to be selected and rate all
Expert identification	Trained ethnographers study communities to identify leaders	Implementation can be done in many settings	Dependent on experts' ability	Participant observers watch interaction within the
Snowball method	Index cases provide nominations of leaders who are in turn interviewed until no new leaders are identified	Implementation can be done in many settings; Provides some measure of the social network	Validity may depend on index case selection; It can take considerable time to trace individuals	Randomly or conveniently selected index cases are asked who they go to for advice

Sample socio-metric	Randomly selected respondents nominate leaders and those receiving frequent nominations are selected	Implementation can be done in many settings; Provides some measure of the network	Results are dependent on the representatives of the sample; May be restricted to	Randomly selected sample or cases are asked who they go to for advice
Socio-metric	All (or most) respondents are interviewed and those receiving frequent nominations are selected	Entire community network can be mapped; May have high validity and reliability	Time-consuming and expensive to interview everyone; May be limited to small communities	All respondents are asked who they go to for advice.

Note. From "Identifying Opinion Leaders to Promote Behavior Change, by T. W. Valente and P. Pumpuang, 2007, *Health Education and Behavior*, 34, 881-896. Reprinted with permission.

Appendix B

Email Request for Participation

Email Request for Participation

Dear Prospective Survey Participant:

I am a doctoral student from Nova Southeastern University, and I am conducting a research study as part of my doctoral degree requirements. My study is entitled, *Factors that Influence the Perception of Higher Education Leaders in the Adoption Process of Instructional Technology and Distance Education*. This is a letter of invitation to participate in this research study. The purpose of this study is to examine the characteristics which may affect the decision-making process for leaders and administrators at Higher Learning Institutions to diffuse and implement new technology.

By agreeing to participate in the study, you will be giving your consent for the researcher or principal investigator to include your responses in the data analysis. Your participation in this research study is strictly voluntary and you may choose not to participate without fear of penalty or any negative consequences. You may be able to withdraw from the survey at any time and all survey responses completed by then will be deleted.

There will be no individually identifiable information, comments, remarks or other identification of you as an individual participant. Furthermore, all results will be presented as aggregate, summary data. The study is also completely anonymous; therefore, it does not require you to provide your name or any other identifying information.

The survey will last no more than 10-15 minutes. Your participation will greatly

contribute to the current literature on the use of Instructional Technology and Distance Education. There will be no compensation or reimbursement offered for your participation.

If you decide to participate after reading this email, you can access the survey link listed below:

Thank you for your consideration,

Diego Tibaquirá

Appendix C

Survey

Survey

Perception of Higher Education Leaders in the Adoption Process of Instructional Technology and Distance Education Survey

NOTE: Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 2003).

Instructions: This survey consists of four parts and will ask you for demographic information as well as your perceptions and opinions regarding your adoption process of Instructional Technology and Distance Education.

Each part of this survey has its own set of instructions. Please read those instructions carefully before beginning each part. Thank you for taking the time to provide answers to this survey.

Part One: Demographic Information

Instructions: Please supply the following information regarding your experiences and background. These questions are designed to help the researcher determine what factors might influence a respondent's answers, interest, perceptions, and opinions.

Gender:

( ) Male ( ) Female ( ) Self-Defined _____

Age:

( ) 20 to 29 ( ) 30 to 39 ( ) 40 to 49 ( ) 50 to 59 ( ) 60 to 69 ( ) 70 or above

Ethnicity origin (or race):

( ) White ( ) Hispanic or Latino ( ) Black or African American ( ) Asian / Pacific Islander

( ) Other (Please Specify): _____

Highest Degree Held:

( ) Masters ( ) Doctorate ( ) Other (Please specify): _____

Professional Title:

( ) CEO ( ) CIO ( ) CISO ( ) Director of Technology ( ) Provost ( ) Dean

( ) Other (Please Specify): _____

How many years have you worked in Higher Education?

( ) 3 to 5 years ( ) 6 to 10 years ( ) 11 to 15 years ( ) 16 to 20 years ( ) 21 to 25 years

( ) More than 25 years

Rate your computer skills:

( ) Expert ( ) Above Average ( ) Average ( ) Below Average ( ) Novice

Part Two:

Instructions: Please check all of the statements regarding your adoption process of Instructional Technology and Distance Education that you would place yourself into. The 15 items are as follows:

1. ( ) I am considering the advantages and disadvantages of Instructional Technology and Distance Education instruction.

2. ( ) I (or my institution) will use Instructional Technology and Distance Education during the upcoming academic year.

3. ( ) I evaluate Instructional Technology and Distance Education tools.

4. ( ) I read brochures from companies marketing Instructional Technology and Distance Education learning programs.

5. ( ) I have secured the technical assistance I need to effectively implement Instructional Technology and Distance Education materials.

