

ABSTRACT

Title of Dissertation: EXAMINING THE RELATIONSHIP BETWEEN HBCU
FACULTY ONLINE EDUCATION, INNOVATIVENESS
and ATTITUDES TOWARD COMPUTERS

Valerie Riggs, Doctor of Education, May 2019

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Recent research highlights the relationship between levels of innovativeness, the use of online learning technologies and attitudes toward computers. Most of the research in this domain has been conducted in PWIs (Johnson, 2015; Pereira and Wahi, 2017; Glass 2017; Broussard and Wilson, 2018). Only a few studies were conducted at HBCUs (Lawrence, 2008; Keesee & Shepard, 2011; Johnson, 2008). There is some evidence on how HBCUs are participating in online learning, but there is certainly not enough to contribute to this overall body of work. This research attempts to augment the body of literature on academic studies completed at HBCUs.

The purpose of this quantitative correlational study was to determine whether significant relationships exist among the variables: levels of innovativeness, attitudes toward online education, attitudes toward computers and various demographic characteristics of full or part time faculty members employed at an HBCU in a Mid-

Atlantic state in the United States. The study and data analysis were informed by Rogers' (2003) Diffusion of Innovation Theory and Azjens' (1985; 1991) Theory of Planned Behavior.

A survey correlation research design accomplished the objectives of the study. This study classified the faculty members based on Rogers' five categories of innovation adoption and correlated them with the demographic variables of age, gender, race/ethnicity, teaching experience and academic rank. A significant relationship emerged between Rogers' identified adopter category of Early Majority and attitudes toward online learning ($r = .299, p < .05$) and computers ($r = .284, p < .05$) and the variables ever taught online and faculty member innovativeness ($r = .266, p < .05$). The results did not show significant difference between faculty member adopter categories and demographic characteristics of age, gender, years of teaching experience, academic ranks and race/ethnicity. However, attitudes toward online education and computers were found to be significantly different by race and gender ($p < .05$). Positive attitudes of the faculty toward online education found in this study suggest faculty members would accept the continued implementation of online education in HBCUs. The study may inform further research on attitudinal aspects that can promote the growth and continued acceptance of online learning at HBCUs.

EXAMINING THE RELATIONSHIP BETWEEN HBCU FACULTY ONLINE
EDUCATION, INNOVATIVENESS and ATTITUDES TOWARD COMPUTERS

By

Valerie Riggs

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DEDICATION

This dissertation is dedicated to several important people in my life. First, I acknowledge my parents: Veronica and Grady Riggs, for instilling the value of hard work, consistency and dedication. Without his or her model of excellence, my efforts on this work would not have been possible. I share a special dedication to my father whose strength and positive spirit through his illness pushed me to complete my degree. He exemplifies the phrase, "There is nothing you cannot do." I want to thank my siblings Angela and Chris for their unconditional love and support throughout the process.

I dedicate this work to my children Kayla, Veronica and Robert for being okay with leftovers on many occasions and patiently waiting on me to get off the computer as I worked late nights throughout the years. This work became a part of his or her lives as well.

My last dedication is to the Riggs and Ball lineage, who hail from Savannah Georgia, Southern Virginia and Washington, DC. I am the first to achieve a doctoral degree in the Riggs family. I will not let you down.

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CHAPTER 1: INTRODUCTION

Background

The U.S. Department of Education, National Center for Education Statistics (2018) data show there are 740 public undergraduate and graduate degree granting institutions. It was found 72.7% of all undergraduate students and 38.7% of all graduate level students who attend public and private Primary White Institutions (PWIs) take online education courses (Anderson, 2017). The development of online education courses is currently a universal trend and helps to procure much needed revenue for schools (Anderson, 2017). In the past decade many Historically Black College and Universities (HBCUs) continue to encounter financial issues as a result of varying governmental policies, falling enrollment, low recruitment, retention efforts, as well as inadequate technology infrastructure and support (Nealy, 2009). The continuous development of online education courses is one way in which HBCUs can work toward increasing revenue, resulting in access to a larger market share of students, improved retention and staying competitive with PWIs.

Online education has a historical beginning with the increased public usage of computers in 1980, the opening of for profit institution University of Phoenix in 1989, and then wide spread public access to the Internet in 1991 (Weems, (2018). By 1997, learning management systems like WebCT and Blackboard were being developed for use in institutions of higher learning (Weems, 2018). From 2000-2008 online education courses continued to develop rapidly in the United States as well as internationally with the growth

of the Internet and integration of personal computers (Casey, 2008). The courses were a modality by which all students could cross barriers and access education (Casey, 2008).

Stuart and Yep (2012) found there were 24 HBCUs offering online programs as of 2012, which was an increase from the 19 programs available in 2011. Lack of continuous published research has spurred grassroots efforts by HBCUs to document progress. One such effort was made by Roy Beasley, a founder and former director of Howard University's Digital Learning Lab works to publish research and track HBCU digital progress (Beasley, 2014). In 2014, there were 33 HBCUs offering online programs of which 26 were at public HBCUs and seven were at private HBCUs totaling 33% out of 106 HBCUs. Since then, four universities have closed and there are currently 102 HBCUs in existence (Beasley, 2014).

Currently, HBCUs are not participating in the development of online education courses and programs at the same rate as PWIs (Nealy, 2009; Stuart and Yep, 2012). This lack of participation in this important technology trend could financially threaten HBCUs' survival in the future (Stuart & Yep, 2012; The National Center for Education Statistics, 2017; Snipes, Ellis, & Thomas, 2006). With this being the case, HBCU administrators may wonder why the development of these offerings is so low and inconsistent among HBCU institutions. Although institutional missions play a key role in initiatives for development, ultimately, faculty members are the driving force in the creation of courses. Currently, there are very few mandates where a faculty member is required to offer an online learning course section. Consequently, the development of such courses is purely based upon a faculty member's decision, experience with learning management systems such as Blackboard, and the ability to design such an offering (Chaney et al., 2009). It is important

to understand that variations in attitudes toward new technology exist among HBCU faculty members. Understanding these variations can contribute to the conceptualization of next steps to increase HBCU faculty members' participation in the development of online courses. Over the next decade, survival of HBCUs will depend upon matching the cutthroat competition in offering online education.

Threats to the Survival of HBCUs

Five threats to the survival of HBCUs were identified, several of which could be reduced by the continued development of online programming (Nealy, 2009). The first threat references decreasing enrollment and attrition. The second threat references staying competitive with newer and innovative technology driven institutions, specifically referencing large for-profit institutions such as the University of Phoenix. This university targets a similar minority population through their use of state of the art technology. This threat exemplifies the struggles HBCUs have keeping up with the implementation of current technology infrastructure, training, equipment and support. For profit institutions pour many resources into this area and consequently, gain access to a minority population that would normally attend an HBCU.

The third threat relates to the problems with equitable access and reliance on government funding. The fourth threat relates to the completion rate of students. The completion rate refers to the number of degrees conferred within a prescribed time frame that is appropriate for the level of degree. Completion rate is different from retention rate. Retention data review the number of students retained from freshman to sophomore year, whereas completion rate focuses on the end goal and gives an idea of how supportive an institution is of its students. The completion rate is important and is directly tied to federal

funding. The fifth threat relates to the traditional and conservative culture and policies of HBCUs (Nealy, 2009).

Consequently, exploring the second threat of keeping abreast of innovative technology is of most importance for this research study because it is important to understand the impact of current struggles HBCUs have with advancing technology, infrastructure and support in faculty members' development of online courses (Nealy, 2009; Hodge-Clark and Daniel, 2014; and Association of Governing Boards of Universities, 2014).

It is important to note HBCUs contribute to 17% of baccalaureate degrees for Black students in the United States (Gasman, Nguyen, Samayoa, Commodore and Hyde-Carter, 2013). While the number of online programs at HBCUs has increased, it can be concluded roughly only one third of 102 HBCUs offering these programs is not competitive enough to capture much of the 72.7% of undergraduate and 38.7% graduate students who are seeking to be enrolled in online programs (Anderson 2017). This slow rate of increase of online programs is a possible cause for a decreased market share among HBCUs.

Considering the large percentage of students likely to participate in online education, all HBCUs should offer online learning options. HBCUs should consider increasing their online education programming in order to stay competitive, address threats to longevity and to provide innovative technology access for their students and staff. Nealy (2009) discussed the importance of addressing these threats for the survival of HBCUs.

HBCUs should conclude the current numbers of online education offerings are not adequate for these college/universities to stay competitive (Beasley, 2014). They should continue to consider online education as a competitive modality of learning that can meet

the needs of their population. Issues remain with the enrollment, retention and revenue. HBCUs offering online programs are meeting success, but still development of these offerings remains low and inconsistent among institutions (Stuart and Yep, 2012). While mandates, vision, culture and school missions are important influences on development, faculty members' expertise, education philosophy, technology aptitude and personal time also play an integral role in the decision to develop online courses.

Current Work in the Field

Studies have shown positive attitudes toward technology from faculty members have contributed to higher levels of computer skill, ability to teach online, openness to accept university training and feeling more freedom of personal expression (Johnson, 2015; Pereira and Wahi, 2017; Glass 2017; Broussard and Wilson, 2018). This establishes the notion that attitudes can be associated with the desire or lack of desire to adapt to new technology and teach online. Similar findings were reported and suggest faculty members with high levels of computer skills were more likely to teach online (Johnson, 2015; Pereira and Wahi, 2017; Glass 2017; and Broussard and Wilson, 2018).

Recent research explores levels of innovativeness and its relationship to the use of online learning technologies as well as attitudes toward computers. Unfortunately, most of this research has been conducted at PWIs. Only a few studies were conducted at HBCUs (Lawrence, 2008; Keesee & Shepard, 2011; Johnson, 2008). As discussed by Nealy (2009), lack of participation in online education could financially threaten HBCUs' survival in the future (Stuart & Yep, 2012; The National Center for Education Statistics, 2017; Snipes, Ellis, & Thomas, 2006; Nealy, 2009).

Many researchers have used the foundation of Theory of Innovation by Roger (2003). Less (2003) investigated faculty member adoption of computer technology for instruction and used Rogers' (2003) five categories of innovation to classify faculty members. She then compared various demographic variables with faculty member levels of innovation. The findings were significant relationships exist between innovativeness, years of teaching and highest degree level.

Surendra (2001) used Rogers' (2003) framework to predict adaptation of web technology by faculty members and administrators at a university. It was found level of technology access and the amount of professional development were strong predictors of how members will adopt innovations. It was concluded Rogers' Theory of Innovation was a successful model to use to understand diffusion factors.

Studies on university faculty members have explored intent, attitude toward computers and development of online courses (Hsu & Chiu, 2004; Jiang et al., 2016; Lawrence, 2008; Tabata & Johnsrud, 2008). Tabata et al. (2008) suggested more research was necessary to understand faculty members' attitudes and beliefs toward the use of computer technology.

Faculty members' attitudes toward the adoption of online education was measured. Computer skill and positive attitudes were found to be the best indicators of intent to use the technology. Understanding attitudes toward computers is necessary to understand intention to use a technology (Ajzen, 1985, 1991; Al-alak & Alnawas, 2011; Padmavathi, 2016; Bourrie & Sankar, 2016)

This past research brings to light the importance of understanding the role faculty members play in the development of course offerings. At most colleges and universities,

departmental courses are developed by faculty members with expertise in the field. The traditional method of such instruction has always been face-to-face classroom learning. As technology availability has increased, some faculty members have pursued and been trained in additional methods such as online course development. Further, the development of such courses is purely based upon interest, intent and ability to design such an offering. Consequently, it can be surmised that although institutional vision and mission are an important consideration for development, faculty members continue to be major stakeholders in the development of such offerings (Chaney et al., 2009). This research study provides necessary contributions to previously explored literature by examining the relationship between HBCU faculty members' attitudes toward online education and levels of innovation. Additionally, the study explored the relationship between faculty members' attitudes toward online education and attitudes toward computers.

Statement of the Problem

Many HBCUs struggle with issues that jeopardize their success and longevity. Several researchers have examined the issues HBCUs face and have determined innovative technology, related infrastructure and support continue to be of great concern for HBCUs that are trying to compete with PWIs and for-profit colleges and universities (Nealy, 2009; Hodge-Clark & Daniel, 2014; Association of Governing Boards of Universities, 2014; Snipes, Ellis, & Thomas, 2006). Further, HBCUs are not participating in the development of online education courses and programs at the same rate as PWIs (Stuart & Yep, 2012; The National Center for Education Statistics, 2017, Snipes, Ellis and Thomas, 2006). Consequently, because online education is widely sought by students, HBCUs are missing the opportunity to recruit and retain students who seek those modalities.

Additionally, it is widely held that HBCU faculty members play an important role in the success of their students (Hirt, Amelink, McFeeters & Strayhorn, 2008). Historically, they have different pedagogical styles and social interaction methods than faculty members at PWIs (Hirt, et al., 2008; Guifrida, 2005). Consequently, it is important to study this specific demographic of educators as it relates to online education because perhaps variations exist among genders, races, age and other demographic characteristics of HBCU faculty members.

Overall, the use of innovative technology and sound infrastructure is inconsistent among HBCU institutions, and there remains a disparity with the use of technology between PWIs and HBCUs (Davis, 2009; Hill, 2012). There is some literature on how HBCUs are participating in online learning, but there is certainly not enough to contribute to this overall body of work. Further, there is a strong call by HBCUs and supporters of these institutions for research that explores these matters. This lack of literature on HBCUs and technology use should be concerning for stakeholders. Consequently, there is a need for more research in this area so HBCUs can continue to improve and remain competitive (Davis, 2009; Samayoa, Nguyen, Gasman, Commodore, & Abiola, 2016). This research study examined faculty members' attitudes and intentions toward technology and examined the relationship between these attitudes and faculty members' levels of innovativeness.

Purpose of Study

This study explored the existence of relationships between the levels of innovativeness, attitudes toward online education and attitudes toward computers amongst HBCU faculty members in a Mid-Atlantic state. This research further examined the

relationship between online teaching and the demographic variables such as age, gender, race, years of teaching experience, academic rank and faculty members' teaching experience. Understanding these traits is imperative for HBCUs as they continue to search for best practices for integrating the development of innovative technology such as online education programs.

Research Questions

1. What are HBCU faculty members' levels of innovativeness?
2. What are HBCU faculty members' attitudes toward online education?
3. Is there a relationship between HBCU faculty members' levels of innovativeness and attitudes toward online education?
4. Is there a relationship between HBCU faculty members' attitudes toward computers and attitudes toward online education?

Overview of Theoretical Framework

This study was informed by two theories: (a) Diffusion of Innovation Theory (Rogers, 2003) and (b) Theory of Planned Behavior (Ajzen, 1985, 1991). Researchers have applied Rogers' (2003) Diffusion of Innovation theory to understand innovativeness and their own processes of implementing online learning (Goncalves & Pedro, 2012; McQuiggan, 2006; Keesee & Shepard, 2011). This study explored two concepts from Diffusion of Innovation Theory: (a) innovations diffuse through social organizations while traveling through a five-step process where members make decisions to accept the innovation and (b) accepting the innovation is related to the categories people fall into as they move through understanding the innovation and determining whether they will use it. Rogers (2003) identified these categories as Innovators, Early Adopters, Majority, Late Majority and Laggards.

Innovators move the fastest and Laggards move at the slowest rate. It is important to understand innovativeness because this concept influences how quickly or slowly new ideas diffuse. The theory does not address attitude specifically. Consequently, Azjen's (1985, 1991) Theory of Planned Behavior contributes to the study and reviews attitudinal aspects toward a behavior and suggests people will possess intent to perform a task, such as accepting new technology like online education or using computer technology. Consequently, understanding attitudes that result in intent is equally important. The theoretical framework is built upon the assumptions that the levels of innovativeness influence the way in which technology diffuses across an organization and may be related to attitudinal causes that either allow for a swift, slow or impassable diffusion of innovation. Furthermore, a correlational study that surveys innovativeness and attitudes toward online education and computer technology is one way in which these constructs can be analyzed to determine whether there is a relationship between these variables for HBCU faculty members.

Significance of the Study

Existing research shows even though HBCUs are consistently interested in developing online programs to stay competitive and increase revenue, there remain concerns with the cost of faculty member development, training and technology infrastructure (Sturgis, 2012; Samayoa et al., 2016; Waymer, & Street, 2016). The findings from this study suggest possible next steps for professional development of faculty members and staff. The study informs further research on attitudinal aspects that can promote the growth and continued acceptance of online learning at HBCUs. This study has

the potential to inform policy and practice and contributes to the knowledge of contributing factors for low rates of online education offerings at HBCUs.

