EXPLORING THE RELATIONSHIP BETWEEN STUDENTS' SENSE OF COMMUNITY,

STUDENT SATISFACTION, AND DOCTORAL PROGRAM RETENTION

by

Adam William Roberson

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

School of Behavioral Sciences

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ABSTRACT

This is a study examining the interaction between certain doctoral student engagement indicators (peer, institution, curriculum, faculty, spirituality) and student satisfaction. The scope is to understand if student sense of community is a significant moderator to this interaction in order to address the issue of student attrition. It is important to understand these interactions and the influence of sense of community so that institutions of higher education better analyze student commitment. The outcomes of this study may be used as a means to design and implement engagement strategies that are effective in student retention and completion. Doctoral students were invited through email to participate in a Likert survey comprised of multiple scales measuring the key engagement indicators along with sense of community and student satisfaction. The quantitative results show that engagement is a predictor of satisfaction and, in some cases, is significantly moderated by sense of community. This study supports contemporary research conclusions suggesting that both student engagement and academic communities are paramount to student satisfaction which will ultimately lead to higher rates of retention. Recommendations for future research include determining how online students will be better served through engaging academic communities and strategies designed to enhance the engagement experiences.

Keywords: andragogy, engagement, retention, peer, institution, curriculum, faculty, spirituality, sense of community

Dedication

The primary dedication of this achievement is unquestionably placed in the hands of my Savior, Jesus Christ who is God's Son. But by the grace of God, go I. It is because of Your presence and the indwelling of Your Spirit, that I have had the power to endure, the wisdom to achieve, and the belief to accomplish mighty things. There are not enough breaths in my lungs nor beats in my heart left for me on this planet that I could thank You and praise You enough. This gift you have entrusted me with will not be squandered.

To my wife, Robin. You have dependably supported my educational journey for this past decade. All the while, you have been patient with me during those long days and late nights. When my face was buried in a book or reflecting the glow of a monitor, your love never wavered. You are my primary mission field; I will continue to serve you beyond the celebration of this accomplishment. To Hannah, our daughter. I can only pray that my attempts to balance all the facets of life were successful in showing you my unending love for the gift that you are. I love you both dearly.

To my parents, I cannot put into words the transformative examples that you have been to me over the many decades of my life. Though the stubbornness and immaturity of my youth blinded me, your persistent love penetrated my heart. Now I see dedication, excellence, commitment, leadership, pride, heritage, and family. Thank you from the depths of my soul and with all that I am. My gratitude and love for my parents, my brothers, my sister, and all of my family present and past is fierce. This accomplishment is the culmination of all of you.

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To my fellow students whom I have grown to respect and cherish. Mutual prayers are shared, encouragement is always given, and celebration is never in short supply. We cannot walk this journey alone; God crossed our paths for a purpose. Thank you for being part of my community.

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National Survey of Student Engagement (NSSE)

Peer Engagement (NSSE1)

Institution Engagement (NSSE2)

Curriculum Engagement (NSSE3)

Faculty Engagement (NSSE4)

The Religious Commitment Inventory-10 (RCI)

Sense of Community Index 2 (SCI)

Student Satisfaction Inventory (SSI)

CHAPTER ONE: INTRODUCTION

Overview

This study addresses the significance of student sense of community in higher education as it ultimately pertains to retention and completion. Specifically, this research is about the importance of establishing an academic community as the primary strategy for improving retention in doctoral programs. Even with the growing acceptance and practice of principles of andragogy, or adult learning theory, retention strategies administered at institutions of higher education remain responsive to singular ideals of student engagement such as peer interaction and learning, institutional access and resources, curriculum design and delivery, faculty availability and mentoring, and even the importance of spirituality as a motivator and source of strength.

Background

This research proposes that engagement indicators do in fact increase doctoral student satisfaction which directly correlates to higher retention. Even more so, the uniqueness of this research endorses that certain engagement strategies yield a higher sense of community. The predominant hypothesis is that this higher sense of community will significantly moderate the relationship between each independent variable of engagement and the outcome variable of satisfaction. When students enter doctoral programs, they are more than individual adult learners seeking an advanced degree. The theory of this study is that building a sense of community will result in greater rates of individual course work, dissertation planning and completion, and program commitment and graduation. This increased success, as a direct result of fostering an academic community, will lead to the doctoral retention universities are seeking.

This research begins by exploring the predictive power of engagement indicators on doctoral student retention. With doctoral programs across the United States averaging roughly 50% retention (completion/success) despite many strategies designed to reduce attrition, the scope of this study is to provide quantitative data that may be useful in the creation of successful engagement strategies and in future research. There presently are many studies in the undergraduate population due to the convenient aspect of sampling these students. While data does exist for graduate and doctoral programs, most of these outcomes derive from qualitative measurements as a result of surveys and focus groups. Further, many studies focus on only certain engagement indicators individually. This study, therefore, addresses many gaps: the target population is doctoral students, the methodology results in quantitative data, and the study collects five primary engagement indicators in order to compare the predictive power of each. The independent variables of engagement indicators for this study include peers, curriculum, institution, faculty, and spirituality. There are two dependent outcome variables that are considered as well which are student sense of community and student satisfaction.