6. ( ) I have decided not to use Instructional Technology and Distance Education tools or strategies for instruction in my institution.

7. ( ) I read journal articles about Instructional Technology and Distance Education

applications in my area of specialization.

8. ( ) I think about ways to implement Instructional Technology and Distance Education in my institution.

9. ( ) I have integrated Instructional Technology and Distance Education into my institution's curriculum-planning activities.

10. ( ) I have secured funding to support my efforts with Instructional Technology and Distance Education.

11. ( ) I am creating or previewing Instructional Technology and Distance Education for future incorporation.

12. ( ) I have observed demonstrations of Instructional Technology and Distance Education for instructional use within disciplines in my institution.

13. ( ) I will use Instructional Technology and Distance Education on a trial basis during the coming year.

14. ( ) I am currently using Instructional Technology and Distance Education in my institution.

15. ( ) I will continue to evaluate my efforts to provide quality Instructional Technology and Distance Education.

Part Three:

Instructions: The following statements refer to attitudes about using Instructional Technology and Distance Education for instructional purposes. Indicate your level of agreement with each statement by choosing a number from 1 to 5.

Response Key:

1 – Strongly Disagree; 2 – Slightly Disagree; 3 –Neutral; 4 –Agree; 5 –Strongly Agree

1. I believe Instructional Technology and Distance Education are better than traditional

learning materials

1 2 3 4 5

2. How important is having new technology in your institution to you?

1 2 3 4 5

3. Instructional Technology and Distance Education represent my values in teaching and learning

1 2 3 4 5

4. My students benefit from using Instructional Technology and Distance Education

1 2 3 4 5

5. Instructional Technology and Distance Education are easy to use and "remix" for future use

1 2 3 4 5

6. Instructional Technology and Distance Education allow me to try new materials and hone them to meet student needs

1 2 3 4 5

7. Faculty at my institution have begun to use more Instructional Technology and Distance Education since implementation

1 2 3 4 5

8. Instructional Technology and Distance Education enhance the way instruction is delivered at my institution

1 2 3 4 5

Part Four:

Instructions: The following questions concern your overall experience with the Instructional Technology and Distance Education. These are a series of open-ended

questions for you to reflect on and respond to.

1. Are you now using Instructional Technology and Distance Education? If not…why not? If so…please describe them and why are you using them?

2. What makes Instructional Technology and Distance Education valuable to you and your institution?

3. What kinds of instructional supports have been available to you during the adoption process of Instructional Technology and Distance Education?

4. In what ways has your college been supportive of access/using Instructional Technology and Distance Education?

If not, what could they have done differently?

5. In many cases there are a number of reasons why institutions gladly use/implement Instructional Technology and Distance Education or choose not to use them. Speaking for yourself, what are the reasons behind your usage or exclusion (For example, quality/cost/convenience)?

6. Does your current budget play a factor in deciding on the use/implementation of Instructional Technology and Distance Education?

7. Does your prior experience play a factor in deciding on the use/implementation of Instructional Technology and Distance Education?

8. Please feel free to add commentary here with specific information that the questions above did not address. These comments will assist in understanding your experiences with and attitudes toward using/implementing Instructional Technology and Distance Education.

Thank you for taking the time to complete this survey.

[“Submit” button located here on the online survey instrument]

Appendix D

Authorization Email to Use Instrument

Authorization Email to Use Instrument

[EXT]: Permission

Coleman-Prisco, Virginia <vcolemanprisco@mercy.edu>

Fri 4/12/2019 8:20 PM

Diego,

You have permission to use my instrument. Please give credit and share your finished study with me!

Best of luck!

Regards,

Dr. Coleman-Prisco

vcolemanprisco@mercy.edu

On Apr 10, 2019, at 18:20, Diego Tibaquirá <tibaquir@mynsu.nova.edu> wrote:

Hello Dr. Coleman-Prisco,

My name is Diego Tibaquirá and I'm a Doctoral student at Nova Southeastern. I'm working on my dissertation and looking for instruments to conduct my study and my chair and I really like your survey from your dissertation. Is it ok for me to use it and

modify it to meet the requirements of mine?

I’m at the proposal stage and working toward the data collection phase.

Please let me know. I appreciate your time.

Thanks,

Diego Tibaquirá

Appendix E

Current Use of Instructional Technology and Distance Education

Current Use of Instructional Technology and Distance Education

Thirteen participants (10, 17, 18, 20, 26, 30, 35, 37, 38, 40, 43, 44, and 45) failed to answer this question (29%).