Determining whether there is a relationship between attitudes toward online education, level of innovativeness and attitudes toward computers is important because it can help researchers understand why new technology is more accepted by some and not all. Several studies have included these constructs individually for PWIs (Goncalves & Pedro, 2012; McQuiggan, 2006; Jiang et al., 2016; Kopcha & Walker, 2016; Hsu & Chiu, 2004; Tabata & Johnsrud, 2008). There have also been studies with these constructs on HBCUs (Keesee & Shepard, 2011; Johnson, 2008). However, no study has investigated these three variables together and their relationship with HBCU faculty members. It is important to note most of the research that exists on these variables has been conducted at PWIs. There are a few recent studies on HBCUs that have examined these or similar variables and even the general concept of progress in online education (Keesee & Shepard, 2011; Johnson, 2008). This research answers the call of Nealy (2009) to conduct more research and address some of the threats to HBCUs, such as staying competitive with technology. In addition, there is very little published research on use of online education and the impact of the growing trend of online education at HBCUs. This research adds to the body of literature on academic studies completed at HBCUs.

Limitations

This study has several limitations. First, the surveys given were sent electronically and may have deterred those who are not so technologically inclined. In addition, the sample size may not be representative of the larger population as more people who possess higher levels of innovativeness may have elected to complete the survey without regard.

Other limitations may include lack of honest responses from the participants. Participants may have felt they had to be efficient with technology to be an instructor or may have expressed hesitancy with exposing his or her technology limitations.

Delimitations

In this study, participants were delimited to HBCU faculty members. Surveys were sent to full time and part time faculty at HBCUs who teach online courses and participants who teach traditional face to face courses. The researcher delimited the participants to faculty and not students because faculty members are the driving force in the development of online courses and programs.

Definitions

1. Attitude: Azjen (1985, 1991) finds attitude is an individual's pre-existing emotions, beliefs and intentions about the world.
2. Attitude toward Computers: Azjen (1985, 1991) finds attitudes are pre-existing beliefs and Christensen and Knezek, (1996) explore these ideas as they relate to computers and technology.
3. Level of Innovativeness: Rogers (2003) finds level of innovativeness are descriptive categories people fall into as they decide to accept or reject a technology.
4. Attitude toward Online Education: Azjen (1985, 1991) finds attitudes are pre-existing beliefs and Mishra and Panda (2007) explore these ideas as they relate to online education.
5. Diffusion: Rogers (2003) finds diffusion represents the process a new innovation travels through by communication methods in a social organization from entry to 6. acceptance.
7. Innovativeness: Rogers (2003) identifies the characteristic of being innovative and choosing to use new technology is available to the social organization.

8. Innovation: Rogers (2003) refers to innovation as a new idea, tool or technology such as online education.

9. Intent: The logical and reasoned decisions individuals make to participate in a behavior based upon his or her evaluation of available information. In this research study, an individual's attitude predicts intent to perform a task. (Ajzen, 1985, 1991).

Organization of the Dissertation

This chapter included the background of the problem, statement of the problem, purpose of the study, research questions and significance of the study, assumptions, limitations and the definition of terms. In the next chapter, literature review and theoretical framework are presented. This is followed by the description of methodology used to collect and analyze data in chapter 3. Chapter 4 presents findings related to the research questions. Chapter 5 presents summary and the discussion of the findings. This is followed by the recommendations and the implications of the study.

CHAPTER 2: LITERATURE REVIEW

This chapter presents the theoretical framework that guided the study and the literature review relevant to the research focus of this study. This literature review was conducted with a systematic approach (LibGuides, 2018). First, research questions were developed that would guide the study after initial scanning of the literature. Next a detailed literature search was performed in a library database, searching for peer reviewed articles and texts with related literature. Additionally, an internet search was also performed for primary and secondary sources. The researcher then compiled literature data in a matrix based on predefined categories of interest that were related to the variable constructs. The completed matrix was used to write the literature review. Although there is limited research that focuses on HBCUs and the constructs in this study, there is much literature on the individual variables studied at PWIs. This chapter reviews theoretical and empirical research that informs this study. It explores literature on online education at HBCUs and contributing factors for slow growth and examines research that uses the same or similar variables proposed in this study with a review of his or her methodology and findings.

Theoretical Framework

The study is informed by two theories: (a) Diffusion of Innovation Theory (Rogers, 2003) and (b) Theory of Planned Behavior (Ajzen, 1985, 1991).

Diffusion of Innovation Theory

Diffusion of Innovation Theory helps to frame the speed in which a user chooses to adopt a new technology (Rogers, 2003). First, it is important to have background

understanding on how a new technology is accepted in an organization. Diffusion of Innovation Theory presents the idea that innovations, such as technology, are more accepted based on the type of innovation, communication channels, time and the social system.

Five Step Process for Making the Decision about Innovation. Rogers (2003) uncovered a phenomenon where he found innovations were diffused or communicated through channels over time to members of the particular social system. Rogers (2003) suggested members of a social system travel through a five-step process in order to make the decision to accept the innovation. The first step in the process is *Knowledge*, where the person learns of the innovation and has a general idea of how it works. The second step in the process is *Persuasion*, where the person forms a positive or negative attitude toward the innovation. The third step is the *Decision*, where the person engages in activities such as self-knowledge, training, or pressure that lead to the choice to adopt or reject the innovation. The fourth step is *Implementation*, where the person begins to use the innovation. The fifth and final step is *Confirmation*, where the person evaluates the results of the innovation decision that was made. It is important to note members of a social system tend to make their own decisions to use an innovation based on the innovation decisions of other members in the system. Rogers (2003) finds usually after ten to twenty five percent of members adopt an innovation, there is usually rapid adoption by remaining members then a slow down as individuals begin to finalize their decisions to adopt. Figure 1 summarizes the decision-making process of innovation.

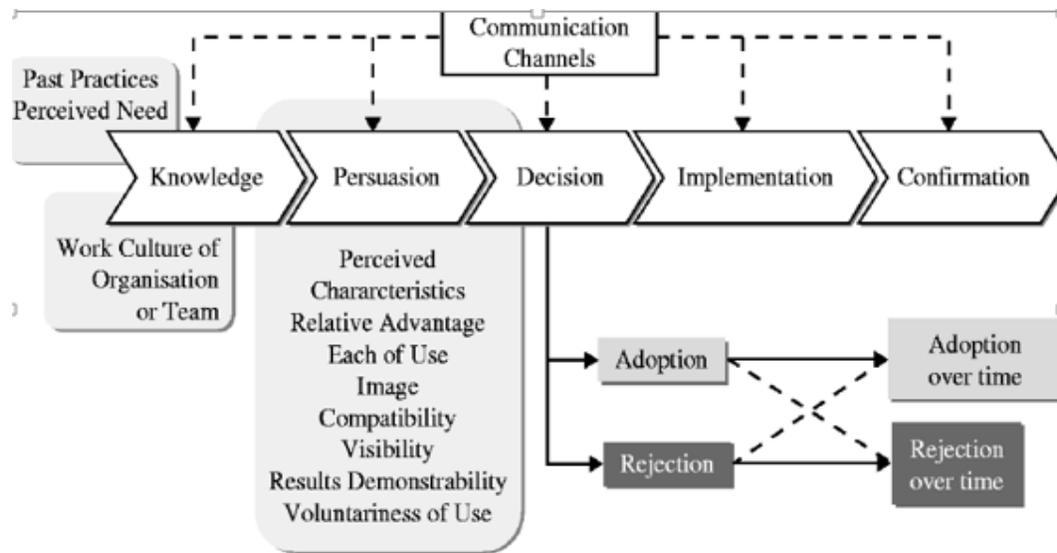


Figure 1. Communication Channels (Rogers, 2003, p. 171)

The first concept from Rogers (2003) provides background on how an innovation such as online education may move through communication channels and be accepted by faculty members. This theory informs this project in several ways. Rogers (2003) discussed the step of persuasion in his Diffusion of Innovation theory and found that during this step, people develop positive or negative attitudes toward innovations. Rogers (2003) found it is important to explore the attitudes that exist on the innovation and why some are persuaded at a faster rate than others. In the case of this research, the innovation is online education. This was the basis for the development of the research question to determine whether a relationship exists between HBCU faculty members' levels of innovativeness and attitudes toward online education.

Levels of Innovativeness. The second concept from Rogers' (2003) Diffusion Theory that will be used to inform the research is the discussion of the five categories of innovativeness faculty members may fall into as they begin to consider adopting a new technology. This is particularly important because one can presume as faculty members

move through their experiences with new technology they will eventually reach the next category and consequently the technology adaptation, resulting in the continuous move through the communication channel. Rogers (2003) described the first and highest category as Innovator. Innovators are people who want to be the first to try out the innovation. They tend to be interested in new concepts, are willing to take risks and do not need much encouragement to adopt an innovation. The second category is Early Adopter. Early Adopters are people who are usually in leadership and are open to changing ideas. They are comfortable with accepting new ideas but may perhaps need instructions and training. They do not need much encouragement to adopt an innovation. The third category is the Early Majority. *The Early Majority* are usually not leaders, but they will adapt to new ideas before the average person adapts to the same idea. They like to see success stories with innovations and evidence the innovation is effective. The fourth category is the Late Majority. This category of people are skeptical of change and tend to be slow with adopting an innovation. They prefer to wait until many others have tried it. They prefer to see success and what happens when others try the innovation. The fifth and lowest category is Laggards. Laggards are very traditional and conservative. They are skeptical of change in general and it is very hard to win them over to trying an innovation. People in this category often need statistics, pressure and requirements to accept an innovation (Rogers, 2003). These five categories are described in Figure 2. It is important to examine how this theory was applied in previous research studies in order to determine best practices for examining the variables discussed.

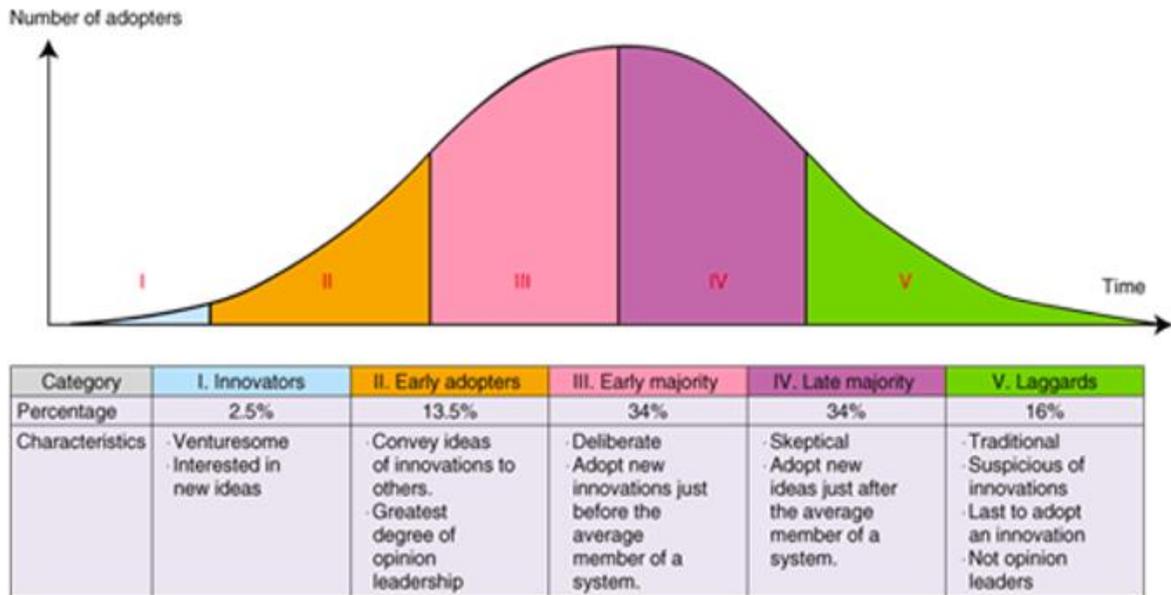


Figure 2. Adopter Categorization on the Basis of Innovativeness (Rogers, 2003, p. 281)

Research based on Rogers’ Classification of levels of Innovativeness.

Goncalves and Pedro (2012) used descriptive methods and demographics to analyze 2020 faculty members and their course offerings in order to understand the innovation categories they fell into and their attitudes toward online learning at the University of Lisbon. They found 2.5% of the faculty members were Innovators and 34% were Early Adopters. Additionally, 34% were found to be Late Majority, followed by Laggards at 16%. The authors discussed how faculty members became ready to accept online learning technologies at different times. The researchers also found faculty members began using online learning methods in different ways and consequently had different perspectives and success with the usage. One area not discussed within this research was the availability of training for all faculty members, which could contribute to the varying perspectives on success.

A similar study was conducted by Keesee and Shepard (2011). The researchers applied Diffusion Theory and used levels of innovativeness to understand the attitudes and the intent. Their study on five HBCU institutions took place in North Carolina. Keesee et al., (2011) surveyed 137 faculty members to analyze a pattern of predicting intent to use online education. Complexity, compatibility and advantage were the variables analyzed against the ability to use the technology. More specifically, these variables were analyzed and were reported to have a significant relationship to the levels of innovativeness of faculty members. This study analyzed the impact of attitude and intent toward complexity, compatibility and advantage against levels of innovativeness. In contrast, the current research study analyzed the attitudes against the levels of innovativeness.

Additionally, McQuiggan's (2006) performed a study of 161 PWI Mid-Atlantic higher education faculty members and utilized Rogers' (2003) framework and analyzed attitudes of online learning technologies by adopter and non adopter faculty members. The study found adopters were more innovative than non adopters and the innovations diffused more slowly with non adopters, who tended to have many concerns about online learning technologies. This study is similar to the studies of Goncalves and Pedro (2012) and Keesee et al., (2011) in the application of Rogers' (2003) Diffusion of Innovation Theory in that it analyzes innovation against identified variables. However, it offers a variation by splitting innovation levels into two distinct categories: adopters and non adopters.

Kopcha and Walker (2016) performed a mixed methods study on 20 faculty members at a university in the Southeastern United States. The purpose of this research was to understand faculty members' perceptions about teaching and technology. The authors found four levels of characteristics of faculty members. The first three levels valued

technology's role in teaching, while the last characteristic level was cautious and skeptical use of technology and innovations in teaching. The first three levels of faculty members that supported technology innovations were categorized and divided again into Deeper Understanders, Deeper Purpose Seekers and Big Picture Reflectors whose titles all accurately describe how faculty members viewed their reasoning for adopting technology innovations. The researchers concluded faculty member beliefs and perceptions on technology were strong predictors of their decision to use it with their students. This study used a mixed methods approach and Q methodology which is a method of factor analysis for measuring subjectivity quantitatively through questions. Perhaps more could have been gained from a full qualitative study given the sample size of 20. The study also continues to support Rogers' (2003) idea levels of innovativeness exist, although in this research study the identified levels were renamed as Deeper Understanders, Big Picture Reflectors and Deeper-Purpose Seekers.

From this body of research, it is surmised that level of innovativeness has been a predictor of the use of online learning technologies for PWIs; attitudes toward computers could also be a predictor as well. Further, performing a correlational study upon HBCU faculty members would examine the relationship between the specified variables and determine whether there are significant relationships for minority serving institutions as well.

Theory of Planned Behavior

The second part of the theoretical framework comes from Azjens' (1985, 1991) Theory of Planned Behavior. According to this theory, a person's intent to perform a task can be predicted based on his or her attitude toward a behavior. The Theory of Planned

Behavior finds the relationship of attitudes can be explored through individual norms, self-efficacy and perceived behavioral control. Azjen (1985, 1991) extends Bandura's (1997) idea of self efficacy as a belief that a person has about being able to accomplish something, by adding that it also refers to the perceived behavioral control. Azjen (1985, 1991) posits a person's belief of how much control he or she has over performing a task is related to the belief one will be successful at performing the task. He also refers to the individual norms as the pressure one may feel from his or her social setting to perform the behavior or task. Consequently, when applying Rogers' (2003) specific levels of innovativeness, one could conclude, if Azjens' (1985, 1991) work is appropriate, then there may be a relationship between the levels of innovativeness of faculty members and their attitudes toward online learning and attitudes toward computers. It would then make sense to utilize Azjens' (1985; 1991) theory to explore how a faculty member attitudes are related to their use of computers or teaching online. Exploring this concept contributed to the research question to determine whether relationships exist between HBCU faculty members' innovation and attitudes toward computers as well as attitudes toward online education.

Several studies on university faculty members have examined the intent to use technology, including computers and the development of online courses and programs (Hsu & Chiu, 2004; Jiang et al., 2016; Lawrence, 2008; Tabata & Johnsrud, 2008). Variables examined in these research studies included attitude, perceived behavior control, self-efficacy, social identity, demographics and adoption of innovations. The research is varied in topics and use of constructs. Much of the research utilizes common theories, such as Rogers' (2003) *Diffusion of Innovation* and Azjens' (1985; 1991) *Theory of Planned Behavior*, which allows for analysis using many of the aforementioned variables. In the

present study, the variables of innovativeness and attitudes toward computers and online education were examined.