The statistical significance of certain engagement indicators will help identify which variables matter most, influence more, and suggest greater completion rates in doctoral students. Therefore, deliberate data-based retention strategies are possible based on these outcomes. One underlying assumption of this research is that the efficacy of engagement studies in the undergraduate population will translate to the doctoral population. That is, higher levels of engagement equal higher levels of retention. A second assumption is that, when compared together, certain areas of engagement will provide greater significance based on what is known of community characteristics. The question, consequently, is which specific engagement indicators have greater power, or influence, than others. As a result, this research presents the

argument that the most powerful indicators may, in fact, be predictive of doctoral student retention which allows for more dynamic and intentional strategies in order to prevent attrition. To arrive at this point, however, the outcome factors of student sense of community and student satisfaction are measured. Based on the lack of a linear study of actual student retention, these dependent variables are necessary to predict retention derived from direct correlation to community and satisfaction.

Problem Statement

There are a couple of important reasons for conducting this research. First, as noted, doctoral retention (completion/success) averages at roughly 50% despite engagement strategies designed to reduce attrition. This is a national concern and requires serious attention by administrators and students alike. Considering the loss of revenue by the students who fail to complete their degrees, the expense of institutions to provide services to students that do not finish programs, and the loss of potential capacity to train and graduate students, such staggering attrition rates are costly. Improvements to retention strategies are required.

Second, the pursuit of this information provides quantitative data that may be useful in the creation of specialized engagement strategies. To this point, the majority of studies conducted on doctoral populations has been qualitative in nature. While these interviews and focus groups provide valuable information that institutions can use when designing retention strategies, they do not offer quantitative statistics that serve as baseline data. This critical data is useful for showing improvements as a result of effective retention strategies.

Purpose Statement

Improving doctoral retention is the main purpose of this research. This is accomplished by understanding how student engagement leads to a greater student satisfaction when sense of

community serves as a moderator. Increased student satisfaction thereby leads to higher rates of program retention. Understandably, a weakness of this particular research model is the snapshot manner by which the data is collected. In essence, the first step in the research model is to validate the data outcomes as congruent to undergraduate data collected in similar research. Further, the outcomes of this research will indicate a hierarchy of certain engagement indicators in correlation to the two outcome variables. The second step is to analyze the effect of student sense of community on satisfaction. Beyond this research, therefore, is the need to conduct a longitudinal study that measures student engagement, community, satisfaction, and retention over the course of the entire academic career.

Significance of the Study

In a broader sense, there is a certain impact on the specific field of higher education in that this unique study provides data that is, for the most part, scarce. There is already an understood gap in studies regarding doctoral students. Most higher education studies are convenient in nature as they are collected from undergraduate populations. A second impact on the field is found in a gap that looks at the effect of the comprehensive measurement of many indicators. As individual engagement indicators provide a level of importance as perceived by students, understanding this particular group as a collective has yet to be studied in relation to these specific outcome variables. In this manner this research will provide a comprehensive and quantitative examination of doctoral students measuring many indicators in one study.

If the theory of this researcher proves to be true, then the impact of these findings will be paramount. When all the engagement indicators are measured as one unit, the strengthening moderator of student sense of community will be significant to student satisfaction. With this variable being directly related to student retention, the implication is that a high student sense of

community can effectively predict student retention. The result is that institutions will be able to focus on all of the characteristics of student community as a means to develop strategies designed to increase student retention.

Research Questions

This section will record the progression of thought regarding this entire project. In other words, this is an explanation of the initial assumptions as a result of the research, the general research questions to answer, the underlying hypotheses based on the research model, and the overarching theory as derived by this researcher. Regarding the assumptions, it is important to confirm that doctoral student engagement is predictive of student satisfaction just as it is in the undergraduate population. Data from this latter population indicates that engagement and satisfaction are closely related. Still, the quantitative equivalent in the doctoral population is all but missing from the literature. Another assumption is that engagement indicators will have a hierarchy of importance consistent with qualities of community. It is important to understand if adult learners consistently rate the importance of engagement indicators as a way to target specific retention strategies.

Certain research questions naturally arise. To begin, are engagement indicators of doctoral students statistically significant to student satisfaction? This understanding helps to formulate the study as a whole. Students engaging in intentional ways as part of the education experience should find increased satisfaction as a result. This leads to the next research question. Are engagement variables statistically significant to sense of community? The final research question remains. What is the moderating effect of sense of community on the interaction between these engagement indicators and student satisfaction? That is, understanding this correlation will help explain the actual interaction of sense of community as a moderator to the

ultimate relationship between engagement and student satisfaction. Retention strategies, as a result, should be designed in response to these outcomes.

RQ1: Are engagement indicators of doctoral students statistically significant to student satisfaction?

RQ2: Are engagement indicators of doctoral students statistically significant to sense of community?

RQ3: What is the moderating effect of sense of community on the interaction between these engagement indicators and student satisfaction?

The research model, therefore, provides a total of 15 possible factor interactions to examine. The initial proposition is in response to the assumptions based on the research in that engagement indicators will have a statistically significant effect on student satisfaction. This premise is important to establish for each of the engagements. Next, this research introduces a different outcome. This idea is in response to understanding if engagement indicators will have a statistically significant effect on student sense of community. As a result, the set of independent variables show potential significance to two different dependent outcome variables. How these outcome variables interact is the basis of the final hypothesis. That is, student sense of community will be a statistically significant moderator of the interaction between the independent variables and student satisfaction. It is this last hypothesis that the theory builds upon.