Participant	1. Are you now using Instructional Technology and Distance Education? If not, why not? If so, please describe them and why are you using them.
1	Yes, we use D2L as our learning management system along with dozens of other instructional technologies, websites, etc. In some cases they simply enhance teaching and learning, and in other cases they are used as the sole method of instruction.
2	Yes. Learning management systems, proctoring services, course design methodologies, etc. For use in the delivery of fully online classes.
3	We offer blended classes. Part of the instruction is face to face and part online.
4	Instructional technologies should be used to allow the learner to do more than simply transmit knowledge; rather, to engage more deeply in processing the knowledge, skill, or behavior.
5	Yes. We offer online education and hybrid face-to-face/online courses. We also make available to the faculty a variety of instructional technology software and programs. We do it because this is what the students expect and the way the educational market is moving.
6	Yes. We utilize instructional technology to enhance the classroom experience. We currently also offer hybrid courses and have full programs available through distance learning.
7	Continuous evaluation of new instructional technology and distance education tools for the purpose of introducing to faculty for use in classroom
8	Yes, blackboard.. google docs lecture capture
9	Blackboard for facilitating communication with students and allowing students to actively monitor their progress.
11	We just implemented a new API to allow instructors to build course lists in Bb. This is used by all courses, regardless of modality (web-enhanced, blended, or virtual).
12	I have implemented both instruction technology and distant education in the past and plan to integrate them again in course planning. Currently writing a grant to support instruction technology to be embedded in different disciplines.
13	The College has a robust distance education area constituted by the Online College. There, we author new materials and courses for delivery to students from all backgrounds.
14	Yes, my institution uses instructional technology and distance

	education to provide learners with flexibility and varied learning opportunities.
15	Yes, to raise basic knowledge in math and sciences
16	Yes, the School of EnTec enhances the delivery of its courses by incorporating technology tools and software to increase student success. Additionally, we incorporate advanced technology to prepare students in emerging technologies.
19	Our area supports those implementing the technology. Our area may not always be familiar with the new technologies being used, but we are supportive of technology and the end result of helping students learn.
21	Yes. D2L primarily.
22	We use a variety of technologies such as Blackboard, Articulate, TurnItIn, Safe Assign, SoftChalk, and others.
23	We use both fully online and blended classes. It is more flexible for students.
24	Yes, I have taught in both blended and fully online formats. I have recorded some of my own YouTube videos and screencasts for students.
25	Yes - in blended course design and delivery (including flipped classroom, web tools, LMS tools, deep integration of publisher ancillaries)
27	Yes
28	Yes. I'm currently teaching blended courses that use an LMS in addition to Open Educational Resources. I'm using them due to the course being a 50%/50% blended course which requires additional instruction beyond the face-to-face meetings.
29	Yes, I support of online resources within our LMS, D2L and also work with OERs and their implementation at our institution.
31	We use D2L and also publisher content to give our IT students access to virtualization and simulation.
32	Blackboard is our LMS. We use other tools such as Smarthinking for 24/7 tutoring for students, Respondus Lockdown Browser for securing proctored assessments in our testing centers, and e-materials from publishers to enhance the student learning experience.
33	As a professor and administrator, I was a part of a group who used IT for remediation for students in the math and English disciplines. I was also responsible for the assessment of existing tools as well as the evaluation of new tools.
34	Yes, for blended on online classes in Crim. Justice and many other fields
36	Simulations, online classes
39	We use ALEKS and MyMathLab in our math courses. We believe that they provide students a platform to do outside-of-class work with additional support that traditional homework from a textbook cannot provide.

41	Yes, I am using Instructional Technology and Distance education. We try to implement new instructional technology in our classrooms to enhance learning and teaching in the classrooms.
42	Crestron devices as instructional technology supporting the day by day classes sessions.

Appendix F

Participant and Institutional Value of Instructional Technology and Distance Education As a Factor in the Decision-Making Process

Participant and Institutional Value of Instructional Technology and Distance Education As a Factor in the Decision-Making Process

Eight participants (10, 24, 30, 35, 37, 40, 43, and 45; 18%) did not answer this question.

Participant	2. What makes Instructional Technology and Distance Education valuable to you and your institution?
1	Instructional technologies make it possible for students to practice a concept without the assistance of their professor or classroom, reinforcing what is needed for course outcomes or even industry certifications. It also allows face to face course time to be reduced. Whether through blended course offerings or through fully online offerings, the technology allows us to address one of the biggest obstacles for our students, which is time.
2	The enrollment of fully online students is approximately 30% of the institution's total enrollment which relies heavily on instructional design specifically for online delivery.
3	Distance education provides a flexible schedule to the students.
4	To do more than could be done in a physical environment, for example practice lab skills, take different decision paths, or explore or practice a skill.
5	It is a way to attract additional students and to provide flexibility in course scheduling so students can complete their programs faster.
6	It provides additional support and different learning modalities for our students. As it relates to distance learning, it provides additional flexibility, particularly for adult and working students.
7	Students are increasingly incorporating technology into day-to-day life so instruction should keep up to ensure students are engaged and graduate job ready.
8	Allows student to work at home at their own pace and time restraints.
9	On-demand student access to course materials
11	Instructional Technology allows us to diversify the way we teach and reach many more students. When combined with other strategies in the classroom, specific technology can be very powerful
12	Distance education allows learning to fit around family and work demands. It also allows for different pace of learning. Instruction technology increases communication and facilitates resolution of problems and is easily integrated in various subject areas.
13	It allows us to be more flexible in our course delivery modalities.
14	It is valuable to the learner because it fills a need for flexibility and varied learning styles. Further, it's used to provide learners with