Research based on Theory of Planned Behavior (Ajzen, 1985; 1991)

Hsu and Chiu (2004) performed a study where they attempted to develop a model to predict usage of an Eservice technology by applying the theory of planned behavior. The researchers used survey methodology and looked at attitudes toward a behavior by analyzing the self-efficacy and controllability of 276 survey respondents. They analyzed the data using a test of instrument model and a test of structural model. The findings suggest there was a relationship between Internet self-efficacy on intention, but individuals' expectations were the main determining factor for the intention to perform the behavior of using an Eservice technology.

In contrast, one group of researchers chose to analyze intentions that contribute to their attitudes toward a behavior. Jiang et al. (2016) performed a correlational study on 505 participants to predict their intentions to use technology to microblog using survey methodology. The results of this study showed social identity, attitude and perceived behavioral control were significant and the top predictors of intention. The findings of this study show it will be important for future research to consider various demographic characteristics contribute to attitude.

Tabata and Johnsrud (2008) analyzed 2,048 faculty members at a public university system using survey methodology. Through ordinal regression analysis, they found there was a direct relationship between (a) faculty members' development of online courses and demographics, (b) attitudes toward technology and online education and adoption of

innovation. They recommended continued research was needed to understand faculty members' attitudes and values toward the use of computer technology.

Surprisingly, Lawrence (2008) was one of the few researchers to study these same effects on HBCUs. The researcher used survey methodology and performed a study of 308 HBCU faculty members and their level of computer skills. Using descriptive statistics, the data were analyzed for demographic variables and other variables such as organizational support, faculty members' computing skills, access and availability of computing resources at faculty members' homes. The study found faculty members had a positive attitude toward technology and were using it to the extent of their capabilities.

In summary, research presented above showed the existence of a direct relationship between faculty members' attitudes and the usage or development of the technology innovation (Hsu & Chiu, 2004; Jiang et al., 2016; Lawrence, 2008; Tabata & Johnsrud, 2008). However, Tabata and Johnsrud (2008) and Lawrence (2008) also discussed the relationship of these attitudes toward the concept of diffusion of innovation.

It is important to note most of the research reported above was completed at PWIs. Lawrence (2008) noted there was very little research on HBCUs and faculty members' attitudes toward technology, computing and online learning. Consequently, there is a gap in the literature on determining the relationship between HBCU faculty members' attitudes toward computer technology and their levels of innovativeness. The proposed research study attempts to contribute to the growing body of research needed to assist HBCUs in determining best practices for the future.

Factors Contributing to Slow Development of Online Courses at HBCUs

Several ideas have been discussed that contribute to understanding the lack of development of online courses and programs within HBCU institutions. Flowers, White, Raynor and Bhattacharya (2012) found much of the issue was due to the result of institution size, cost of programming and the scope of development of such online programs. Arroyo (2014) discussed ideas that university faculty members and university presidents thought HBCU distinctiveness or tradition could be upset with increased development of online courses (Harkness, 2015). Lorenzetti (2009) discussed the digital divide and that its impact may affect the ways in which HBCUs and their faculty members participate in online teaching and learning.

In one case, an HBCU collaborated with a third party that manages online learning quality standards. Faculty members had concerns about intellectual property and workload for teaching online (Harkness, 2015). During this project, faculty members experimented individually and worked to gain technology support in their endeavors. The continuance of the program was questionable as leadership changed; however, many faculty members remained interested and worked to develop online courses. It was concluded individual motivation, administration leadership and mission statements continue to drive online course development (Harkness, 2015).

HBCUs have also encouraged faculty researchers to explore other models of online education such as open access courses that can help universities expand their offerings and accept more non-traditional students (Samayoa et al., 2016). Concerns remain about collaborating with third party vendors, financial impact and student-teacher interactions (Harkness, 2015).

HBCUs that offer online programs are experiencing success and continued program development when accepted by the institution and faculty members who are developing and teaching the courses (Harkness, 2015). Consequently, the question becomes, whether there are correlating factors that contribute to faculty members at some HBCU institutions being more accepting of online programs and as a result, spurring program development at a faster rate at some institutions than others. Understanding this problem is important because online programming is essential to remaining competitive and most importantly, continuing to exist as HBCU Colleges and Universities (Flowers., et al, 2012). The literature review supports the need for continued studies.

HBCU and Current Online Education Needs

The literature reflects much discussion and many calls for HBCUs to put their best foot forward in the online education market and to embrace the opportunity (Smith, 2011; Sturgis, 2012). The discussions show a disdain toward the increasing traditional HBCU market share being absorbed by for profit institutions and PWIs that have online competitive offerings. In one instance, it was discussed that large for profit entity, University of Phoenix spent \$222 million on marketing their online offerings. In general, HBCUs do not have the financial revenue to counter such marketing. Nonetheless, tradition and support of HBCUs remain strong and the opportunity exists to maintain, regain and stay competitive (Smith, 2011).

HBCU administrators are beginning to consider the need and opportunity for institutions to enter into online learning (Sturgis, 2012; Samayoa et al., 2016; Waymer, & Street, 2016). Minority serving institutions are reviewing online learning and considering it an option as more and more students turn toward enrollment in online schools and

programs. Several HBCUs are turning toward nontraditional students and are focusing on strengthening their enrollment through online offerings. Hampton University Online has had success with online enrollment and had about 400 students in 2012. They were the first HBCU to offer online degrees (Sturgis, 2012). In addition, there are several online initiatives sponsored by powerful HBCU alumni, such as Tom Joyner, who have jumped on the trend of supporting the development of online programs at minority institutions. Although several institutions have joined in the trend in the development, there is still hesitancy about its success and the economic, political and social impacts of such a drastic change in this aspect of learning (Sturgis, 2012).

As HBCUs continue to look for funding options to sustain their institutions, increasing online education opportunities allows institutions to be competitive with PWIs as well as For Profit Colleges. It was found while enrollment is down for many HBCUs, enticement for students through offering non traditional methods of learning has shown to be helpful especially in current economic situations (Waymer & Street, 2016).

Faculty Attitudes toward Online Education and Technology

One of the purposes of this research is to examine HBCU faculty members' attitudes toward online education. Therefore, it is important to examine general attitudes of faculty members from primary white institutions toward online education in order to have the complete picture and contribute to the overall conversation and findings of this research project.

There is a consistent demand for online courses in higher education. Although many schools offer these courses, historically, there have been faculty members who have had some concerns about teaching online, but still chose to participate in the development of

this learning modality (Tabata & Johnsrud, 2008; Wickersham & McElhany, 2010; Mandernach, Mason, Forrest, & Hackathorn, 2012; Lee, March, & Peters, 2015).

The literature shows both negative and positive attitudes toward online learning. More often than not, negative attitudes may have resulted from the lack of computer skills, workload and lack of university support (Mitchell & Geva-May, 2009; Chen, 2009; Grossman & Johnson, 2015; Pereira & Wahi, 2017; Glass, 2017). On the other hand, positive attitudes from faculty members have contributed to higher level of computer skill, previous experience teaching online, university training and the ability to maintain personal expression (Johnson, 2015; Pereira et al., 2017; Glass 2017; Broussard & Wilson, 2018).

Tabata and Johnsrud's (2008) study of two thousand forty eight faculty members was framed in Azjen's (1985, 1991) theory of intent as previously discussed. This study also reviewed attitude as a predictor of intent. They found positive variable attitude indicators associated with the increased likelihood of faculty members participating in online education and negative variable attitude indicators associated with decreased likelihood of participating in online education. Tabata and Johnsrud (2008) suggested positive attitude indicators resulting in the likelihood of faculty members participating in online education were (a) faculty members who were skillful with using technology, (b) belief technology is important to his or her work, (c) having training in online education instruction, (d) belief online education is similar to traditional education and (e) belief online education technology is easy to use. In contrast, negative attitude indicators resulting in the decreased likelihood of faculty members participating in online education were as a result of (a) the belief technology support was low, (b) the institution did not value online education and (c) there were more disadvantages than advantages to teaching online.

These study results are important because they establish there are general attitudes that can be associated with the likelihood or decreased likelihood of teaching online. Further, it was found, faculty members who had positive attitudes toward the technology were more likely to teach online. Some other studies reported findings that were similar regarding faculty members' positive attitudes toward technology as well as proposing that faculty members with higher skill levels with technology were also more likely to teach online (Johnson, 2015; Pereira & Wahi, 2017; Glass 2017; Broussard & Wilson, 2018).

Several researchers identified factors that contributed to faculty members' negative attitudes toward online education. Mitchell and Geva-May (2009) found faculty members' attitude and acceptance of online learning were influenced by intellectual reluctance, support, change and benefits. They purported that addressing these concerns encourages development of online learning. In another study, faculty members had major concerns with their workload and felt there was often a lack of reward for investing so much time in developing courses (Chen, 2009). Wickersham and McElhany (2010) also found many faculty members were concerned about their workload as well as their time to design, develop and teach an online course. In this study, faculty members also were not convinced their course content would translate or have the same rigor as of a face to face course. In addition, these faculty members noted they consider online teaching to have less interaction in comparison to what their students would receive from traditional courses. Further, faculty members were concerned with popularity of online courses, support by their administrators, strong enrollment and whether administration views these courses as serious offerings. Finally, faculty members were concerned with student technology ability and student perceptions and attitudes toward online courses. They thought students

considered the courses to be easier than traditional methods (Wickersham & McElhany 2010).

Mandernach, Mason, Forrest and Hackathorn (2012) studied psychology faculty members' attitudes and perceptions of online teaching. This study found in general faculty members felt there was a lack of support from their institution and department for teaching online. Another faculty member's belief was student interpersonal abilities in the field could not be properly assessed for interactive degrees such as clinical psychology. Interestingly, this study valued the importance of identifying whether faculty members had previously taught online courses and categorized the results with over forty percent having reported to have taught online or developed online curriculum. Conversely, roughly sixty percent of faculty members had not taught online, which could have some type of contribution to the belief students could not be properly assessed. One area that could have been improved and was similarly referenced in the discussion on Tabata and Johnsrud (2008) was thirty one percent of these faculty members surveyed were adjunct. It seems level of employment could also contribute toward lack of commitment to participate in online learning, due to time factors or the fact that developing an online course is often an unpaid voluntary practice.

Other researchers also report faculty members who teach online or had more training were more likely to have positive attitudes. Jaschik and Lederman (2014) found faculty members who have taught online have a more positive view of technology and teaching online than those who have not. Those same faculty members were also more likely to agree students' learning objectives could be achieved through online learning. They also suggested faculty members who took training to teach online had more positive

attitudes toward online teaching. The findings of Jaschik and Lederman (2014) support the findings of Lee, March and Peters (2015) who also examined faculty members' attitudes toward online education. Their purpose was to determine whether attitudes would change over time as a result of taking the training course. The results showed attitudes were positive after having been trained on the technology. Faculty members' attitudes toward online teaching shifted after training, teaching, or both. This is not to say there was a change overall in instructors' outlook, but perhaps teachers found online education to be somewhat more valuable than originally believed. However, these changes in attitudes were decidedly more marked after teaching a course online compared to merely being trained to do so. Based on the review of these studies, it can be surmised participation and continued training contribute to positive attitudes toward teaching online.

In some instances, faculty members have had less favorable views of students who participated in online education and tended to favor students from traditional face to face courses. The contributing factors have been related to questions on rigor and in some cases department affiliation (Grossman & Johnson, 2015; Pereira & Wahi, 2017). Some faculty members were found to have negative attitudes toward online learning because they deemed a teaching modality was less rigorous than face to face learning. Further, faculty members that had less technical and soft skills were likely to have a negative attitude toward online learning. However, this negative attitude about online students and online education was found to be minimized if the faculty members had previously taught online and had more computer skills (Grossman & Johnson, 2015).

In addition to experience and computer skills, negative attitudes toward online education were often associated with department affiliation. Pereira & Wahi (2017) found

faculty in nursing, business administration, English, industrial technology and other interdisciplinary studies departments were likely to have less positive attitudes toward online education and consequently would need more support from their administrators and universities. Further, it was found, there was variance in attitude toward online education with less positive attitudes from faculty members who were tenured, had higher rank or infrequently used online education technology. It was also reported they were more likely to have less than positive attitudes and self-efficacy toward technology and computers (Pereira & Wahi, 2017).

The literature also shows faculty members were found to have positive attitudes toward online learning when certain conditions were met. Pereira and Wahi (2017) reported findings that faculty members' attitudes toward online education were more positive when an approach was implemented that supported training for faculty members. This encouraged faculty members to have a more positive attitude toward online education technology and contributed to increasing positive attitudes amongst faculty members for the continued development of courses.

Glass (2017) performed a study that found faculty members' attitudes toward online education were shaped by their ability to personally express and convey the subject matter online as well as their ability to maintain their social role and pedagogical style that they valued within their courses. Faculty members who were able to have personal expressions found more meaning in their courses and had more positive attitudes toward online education. Faculty members who mentioned "narrowed expressions" had less positive attitudes toward online education. "Narrowed expressions" often occurred in standard curriculum and cannot be personally modified. Broussard and Wilson (2018) also

reported in a recent survey that nursing faculty members who had previously taught online and had familiarity with computers had positive attitudes toward the learning outcomes of students in both hybrid and online courses and felt the courses offered the same outcomes as face to face courses.

Summary. Overall, the attitudes of faculty members toward online learning at PWIs have been both positive and negative. Faculty members' attitudes were impacted by computer skills, workload, training, experience teaching online and academic freedom. The variables impacting these attitudes contributed to the overall development or lack of development for online courses. From the review of related literature on faculty members' attitudes toward online learning, it is clear HBCU faculty members' attitudes toward online education should be measured as well as computer skills as this was a variable impacted by attitude results.

Faculty Attitudes toward Computers and Intent to Use Technology

Understanding faculty members' attitudes toward computers is an integral part of understanding intention toward using a technology (Azjen, 1985, 1991; Al-alak & Alnawas, 2011; Padmavathi, 2016; Bourrie & Sankar, 2016). Several studies have measured faculty members' attitudes toward the adoption of online education (Al-alak & Alnawas, 2011; Bourrie & Sankar, 2016). It was found computer experience and positive attitudes toward computers were the strongest indicators of behavioral intentions. One study suggested when a teachers have prior experience with a computer technology that is similar to the new technology, they are more likely to have a more positive attitude toward the computer technology and consequently more likely to use it (Al-alak and Alnawas, 2011). Similarly, Bourrie and Sankar (2016) performed a correlation study using survey

methodology. They used linear regression analysis of the responses of 336 participants and descriptive statistical analysis. The authors found attitudes toward computer related technology was impacted positively by how easy the technology innovations were to use. The determination by faculty members of ease of use was directly related to the intention to adopt the computer technology. In addition to the findings of Al-alak and Alnawas (2011), Bourrie and Sankar (2016) found that if faculty members had a positive attitude toward a computer technology, their peers were more likely to share their positivity. It was also found that faculty members who cared about their student learning outcomes were more likely to use new computer technologies. Poor attitudes toward computer technologies were found to be the result of the faculty member having a lack of time, proper training, intrinsic motivation and lack of technical skills. It was concluded easy to use computer technologies contributed to more positive attitudes toward computers.

Padmavathi (2016) performed a correlational study of 110 student teachers' readiness to use computers in teaching. Analysis of data using Pearson correlation and MANOVA suggested attitude in conjunction with training and experience in using computers leads to the use of computers. It was found teachers who had years of computer experience were more likely to have a positive attitude toward computers. The discussion of these findings is important because Theory of Reasoned Action (1980) purports in terms of computers, if people think that using computers is positive and others think so too, they are more likely to use computers and think they are positive as well. One of the theoretical frameworks used in this research study is Azjen's (1985, 1991) Theory of Planned Behavior, which is an extension of his Theory of Reasoned Action (1980). This theory finds people are more likely to perform a behavior if they feel they will be met with success.

Azjen (1985, 1991) found people must have a belief in their ability to perform, which transfers to their intent. Consequently, Padmavathi's (2016) findings suggest a positive attitude toward computers is achieved by training and experience, which then boosts self-confidence and thus contributes in developing the positive attitude toward computers. This research project will use components of Azjen's (1985) Theory of Planned behavior to explore attitude toward computers as it is an integral part of contributing to a person's confidence level, which according to this theory contributes toward the intent to use a technology.

Moreover, research shows attitude toward computers is an indicator of intent to use a new technology. The literature shows there is a relationship between attitude and intent. Consequently, within this research the goal is to measure faculty members' attitudes toward computers and determine whether they is positive or negative. Understanding these results and comparing them to attitudes toward online learning can help to determine whether a correlating relationship exists between these two variables.

Summary

This chapter described the theories of Rogers' (2003) Diffusion of Innovation and Azjen's (1983, 1991) Theory of Planned behavior to establish framework for the study of the relationship of HBCU faculty members' level of innovativeness, attitude toward online education and attitude toward computers. Understanding whether a relationship exists will shed light on next steps to professionally develop and train HBCU faculty members to implement online learning and course development.