The core of this research is to understand why retention rates are continuously low in doctoral programs across the United States and what can be done about it. Rather than only focusing on individual forms of engagement, as most studies of undergraduate students examine, this study is designed to understand how the collective group of engagement indicators results in

building a sense of community. Therefore, it is theorized that increasing retention is reliant on fostering a strong student sense of academic community. If this can be shown to be statistically significant, then a new perspective is presented to the field of higher education with the intent of designing retention strategies around student communities rather than isolated forms of engagement.

Definitions

To close this introduction, the main ideas and terms associated with this research are provided. These terms are directly related to the foundational precepts of the study, the key measurements of variables, and the prevailing theory. The definitions provided are relevant to the understanding here within; to be sure, each term is explored in great detail as part of the literature review.

1. *Andragogy*. The study and theory of adult learning processes, methodologies, and outcomes.

2. *Community*. A group of individuals that participate and interact with others as part of a common goal or body of knowledge.

3. *Curriculum*. All components of information, presentation, interaction, and assessment that is required for students.

4. *Engagement*. The manner by which students interact and participate with specific elements as part of the higher education experience.

5. *Faculty*. The individuals who administer the curriculum, provide direction and expectation, and assess knowledge obtained by the students.

6. *Institution*. Relevant to the administration of student accounts, the opportunities for further activities, and the learning resources that augment the educational journey.

7. *Peers*. Individuals directly involved with the students by means of similar education experiences, course work, or program involvement.

8. *Retention*. The measurement of students who complete coursework, dissertation outcomes, and programs of study.

9. *Satisfaction*. The measurement of fulfillment and approval, as perceived by the student, in response to the overall experience with the coursework, the dissertation, and the program elements as a whole.

10. *Spirituality*. A measurement of students' commitment to their individual faith as a means to provide security, stability, and motivation.

Summary

This chapter provided an introduction to the study of specific student engagement indicators and how they affect sense of community, satisfaction, and retention. Presented here was a general description of the overall study to include an introduction of the current research available on the topic and specific gaps in the research that this dissertation will fill. Also, there was an explanation of how the outcomes of this study will contribute to the extended field of education and provide institutions of higher learning extensive quantitative data that will be useful for establishing deliberate retention strategies. As preparation requires, certain assumptions and research questions were noted that lead to hypotheses and theories this study is intended to vet. Finally, key terms were defined simply to provide a point of reference for the reader before moving further into this study.

Regarding the balance of this dissertation, the following chapters will begin with an exhaustive literature review on all the main topics of this study. Within each topic, there are notations presented for the current definitions, present studies, and potential gaps in the research.

Following this chapter, the methodology of this dissertation is examined. This includes the sample population, the research model, and an exploration of the actual survey tool to be used to collect data. The subsequent chapter will include data findings, research results, and other pertinent outcomes of the study. To close, the conclusion chapter provides a summation of the outcomes and discussion, an examination of how the study's findings inform the literature, and a challenge for further study on the matter.

CHAPTER TWO: LITERATURE REVIEW

Overview

The origin of this research is to address the ever-present concern over student retention in higher education programs. The goal is to provide data that is useful for increasing the number of students entering a graduate or doctoral program who will actually complete the program. The current national trend is alarming given the loss of student potential and institutional resources. In order to understand how institutions can intentionally design strategies that will improve retention, this research will study the potential power of certain doctoral student engagement indicators as measured through their sense of community and overall satisfaction. Therefore, the foundation of this cumulative study provides an understanding of andragogy, retention, and engagement. Each topic offers a broad explanation increasing the relevancy of this dissertation research and survey of contemporary research.

Further, this study seeks to identify the predictive power of engagement indicators on doctoral student retention. With doctoral programs across the United States averaging roughly 50% retention (completion/success) despite many strategies designed to reduce attrition (Akobirova, 2011; Harper & Ross, 2011), the scope of this study is to provide quantitative data that may be useful in the creation of successful engagement initiatives and in further research. To be sure, there currently exists many studies in the undergraduate population providing comparable quantitative data. While graduate and doctoral data exists, most of these outcomes derive from qualitative measurements of surveys and focus groups. Additionally, many studies focus on only certain individual engagement indicators. The independent engagement indicators for this study include peers, institution, curriculum, faculty, and spirituality. Dependent outcome variables include student sense of community and student satisfaction. This research addresses

many gaps: the target population is doctoral students, the methodology results in quantitative data, and the study collects five primary engagement indicators in order to compare the predictive power of each.

One underlying assumption of this research is that the efficacy of engagement studies in the undergraduate population will translate to the doctoral population. That is, higher levels of engagement equal higher levels of satisfaction. The statistical significance of certain engagement indicators will help identify which variables matter most, influence more, and lead to greater completion rates in doctoral students. Therefore, deliberate retention strategies are possible based on these outcomes. A second assumption is that, when compared together, certain areas of engagement will provide greater significance as per the understanding of community. The question, consequently, is which specific engagement indicators have greater power, or influence, than others. As a result, this research presents the argument that the most powerful indicators may, in fact, be significantly associated with doctoral student retention which allows for more dynamic and intentional strategies to prevent attrition.