	stronger technology skills which transfer into personal and work life.
15	Takes advantage of time, adapts to individual needs related to time, contents can be reviewed anytime, complements in classroom teaching
16	It enhances the learning process for the students. It also allows me to reach more students.
17	It provides the user with supplemental instruction capability beyond the capacity of traditional materials.
18	Instructional technology enhances learning experience for all learners. DE provides learning opportunities for all beyond time and space.
19	Instructional Technology specifically offers additional tools or approaches to help our students gain understanding and mastery or a subject matter.
20	The system has to be something easy for students and faculty to use.
21	Being able to reach a larger and more varied student population/demographic.
22	These tools enhance instruction and allow delivery of learning materials/content whether face-to-face or fully online.
23	It is more flexible to students and easier for those who have personal obligations or work schedules that prohibit face to face courses.
25	It meets students where they are, allows them to actively engage in the course within their time schedule and provides enhancement/remediation as needed.
26	Many of our students have copious demands on their time (work, family, etc.). This technology allows our students to learn when it is convenient for them without having to be in a traditional classroom.
27	Keeping up with the times and encouraging student engagement through creative measures.
28	It's valuable because it gives you the flexibility when it comes to deliver the course. It frees up time for both the students and instructors so they can complete course activities during times that are more convenient. Also, it allows the institution to leverage emerging technology to more effectively deliver course content.
29	We have a large number of online students and hybrid courses that need effective delivery of instruction and resource support. Instructional technology helps make this possible.
31	Gives the students access to real time/ real world applications.
32	These are valuable to our institution in that they enhance the student learning experience and allow us to offer web-enhanced, blended, and fully online classes.
33	It can enhance student learning outside of the classroom and much of it (at this point) can be tailored in some way to meet the needs of

	individual students.
34	Convenience for students and faculty for teaching and learning with less drive time so folks can work
36	Leads to innovation and critical thinking.
38	Allows more schedule flexibility for non-traditional students and their learning styles.
39	The two most important benefits that online technology provides are 1) the immediate feedback provided to students and 2) the reduction in workload of faculty, specifically the grading of homework. In the case of ALEKS, its greatest asset is that it is adaptive and can tailor the student work based on need.
41	Instructional Technology and Distance education helps the institution to reach a greater number of students who would have not been able to attend the institution otherwise.
42	The usage of both approaches provides my institution with the tools for facing the future of the educational process.
44	It allows us to accommodate students' schedules and flexibility.

Appendix G

Personal Reasons As a Factor in the Instructional Technology and Distance Education Decision-Making Process

Personal Reasons As a Factor in the Instructional Technology and Distance Education Decision-Making Process

Nine participants (10, 15, 30, 34, 35, 37, 40, 43, and 45; 20%) did not answer this question.

Participant	5. In many cases there are a number of reasons why institutions gladly use/implement Instructional Technology and Distance Education or choose not to use them. Speaking for yourself, what are the reasons behind your usage or exclusion (For example, quality/cost/convenience)?
1	Instructional technology and distance education can serve students who are otherwise unable to earn a degree, whether through providing additional support in learning the material or through providing the option to take a course online/blended. Instructional technologies are rarely cheap, but offering a course online does cost less in overhead than offering it on campus. Quality is always a concern. Some distance education materials are not quality, although they may be cost effective. I have used OER resources on more than one occasion, and they were far more burdensome from an instructional perspective, but they also provided students an opportunity to meet the learning outcomes without additional expenses (again, addressing a student obstacle - money).
2	Better quality fully online classes that meet certain standards (Quality Matters) to ensure a richer, more engaging learning and teaching experience.
3	Convenience for the students.
4	Technologies should be used to enhance the learners' personal integration of knowledge, skills and behaviors into their schema, or should remove barriers of the same. Usability, cost, integration with other technologies, are all contributing factors to not use technologies.
5	Reasons for usage: satisfaction of student needs, motivation of technologically inclined faculty, increase of class schedule flexibility, competition by other higher education institutions.
6	Added support and flexibility for our students. We need to constantly adapt to our students needs and instructional technology and distance learning assists us to keep up with their needs.
7	Leveraging technology has the potential to facilitate individualized instruction and student engagement
8	Cost and ease of use
9	Ease of use; enhances curriculum delivery; enhances the interaction and communication between faculty and students; students feel comfortable using the technology.
11	Quality/cost/convenience existing knowledge within the institution of