The literature showed many studies reviewed the aforementioned variables individually, but many did not include multiple variables and extensive demographics as

in this study. Further, the research was widely performed at PWIs and there is a need for more literature on HBCUs and implementation of current technology, in particular, online learning. The chapter discussed the need for HBCUs to become more advanced with technology and explored several existing studies by HBCU researchers on online education as well as the call for scholars to perform more research and add to the existing body of work on HBCUs and online education.

CHAPTER 3: METHODS

The purpose of this chapter is to discuss the research methodology used in this correlational study. This chapter will describe (a) the research design, (b) sample selection, (c) procedures, (d) data collection methods, (e) data collection instruments and (f) data analysis methods. The sample selection section will describe the criteria for selection and the sampling method. The procedures section will discuss how the data were collected and what collection tools were used to perform the study. This will be followed by the discussion of the reliability and validity of these tools. The data analysis section will discuss the statistical tests performed and the selection process.

This study first determined HBCU faculty members' levels of innovativeness and their attitudes toward online education. Next, the study explored if there is a relationship between (a) HBCU faculty members' levels of innovativeness and attitudes toward online education, (b) faculty members' attitudes toward online education and their attitudes toward computers. Additionally, the demographic variables: gender, discipline, race, age, faculty rank, taught online and years teaching, were analyzed against the levels of innovativeness, attitude toward online education and attitudes toward computers to determine whether a relationship exists. This study answered the following research questions:

1. What are HBCU faculty members' level of innovativeness?
2. What are HBCU faculty members' attitudes toward online education?
3. Is there a relationship between HBCU faculty members' levels of innovativeness and attitudes toward online education?

4. Is there a relationship between HBCU faculty members' attitudes toward computers and attitudes toward online education?

Research Design

Rationale

Quantitative research methods are used to examine relationship between variables (Creswell, 2018). Data are analyzed through statistical measures. They are collected in a numeric format and results are displayed in written format, graphs, charts and tables. The researcher used a correlational research design to examine demographics, the attitudes toward online education, attitudes toward computers and level of innovativeness of the participants. Correlational research seeks to identify relationship between variables (Creswell, 2018). This research used cross sectional survey methodology to collect quantitative data from the participants at one time. This type of survey method allows inferences to be made on one set of population for period of time (Creswell, 2018). The strength of this design is that it may be easier to do for many types of industries in comparison to experimental designs, which are often not possible because of logistics or legalities.

This research design is appropriate for the study because its purpose was to determine the strength of relationship that may exist between the variables of interest. The study explored the relationship between: (a) attitudes toward online education and attitudes toward computers and (b) levels of innovativeness and attitudes toward online education. The design also explored whether gender, race, age and discipline, rank, taught online and years of teaching have stronger or weaker relationship with the aforementioned variables.

A limitation to this design is that correlational research does not determine causal factors, specifically because there is no experimental condition.

Data Collection

The target population of this research was HBCU faculty members. The researcher received institutional IRB approval from a large Mid-Atlantic HBCU to perform this study. HBCU faculty members were sent emails inviting them to participate in the study with a link to the electronic surveys located in Survey Monkey (See Appendix A). Participants were provided with informed consent forms prior to taking the study (See Appendix B). The study was thoroughly explained in an introductory letter and participants were alerted of the opportunity to opt out at any time with no penalty. The survey took place over a period of two weeks. Two follow up emails were sent to participants as well as follow up phone calls to encourage completion of the study via the electronic link. All surveys from this research study were completed electronically and participants received "thank you" notes via emails after the confirmation of completed surveys.

Sample

A total of 554 surveys were electronically distributed with a 20% response rate. The convenience sample of 110 participants was obtained from two HBCU institutions in a Mid-Atlantic state. Best practices of correlation research require a minimum of 30 participants (Creswell, 2018). Demographic categories were extensive prior to data collection but were then reduced and re-grouped based on completed answers. The categories used in the data analysis study were: gender= male, female; Ethnicity= black, white, other; Age= 26–37, 38–49, 50–61, 62+; discipline=arts, humanities, social sciences, education, business, STEM and other; faculty rank= professor, associate professor,

assistant professor and lecturer/adjunct; taught online= yes or no; length of teaching= 0–5, 6–11, 12+. The only participant eligibility requirement was that they taught at an HBCU.

Convenience sampling is a type of nonprobability sampling where the target population is deemed easily accessible, willing and available to the researcher (Creswell, 2018). Eitkan, Muserand Alkassim (2016) found this type of sampling provides ease of use for research studies because of access and willing participants. It is also suggested researchers describe how this sampling would differ from a randomly selected sample as well as what subject may be excluded or overrepresented. In this case, it can be inferred convenience sampling would produce similar participants as a randomly selected sample because the researcher allowed for a wide range of demographic, discipline and employment eligibility, delimiting only to the requirement of being employed at an HBCU. As in most survey studies, the researcher had no control over who would respond to the survey but did have access to the subjects to whom the survey was submitted. The researcher did not have an eligibility requirement other than faculty employment at an HBCU, so it is unlikely members were purposefully excluded or overrepresented. However, Eitkan, Muserand Alkassim (2016) argue convenience sampling may not be representative of the entire population. This was also discussed in the limitations of this study.

Procedures

Data Collection Instruments

The research design employed a survey method of collecting data. The researcher measured the constructs of attitudes toward online education, attitudes toward computers and levels of innovativeness. The researcher obtained written permission from each survey

developer to use the surveys for this project (see Appendix C). All surveys used were deemed reliable and valid by published research testing of the instruments. Reliability refers to the consistency of an instrument and its ability to measure similarly each time. Reliability is estimated through testing and retesting to estimate accuracy. Validity measures how accurate the assessment is and if it measures what it is intended to measure. HBCU faculty members were sent emails with a link to the electronic survey on Survey Monkey as discussed previously in the procedures section. The data collection window was two weeks. Data capture methods kept all participants anonymous and did not collect individual identifying information. One hundred ten participants completed the electronic survey.

The following survey tools were used: (a) Faculty Attitudes Toward E-Learning, (Mishra and Panda, 2007) to collect data for attitudes toward online education, (b) the Teacher Attitudes Toward Computers Scale (TCAS) to collect data for attitudes toward computers and (c) the Measurement of Innovativeness II (Hurt, Joseph and Cook, 1977) to collect data for innovativeness (see Appendix D). Participants completed the study by answering the questions according to a 5-point Likert scale of 1=Strongly agree, 2=Agree, 3=Does not apply, 4=Disagree, 5=Strongly disagree.

The Faculty Attitudes toward Online Education. This instrument was produced in 2007 and is used to measure attitudes toward online learning (Mishra and Panda, 2007). A test of reliability and validity was performed and the alpha coefficient indicated a score of .81. Scores above .8 are considered to be “very good”(Creswell, 2018). This test was selected because it was specifically developed for university faculty members and specifically measures the construct of attitude toward online learning. Responses are

answered in a 5-point Likert format and range from 1=Strongly Agree to 5=Strongly disagree. Reverse scoring and coding of this survey was necessary for negatively worded items. The survey was analyzed by finding the total scores for each participant and then performing descriptive statistical analysis of mean scores for each test item and total score.

The Teachers' Attitudes toward Computers (TAC). This questionnaire was developed from 1995-1997 in order to examine the effects of technology on the attitudes of teachers (Christensen & Knezek, 1996; Christensen & Knezek, 1997). The scale has several versions. The TAC (v5.11) is the version that was used for this study because it is the most current version and has consistent reliability and validity. The instrument tests for attitudes. The responses were answered in a 5-point Likert format and ranged from 1=Strongly Agree to 5= Strongly disagree. Cronbach Alpha is a test of internal consistency and can measure the reliability estimates. The reliability estimates for the TAC Ver. 5.11 range from .89 -.97. A score below .65 is unacceptable. A score between 0.65 and 0.8 is good and scores above are rated very good (Creswell, 2018). Consequently, this reliability test has scored within the "very good" range for reliability and it was tested and in the aforementioned study was found to be valid. Reverse scoring and coding of this survey was necessary for negatively worded items. The survey responses were analyzed by adding the scores and then descriptive statistical analysis of mean scores of each test item was performed. Scores closer to one represent positive attitudes, while those closer to five represent poor or negative attitudes toward online education and computers.

Measurement of Innovativeness II. The Hurt et al. (1977) survey was developed to measure Innovativeness and results were categorized by using Rogers' (1983) Model of Diffusion of Innovation. The survey determines innovativeness from Rogers' (1983, 2000)

Diffusion of Innovation Theory. Responses were answered in a 5-point Likert format and ranged from 1=Strongly Agree to 5=Strongly disagree. The instrument is reliable and is found to be a significant predictor of technology use with reported reliability coefficients from .86-.90 (Hurt, Joseph, & Cook, 1977; Pallister & Foxall, 1998). Reliability coefficients are a strong measure of accuracy of a test because it tests twice and then correlates the accuracy of the results. The score reported for this instrument was .89. A score of no error is $< .1$. Consequently, this is a reliable and valid resource.

Data Analysis

The data from this study was uploaded into the Statistical Package for Social sciences (SPSS) and analyzed by using both descriptive and inferential statistics.

Descriptive Statistics

Descriptive statistics for HBCU faculty members were computed. The researcher created frequency distributions to display the frequency, mean and percentages of the raw survey scores of demographic variables: age, race, gender, ethnicity, faculty rank, length of years teaching, academic discipline and ever or not taught online. Composite mean scores were used to examine attitudes toward online education and attitudes toward computers.

Inferential Statistics

Inferential statistics allow for inference from the data. To answer the research questions 3 (RQ3) and 4 (RQ4), Pearson correlation coefficient (r) was used. Pearson r measures the strength of the relationship between two variables. Additionally, this study explored the relationship between faculty members' attitudes toward online education and the demographic variables: age, race, gender, faculty rank, years of teaching, taught online

and academic discipline. ANOVA test for variance was run on the demographic variables against innovativeness and attitudes toward computers. Demographic analysis was an important part of this study. Only significant demographic findings were reported for this project. The following data codes were used, (Figure 3).

Data Coding Matrix				
Level of Innovativeness 1-Innovators 2-Early Adopters 3-Early Majority 4-Late Majority 5-Laggards	Attitude Toward Online Education 1-Strongly Agree 2-Agree 3-Does Not Apply 4-Disagree 5-Strongly Disagree	Attitude Toward Computers 1-Strongly Agree 2-Agree 3-Does Not Apply 4-Disagree 5-Strongly Disagree	Age 1-Age 26-37 2 Age 38-49 3-Age 50-61	Faculty Rank 1- Professor 2-Associate Professor 3- Assistant Professor 4- Faculty Rank
Gender 1-Male 2-Female	Race 1- White or Caucasian 2- Black or African American 3-Another race	Years of Teaching 1-Years 0-5 2- Years 6-11 3- Years 12 or more	Ever Taught Online 1-Yes 2-No	Discipline 1- Arts, Humanities, Social sciences 2- STEM 3- Business 4- Education 5- Other not listed

Figure 3: Data Coding Matrix

Summary

This chapter has described the research design, instrumentation, data collection and analysis procedures. The next chapter of this dissertation presents the findings of this study.

CHAPTER 4: FINDINGS

A survey research design was used to accomplish the objectives of the study. This study does not produce causal results; however, it is an important aid for HBCUs because it introduces variables that may or may not be significantly related to the development of online courses. The sample consisted of 110 HBCU faculty members from a Mid Atlantic state. Of the 110 participants, 19 participants did not complete some questions in the questionnaires. Zhang (2016) discussed best practices for dealing with missing data and found using mean, median and mode are all valid ways in which a researcher can handle missing data and maintain sample integrity. For this project, the researcher selected the mode because most data were categorical. The faculty members were surveyed using Survey Monkey with the following instruments: (a) Individual Innovativeness (II) Instrument, (b) Faculty Attitude Toward eLearning Scale and (c) Teacher's Attitude Toward Computer Scale. Faculty also completed demographic questions which included: race, age, gender, rank, discipline, ever taught online and years of teaching.

Data analysis involved the use of descriptive and inferential statistics. The variables used in the study were levels of innovativeness, attitudes toward online learning and attitudes toward computers. Participants rated their answers on a five-point Likert scale. Descriptive statistical analyses were reported to determine frequencies and percentages of the survey responses. Inferential statistics were used to analyze any relationship between variables. For statistical computations, the composite mean scores on the attitude surveys and innovative surveys were calculated. The higher the total score, the more positive the level or attitude.

Demographic Characteristics of Participants

Descriptive Statistics. Descriptive statistical analyses were reported to determine frequencies and percentages of the survey responses. Table 1 presents the academic discipline distribution of the respondents in the sample. Thirty eight (34.5%) faculty members responded from Arts, Humanities and Social Sciences departments. Twenty seven (24.5%) faculty members responded from the Science, Technology, Engineering and Mathematics (STEM) departments. Nineteen (17.3%) faculty members responded from the Education discipline. Sixteen (14.5%). Ten (9.1%) faculty members responded from various other disciplines. Data on whether a faculty member had ever taught a fully online or partially online (hybrid) course using a Learning Management System revealed 67 (60.9%) faculty members had taught online. (see Table 2).

Table 1: Discipline Distribution of the Respondents in the Sample

	Frequency	Percent
ARTS, HUMN, SS	38	34.5
STEM	27	24.5
Business	16	14.5
Education	19	17.3
Other -Not listed	10	9.1
Total	110	100

Note. HUMN=Humanities; SS=Social sciences

Table 2: EVER Taught Online? Distribution of the Respondents

	Frequency	Percent
Yes	67	60.9
No	43	39.1
Total	110	100.0

Data on faculty rank revealed 13.6% faculty members held the rank of Professor. Twenty five (22.7%) faculty members held the rank of Associate Professor. Thirty four (30.9%) faculty members held the rank of Assistant Professor and 36 (32.7%) faculty members held the rank of Lecturer or Adjunct (see Table 3). The findings suggest adjunct or lecturer faculty members constituted more than one third of the sample. It is important to note that faculty members may be at various levels of their career to include continuing their education, part time employment or retirement employment. This is in contrast to the other levels of professorship as assistant, associate and professors may be more settled in their career and also have more university responsibilities and commitments. These variations in position could contribute to the types of participants responding; adjunct and lecturers may have more time available or different motivations to learn new technologies such as teaching online.

Table 3

	Frequency	Percent
Professor	15	13.6
Associate Professor	25	22.7
Assistant Professor	34	30.9
Lecturer/Adjunct	36	32.7
Total	110	100.0

Data on faculty member age revealed 11(10%) faculty members were between the ages of 26-37. Thirty two (29.1%) faculty members were between the ages of 38-49. Forty five (40.9%) faculty members were between the ages of 50-61. Twenty two (20% of faculty members were age 62 and over (see Table 4). Thus, approximately 70% of the respondents were in the age group: 38-61.

Table 4: Age Distribution of the Respondents in the Sample

	Frequency	Percent
26-37	11	10.0
38-49	32	29.1
50-61	45	40.9
62+	22	20.0
Total	110	100.0

Data on faculty member race revealed 31 out of 110 (28.2%) were white or Caucasian. Sixty four (58.2%) faculty members were Black or African American whereas 15 (13.6%) faculty members were identified as belonging to another race (see Table 5).

Table 5: Race Distribution of the Respondents in the Sample

	Frequency	Percent
White or Caucasian	31	28.2
Black or African American	64	58.2
Another race	15	13.6
Total	110	100.0

Data on faculty members gender revealed the sample consisted of 43 (39.1%) males and 67 (60.9%) females (see Table 6).

Table 6: Gender Distribution of the Respondents in the Sample

	Frequency	Percent
Male	43	39.1
Female	67	60.9
Total	110	100.0

Data on faculty member years of teaching revealed 14 (12.7%) faculty members had been teaching for 0-5 years. Nineteen (17.3%) faculty members had been teaching for

6-11 years. Seventy-seven (70%) of faculty members had been teaching for 12 years or more (see Table 7).

Table 7: Years of teaching Distribution of the Respondents in the Sample

	Frequency	Percent
0-5 years	14	12.7
6-11 years	19	17.3
12 years or more	77	70.0
Total	110	100.0

The next section presents findings related to the research questions (RQ). This study attempted to answer the following research questions:

1. What are HBCU faculty members' levels of innovativeness?
2. What are HBCU faculty members' attitudes toward online education?
3. Is there a relationship between HBCU faculty members' levels of innovativeness and attitudes toward online education?
4. Is there a relationship between HBCU faculty members' attitudes toward computers and attitudes toward online education?

RQ#1
What are HBCU faculty members' levels of innovativeness?