The overarching theory that is being tested regards the power of community. Specifically, there are many engagement strategies that rely on assumed importance of individual engagement indicators. However, if these engagement indicators are shown to increase student sense of community, then the cumulative moderating factor of sense of community may be powerful enough to warrant a fresh approach to an ever present problem. Rather than focusing on faculty-student mentoring or peer learning cohorts, for example, institutions can build retention strategies that focus on building a student's sense of belonging to an academic community as a more significant means of increasing program completion.

Theoretical Framework

This chapter contains significant theories, milestones, and the emerging practices of andragogy. This includes the historical prevalence of concern among institutions of higher learning regarding the low retention rates among enrolled students. Next, there is an exploration of currently applied engagement strategies and institutional efforts to reduce attrition among students. Specific to this study, a literature summation of each of the major topics and primary engagement indicators provides context that is useful for identifying research questions, designing the research methodology, and interpreting outcomes. Each engagement indicator is defined in general and then given credence to this specific research. Further, an explanation of how the factor is applicable to student retention strategies provides a broader understanding of how each may complement the others as a group.

To continue, a literature summary of the combination of all variables follows. It is important to apply what is known of these singular variables into a working theory of intertwined dynamics affecting the retention in doctoral students. Again, the two primary assumptions being that higher engagement leads to higher retention and certain factors may have higher powers of significance than others. To measure the overall sense of community, it is helpful to include them in one observation. A conclusion encapsulates the entirety of the literature review and overall contribution of this research to the broader field of higher education. Along the way, the strengths and weaknesses of the existing literature will help to clarify the notable gaps. From these outcomes, mitigation to correct for weaknesses, gaps, and limitations is noteworthy before continuing with the research.

Adult learning theory

Knowles idealized and developed what is today a widely known theory of how and why adults learn (Harper & Ross, 2011). Andragogy takes into account that adults learn differently than children in that the purposes and outcomes of obtained knowledge and skill are intricately connected to helping adults meet their needs and achieve their goals. The failure of institutions or organizations to serve adults in this manner results in their disengagement and removal of personal investment (Harper & Ross, 2011). This theory, now 40 years removed from conception, is driving much of how institutions of higher education approach the ideals and strategies to improve student retention, engagement, and academic success.

To dismiss andragogy as an irrelevant theory with little value, as some do, would be to ignore the positive attributes and contributions of Knowles and many others to the field of adult learning. One such example is the proposal of *pedandragogy* which takes the merits of both pedagogy and andragogy together as a means to promote and encourage "the development of effective learning environments where self-engaged learning by individuals of all ages can be fostered" (Samaroo et al., 2013, p. 76). These two markedly different theories have a distinctive place and purpose among specific populations due to the nature of considering that the needs and goals of adults are starkly different than those of children.

Foundational precepts

For the purposes of this research, the concept that andragogy considers the adult learner as one with unique needs, goals, and characteristics is foundational to the hypotheses that engagement demands and outcomes are equally unique to this population. Adult learning is more effective in mutually beneficial academic communities. To that end, what follows is a survey of key principles underlying this study. Each principle is fundamental as a way of framing the

subsequent factors. The engagement indicators, therefore, are the factors studied in the sample population. Before reviewing the topic of andragogy, it is important to reflect on the overall context of this study. The scope of this dissertation research revolves around retention of adult learners and the importance of certain engagement indicators on student sense of community and student satisfaction. While this research aims to address the doctoral population, a deeper understanding of the adult learner is important.

Andragogy. One simple example of why andragogy is so important, younger and older learners differ in information acquisition, retrieval, and organization in that the latter takes more time accessing the long-term memory required to do so (Merriam, et al., 2007). The resulting quantitative data outcomes of this research, therefore, will better prepare institutions and programs in the development of intentional engagement strategies specific to adults. While many studies exist on younger learners due to the convenient access to the sample population, there is a need to study older adults as strategies are expectedly different. Along with the need for acknowledging adult learning theory, the effects of andragogy on learning theory, the research supporting it, and the future application of andragogic strategies are noted here.

One premise of this dissertation research is based on existing data that the traditional undergraduate student will obtain higher levels of retention as a result of achieving higher levels of engagement. The assumption is that this same outcome will translate to the adult learner at which time it is expected that certain engagement indicators will show greater predictive power than others. Higher levels of adult learner engagement will, presumably, lead to greater sense of community and student satisfaction which results in higher levels of retention in advanced degree programs.

With this in mind, it is concerning that researchers and institutions are finding that students are approaching higher education with a "minimalistic" mindset as indicated by the appearance of students at the beginning of the semester to retrieve course expectations and then the departure of those students until the end of the semester at which time all assignments are submitted (Blackley, 2015). This illustrates a dire disconnection between the student and the educator. To be sure, pedagogical models of education place the student in a submissive role and require obedience to and dependence on the teacher as the purveyor of knowledge (Samaroo, 2013). However, failure of the learning environment and experience to ensure the inclusion of the student prevents transformation. As demonstrated by these trends and concerns, this model rarely succeeds in acknowledging the unique learning styles and characteristics of the adult student.