	the tool and how to use it or even make it available to instructors.
12	Accessibility, facilitation of information sharing, keep up with current higher education trends, etc.
13	1. Flexibility 2. Economy of Scale 3. Budget Concerns
14	I believe Instructional Technology and Distance Education adds flexibility, therefore convenience for the learner. From an instructional perspective, it does not save time or money if done properly.
16	I believe that technology enhances every field, including education. It also prepares the students with required workforce skills. Finally, it adds convenience for both, the student and the professor.
17	I use them due to their quality and convenience.
18	Not applicable.
19	Everything will ultimately come down to cost and if the institution will approve the instructional tool.
20	Making a decision to use a product is dependent on a cost benefit analysis. If the need is great, then a decision to purchase is made and the cost of instructional support is added to the cost of purchase.
21	Quality
22	The biggest reason is to provide our students with options to continue their degree while working, managing family, and life obligations.
23	Convenience being the biggest reason. Also, the new generation learners are comfortable with the technology.
24	My worry is the time required to educate users, both students and faculty.
25	I use it for student convenience and self-confidence building because it offers more opportunities for student success. Whenever OER is available, it is a great cost saving measure
26	Convenience for the student
27	Increased retention, student engagement, more positive outcomes for student success.
28	My main reason is convenience and cost. Utilizing some of the current tools allows me to keep costs down for the students and adds convenience with the online portion of the course.
29	It is necessary at our institution with our diverse and long-distance populations in multiple locations around the world. We also need to keep current.
31	In IT, it keeps the learning resources current, also helps keep the curriculum current with access to the latest technologies being used in Industry.
32	The reasons behind my usage include improved student learning and the option for students to take classes fully online.
33	The college uses distance education in order to increase enrollment. I am not opposed to this thinking, but if it doesn't happen in concert with robust retention and student support services, it consistently results in lower success rates. There is also a fear among faculty that IT and DE

	are being used as a way of standardizing content and teaching strategies (thus stifling innovation and reducing faculty positions) in the name of easy replication and assessment. Professors essentially become passive course managers rather than active, creative teachers.
36	Grant funds available to implement it
38	Cost, lack of interest, academic freedom, technology isn't accessible-friendly
39	We implement technology for reasons of quality--adaptivity of the software and the richness of the resources that are included--and convenience.
41	I am an adjunct faculty and am closely associated with technology. As such, I am always looking forward to implementing these technologies in the classrooms that would enhance the learning and teaching experience for our students.
42	I use them because they make the classes sessions more efficient and even practical.
44	I use the resources I'm familiar with like D2L when I teach to allow students the opportunity to supplement their face to face learning.

Appendix H

Current Budget As a Factor in the Instructional Technology and Distance Education Decision-Making Process

Current Budget As a Factor in the Instructional Technology and Distance Education Decision-Making Process

Nine participants (10, 15, 30, 35, 37, 40, 43, 44, and 45) did not answer this question (20%). Seven participants answered no without elaboration (3, 14, 21, 23, 26, 31, and 39) whereas participants 25 and 38 equivocated, for a total of 9 participants who said budget was immaterial to the decision process (20%). Thirteen participants answered yes without elaboration (2, 7, 8, 9, 13, 16, 17, 19, 24, 27, 29, 36, and 42; 29%) whereas 14 more said yes and elaborated (31%), for a total of 27 participants who said budget was important to the decision-making process (60%).

Participant	6. Does your current budget play a factor in deciding on the use/implementation of Instructional Technology and Distance Education?
1	Budget is always a factor, but we will search for alternate sources of funding or cheaper alternatives to get what is needed for our students.
4	Yes, to some extent. However, I find constant organizational strategy/tactics to be absent in the validation of technologies.
5	A minor factor. Cost/benefit analysis favors the introduction of Instructional technologies and Distance Education.
6	Absolutely. The cost of instructional technology and distance education platforms is ever-increasing. It has caused us to be more diligent in the selection of key platforms, as well as evaluating how we can use a single platform for multiple purposes.
11	The department budget plays a factor and is discouraging of such adoptions; however, if the tool is sound, the institution will support its adoption
12	Definitely! We are working on a grant that will hopefully support online tutoring to our students.
18	Budget and staffing are always the key factors to consider when adopting a new technology.
20	Yes, a budget plans a significant role in the decision making.
22	It can, depending on the technology, cost and benefit.
25	I would assume so - I do not handle budget
28	It's not a factor in my personal budget; however, I believe it plays a role in the institution's decision.
32	Yes, budget plays a factor in deciding on the use/implementation of Instructional Technology and Distance Education.