This study used Rogers' (2003) five categories of levels of innovativeness to classify the data. The first category is Innovators. Innovators are people who will take risks and want to be the first to try out the innovation. The second category is Early Adopter. Early Adopters are usually leaders and people are comfortable with accepting new ideas but may need further training. The third category is the Early Majority. The

Early Majority are usually not leaders, but will adapt to new ideas before the average person. The fourth category is the Late Majority. These people are skeptical of change and prefer to wait to adopt after many others have tried it and have had success. The fifth and lowest category is Laggards. Laggards are very conservative and often need statistics, pressure and requirements to accept an innovation (Rogers, 2003). The data show 66.4% or 73 of the 110 faculty members were classified as Early Majority and 33.6% or 37 faculty members were Early Adopters (see Table 8).

Table 8: Faculty Members Level of Innovativeness

	Frequency	Percent
Early Majority	73	66.4
Early Adopters	37	33.6
Total	110	100.0

Table 9 :Innovativeness Category Distribution by Discipline, Ever taught online, Faculty Rank, Age, Race, Gender and Years of Teaching

		Faculty Discipline				
Discipline		Early Adopters	Percentage	Early Majority	Percentage	Total
	ARTS, HUMN, SS	17	45%	21	55%	38
	STEM	8	30%	19	70%	27
	Business	4	25%	12	75%	16
	Education	5	26%	14	74%	19
	Other -Not listed	3	30%	7	70%	10
Total		37	100%	73	100%	110

		Ever Taught Online				
EVER taught online?		Early Adopters	Percentage	Early Majority	Percentage	Total
	Yes	17	25%	50	75%	67
	No	20	46%	23	53%	43
Total		37	100%	73	100%	110

		Faculty Rank				
Faculty Rank		Early Adopters	Percentage	Early Majority	Percentage	Total
	Professor	3	20%	12	80%	15
	Associate Professor	8	32%	17	68%	25
	Assistant Professor	13	38%	21	62%	34
	Lecturer/Adjunct	13	36%	23	64%	36
Total		37	100%	73	100%	110

		Age				
Age		Early Adopters	Percentage	Early Majority	Percentage	Total
	26-37	4	36%	7	64%	11
	38-49	7	22%	25	78%	32
	50-61	18	40%	27	64%	45
	62+	8	36%	14	63%	22
Total		37	100%	73	100%	110

		Race				
Race		Early Adopters	Percentage	Early Majority	Percentage	Total
	White or Caucasian	12	39%	19	61%	31
	Black or African American	17	27%	47	73%	64
	Another race	8	53%	7	47%	15
Total		37	100%	73	100%	110

		Gender				
Gender		Early Adopters	Percentage	Early Majority	Percentage	Total
	Male	16	37%	27	63%	43
	Female	21	31%	46	69%	67
Total		37	100%	73	100%	110

		Years Teaching				
Years of teaching		Early Adopters	Percentage	Early Majority	Percentage	Total
	0-5 years.	5	36%	9	64%	14
	6-11 years.	7	37%	12	63%	19
	12 years or more	25	35%	52	72%	77
Total		37	100%	73	100%	110

Note. HUMN = Humanities; SS = Social sciences

None of the respondents were identified as Innovators, Late Majority or Laggards. It is important to note more than one-third of the respondents in this study consisted of adjunct faculty or lecturers, which are at the lowest level of academic rank. The composition of the sample may have influenced the outcome of the study related to Research Question #1.

This may indicate lower rank faculty members are more willing to be exploratory, and varying factors could contribute to this. Lower ranked faculty members may be younger and may be just starting their careers. They may have varying educational pursuits, which may include completing their next degree. They also may have different employment goals, which could range from working part time or pursuing a higher rank position at their university. These descriptors may allow them to have more time or increased motivations to perform, leading them to being more open to online learning. Table 9 presents the demographics of innovativeness for faculty members by discipline, ever taught online, rank, age, race, gender and years of teaching. Faculty member disciplines were reported in five categories. Data show thirty-eight faculty members were from the disciplines of arts, humanities and social sciences. Seventeen (45%) were Early Adopters and 21 (55%) were Early Majority. Twenty-seven faculty members were from the STEM disciplines. Eight (30%) were Early Adopters and 19 (70%) were Early Majority. Sixteen faculty members were from the business discipline. Four (25%) were Early Adopters and 12 (75%) were Early Majority. Nineteen faculty members were from the Education Discipline. Five (26%) were Early Adopters and 14 (74%) were Early Majority. Ten faculty members came from other disciplines. Three (30%) were Early Adopters and 7 (70%) were Early Majority (See Table 9). Data on this demographic show the most frequent faculty member respondents were in the arts, humanities and social sciences disciplines and the majority were Early Majority.

Faculty members identified whether they had ever taught on line in two categories. Data showed 67 out of the 110 faculty surveyed had taught online. Seventeen (25%) of those were Early Adopters and 50 (75%) were Early Majority. Forty three out of the 110

faculty members surveyed had not taught online. Twenty (46%) were Early Adopters and 23 (53%) were Early Majority (See Table 9). Data on this demographic show most faculty member respondents had taught online and were Early Majority.

Faculty member ranks were identified in four categories. Table 9 shows 15 faculty members reported a rank of Professor. Three (20%) of these faculty members were Early Adopters and 8 (32%) were Early Adopters, and seventeen (68%) were Early Majority. Thirty-four faculty members reported a rank of assistant professor. Thirteen (38%) were Early Adopters; twelve (80%) were Early Majority. Twenty-five faculty members reported a rank of associate professor and were Early Adopters, and twenty one (62%) were Early Majority. Thirty-six faculty members reported a rank of lecturer/adjunct. Thirteen (36%) were Early Adopters, and twenty-three (64%) were Early Majority (see Table 9). These data show the majority respondents were lecture/adjuncts and then assistant professors. Of all disciplines, most identified as Early Majority.

Faculty members' age was reported in four categories. Eleven faculty members reported they were from 26-37 age range. Four (36%) of these faculty were Early Adopters and seven (64%) were Early Majority. Thirty-two faculty members reported they were from 38-49 age range. Seven (22%) of these faculty were Early Adopters, and 25 (78%) faculty were Early Majority. Forty-five faculty members reported they were from 50-61 age range. Eighteen (40%) of these faculty were Early Adopters, and 27 (64%) were Early Majority. Twenty-two faculty members reported they were 62 years of age and over. Eight (36%) of these faculty members were Early Adopters, and 14 (63%) were Early Majority (See Table 9). These data reflect the highest number of respondents were between the ages of 50-61 and the highest number of respondents were Early Majority.

Faculty members' race was reported in three categories. Thirty-one respondents reported being white or Caucasian. Twelve (39%) of these faculty members were Early Adopters, and 19 (61%) were Early Majority. Sixty-four respondents reported being Black or African American. Seventeen (27%) were Early Adopters, and 47 (73%) were Early Majority. Fifteen respondents reported being from another race. Eight (53%) were Early Adopters and 7 (47%) were Early Majority. Findings on faculty members race and innovativeness show the majority of respondents were Black or African American. White or Caucasian and Black or African American faculty members were mostly Early Majority. In contrast, other races reported being mostly Early Adopters.

Faculty members reported in two categories of gender. Forty-three respondents reported being male. Sixteen (37%) were Early Adopters, and 27 (63%) were Early Majority. Sixty-seven respondents reported being female. Twenty-one (31%) were Early Adopters, and 46 (69%) were Early Majority. Findings on faculty members' gender show more females were respondents. However, percentages of female and male respondents were similar where more than 60% reported being Early Majority and an average of 30% or more reported being Early Adopter. Therefore, innovation levels were similar between genders.

Faculty members reported their years of teaching in three categories. Fourteen respondents said they had been teaching for 0-5 years. Five (36%) were Early Adopters and 9 (64%) were Early Majority. Nineteen respondents said they had been teaching for 6-11 years. Seven (37%) were Early Adopter, and 12 (63%) were Early Majority. Seventy-two faculty members reported teaching for 12 years or more. Twenty-five (35%) were

Early Adopters and 52 (72%) were Early Majority (see Table 9). These findings show most respondents were seasoned teachers with more than 12 years of experience.

In conclusion, the largest number of respondents were from the arts, humanities and social science disciplines, where the majority were Early Majority. Most early majority faculty members had taught online. Assistant professors and adjunct/lecturers were the most frequent rank with the majority of those being Early Majority. The most frequent age range for faculty members was 50-61. Black or African American race faculty members were the largest number of respondents as well as females. In general, the population was Early Majority.

RQ#2

What are HBCU faculty members' attitudes toward online education?

To understand the data for this question, it is best to review the mean scores for this scale, shown in Table 10. The mean attitude score toward online education was 2.5 on a Likert scale where 1=Strongly Agree; 2=Agree; 3=Does not Apply; 4=Disagree; 5=Strongly Disagree. A score of 2.5 indicates positive attitudes toward online education.

In order to further explore faculty members' attitudes toward online education, Table 11 reports the percentages of responses for items asked about attitudes toward online education. More than half of participants (58.8%) disagreed online learning saved them time and effort. Almost all (85.45 %) agreed online learning increases access to education and training. A little over half (52.3%) of respondents disagreed online learning increased their efficiency, but almost half (40.3%) agreed it did increase their efficiency. More than half (72.73%) of respondents agreed online learning allowed them to be more flexible with their teaching. However, more than half, (61.4%) disagreed it improved communication

with their students. Half of the respondents disagreed (50.46%) online learning increases pedagogy in the course. Many respondents (76.36%) felt positive and did not feel intimidated by online learning. Many respondents (68.52%) felt positive and did not have sinking feelings about using online learning. More than half (62.72%) of respondents agreed online learning was effective for students. Almost all respondents (87.2%) felt comfortable with online learning. These findings indicate faculty members see the benefits in online learning but report varying levels of comfortability.

Table 10: Mean Faculty Attitudes

	N	Mean
Attitude toward Computers	110	1.9591
Attitude toward Online Education	110	2.5509
Valid N	110	

Tests of variance were run on the variable attitude of online education and faculty members' demographics (gender, race, age, rank, discipline, ever taught online and years teaching) in order to test for significance amongst groups. Significance was found in rank, gender and ever taught online. Exploration of the significant findings provide more insight into how these demographic identities may affect faculty member's attitudes toward online education.

A one way analysis of variance (ANOVA) was run on attitudes toward online education by faculty members' rank in order to test for significance amongst groups (Table 12). This test was used to compare means between variables with more than two groups. There was a significant effect of rank on attitude toward online education question number four at the $p < .05$ level for the three conditions [$F(3,106) = 2.893, p = 0.039$]. This question

asked whether online learning increased the flexibility of teaching and learning. This test was found to be statistically significant; therefore, a post hoc test was run. The researcher selected the Tukey post hoc test to compare each condition. The Tukey HSD test showed professors, associate professors and assistant professors had significantly higher scores that agreed with the question online learning increases the flexibility of teaching and learning. In comparison, the scores of lecturer/adjuncts mostly disagreed with this question as seen in (Table 13). All other comparisons of rank on the remaining questions were not significant and therefore not reported on Table 13.

Table: 11 Attitude Toward Online Education

Item	Agree	Disagree	Neutral
1. Online learning saves time and effort for teachers.	30.91% (34)	58.18% (64)	10.9% (12)
2. Online learning increases access to education and training.	85.45% (94)	13.64% (15)	.91% (1)
3. Online learning will increase my efficiency in teaching.	40.37% (44)	52.3% (57)	7.34% (8)
4. Online learning increases the flexibility of teaching and learning.	72.73% (80)	20 % (22)	7.27% (8)
5. Online learning improves communication between students and teachers.	32.11% (35)	61.47% (67)	6.42% (7)
6. Online learning enhances the pedagogic value of a course.	36.7% (40)	50.46% (55)	12.84% (14)
7. I feel intimidated by online learning	10.91% (12)	76.36% (84)	12.73% (14)
8. I get a sinking feeling when I think of trying to use online learning for my courses.	22.22% (24)	68.52% (74)	9.26% (10)
9. Online learning is not effective for student learning.	21.82% (24)	62.72% (69)	15.45% (15)
10. Online learning makes me uncomfortable because I do not understand it.	2.73% (3)	87.27% (96)	10% (11)

Table 12 One Way Analysis of Variance of Attitude Online Education by Faculty Rank

	Source	df	SS	MS	F	P
1. Online learning saves time and effort for teachers.	Between Groups	3	4.997	1.666	1.031	.382
	Within Groups	106	171.221	1.615		
	Total	109	176.218			
2. Online learning increases access to education and training.	Between Groups	3	1.379	.460	.445	.721
	Within Groups	106	109.394	1.032		
	Total	109	110.773			
3. Online learning will increase my efficiency in teaching.	Between Groups	3	6.033	2.011	1.323	.271
	Within Groups	106	161.058	1.519		
	Total	109	167.091			
4. Online learning increases the flexibility of teaching and learning.	Between Groups	3	11.366	3.789	2.893	.039
	Within Groups	106	138.825	1.310		
	Total	109	150.191			
5. Online learning improves communication between students and teachers.	Between Groups	3	.627	.209	.141	.935
	Within Groups	106	157.564	1.486		
	Total	109	158.191			
6. Online learning enhances the pedagogic value of a course.	Between Groups	3	8.283	2.761	1.870	.139
	Within Groups	106	156.481	1.476		
	Total	109	164.764			
7. I feel intimidated by online learning.	Between Groups	3	.423	.141	.141	.935
	Within Groups	106	106.131	1.001		
	Total	109	106.555			
8. I get a sinking feeling when I think of trying to use online learning for my courses.	Between Groups	3	2.678	.893	.638	.592
	Within Groups	106	148.313	1.399		
	Total	109	150.991			
9. Online learning is not effective for student learning.	Between Groups	3	8.852	2.951	1.981	.121
	Within Groups	106	157.911	1.490		
	Total	109	166.764			
10. Online learning makes me uncomfortable because I do not understand it.	Between Groups	3	.167	.056	.085	.968
	Within Groups	106	69.697	.658		
	Total	109	69.864			

Table 13: Tukey HSD Multiple Comparisons of Faculty Rank

Dependent Variable	(I) Faculty Rank	(J) Faculty Rank	Mean		Sig.	95% Confidence Interval	
			J	Std. Error		Lower Bound	Upper Bound
4. Online learning increases the flexibility of teaching and learning.	Professor	Associate Professor	-.08000	.37376	.997	-1.0556	.8956
		Assistant Professor	-.01176	.35473	1.000	-.9377	.9142
		Lecturer/Adjunct	.65000	.35170	.257	-.2680	1.5680
	Associate Professor	Professor	.08000	.37376	.997	-.8956	1.0556
		Assistant Professor	.06824	.30151	.996	-.7188	.8552
		Lecturer/Adjunct	.73000	.29794	.074	-.0477	1.5077
	Assistant Professor	Professor	.01176	.35473	1.000	-.9142	.9377
		Associate Professor	-.06824	.30151	.996	-.8552	.7188
		Lecturer/Adjunct	.66176	.27368	.080	-.0526	1.3761
	Lecturer/Adjunct	Professor	-.65000	.35170	.257	-1.5680	.2680
		Associate Professor	-.73000	.29794	.074	-1.5077	.0477
		Assistant Professor	-.66176	.27368	.080	-1.3761	.0526

An independent T test was run on attitudes of online education by faculty gender in order to test for significance amongst groups, as seen in Table 14 and Table 15. This test was used to compare means for variables with two groups. There was a significant difference in the question one scores for male (M=2.97, SD=1.29) and female (M=3.55, SD=1.20) conditions; $t(108) = -2.36, p = 0.020$. The question asked whether online learning saves time and effort for teachers. Male responses were a mean score of 2.97, and based on the likert scale where 2=Agree, males were on the lowest end of agree. In contrast, Female responses were a mean score of 3.55, and based on the Likert Scale where 3=Does Not Apply, females selected on the lower end of this option. Consequently, males reported more positive scores than females, indicating online learning saved them time.

There was a significant difference in scores from question seven for male (M=2.25, SD=1.09) and female (M=1.73, SD=0.86) conditions; $t(74.720) = 2.65, p = 0.010$. The question asked whether the participant felt intimidated by online learning. Male responses based on the likert scale were 2=Agree. In contrast, female responses based on the likert scale were 1=Strongly Agree. Consequently, females reported more positive scores indicating they were more intimidated than males by online learning.

There was a significant difference in the statement referring to whether the participant got a sinking feeling when they thought about using online courses. Question eight scores for male (M=2.62, SD=1.23) and female (M=1.91, SD=1.055) conditions; $t(79.469) = 3.14, p = 0.002$. Male responses based on the likert scale were on the higher end of 2=Agree, approaching disagree. Female responses based on the likert scale were on the higher end of 1=Strongly Agree, approaching Agree. Consequently, females had more negative feelings about using online courses than males.