An exploration of the theory of andragogy is a valid pursuit as part of this research. When compared to their younger counterparts, adult learners will display a vast difference in learning preferences and habits (Brookfield, 2013) such as learning methods, task orientation, instinctive application, and rhythms of conducting learning preparation and outcomes. It is important to understand the adult learner and adult learning theory, therefore, before progressing through this study. Andragogy, as proposed by Malcom Knowles, is based on the assumptions that adult learners are self-directing, are able to recall and utilize experience, can associate social developmental tasks, display eagerness to apply knowledge, are driven by internal motivations, and desire concrete rationalization for learning a subject matter (Merriam, et al., 2007). In theory, this suggests that the adult doctoral student population sample of this study is characteristically different than the young adults who make up the undergraduate samples of previous research.

A challenge that faces adult learners is that they tend to coexist in two worlds; one is academic and one is professional. The successes achieved in professional settings can be replicated in an academic setting if the learning environment is structured in such a manner that is familiar to the learner. Conversely, in the absence of a learning environment that is not influenced by andragogy, the students have difficulty and face challenges when integrating into a traditional learning setting (Kenner, 2011). As many examinations of adult learners indicate, the andragogic theory holds true in that adults are lifelong and self-directed learners, highly motivated through curiosity, and must be given the opportunity to explore, challenge, and apply gained knowledge (Wray, 1999.) Their educational experience far exceeds completing assignments in exchange for a grade. It is conducive to both academic and professional pursuits.

As the development of andragogy advances, the teacher becomes more of a facilitator of learning through the transmission of knowledge to a group of interrelated and self-motivated adults. The presence of self-engagement in the older population, therefore, predicts the investment of time in learning activities, the amount of interest in actually learning, and the influence of collaborative learning. The approach of the *Interdisciplinary Studies* (IDS) at one institution, for example, rationalizes that students exercise their ability to research and apply knowledge in the process of marrying their academic path to their future plans through a systematic organization of information and methods applied to the creation of their course of study (Harper, 2011). In this manner, they are both engaged and motivated intrinsically.

Growing research in the field of andragogy continues, albeit in limited supply. Still, in younger populations there is a stark absence of deeper learning (characterized as personal development and professional identity) as realized through higher-order thinking, collaboration and conversation with peers, and reflection and feedback (Blackley, 2015). The studies of these

characteristics in advanced degrees are simply scarce and unreliable. Solutions that do embrace the intricacies of andragogy theory include a movement away from material or content focused teaching environments to more learner-centric communities that include collaborative learning, service learning, culture exchange, threaded discussion, open dialogue, and more (Ehiobuche, 2014). Just as teachers creatively seek ways for learners to demonstrate the application of knowledge, the methods that students acquire that knowledge must evolve as well, especially with adult learners.

To be sure, some research indicates that older non-traditional students, or those students who are older than 25-years old, have some semblance of financial independence, are employed full-time, may have dependents, and are enrolled part-time, are at a significantly higher risk for not completing their degree (Kenner, 2011). The study of andragogy must move beyond adult education and adult learning to a larger context. In other words, the long-term benefits of andragogic principles are not merely realized in the education and learning relationship nor do they simply describe the teacher-student-content triad of collaborative knowledge transfer (Ekoto, 2015). While there is an emergence of heutagogy, the study of self-determined learning, the arguments of Ekoto and others imply that andragogic principles prepare adults more effectively when knowledge is shared and explored in the presence and nurturing of critical thinking and application.

Finally, the future application of andragogic principles are of particular promise. Through the practice of andragogy theory, learners can be given additional attention, direction, and support which is in stark contrast to traditional lecture models of education. As such, researchers have found that instructional strategies that include this level of interaction and care from the educator will result in benefits for the learners, such as greater knowledge retention and that

these strategies are transferrable to any classroom environment to include non-traditional online

learning (Johnson, 2014). Adult learners engage in the process of learning when they have

freedom to collaborate with educators and fellow students. In these andragogic communities,

learners are encouraged to interact with the content and to actively seek, express and negotiate

interpretations as a means to further develop value-oriented relationships, critical self-reflection,

and collaborative skills (Ehiobuche, 2014).

As previously referenced, a group of educators from one institution (Harper, 2011) have

discovered successful outcomes in the IDS program in that students are more invested in the

completion of their degrees when they participate in the design of the program and choices of the

coursework as their interest increases through this process. In other words, the more difficult

courses (that may or may not be required) are endured with greater completion because the

students find ownership in the construction of a program of study that fits their desired goals.

Successful transference of knowledge from educators to students allows for open discussion

about the material, struggling through meaning, discussing personal experience, and discovering

application for the newly retained material (Wray, 1999). This level of involvement will increase

the investment of students resulting in the next topic to understand, the understanding of student

engagement.

Engagement. The second foundational principle, student engagement, is important to

institutions of higher learning as the application of these ideals will improve and increase

valuable investments of the students in order to create quality graduates (Association for the

Study of Higher Education, 2014). Therefore, engagement has the proposed goal of developing

students who exhibit both academic autonomy and active participation with the learning

environment as a whole and will, theoretically, increase rates of retention. Understanding

engagement is paramount to this dissertation study. First, one assumption is that higher levels of engagement will correlate with higher levels of retention as illustrated through student success and satisfaction. Second, as there are many avenues for engagement, certain engagement indicators will exhibit stronger predictive power. Therefore, a survey of student engagement theory and application is necessary.