33	Yes. DE is considered more profitable to the institution because it reduces the physical footprint. However, the result of this is that increased costs are passed on to the student (e.g. Internet access, computer, access to educational software tools, online testing fees, etc.). Given our student population, this is a serious equity issue.
34	Yes, we need funds to create more and update online courses.
38	I guess. Those conversations don't occur at my level.
41	The budget always plays a role in the implementation of these technologies. But fortunately, the college is very responsive to requests and ideas towards improving teaching technologies in the classrooms and for distance education.

Appendix I

Prior Experience As a Factor in the Instructional Technology and Distance Education Decision-Making Process

Prior Experience As a Factor in the Instructional Technology and Distance Education Decision-Making Process

Nine participants (10, 15, 24, 30, 35, 37, 40, 43, and 45; 20%) did not answer this question. Another 20 participants (2, 3, 4, 7, 8, 9, 11, 13, 16, 17, 20, 21, 25, 27, 29, 31, 36, 39, 42, and 44; 44%) answered yes to this question without elaboration; comments from participants who answered yes and elaborated are listed in this Appendix. Four participants (19, 23, 26, and 38; 9%) answered no to this question without elaboration; comments from participants who answered no and elaborated are listed in this appendix.

Participant	7. Does your prior experience play a factor in deciding on the use/implementation of Instructional Technology and Distance Education?
1	Yes. I was an early adopter of instructional technologies at the very beginning of my teaching career. I believe this makes me more open to the potential of new technologies. However, my knowledge of networks and computer security can also delay a decision/implementation if I am not convinced that the product will be capable of serving students in an appropriate way. I am slightly more skeptical than some of my non-tech colleagues if a vendor cannot explain a technical part of the product or service to me, especially if I am concerned about its ability to consistently, reliably, and safely serve our student population.
5	No. I have no experience in these fields.
6	As a former faculty member, yes. I always base my decisions on two key questions: 1) How will this technology make the faculty more effective? 2) How will this technology support our students?
12	Yes! I have had successful experience when using distance learning and instructional technology.
14	I guess since I am comfortable with technology, it probably influences me to feel favorable to trying new technology.
18	No. DE is a core delivery method for the institution. Instruction Technology is a core service for the institution.
22	Sometimes but I always look at new ways and new editions of technologies understanding that improvements can be made or that quality can regress.
28	Yes. My prior experience plays a role in that I've used it before. Being that I've used it before, I've seen the benefits of using it and would like to continue to take advantage of those benefits in the future.
32	My prior experience is not a factor in deciding on the

	use/implementation of Instructional Technology and Distance Education.
33	It does. My background as a technical writer makes me more receptive than the average academic regarding the use of DE and IT; however, I am also more keenly aware of its shortcomings.
34	Yes, I was an administrator for an online college, and I have taught only for 17 years.
41	Yes, my prior experience certainly plays a part in deciding the technologies that would be implemented in the classrooms as well as those that would enhance the distance learning experience.

Appendix J

Instructional Supports As a Factor in the Instructional Technology and Distance Education Decision-Making Process

Instructional Supports As a Factor in the Instructional Technology and Distance Education Decision-Making Process

Ten participants (10, 15, 18, 24, 30, 35, 37, 40, 43, and 45; 22%) did not answer this question.

Participant	3. What kinds of instructional supports have been available to you during the adoption process of Instructional Technology and Distance Education?
1	The college offers both online and in person professional development, funding to attend conferences and has a well-educated instructional design team that assists in adopting and learning new instructional technologies.
2	A highly skilled instructional design team
3	Instructional designers, Subject matter experts, IT Staff
4	I believe that the faculty must have all supports (initial training, job aids, ongoing feedback) they need in order to effectively leverage the technology tools in support of student achievement of the outcomes.
5	Presentations by experts, acquisition of hardware and software, professional development and training opportunities, hiring of full-time and part-time support personnel, allocation of physical space
6	Digital textbooks, supplemental materials, video tutorials, interactive graphics, virtual access to advisors, tutors and faculty
7	CIOL trainings, vendor trainings, one-on-one instructional design support through CIOL and Online
8	Self-taught
9	Technical and instructional design support for faculty; technical support for students
11	Very little to none. The institution needs to make a greater effort at increasing support on campuses. Most of the time, I teach myself how to use the technology by speaking to colleagues, playing with the tool, and watching videos via YouTube.
12	Some of the instructional support available: curriculum-based assessment, class observation performance, established faculty-student meeting schedule, monitoring student progress, student referral services, data collection and maintenance of data, class reading instruction, standard-based instructions
13	We have a dedicated helpdesk for all issues related to Online Course Delivery. Students have 24 hour access to the help line.
14	There has been external and internal training support.
16	Access to software providers and training on their use.
17	Workshops and online learning. The Center for Instructional Learning provides continuous learning opportunities throughout the year.
19	Our institution offers resources in both Network and Media support to