There was a significant difference in the question nine scores for male ($M=2.76$, $SD=1.28$) and female ($M=2.19$, $SD=1.15$) conditions; $t(108)=2.42$, $p=0.017$. The question asked participants to decide whether online learning was effective for student learning. Male responses based on the Likert scale were on the higher end of 2=Agree, approaching disagree. Female responses based on the Likert scale were on the lower end of 2=Agree. Consequently, females had more positive responses than males that online learning was effective for student learning.

Table 14: Group Statistics for Attitudes Toward Online Education and Faculty Gender

Gender		N	Mean	Std. Deviation	Std. Error Mean
1. Online learning saves time and effort for teachers.	Male	43	2.9767	1.29997	0.19824
	Female	67	3.5522	1.20960	0.14778
2. Online learning increases access to education and training.	Male	43	2.1628	1.06749	0.16279
	Female	67	1.9701	0.96876	0.11835
3. Online learning will increase my efficiency in teaching.	Male	43	2.9302	1.35216	0.20620
	Female	67	3.1940	1.15783	0.14145
4. Online learning increases the flexibility of teaching and learning.	Male	43	2.4186	1.34930	0.20577
	Female	67	2.0746	1.03446	0.12638
5. Online learning improves communication between students and teachers.	Male	43	3.3953	1.29357	0.19727
	Female	67	3.3881	1.15411	0.14100
6. Online learning enhances the pedagogic value of a course.	Male	43	3.3256	1.37531	0.20973
	Female	67	3.1493	1.13155	0.13824
7. I feel intimidated by online learning.	Male	43	2.2558	1.09312	0.16670
	Female	67	1.7313	0.86308	0.10544
8. I get a sinking feeling when I think of trying to use online learning for my courses.	Male	43	2.6279	1.23488	0.18832
	Female	67	1.9104	1.05502	0.12889
9. Online learning is not effective for student learning.	Male	43	2.7674	1.28799	0.19642
	Female	67	2.1940	1.15783	0.14145
10. Online learning makes me uncomfortable because I do not understand it.	Male	43	1.9070	0.89480	0.13646
	Female	67	1.5373	0.70342	0.08594

Table 15: Independent Samples Test for Attitudes Toward Online Education and Faculty Gender

		for Equality of Variances		t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		F	Sig.						Lower	Upper
1. Online learning saves time and effort for teachers.	Equal variances assumed	1.225	0.271	-2.365	108	0.020	-0.57549	0.24338	-1.05791	-0.09308
	Equal variances not assumed			-2.327	84.952	0.022	-0.57549	0.24726	-1.06712	-0.08387
2. Online learning increases access to education and training.	Equal variances assumed	1.001	0.319	0.978	108	0.330	0.19264	0.19702	-0.19789	0.58317
	Equal variances not assumed			0.957	83.320	0.341	0.19264	0.20127	-0.20765	0.59293
3. Online learning will increase my efficiency in teaching.	Equal variances assumed	4.101	0.045	-1.091	108	0.278	-0.26380	0.24172	-0.74292	0.21533
	Equal variances not assumed			-1.055	79.610	0.295	-0.26380	0.25006	-0.76146	0.23387
4. Online learning increases the flexibility of teaching and learning.	Equal variances assumed	8.798	0.004	1.508	108	0.134	0.34398	0.22804	-0.10803	0.79599
	Equal variances not assumed			1.424	73.049	0.159	0.34398	0.24148	-0.13728	0.82524
5. Online learning improves communication between students and teachers.	Equal variances assumed	1.085	0.300	0.031	108	0.975	0.00729	0.23648	-0.46146	0.47604
	Equal variances not assumed			0.030	82.220	0.976	0.00729	0.24248	-0.47505	0.48963
6. Online learning enhances the pedagogic value of a course.	Equal variances assumed	3.336	0.071	0.732	108	0.466	0.17633	0.24075	-0.30088	0.65354
	Equal variances not assumed			0.702	77.154	0.485	0.17633	0.25119	-0.32385	0.67650
7. I feel intimidated by online learning.	Equal variances assumed	4.906	0.029	2.798	108	0.006	0.52447	0.18741	0.15299	0.89595
	Equal variances not assumed			2.659	74.720	0.010	0.52447	0.19725	0.13151	0.91743
8. I get a sinking feeling when I think of trying to use online learning for my courses.	Equal variances assumed	6.693	0.011	3.254	108	.0002	0.71746	0.22048	0.28042	1.15450
	Equal variances not assumed			3.144	79.469	0.002	0.71746	0.22820	0.26328	1.17164
9. Online learning is not effective for student learning.	Equal variances assumed	2.491	0.117	2.425	108	0.017	0.57341	0.23646	0.10472	1.04211
	Equal variances not assumed			2.369	82.706	0.020	0.57341	0.24205	0.09196	1.05486
10. Online learning makes me uncomfortable because I do not understand it.	Equal variances assumed	0.063	0.802	2.415	108	0.017	0.36966	0.15308	0.06623	0.67309
	Equal variances not assumed			2.292	74.468	0.025	0.36966	0.16126	0.04838	0.69095

An independent T test was run on attitudes toward online education by faculty members' identification of ever having taught online in order to test for significance amongst groups, as seen in Table 16 and Table 17. This test was used to compare means for variables with two groups. There was a significant difference in the question three items for Yes (M=2.85, SD=1.28) and No (M=3.46, SD=1.07) conditions; $t(108)=-2.606$, $p=0.010$. The question asked whether online learning would increase their efficiency. Faculty members who had taught online had Likert scale responses of 2=Agree. Faculty members who had not taught online scored 3.46 which is = Does Not Apply. Consequently, faculty members who had taught online felt more positively that online learning was a time saver.

There was a significant difference in the question six scores for Yes (M=2.95, SD=1.21) and No (M=3.62, SD=1.15) conditions; $t(108)=-2.89$, $p=0.005$. (See Table 16 and Table 17) The question asked whether online learning enhanced the pedagogic value of the course. Faculty members who had taught online mostly agreed based on likert scale responses of 2=Agree, but almost scored at 3= Does Not Apply. Faculty members who had not taught online selected Does Not Apply based on the likert scale responses of 3. Their responses were on the higher end, approaching 4=Disagree. Consequently, faculty members who had taught online felt more positively than those who had not taught, that online learning enhanced their teaching.

There was a significant difference in the question seven scores for Yes (M=4.32, SD=0.87) and No (M=3.65, SD=1.02) conditions; $t(108)=-3.70$ $p=0.000$. (See Table 16 and Table 17) The question asked whether online learning was intimidating. Faculty members who had taught online scored high with likert scale responses of 4= Strongly

disagree. Faculty members who had not taught online scored slightly lower and mostly selected likert scale response of 3=Neutral. Faculty members that had taught online felt more strongly that online learning was not intimidating.

There was a significant difference in the question eight scores for Yes (M=4.01, SD=1.13) and No (M=3.48, SD=1.18) conditions; $t(108)=-2.33$, $p=0.021$ (See Table 16 and Table 17) The question asked whether they got a sinking feeling when teaching online or thinking about it. Faculty members who had taught online mostly agreed based on Likert scale responses of 2=Agree. Faculty members who had not taught online did not have sinking feelings. Consequently, faculty members who had taught online felt more negatively and had sinking feelings about teaching online or thinking about teaching online.

Table 16: Group Statistics for Attitudes Toward Online Education and Faculty Ever Taught Online

Have you EVER taught a fully online or partially online (hybrid) course using any (LMS) such a Blackboard, or any similar software?		N	Mean	Std. Deviation	Std. Error Mean		
1. Online learning saves time and effort for teachers.	Yes	67	3.3134		1.33948	0.16364	
	No	43	3.3488		1.17278	0.17885	
2. Online learning increases access to education and training.	Yes	67	2.0149		1.03708	0.12670	
	No	43	2.0930		0.97135	0.14813	
3. Online learning will increase my efficiency in teaching.	Yes	67	2.8507		1.28221	0.15665	
	No	43	3.4651		1.07679	0.16421	
4. Online learning increases the flexibility of teaching and learning.	Yes	67	2.1194		1.14842	0.14030	
	No	43	2.3488		1.21270	0.18494	
5. Online learning improves communication between students and teachers.	Yes	67	3.2836		1.19095	0.14550	
	No	43	3.5581		1.22090	0.18618	
6. Online learning enhances the pedagogic value of a course.	Yes	67	2.9552		1.21147	0.14800	
	No	43	3.6279		1.15518	0.17616	
7. I feel intimidated by online learning.	Yes	67	4.3284		0.87712	0.10716	
	No	43	3.6512		1.02082	0.15567	
8. I get a sinking feeling when I think using online learning for my courses.	Yes	67	4.0149		1.13475	0.13863	
	No	43	3.4884		1.18265	0.18035	
9. Online learning is not effective for student learning.	Yes	67	3.7313		1.17528	0.14358	
	No	43	3.3488		1.30719	0.19934	
10. Online learning makes me uncomfortable because I do not understand it.	Yes	67	4.4328		0.76324	0.09325	
	No	43	4.1395		0.83328	0.12707	
Equal variances not assumed			1.861	83.923	0.066	0.29330	0.15761

Table 17: Independent Samples Test for Attitudes Toward Online Education and Faculty Ever Taught Online

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
1. Online learning saves time and effort for teachers.	Equal variances assumed	2.789	0.098	-0.142	108	0.887	-0.03540	0.24957	-0.53010	0.45929
	Equal variances not assumed			-0.146	98.036	0.884	-0.03540	0.24242	-0.51647	0.44566
2. Online learning increases access to education and training.	Equal variances assumed	0.000	0.990	-0.395	108	0.694	-0.07810	0.19775	-0.47007	0.31388
	Equal variances not assumed			-0.401	93.938	0.690	-0.07810	0.19492	-0.46513	0.30893
3. Online learning will increase my efficiency in teaching.	Equal variances assumed	8.701	0.004	-2.606	108	0.010	-0.61437	0.23575	-1.08166	-0.14708
	Equal variances not assumed			-2.707	100.343	0.008	-0.61437	0.22694	-1.06460	-0.16414
4. Online learning increases the flexibility of teaching and learning.	Equal variances assumed	0.645	0.424	-1.000	108	0.319	-0.22943	0.22937	-0.68408	0.22521
	Equal variances not assumed			-0.988	86.107	0.326	-0.22943	0.23213	-0.69089	0.23202
5. Online learning improves communication between students and teachers.	Equal variances assumed	0.275	0.601	-1.168	108	0.245	-0.27456	0.23500	-0.74038	0.19126
	Equal variances not assumed			-1.162	88.062	0.248	-0.27456	0.23629	-0.74414	0.19502
6. Online learning enhances the pedagogic value of a course.	Equal variances assumed	0.329	0.568	-2.893	108	0.005	-0.67268	0.23251	-1.13355	-0.21182
	Equal variances not assumed			-2.924	92.796	0.004	-0.67268	0.23008	-1.12960	-0.21577
7. I feel intimidated by online learning.	Equal variances assumed	2.791	0.098	3.704	108	0.000	0.67720	0.18282	0.31481	1.03958
	Equal variances not assumed			3.583	79.825	0.001	0.67720	0.18899	0.30108	1.05331
8. I get a sinking feeling when I think of trying to use online learning for my courses.	Equal variances assumed	0.686	0.409	2.336	108	0.021	0.52655	0.22542	0.07974	0.97337
	Equal variances not assumed			2.315	86.972	0.023	0.52655	0.22748	0.07442	0.97869
9. Online learning is not effective for student learning.	Equal variances assumed	1.789	0.184	1.594	108	0.114	0.38251	0.24000	-0.09322	0.85823
	Equal variances not assumed			1.557	82.716	0.123	0.38251	0.24567	-0.10615	0.87116
10. Online learning makes me uncomfortable because I do not understand it.	Equal variances assumed	0.023	0.879	1.897	108	0.060	0.29330	0.15460	-0.01315	0.59975
	Equal variances not assumed			1.861	83.923	0.066	0.29330	0.15761	-0.02014	0.60674

RQ#3

Is there a relationship between HBCU faculty members' levels of innovativeness and attitudes toward online education?

The following hypotheses were tested for RQ#3:

H₀₁: There is no significant relationship between HBCU faculty members' levels of innovativeness and attitudes toward online education.

H_{A1}: There is a significant relationship between HBCU faculty members' levels of innovativeness and attitudes toward online education.

The Pearson correlation coefficient was used to determine the relationship between two identified levels of innovation of HBCU faculty members: Early Adopters and Early Majority and attitudes toward online education (see Table 18). There was a weak positive relationship between the two variables ($r=.284$, $p=.05$). The researcher rejects the null hypothesis and accepts the alternative hypothesis because $p= .001<.05$. There is a significant relationship between faculty members' levels of innovativeness and their attitudes toward online education. As level of innovativeness increases, so do attitudes toward online education. Accordingly, Early Adopters are more likely to have positive attitudes toward online education.

Table 18: Pearson Correlation for Levels of Innovation and Attitude Toward Online Education

		Early Adopters	Early Majority	Attitude Towards Online Education
Early Adopters	Pearson Correlation	1	. ^c	.051
	Sig. (2-tailed)		.	.767
	N		0	37
Early Majority	Pearson Correlation		1	.284*
	Sig. (2-tailed)			.015
	N			73
Attitude Towards Online Education	Pearson Correlation			1
	Sig. (2-tailed)			
	N			

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

RQ#4

Is there a relationship between HBCU faculty members' attitudes toward computers and attitudes toward online education?

Pearson correlation coefficient was used to determine the relationship between attitudes toward computers and attitudes toward online education (see Table 19). There was a weak positive relationship between attitudes toward online education and computers ($r = .380$, $p < .001$) This means as attitudes toward computers increase so do positive attitudes toward online education. The researcher rejects the null hypothesis and accept the alternative hypothesis because $.01 < .05$ and conclude there is a relationship between faculty members' attitudes toward computers and their attitudes toward online education. No members' relationship was observed between other demographic characteristics and attitudes toward computers.

Table 19: Relationship between Attitude Towards Online Education and Attitude Towards Computers

		Attitude_Towards_Online_Education	Attitude_Towards_Computers
Attitude_Towards_Online_Education	Pearson Correlation	1	.380**
	Sig. (2-tailed)		.000
	N		110
Attitude_Towards_Computers	Pearson Correlation		1
	Sig. (2-tailed)		
	N		

** . Correlation is significant at the 0.01 level (2-tailed).

Summary

This chapter presented results of the study. Data analysis was presented beginning with the descriptive statistics of the respondents' demographic characteristics and then descriptive statistics of faculty members' attitudes toward online education and computers, results of correlations used to examine the relationship between the variables of interest and the demographic characteristics of the sample. The next chapter presents summary, recommendations, implications and directions for future research followed by the conclusion of the study.

CHAPTER 5: SUMMARY, RECOMMENDATIONS and IMPLICATIONS

Summary

The summary of the study, discussion of the findings, implications for practice, and recommendations for future research are presented in this chapter. The purpose of this correlational study was to explore HBCU faculty members' levels of innovation, attitudes toward online education and computers in a Mid-Atlantic state in the United States.

The following research questions guided this study:

1. What are HBCU faculty members' levels of innovativeness?
2. What are HBCU faculty members' attitudes toward online education?
3. Is there a relationship between HBCU faculty members' levels of innovativeness and attitudes toward online education?
4. Is there a relationship between HBCU faculty members' attitudes toward computers and attitudes toward online education?

The theoretical framework for this study was based upon Diffusion of Innovation Theory (Rogers, 2003) and the Theory of Planned Behavior (Ajzen, 1985, 1991). This framework presented the theoretical knowledge innovation such as online learning diffuses through organizations at various rates and is accepted by social members based on the levels of innovativeness into which they fall. Social members may be Innovators, Early Adopters, Early Majority, Late Majority and Laggards. Rogers' (2003) five categories of levels of innovativeness classify Innovators as people who will take risks and want to be the first to try out the innovation. The next category are Early Adopters who are often leaders who are comfortable with accepting new ideas but may need further training. Next, there are Early Majority who are usually not leaders, but will adapt to new ideas before the

average person. The fourth category are those in the Late Majority, where they are skeptical of change and prefer to wait to adopt until others have had success. Lastly, the fifth category are the Laggards, who are conservative and often need much convincing in order to accept an innovation (Rogers, 2003).

Additionally, innovativeness is influenced by attitudes, which are often personal and pre-existing beliefs (Rogers, 2003; Azjen, 1985, 1991). Further, demographics such as race, gender, age, years of teaching, discipline, taught online and rank are personal identities and may also influence attitudes. Therefore, this research study explored the plausibility that HBCU faculty members' levels of innovativeness may be related to their attitudes toward online education. Also, HBCU faculty members' attitudes toward online education may be related to their levels of innovation, and attitudes toward computers may also be related to their attitudes toward online education. This research also explored the previously mentioned demographics to determine whether they were significantly related to HBCU faculty members' attitudes toward online education and attitudes toward computers.