There are many more possibilities for decision making, interaction, negotiation, and assessment of the doctoral student (de Freitas, et al., 2015). As generations of adult learners transition to include those who may operate more comfortably in the digital age, engagement can be fostered through these many possible solutions. However, there is a noticeable gap in technological demand and the institutional resources and readiness. As such, student engagement stands to suffer a missed opportunity. To be sure, there is growing acceptance to the idea that student engagement influences the decision to maintain enrollment or depart from a university (Lehmuller, 2010). For example, in one study, student satisfaction was shown to be positively correlated to student-faculty interaction, quality of student support, and effective teaching practices (Johnson, et al., 2016). Further, discussions with diverse others, quality of interactions, and effective teaching practices were strong indicators of student engagement (Johnson, et al., 2016). It is inferred that engagement strategies that take into account overall student satisfaction will have positive retention outcomes. Engagement, certainly, can manifest in many forms and there is no conclusive solution that can be deployed across all university settings.

Suggestions of doctoral student motivation are made to focus on the strengths, positive emotions, and efficacious functioning of successful doctoral students as a means to harness and develop their dedication to a fulfilling experience (Vekkaila, et al., 2013). As such, the development of the students as active and competent academic scholars results in higher levels of

engagement and motivation to complete the degree. One case study (de Freitas, et al., 2015) shows areas of weakness in retention to include the quality of the teaching and learning experience and the increasing need for engagement strategies especially amidst the growing use of the online format in higher education. One of the outcomes of this study indicate many benefits from embracing digital and electronic resources as solutions to the engagement problem.

While there is a focus on providing research outcomes that will enhance engagement strategies at institutions of higher learning, the research does not simply rely on what efforts prove efficacious. Interestingly, one group of researchers actually assessed the disengagement of doctoral students from their respective programs (Virtanen, et al., 2017) as a possible theory for addressing retention. In an attempt to understand the importance of student engagement in a specific university setting, a second group of researchers reviewed current studies, literature, and strategies (Oyler, et al., 2016). Intertwined in the clarification of engagement is the observation of motivation, the warning against isolation, and the interaction with institutional resources. As a final example, another group of researchers studied a group of seniors at a university to understand if a relationship existed between their engagement and satisfaction (Johnson, et al., 2016). The implication of their positive finding is paramount. If engagement increases student satisfaction, then the congruent outcome is an increase in retention.

In a broad finding, one ASHE study emphasizes that effective engagement strategies are those that result in students engaged in their learning and maintain involvement in further learning and course activities (Association for the Study of Higher Education, 2014). While studies on engagement in the undergraduate population show positive correlation to learning and personal development and to academic achievement, retention, and satisfaction, there are few studies that confidently show the same outcomes in graduate student populations (Akobirova,

2011). Further, very little is known about the motivations of doctoral students to enroll, pursue, and complete the doctoral journey, although ongoing research is seeking answers to this situation (Vekkaila, et al., 2013). Regarding the benefits of technological resources as solutions to the engagement dilemma, researchers note that such solutions are scalable and provide flexibility for online, on-campus, and hybrid models of teaching (de Freitas, et al., 2015).

Further research is still needed regarding the benefits of engagement (Lo, et al., 2016) as most students presented with positive correlations to engagement, although some exhibited negative importance to peer and faculty interaction in certain criteria. In graduate populations, studies result in no conclusive outcome. Still, among the findings of disengagement studies (Virtanen, et al., 2017) was the confirmation for doctoral students to abandon their programs based on lacking a sense of belonging in the scholarly community, failing to believe they had control over their development or success, and a reduced feeling of competency.

If institutions can mitigate or prevent doctoral attrition, they will need to understand the experiences that result in student disengagement. Research of multiple strategies (Lehmuller, 2010) helps to identify those practices that show better efficacy than others. The challenge is that many factors are notable predictor variables of academic achievement though no statistical significance exists for predictors of retention. Important higher levels of critical learning, some researchers note, include immersion into the learning process through problem discovery, identifying proper inquiry, and emphasizing the broader application of outcomes (Oyler, et al., 2016).

Student engagement presents many challenges in the technologically advancing market of education. With respect to online learning, ASHE stresses the importance of exploring student engagement theories due to the limited avenues for the student, faculty, and institution to engage.

As adult learners are expected to be self-motivated for independent study, the concern for disengagement remains. Relevant to this study, three main characteristics do emerge from the literature as factors of disengagement for the student: a sense of distress, a sense of cynicism, and experiences of inefficacy (Virtanen, et al., 2017).

Research suggests that factors of student expectation, support, involvement, and assessment can actually stifle or promote the level of efficacious autonomy (Lo, et al., 2016). As a result of this research, there may be a hierarchy of importance to students based on external demands and responsibilities. Along this line of caution, student success, another theory counters (Lehmuller, 2010), is not completely indicative of retention. Academic failure accounts for only a fraction of the attrition but is symptomatic of failure to engage in academic, scholastic, or institutional communities. To be sure, creating and fostering student engagement requires awareness of student emotion and interest, course material relevancy, and assignment application and achievability (Oyler, et al., 2016). Many factors are important to review to understand what may or may not result in student engagement. The ultimate goal, all the same, is retention.