	help. The CCIOs are also available to discuss and offer their expertise with regards to instructional technology and what it would take to implement.
20	Instructional designers are available during curriculum design of distance education classes. Trainers are at hand for support when instructional technology is adopted.
21	Vendor and internal.
22	We partner with the Center for Institution and Organization Learning for technologies used by Online. Online provides an instruction orientation for teaching fully online classes. We announce webinars and videos that support faculty
23	We have a whole unit available for support and we use Quality Matters.
25	CTEL workshops, one on one assistance in course design by instructional designers and technologists, GIT help from instructional designers/technologists, online tutorials in the LMS
26	Online chats, help desk support
27	AR/VR/LMS
28	Open Educational Resources, Instructional Technologists, and software demonstrations.
29	We have great colleagues in our LMS, IT, and Online Campus departments that have collaborated with the library to provide quality platforms and resources.
31	We have a team in our IT department dedicated to our LMS and other technology resources and a team that supports faculty (instructional designers).
32	Instructional support is provided by CIOL. They host a wide variety of trainings that are available to faculty and staff. Some of their trainings are offered fully online.
33	Our CTEL (Center for Teaching and Learning Excellence) has provided professional development activities regarding the use of instructional technology and individual pathways have shared best practices as well. In terms of the use of technology in the wake of Florida dev ed reform (SB 1720 in 2014), the Center for Postsecondary Success has worked with every Florida college to collect data regarding the use of strategies (including the use of IT) to address the needs of students who would before have been classified as "not college-ready."
34	Vendors give good presentations, and [college name removed] gives training on teaching and learning, including online.
36	Support from several departments such as IT and legal.
38	Professional development courses, e-associates available to assist with technical troubleshooting, designers to assist with course development.
39	Both the vendor and my institution work closely together to implement the adopted technologies.

41	We constantly have meetings to explore ways to improve the technology in the classrooms. All IT staff is instructed to provide full support to teachers in the classrooms.
42	100 % of support when required on both approaches.
44	Help Desk, colleagues

Appendix K

College Supports As a Factor in the Instructional Technology and Distance Education Decision-Making Process

College Supports As a Factor in the Instructional Technology and Distance Education Decision-Making Process

Nine participants (10, 15, 24, 30, 35, 37, 40, 43, and 45; 20%) did not answer this question.

Participant	4. In what ways has your college been supportive of access/using Instructional Technology and Distance Education? If not, what could they have done differently?
1	Offering professional development and providing access to an instructional design team show me that the college is committed to the successful implementation of instructional technology.
2	Funding the instructional design team positions.
3	The college provides a well-organized way to deliver shells for online and blended classes. These shells are professionally reviewed before being available to faculty.
4	Initial training is mostly present, but often the context of why the technology should be used is lacking. The institution should be provided much deeper, richer training; and ongoing guidelines in order to ensure that the technologies continue to be used properly especially once the rollout phase is complete.
5	Presentations by experts, acquisition of hardware and software, professional development and training opportunities, hiring of full-time and part-time support personnel, allocation of physical space. Also, faculty inclined to use Instructional Technology describe that kind of innovation and service in their portfolios to obtain tenure, promotions, and endowed teaching chairs.
6	We allow our faculty to provide input into new instructional technology and faculty are central in the development of distance education courses. We have a training department at the institution that provides support for faculty and staff in the use of Instructional Technology and Distance Education.
7	Pilot opportunities for new technologies, ongoing technology training, design your own break with focus on instructional technology
8	Provide more resources showcasing and tutoring of products and tools
9	The college offers multiple professional development seminars on the use and implementation of instructional technologies.
11	I think it is very supportive within reason.
12	Yes! The college I serve has been supportive of Instructional Technology and Distance Education. We are in the process of planning online tutoring support to students.
13	We allow all students access to distance education modalities.
14	The college provides technical support and professional development opportunities.