This study used a convenience sample of 110 HBCU faculty members from a Mid Atlantic state. The participants were surveyed electronically through a survey link sent via email. This study had several goals. The first goal was to explore HBCU faculty members' levels of innovativeness. The second goal was to explore HBCU faculty members' attitudes toward computers. The third goal was to see whether a relationship existed between HBCU faculty members' levels of innovativeness and their attitudes toward online education. The fourth goal aimed to see whether their attitudes toward computers were related to their attitudes toward online education. Further, the research studied distributions and

correlations between the specific demographic characteristics of age, race, gender discipline, rank, ever taught online and years of teaching against the third and fourth goal and reported significant findings.

The theoretical framework and literature review guided the development of the four research questions. These research questions and hypotheses were tested and analyzed with descriptive and inferential statistics. Research questions one and two were analyzed using descriptive methods in order to identify patterns in the data and to better describe the population. Research questions three and four were analyzed using both descriptive and inferential statistical methods. Inferential methods were used here to further examine any relationship found within the sample. The results of this study do not produce causal results; however, they do serve as an important aid and introduce variables that may or may not be significantly related to the slow development of online courses.

As discussed in the background of this study, Nealy (2009) found this slow development of online courses was one of the five threats to the survival of HBCUs. This study worked to explore threat. However, all five threats discussed by Nealy (2009) contributed to some general notions of what expected results might be from this study. The five threats to HBCUs were enrollment and attrition; competitive technology; equitable access and reliance on government funding; student completion rate; traditional and conservative culture of HBCU policies (Nealy, 2009).

The researcher presumed slow development of online courses may be due to a lack of innovativeness within the faculty members and also negative attitudes toward computers. Nealy (2009) discussed the struggling technology infrastructure many HBCUs deal with prevents competitive computer access. Consequently, it was presumed this might

have an effect on attitudes toward online learning and computers in general. Further, Nealy (2009) noted the “HBCU way” was conservative and traditional in nature, thus it was surmised faculty members may align with the latter half of Rogers’ (2003) levels of innovativeness, which would include Late Majority and Laggards. The results of this study were positive for HBCUs and counter the researcher’s original presumptions. HBCU faculty members in this study fell into Early Adopters and Early Majority of Rogers’ (2003) levels of innovativeness. These are the second and third highest categories of innovativeness. It was presumed HBCU faculty members would not be very innovative, when in fact they are and will accept new innovations. HBCU faculty members also have positive attitudes toward online education and computers. In this case, it was presumed because of the noted slow development of online education, attitudes toward such would be low.

On the contrary, HBCU faculty members expressed positive attitudes toward these technologies. With the results of this study, HBCUs can continue to explore related factors impacting faculty members and address them through institutional or professional development. Consequently, this research contributes to conclusions that HBCU faculty members are willing and able to use new technologies. HBCU institutions should work to ensure access, training and infrastructure are available to faculty members in order to support continual development of online education. The next section presents a discussion of the findings related to each research question and how they are related to the literature review and theoretical framework.

Discussion

HBCU faculty members level of innovativeness

The findings of this study suggest out of 110 respondents, 33.6% or 37 were Early Adopters and 66.4% or 73 were Early Majority. These findings were somewhat consistent with Rogers' (2003) discussion of adopter categorization on the basis of innovation. Rogers' (2003) categorization of innovativeness found most people are likely to be Early Majority and Late Majority. These findings show the bulk of the users fell into the Early Majority category, which is consistent with Rogers' (2003) reports (See Figure 3). However, there was a variation in the results; specifically, there were more Early Adopters reported than Rogers (2003) suggests would generally occur. Recent studies also reported similar findings with the bulk of the participants falling in the Middle categories' corresponding with Early Adopter, Early Majority or Late Majority category (e.g., Goncalves & Pedro, 2012; McQuiggan, 2006; Kobcha & Walker, 2016).

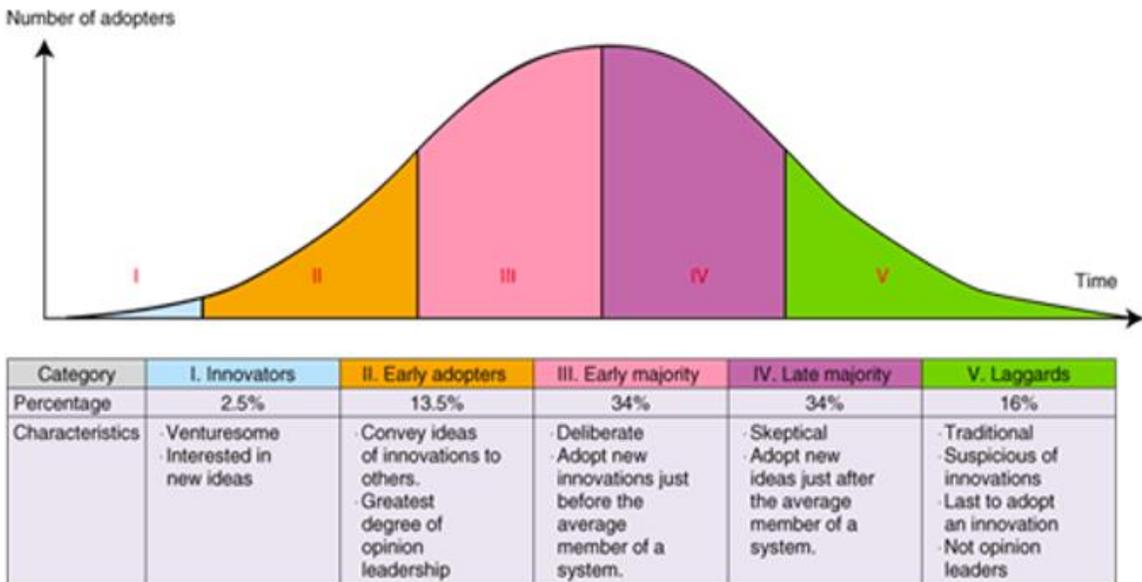


Figure 2: Adopter Categorization on the Basis of Innovativeness (Rogers, 2003, p. 281)

innovation. Thus, it seems those within the liberal arts type of disciplines are more open to exploratory technology.

More than half of faculty members surveyed (61%) had ever taught online. It was interesting to find 75% of the total number of respondents who had taught online were Early Majority. It would be presumed the higher category would be Early Adopters because of their enterprising actions. Another finding was that of those who had not taught online, 46% were categorized as Early Adopters. This is interesting because it would be presumed these Early Adopters would be quick to move toward online learning. Consequently, it would be beneficial in further studies to explore why they have not.

Research on faculty rank and innovativeness showed the majority of faculty members were Early Majority (60 %+), However, assistant professors had the higher level of Early Adopter innovation level (38%) among all faculty members. It may be important to note assistant professorship is the entry level position for tenure track faculty members and consequently these faculty members may be more open to new technology in order to support their goal of tenure. In addition to tenure track motivations, age may also be a factor. As stated, the position is entry level, consequently these faculty members are more likely to be younger than the other ranks of associate professors or professors. Younger faculty members may be more open to using technology.

Faculty age and level of innovation varied with 60% more than faculty of all ages from 26-37, 38-49, 50-61, 62+ falling in the range of Early Majority. Faculty race and level of innovation showed those from other races are mostly Early Adopters. Black or African American and White or Caucasian are mostly Early Majority. However, White or

Caucasian reported more Early Adopters than Black or African Americans. This finding is particularly interesting and more should be explored.

Nealy (2009) references HBCU conservatism was one threat for these universities. This concept should be researched further to determine whether this contributes to the lower level of innovativeness amongst African American faculty members. The category of gender was reported, and both male and females had almost equal levels of innovation and were categorized as Early Majority. Lastly, it was reported as length of years teaching increased, level of innovation was lower; however, those respondents were still categorized as Early Majority. Those teaching over 12 years represent the modal category as Early Majority. Age is most likely a contributor to this as it can be assumed as length of employment increases so does age. Regardless, this is also positive news for HBCUs that most faculty members report at the Early Majority level of innovativeness.

The results of this research question are supported by the theoretical framework and are similar to other reported results from the literature where the bulk of the participants fell into the middle categories of innovativeness, Early Adopter and Early Majority. The difference in this study is Early Adopters reported in numbers that were a higher percentage at 33.6% while Rogers (2003) reported on average an organization is most likely to have an Early Adopter percentage of 13.5%. This is a positive result for HBCUs because this representative sample shows faculty members were more innovative than expected based on Rogers (2003), despite any negative presumptions that HBCU faculty members would be less innovative. In fact, many faculty members fall within the second and third categories of innovativeness, Early Adopter and Early Majority, respectively. These categories both have characteristics that include leadership and willingness to participate

in new technologies independently or with training. Faculty members with these characteristics are interested in technology and online learning and may actively consider or participate in its use.

HBCU faculty members' attitudes toward online education

The second research question sought to determine participants' attitudes toward online education. The attitudes toward online education scale was used to measure this construct. The likert scale for this question was as follows 1=Strongly Agree, 2=Agree, 3=Does not Apply, 4=Disagree, 5=Strongly Disagree. The mean scale score for HBCU faculty members' attitudes toward online education was 2.5. Based on the likert scale, this means faculty members had positive attitudes of Agree toward online education. The theoretical framework references Azjen's (1985, 1991) discussion of attitude stemming from personal pre-existing beliefs. Attitude contributes to a person's belief that the person can accomplish a task. The framework discussed there may be a relationship between the levels of innovativeness of a faculty member and their attitudes toward online learning and attitudes toward computers or technology. Therefore, the first part of exploring the relationship should be to identify the actual attitudes toward online education, hence the purpose for this research question. The literature reported participants' attitudes as a means of determining whether a relationship existed with technology or innovations (e.g., Hsu & Chiu, 2004; Jiang et al., 2016; Lawrence, 2008; Tabata & Johnsrud, 2008). This was the goal of the question and is consistent with the existing research.

Attitude toward online education survey results showed more than 50% of faculty members disagreed online learning saved time, increased efficiency in teaching, improved communication, enhanced pedagogy. In contrast, most agreed online learning increased

access to education and training, increased flexibility, was not intimidating or made them feel uncomfortable and was effective for student learning. These results show faculty members do see some merit in this teaching modality; however, they do see a conflict with how to incorporate teaching online based on time and pedagogical implementation. These survey results also showed significant variations in the attitudes of faculty rank, gender and whether the participants had ever taught online. It was reported lecturers/adjuncts disagreed online teaching increased flexibility, while all other ranks agreed it did. The significance in rank and attitudes toward online learning was telling particularly because there may be many contributing factors universities should consider. Contributing factors for lecturers'/adjuncts' belief of lack of flexibility with online teaching could be based upon the nature of their position and their employment motivations, educational goals, or lack of institutional access to training. For example, many lecturer/adjuncts may choose to be part time, be enrolled in graduate programs or not have the time to take necessary technology training. Consequently, undertaking the development of an online course may be a more daunting task than for an assistant, associate or professor that has the time and motivation to being on the cutting edge.

The literature supports negative attitudes were attributed to lack of computer skills, workload and lack of university support, and consequently supports the findings of this research study (Mitchell & Geva-May, 2009; Chen, 2009; Grossman & Johnson, 2015; Pereira & Wahi, 2017; Glass, 2017). The findings from this research are similar in that faculty members with negative attitudes toward online learning do not know how to implement this technology, feel it is time consuming, and feel intimidated.

The research study findings contribute to gaps in the literature on online education and various demographics. Gender was found to be related to attitudes toward online education. Data show females reported a higher level of negative feelings about online learning than males. Females reported higher responses than males that online learning did not save time and they were intimidated. They also scored higher in response to negative feelings about using online technology and reported higher scores stating they were uncomfortable because of lack of understanding of online learning. Male modal category responses were slightly lower for all questions. Consequently, females had more negative opinions about their attitudes toward online education.

Faculty members who had taught online reported higher scores than those who had not taught online when asked about whether online learning saved time, enhanced their teaching and increased their efficiency. This is in line with the presumption that if a faculty member had taught online he or she would be more positive toward online learning. However, it was surprising to learn faculty members who had taught online reported feeling more intimidated about online learning than the scores reported for faculty members who had never taught online. This finding is an indication for universities that training for online course development and its associated technology is an important necessity.

The literature references positive attitudes toward online learning were attributed to higher levels of computer skill, previous experience teaching online, university training and the ability to maintain personal expression (Johnson, 2015; Pereira et al,2017; Glass 2017; Broussard et al., 2018). This research reports Early Adopter and Early Majority participants reported positive attitudes toward online learning, with some hesitation about time saving, efficiency and being intimidated. However, those who had taught online or

were Early Adopters had higher positive attitude scores toward online learning. The literature supports these findings, and varying factors could have contributed to this outcome. Rogers (2003) finds Early Adopters and Early Majority are usually leaders and curious about new innovations. Consequently, based on the description it could be possible they would engage in technology at a more advanced level, participate in training and feel satisfied with academic freedom of expression for online learning.

The relationship between HBCU faculty members levels of innovativeness and attitudes toward online education

The third research question was concerned with participants' levels of innovativeness and their relationship to the attitudes toward online education. The scores from Innovativeness II measurement tool and the Faculty Attitudes Toward E-Learning tool were used to measure these constructs. These items were correlated and a weak positive significance was found, specifically with faculty who placed into the Early Majority category rather than Early Adopters, and the alternative hypothesis was accepted. These findings have two meanings. First, levels of innovativeness are related to whether a faculty member has a positive or negative attitude toward online learning. When compared to a higher and lower level of innovation, specifically Early Majority, participants' innovation levels were related to their attitudes toward teaching online. In the theoretical framework, Rogers (2003) discusses the time frame of persuasion and how users' attitudes were persuaded to accept or reject innovations. He further argues, the higher the innovation level the less time this persuasion process takes. In this research, this applies to the Early Adopters. It would then make sense a person with a lower level of innovation would be more likely to have a more negative attitude toward online learning. In this research, this

would be the Early Majority. The literature review reflected varying attitudes toward online learning were related to computer skill, training and university support (Mitchell et al., 2009; Chen, 2009; Grossman & Johnson, 2015; Pereira & Wahi, 2017; Glass, 2017; Broussard & Wilson, 2018). The findings suggest Early Adopters would be less likely to be concerned with these issues and Early Majority participants would be more likely to be concerned. Consequently, the results are consistent and in line with the theoretical framework and recent research.

The theoretical framework from Rogers (2003) supports the findings that suggest level of innovativeness is a predictor of technology use. Given this support, HBCUs should work to increase the level of innovativeness amongst their faculty members. In the first research question, it was found HBCU faculty members from this study were largely categorized as Early Majority. Early Majority are found to be leaders and curious, but still a little hesitant and want to ensure success. This research also discussed time and implementation of online learning were a concern for some faculty members. Consequently, HBCUs should look to increase the level of innovativeness of their faculty by working to develop more training that addresses their faculty members' needs. Examples of course success and sharing how to specifically implement online learning modalities into the pedagogical process may alleviate the hesitancy these curious faculty feel.

The relationship between HBCU faculty members' attitudes toward computers and attitudes toward online education

The fourth research question focused on whether faculty members' attitudes toward how they felt about computers and technology related to their attitudes toward online

education. The composite mean scores from the Teacher Attitude Toward Computers scale and the Faculty Attitude Toward eLearning tool were used to measure these constructs. These items were correlated, a weak positive significance was found and the alternative hypothesis was accepted. Consequently, faculty members' attitudes toward computers relates to their attitudes toward online education. This finding is consistent with the existing literature (Jiang et al., 016). As faculty members' attitudes toward computers increase, so do their attitudes toward online education. No correlation was observed between other demographic characteristics and attitudes toward computers.

These findings are consistent based on the discussion of faculty members' attitudes toward online learning. In this previous discussion, it was reported faculty members felt online learning was very time consuming and they did not know how to implement this practice. These findings may have been more positive if the computer skills of faculty members were increased. HBCUs can work toward continuous implementation of new training of computer software and online systems. This would assist faculty members with developing the skills necessary to reduce time to develop online courses because there would be a higher level of comfortability with the tools. Further, increasing computer skills may lead to a more positive attitude toward computers as well as more positive attitudes toward online learning, which also uses advanced technology.

Conclusion

A convenience sample of 110 Mid-Atlantic HBCU faculty members on levels of innovativeness, attitudes toward online education, and attitudes toward computers resulted in the following:

- An HBCU faculty member sample resulted in 33.6% of the population level of innovativeness being categorized as Early Adopters and 64.4% as Early Majority. Early Adopters are leaders and open to new ideas. Early Majority are practical and need time to research innovations, but remain open to possibilities (Rogers, 2003). HBCU faculty members' levels of innovativeness in this study reported higher scores for Early Majority.
- Regardless of discipline, ever taught online, faculty rank, age and gender, faculty members reported higher composite scores for Early Majority levels of innovation.
- In the demographic of race, another race reported the highest scores in the innovativeness category of Early Adopter. White or Caucasian and Black or African American reported higher composite scores for Early Majority level of innovativeness.
- Faculty members scored positively for attitudes towards online education. Composite mean scores for attitudes toward online education were positive: "Agree" based on 5-point likert Scale, from 1=Strongly Agree to 5=Strongly Disagree. Although there were generally positive attitudes toward online education, responses varied based on demographic characteristics.
- Rank, gender and ever taught online played a significant role in faculty members' attitudes toward online education. Higher ranked faculty members such as assistant, associate and professor had more positive attitudes toward education than lecture/adjunct. Males reported more positive attitudes toward online education than females. Those who taught online also reported more positive attitudes toward online education than those who had not.