Retention. As the final foundational point of understanding, retention of students in university programs is a constant and growing concern across American institutions of higher learning. From undergraduate programs at community colleges to doctoral programs at larger universities, the concern of student attrition is considerable. This is true in traditional on-campus settings, contemporary online settings, and a hybrid of both. Studies exist that look to identify and harness the factors that provide positive outcomes of student success, satisfaction, and retention (Sutton, 2014). The pursuit of discovery within this study includes the potential predictive power of certain engagement indicators on doctoral student retention. However, the thrust of the theory is that engagement leads to a stronger sense of community. It is this sense of

community that is a stronger predictor of retention. This doctoral population is intentionally selected due to the limited studies on these graduate students and due to the typically unique characteristics thereof.

This research focuses on the doctoral population of university students. As andragogy suggests, this population of adult learners will approach, interact, engage, and apply the transfer of knowledge differently than traditional students immediately out of high school. Still, the challenge of student retention exists and with even greater variables that commonly accompany adult responsibilities. It is this doctoral student population that receives limited research regarding the low retention (Akobirova, 2011) which is why studying this population is critical for understanding the expectations, experiences, and exposure of these students. Student retention, or the measurement of students remaining in and completing education programs, is a consistent concern for educators and institutions. With many doctoral programs taking as long as nine years to complete (Ehrenberg, et al., 2007), the correlating attrition rate, or failure to complete, represents more than half of the students who start the programs.

Institutions have attempted to correct this trend with varying degrees of success. In many cases, strict course structure and activities that promote contiguous accountability, for example, were noted as helpful in subsidizing student effort. Another strategy that is gaining traction and showing progress in mitigating the nearly 50% attrition rate of doctoral candidates is that of student-faculty mentor programs especially with online student success being of considerable concern (Bell, et al., 2014). The mentoring approach addresses multiple facets of a similar problem relevant to the research of this paper. First, doctoral student completion is of unique importance as adult learners present new opportunities for educators. Second, the online environment provides a more difficult arena to prove efficacy of mentoring success.

Institutions concerned with low retention rates of the student population implement many strategies in response to this constant threat. Of those strategies, involvement of faculty as part of the solution is most common. According to some researchers (Golde, 2005), focus on doctoral retention, ranging between 50%-55%, is important due to the lack of extensive research on the topic, the implication of weaknesses in a department, university, or discipline, and the economic arguments of wasted departmental, institutional, and federal resources. This particular qualitative study builds on the theory that doctoral students experience greater success when they are integrated into both the discipline and the department.

Graduate students often present many unique circumstances as part of their educational journey. In theory, the graduate student will differ from the average undergraduate student in many potentially confounding variables such as life experience, military status, number of dependents, vocational journey, income, length of study and more (James, et al., 2016). Further, although these students are traditionally expected to be self-guided scholars, meaningful interaction with these students should not be sacrificed as this contact has a direct impact on retention (Akobirova, 2011).

Of the studies on retention in an online higher education setting, the concept of community is hardest to observe as peer, faculty, and institutional relationships are characterized by little interaction due to the nature of the learning environment. While online education offers a myriad of opportunities (a discussion beyond the scope of this research), it certainly presents concerning characteristics that theoretically contribute to low retention. These concepts were the basis of one researcher comparing students taking only online courses and those taking a hybrid of online and on-campus courses (Struble, 2014). Along with the challenges of online learning, first-generation students are unique as well. A focused study on the impact of programmatic

strategies designed to improve retention of first-generation college students resulted in a strong impact from faculty mentoring and involvement in communities of learning (Woods-Warner, 2014). As such, it is understandable that a shift in the institutional response to the ever-present problem of retention is occurring. That is, strategies that include an emphasis on student engagement, as an intentional response, are becoming more common.

Some researchers have identified influences of retention in both the classroom and on institutional standards. For example, institutions that practice open-enrollment, or student enrollment with the lowest selectivity criteria, are generally those programs that report the lowest retention rates (Sutton, 2014). Additionally, while the factors of online and on-campus education opportunities are characteristic of non-traditional adult learners, researchers have found that, when compared to each other, neither online nor on-campus programs showed significance in predicting retention over the other (James, et al., 2016). Institutions struggle to understand this quagmire of student retention.

One assumption is that the time required to complete a degree and the successful completion of that degree are related in some manner. To be sure, research also shows a disparaging balance that must be understood. While greater lead time to completion decreases retention, it also increases the quality of the student and their work. That is, the quality of the post-completion jobs and that of the research publications of the students are maximized through longer faculty and research interaction and reducing the time for degree completion to improve retention may adversely affect the quality of the dissertation and students' future prospects (Ehrenberg, et al., 2007). The challenge to review many factors of low retention in one study remains.