16	Flexibility to incorporate Instructional Technology into courses - training on how to incorporate Technology into courses - opportunity to offer courses through distance education
17	Through the Center for Instructional Learning and the funding of multiple online tools
18	The institution equips faculty and students a wide array of tools to ensure effective instruction delivery and learning outcomes. Knowledge staff are available to provide technical and instructional design support and training.
19	The college has been supportive if there is value in the technology being used. Usually the instructional technology will need to be evaluated and its merits and negatives must be taken into account. What could be done differently could be a formal form that indicates a certain technology is being evaluated and a database with the outcome and supporting reasons as to why or why not the technology was not implemented (i.e. quality, costs, able to meet the learning priorities).
20	The college has provided tech support for faculty use. It would be better if additional support is available to students.
21	[Name removed] College is pretty progressive when it comes to implementing IT/DE.
22	We have participated in demos, pilots, and provided training and support for new technologies. The biggest challenge is making faculty aware of the resources and opportunities.
23	College has been very supportive.
25	Getting Ready to Teach Blended/ Online workshops and workshops on the tools within the LMS, encouraging blended course facilitation, thorough review of course design, and the availability of master course content in a traditional blended and contextualized format.
26	In-depth training and re-training as needed
27	Cover funding to attend conferences to learn how to evolve and develop instructional technology in our instruction.
28	Offering professional development workshops, training, a dedicated instructional technologist to assist with the course.
29	We have recently hired a new District Director of Instructional Design for the College, formed a workgroup to assess our current instructional technologies, and I am currently working on funding for new tech.
31	Assist in the creation of master course shells and use of immersive technologies in the classroom.
32	The College has been supportive of Distance Education through their support of Online (f/k/a Virtual College) and through the large number of trainings offered by CIOL.
33	The college is supportive of the use of IT in general, but the processes for the adoption of IT and the equity of its access has been slow to change. The college recently received an ATD Grant for the establishment of an institutional structure focused on the

	implementation of courseware that has the potential to assist with removing institutional barriers. This structure would have been helpful from the start. The college also made the decision to separate online teaching from face-to-face teaching. This discouraged the innovation in the use of IT and distance education college-wide.
34	Our Center for Teaching Excellence and Learning provides ample training
36	Process in place to access it.
38	Every faculty member can access and develop course content in an assigned shell or use one that's already developed.
39	They have been supportive by providing technological infrastructural support and by (in some courses) subsidizing the cost to students.
41	The college is always open to ideas and technology that would go to enhance the instructional capabilities in the classrooms. Also, the college is very supportive of exploring new distance learning tools.
42	The College is supporting these approaches 100% as they are the future of the education.
44	They are open to attaining new and better technology.

Appendix L

Closing Comments About Instructional Technology and Distance Education

Closing Comments About Instructional Technology and Distance Education

Thirty-two participants did not answer this question (1, 2, 4, 6, 7, 8, 9, 10, 13, 15, 16, 17, 18, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 35, 37, 38, 39, 40, 43, 44, and 45; 71%). The remaining 13 participants left comments (29%).

Participant	8. Please feel free to add commentary here with specific information that the questions above did not address. These comments will assist in understanding your experiences with and attitudes toward using/implementing Instructional Technology and Distance Education.
3	In our organization, the implementation of Instructional technology or Distance education is mostly the responsibility of committees. The administrators implement these programs and provide feedback.
5	Although traditional campus life and physical presence in a classroom are very valuable experiences, technology and distance education constitute an imperative today. The world is changing, not necessarily for the best, but we cannot stop this trend. We must embrace it.
11	Instructional technology is many times hailed as the solution to many of today's educational problems. it is not, in my opinion. it can solve many problems, but only when used to address specific issues in the classroom.
12	I noticed that some students do not feel comfortable with any other method on instruction or relationship than face-to-face.
14	I do not think that one instructional modality is best for everyone. I think it is important for colleges to offer multiple ways of teaching and learning to accommodate the uniqueness of learners and their goals.
19	One challenge we find is the lack of faculty willing to adopt new technology. Faculty may be set in their traditional ways that they are not be open to adopting or using a new technology because it requires training and familiarity with the new technology tool.
22	I have over 35+ years in instructional technology and distance education. I follow a variety of listservs, read journal articles and attend conferences whenever possible to stay up on trends. Regardless of the technology, the goal and mission is to provide students with learning opportunities. It isn't the tool it is the pedagogy. There are also trends in pedagogy on how to best deliver learning outcomes, regardless of technology.
32	Thank you for the opportunity to participate in this survey.
33	A huge problem with the use of IT in the classroom is a lack of discussion about what makes pedagogical sense regarding student learning. This is a particular problem in a discipline like English,

	where most of the software is little more than a glorified electronic version of grammar handbooks that we know aren't good at helping students write better. In fact, we've known this since 1980. Making web versions of old textbooks is not innovation. As it relates to distance education, most of the online models rely on standardized course content that do not allow for innovation of any kind. It makes no sense.
34	More research will yield needed findings for online and distance education, needs, and benefits.
36	Requires buy-in from faculty and staff.
41	Unfortunately there is sometimes a strong resistance towards using technology in the classrooms. This is mostly because of fears of technology that exists and also instructors become comfortable with their conventional teaching methods which they have used for the previous several years.
42	The usage of the technology represents the present and future of all human activity, where the education is not the exception of the rule.