- Innovation level is related to attitudes toward online education. Specifically, the higher the level of innovation, the higher the attitudes toward online education. Early Majority participants' levels of innovation was related to their attitude toward online education
- Attitude toward computers relates to attitudes toward online education. In general, as participants' positive attitudes toward computers increased, so did their positive attitudes toward online education.

HBCU Faculty members from this study were mostly Early Majority users with weak positive attitudes toward computers and online education. The researcher finds these results are in accord with current research of PWIs (Goncalves et al., 2012; McQuiggan, 2006; Jiang et al., 2016; Kopcha & Walker, 2016; Hsuet al., 2004; Tabata et al., Johnsrud, 2008).

Recommendations

As a result of the research findings, several recommendations are suggested. Nealy (2009) discussed five threats to the survival of HBCUs. This research examined the second threat, which was concerned with HBCUs keeping abreast of innovative technology. These recommendations address ways HBCUs can improve the offering of online education opportunities.

The goal of understanding levels of innovation is to determine the best way to assist members of organizations to move to their next level of innovation and ultimately reach the top category of Innovator. Moving along with this process helps innovations such as online learning to be accepted at a faster rate. In the case of this research, HBCUs may be concerned with how they can get more faculty members to incorporate online learning and develop more courses at their institutions. This is important and addresses the need to

develop more online education programs, which was one of the five threats to HBCUs discussed by Nealy (2009).

This research found HBCU faculty members were categorized as having Early Adopter and Early Majority levels of innovation based on the theoretical framework of Rogers (2003). This was a positive outcome, and the findings show faculty members are using online learning and are open to learning more about this innovation. Further, there were specific demographic attributes discussed in this research that HBCUs should take into consideration. Females had more negative attitudes toward online learning than males. Newer faculty members with less than 12 year of teaching experience were more innovative. Faculty members who identified as neither white, nor black had higher levels of innovation. Faculty members who had never taught online did not see the value in it or think it was an efficient way of instruction. Being aware of these provocative demographic findings could be the basis for a sound training program to address the needs of faculty members and the institution.

The theoretical framework shows levels of innovation relates to attitudes in general (Rogers, 2003; Azjen, 1985; 1991). This research study agreed and found attitudes toward online education relates to level of innovativeness and attitudes toward computers. Consequently, the recommendations for universities that want to increase online education opportunities are to explore ways in which organizations can increase their faculty members' level of innovativeness.

This research suggests one such way is to improve how faculty members feel about computers and technology as well as how they feel about online education. This could be accomplished by implementing continuous training on hard skills such as software and

pedagogical skills that include the use of technology. Further, the significant demographic variables were discussed, and attitudes toward online education and innovativeness were at times affected by gender, race and whether they had taught online. Incorporating measures that meet the needs of the demographic population will be important.

Implementing training may improve attitude. Azjen (1985, 1991) found attitudes are more positive when participants believe they can accomplish the task. Therefore, faculty members who are completing training on software and technology related pedagogy will more likely have positive attitudes about using their skills. Additionally, soft skills, professional development on industry specific practices, as well as promoting attendance of panels and conferences on online education may be helpful in improving attitudes toward online education.

Rogers (2003) discussed the processes innovations must move through in order to be accepted. In the persuasion process, participants decide if they will accept or reject the innovation based upon their attitudes and pre-existing beliefs. Participants with lower levels of innovation move at a slower pace through this process. The recommendations from this study are for HBCUs to first uncover the level of innovativeness that exists within their institution. It is suspected each will be different as institutional visions vary as does the diversity of staff. Armed with these findings, HBCUs should consider the researched demographic findings of this study and work to develop training that addresses these needs. Hard skill training on online software and updated technologies is key; however, it is evident based upon the demographic findings that soft skill training would be beneficial as well. Soft skill training could address the particular needs of staff that would assist with overcoming the hesitancy and belief that the modality of online learning is inefficient. The

goal should be to improve attitudes about being able to succeed with technology and then to increase soft skill training. Both should work to increase innovation level. As discussed, increasing level of innovation increases the speed of the adoption of new innovations such as online learning.

Recommendations for Further Research

This correlational study found attitudes toward online education relates to levels of innovativeness and attitudes toward computers. Future quantitative research should focus on attitudinal studies. Specifically, researchers should work to perform experimental studies to measure the impact of hard and soft skill training recommendations. Further studies could explore the demographics of gender, race and ever having taught online. Correlational studies are not causal in nature; therefore, research that can produce causal results would be positive contributions to the HBCU community. Future experimental examples may include specific software training and the impact on attitudes toward computers or attitudes toward online education. More research should also be completed on treatments that improve levels of innovation of HBCU faculty members.

Qualitative research should also be considered and explored in the same light. It would be beneficial to explore the nature of attitudes toward these concepts and deeper understandings through case studies or even video analysis techniques. Further, it could be helpful to have more detail on those that identify with various demographics and their beliefs on online education that have been developed over time.

Additional research could include analyzing student attitudes and levels of innovativeness. It is also important to understand the impact of online instruction on

HBCU students. Overall, universities should work to understand what factors contribute to and impact their faculty members' and students' online participation and performance.

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APPENDIX A; INVITATION TO PARTICIPATE LETTER



Fwd: You are invited to participate in a study of faculty perceptions of online education



Dear Colleagues,
You are invited to participate in a study related to faculty perceptions of online education.

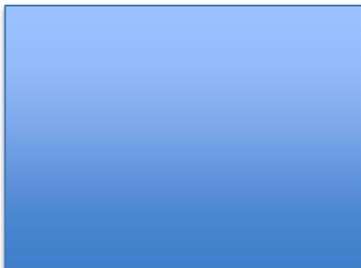
Please click here to take the survey: <https://www.surveymonkey.com/r/onlineEd2018>
This is a brief survey which may take less than 10 minutes.

You can find the detailed IRB consent form on this link <http://bit.ly/2018onlineEd>

If you have any questions, please do not hesitate to contact us.

Thank you,

Valerie Riggs, Principal Investigator
Omari Jackson, Faculty Advisor
Urban Educational Leadership Program
Morgan State University



APPENDIX B: CONSENT FORM

Examining the Relationship Between HBCU Faculty Innovativeness and Attitudes Toward Online Education

You are invited to participate in a study titled *Examining the Relationship Between HBCU Faculty Innovativeness and Attitudes Toward Online Education*. We hope to learn whether there is a relationship between faculty attitudes toward computers and levels of innovativeness. The study is being conducted by Valerie Riggs, Urban Education Doctoral Student of Morgan State University. You were selected as a possible participant in this study because you are a full or part time faculty member who has in the past or currently works at an HBCU.

This study will be significant for MSU because the findings may point to aspects could be correlating factors for the rate at which distance education courses are offered. In addition, there is very little published research on the impact of the growing trend of distance education on HBCU's. This research will add to the HBCU community at large.

If you decide to participate, we will ask you complete this informed consent form and complete an electronic survey. The estimated time to complete the survey is less than 10 minutes. Participants will be sent an electronic survey and will submit it to the Principal Investigator. Participants will be sent an electronic survey and will minutes. The participant may complete the survey on any computer device of his or her choice. The procedures involved have minimal physical, psychological and/or social risk. However, with any procedure there can be individual risk involved such as reviewing a question related to computer use or technology triggers a psychological or social concern. In order to minimize these possible risks, participants can exit the computerized survey at any time if they feel it is impacting them negatively in some way.

Any information is obtained in connection with this study will remain confidential and will be disclosed only with your permission. Your decision whether or not to participate will not prejudice your future relationship with the Morgan State University. If you decide to participate, you are free to discontinue participation at any time without prejudice.

If you have any questions, please do not hesitate to contact us. If you have any additional questions later about the study, please contact Valerie Riggs, Principal Investigator- Urban Education Doctoral Student at Valerie.Riggs@msu.edu or Omari Jackson, Ph.D.– Faculty Advisor at Omari.Jackson@msu.edu who will be happy to answer them. If you have further administrative questions, you may contact the MSU IRB Administrator, Dr. Edet Isuk, at 410-516-3117. You will be offered a copy of this form to keep.

You are making a decision whether or not to participate. Your participation in this survey indicates you have read the information provided above and have decided to participate. You may withdraw at any time without penalty or loss of any benefits to which you may be entitled should you choose to discontinue participation in this study.

Valerie Riggs, Principal Investigator
Urban Education Doctoral Student

APPENDIX C: PERMISSION TO USE INSTRUMENTS

7/10/2018

Morgan State University Mail - Re: [EXT] Teacher Attitude Towards Computers Survey



Re: [EXT] Teacher Attitude Towards Computers Survey

1 message



To: Valerie Nyggs <valerie.nyggs@morgan.edu>, Knezek, Gerald <Gerald.Knezek@unt.edu>

Hello Valerie,
Yes, you have permission to use the TAC as you described in your message. The scoring instructions for the TAC are in the Instruments for Assessing Educator Progress in Technology Integration.
http://iittl.unt.edu/sites/default/files/Instruments/InstrumentsforAssessingEducatorProgressinTechnologyIntegration_0.pdf

Kind regards
Rhonda Christensen

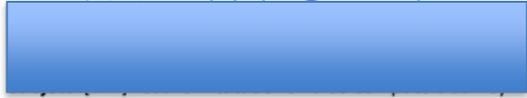
Instruments for Assessing Educator Progress in Technology ...

iittl.unt.edu

Instruments for Assessing Educator Progress in Technology Integration By: Gerald Knezek Rhonda Christensen Keiko Miyashita Margaret Ropp

Rhonda W. Christensen, Ph.D.
Research Professor

NSF Going Green! MSOSW Project Co-PI
Co-Director, Institute for the Integration of Technology into Teaching and Learning (IITTL)
University of North Texas
Information Technology Council Chair, Society for Information Technology in Teacher Education (SITE)



Dear Dr. Christensen and Dr. Knezek,
I am a doctoral student at Morgan State University and I am in the process of working on my dissertation. I would like to know if I can have your permission to use the Teacher Attitude Towards Computers Survey as an instrument for my dissertation? I will cite your work properly and provide you with a copy of my research. If so, I have the survey, located on your website. However, I do not see the scoring method for this survey and would need that as well.

Thank you for your help,

https://mail.google.com/mail/u/1/?ui=2&ik=777ca35fae&jsver=udqAzWhC2a4.en.&cbl=gmail_fe_180701.15_p4&view=pt&q=teacher%20attitude&qs=true&search=q



Re: re Development and Factor Analysis of an Instrument to measure Faculty Attitude towards e-Learning

1 message



Tue, Jul 3, 2018 at 3:12 AM

Dear Valerie,
Thank you very much for your mail. Our paper in AsianJDE has the final 12 statement instrument that you can use in your work with appropriate acknowledgement.

If you want a copy for the instrument, maybe Prof. Panda can share. At present I do not have access to a copy of the same.

Regards, sanjaya

Sent from my Samsung device

----- Original message -----



To: Sanjaya Mishra <smishra@col.org>

Subject: Re: re Development and Factor Analysis of an Instrument to measure Faculty Attitude towards e-Learning

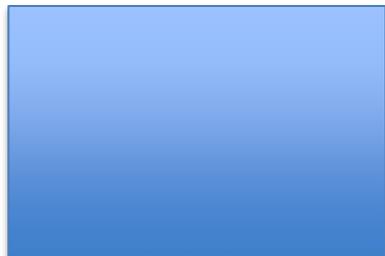
Dear Dr. Mishra,
The Aisan Journal gave me your updated contact information. Please see my email that I sent to you and Dr. Panda below.

Thank you so much,

On Mon, Jul 2, 2018 at 1:21 PM Valerie Riggs < >

Dear Dr. Mishra and Dr. Panda,
I am a doctoral student at Morgan State University. I am currently working on my dissertation and I am examining factors impacting faculty and the continued development of distance education. I have read your article Development and Factor Analysis of an Instrument to measure Faculty Attitude towards e-Learning. I would like to know how to gain access to this survey and possibly use it as a measurement tool for my dissertation.

Warmly,



APPENDIX D: INSTRUMENTATION

Individual Innovativeness (II)

Hurt, H. T., Joseph, K., & Cook, C. D. (2013)

1. My peers often ask me for advice or information.
2. I enjoy trying new ideas.
3. I seek out new ways to do things.
4. I am generally cautious about accepting new ideas.
5. I frequently improvise methods for solving a problem when an answer is not apparent.
6. I am suspicious of new inventions and new ways of thinking.
7. I rarely trust new ideas until I can see whether the vast majority of people around me accept them.
8. I feel I am an influential member of my peer group.
9. I consider myself to be creative and original in my thinking and behavior.
10. I am aware I am usually one of the last people in my group to accept something new.
11. I am an inventive kind of person.
12. I enjoy taking part in the leadership responsibilities of the group I belong to.
13. I am reluctant about adopting new ways of doing things until I see them working for people around me.
14. I find it stimulating to be original in my thinking and behavior.
15. I tend to feel the old way of living and doing things is the best way.
16. I am challenged by ambiguities and unsolved problems.
17. I must see other people using new innovations before I will consider them.
18. I am receptive to new ideas.
19. I am challenged by unanswered questions.
20. I often find myself skeptical of new ideas.

Instrument to measure Faculty Attitude toward e-Learning

Sanjaya MISHRA, & Santosh PANDA

Indira Gandhi National Open University, India

1. e-Learning will never replace other forms of teaching and learning.
2. e-Learning makes me uncomfortable because I do not understand it.
3. e-Learning is a de-humanizing process of learning.
4. e-Learning can solve many of our educational problems.
5. I feel intimidated by e-learning.
6. e-Learning will bring new opportunities for organizing teaching and
7. learning.
8. e-Learning is difficult to handle and therefore frustrating to use.
9. There are unlimited possibilities of e-learning have not yet been
10. thought about.
11. e-Learning saves time and effort for both teachers and students.
12. e-Learning increases access to education and training.
13. e-Learning will increase my efficiency in teaching.
14. e-Learning enables collaborative learning.
15. e-Learning can engage learners more than other forms of learning.
16. e-Learning increases the quality of teaching and learning because it
17. integrates all forms of media ; print, audio, video and animation.
18. e-Learning increases the flexibility of teaching and learning.
19. e-Learning improves communication between students and teachers.
20. e-Learning enhances the pedagogic value of a course.
21. I get a sinking feeling when I think of trying to use e-learning for my
22. courses.
23. e-Learning is not effective for student learning.
24. e-Learning experiences cannot be equated with those of face-to-face
25. teaching or even distance education.
26. It is essential e-learning material be of high quality.
27. Open universities should adopt more and more e-learning for his or her
28. students.

Teachers' Attitudes Toward Computers: Rhonda Christensen & Gerald Knezek
University of North Texas

1. I get a sinking feeling when I think of trying to use a computer.
2. Working with a computer makes me feel tense and uncomfortable.
3. Working with a computer makes me nervous.
4. Computers intimidate me.
5. Using a computer is very frustrating.
6. I feel comfortable working with a computer.
7. Computers are difficult to use.
8. I think computers are very easy to use.
9. I have a lot of self-confidence when it comes to working with computers.
10. Computers are hard to figure out how to use.
11. I believe I am a better teacher with technology
12. I like to talk to others about computers.
13. It is fun to figure out how computers work.
14. If a problem is left unsolved in a computer class, I continue to think about it afterward.
15. I like reading about computers.
16. The challenge of solving problems with computers does not appeal to me.
17. When there is a problem with a computer I can't immediately solve, I stick with it until I have the answer.
18. Computers can be exciting
19. I don't think I would do advanced computer work.
20. I will use computers many ways in my life.
21. I will use computers many ways in my life.
22. I like to scan computer journals.
23. It is important for students to learn about computers in order to be informed citizens.
24. Students should understand the role computers play in society.
25. All students should have some understanding about computers.
26. All students should have an opportunity to learn about computers at school.
27. Computers could stimulate creativity in students.
28. Computers could help students improve his or her writing.
29. Computers can help accommodate different learning styles.
30. Students work harder at his or her assignments when they use computers.
31. Students help one another more while doing computer work.
32. Student time on the Internet is time well-spent.
33. Learning about computers is worthwhile.
34. Having computer skills helps one get better jobs.
35. I am sure with time and practice, I can be comfortable working with computers.
36. Learning to operate a computer is like learning any new skill - the more you practice, the better you become.