The search for a reliable answer to the problem of retention rates of higher education being merely fifty percent involves many factors. Institutions continue to struggle especially as education methodologies and practices continue to change. With the advent of online learning environments, the recognition of exceedingly more factors of low retention is evident. In an effort to understand this particular population, researchers (Firmin, et al., 2014) find that student effort and discipline was a stronger indicator of success than other characteristics measured in the study. In fact, the outcomes were so overwhelmingly in favor of student effort that the next most prevalent factors of demographic description, course content, and use of support services were arguably insignificant (Firmin, et al., 2014). In another study, one group of researchers at a large state university identified that a study of engagement strategies failed to show efficacy for increasing retention (Cochran, et al., 2014). Rather than studying the strategies that are designed to keep students enrolled, they studied the characteristics of those students who completed the education process. Of their findings, cumulative GPA, class standing, previous withdrawal history, gender, and receipt of academic loans were significant factors (Cochran, et al., 2014). Institutions are still missing the target.

Research exists that uses analytics as a means to improve retention through institutional improvements to learning environments and support mechanisms (West, et al., 2016). Of the findings, it is understandable that many outcomes have unique correlations to the specific institution and student culture. Still, there are broad characteristics found in virtually all institutions that were studied. In a similar study of the learning mechanism, the outcomes of online research showed that those students who took at least one hybrid course retained at a higher percentage than those students who participated in online courses only (Struble, 2014). The implication is that the benefits of online higher education for the non-traditional student do

not overshadow the concept of community with fellow students, the research field, and academic professionals.

The academic community continues to surface as a noteworthy predictor. Of the significant findings from some research on doctoral students, these sample students had constructed certain academic realities based on their undergraduate experiences only to develop a more realistic understanding of career outcomes from interacting with faculty, research, and career advisement (Golde, 2005). Conversely, the student perception of an unsurmountable milestone (such as a dissertation project, a qualification examination, or an oral postsecondary requirement) was a large indicator of dropping out of a program (Golde, 2005).

Based on the outcomes of student characteristic studies with the strongest statistical significance of academic experience, withdrawal history, and cumulative GPA (Cochran, et al., 2014)., it is a reasonable conclusion that students, online or otherwise, who are characteristically weak in these areas need additional assistance and guidance in order to fulfill completion requirements and improve retention rates as a whole. Regarding the idea of enhancing student culture as a means to improve retention, a lack of clarity and purpose for degree completion and perceiving insufficient ability to succeed were shared among most universities (West, et al., 2016). A strong academic community may help ensure the additional support and guidance students need in order to maintain and complete their degree completion goals.

Learning analytics, as previously noted, involves a great deal of resources and expertise; however, the use of such a tool will provide institutions with continuous data collection and student feedback that allows for real-time response to unique causes of student attrition rather than delayed reactions. Analytics can come in the form of student engagement across many facets of their education and the institution can react and respond accordingly. As an example of

engagement that may be corrected or improved, a faculty-student relationship should avoid dictator supervision from the teacher and feelings of isolation and being overwhelmed by the student (Bell, et al., 2014). Enhanced mentoring experiences should include, therefore, positive communication, interaction, adherence to the vision, contagious energy, and firm commitment to degree completion and student success thereby increasing retention (Bell, et al., 2014).

On a final note, a growing emphasis on student engagement is specifically true in populations of at-risk students which emphasizes the need to understand student persistence and engagement as a critical element of retention and success (Woods-Warner, 2014). The key to retention, as this study theorizes, is a strong sense of community that is built through certain avenues of engagement. This study focuses on student engagement with other peers as symbiotic learners, the institution as an entity, the curriculum and knowledge resource, the faculty as facilitators, and one's spirituality as a source of strength and determination. Each topic is given ample explanation and current research findings.

Subjects of study

Now that a foundation for this study exists due to recognizing andragogy, engagement, and retention, there are five areas of specific engagement to define, understand, and apply to both the equation and solution for low retention. If andragogy suggests that adults learn in different manners and environments than children and that intentional engagement is critical to success and completion, then there must be a quantitative measurement of specific engagement indicators if there are to be transformative solutions to low retention.

Peers. The first mode of engagement, the interaction with peers is important to explore. The study and application of learning communities by a pair of researchers (Bonet & Walters, 2016) indicates the strong correlation between peer engagement and student success.

Preparation, development, and cooperation are all key outcomes of peer engagement that faculty are realizing through intentionally designing learning environments. The current research of this dissertation study is seeking to identify what engagement factors are more predictive of students' sense of community and satisfaction. Ultimately, this leads to an understanding of student retention.

In one study, the second highest factor regarding student retention was the level of academic engagement (Pruett & Absher, 2015). Academic engagement, in this case, is described as the accumulation of students' interaction within the classroom, with other peers, and with faculty. This engagement must begin within the first semester to avoid the student being overwhelmed, distracted, and losing interest altogether. Additionally, evidenced-based programs that are intentionally designed to build upon students' self-awareness of their personal educational journey directly correlate to engagement and retention (Soria & Taylor, 2016). These initiatives are founded on the belief that individuals possess the ability, skills, and resources to be successful (Soria & Taylor, 2016) and can build off of others working in their cohort.

Student engagement occurs in many different facets, although this study focuses on five specific factors. Engagement with academic peers as colleagues, confidants, and co-learners is one important indicator, to be sure. Studies do indicate that student success and satisfaction is closely related to their engagement in a scholarly and challenging community (Vekkaila et al., 2014). From the perspective of both the student and institution, positive gains are realized as a result of finding that these learning communities increase student engagement and retention (Kampfe et al., 2016). Therefore, the concept of peer interaction and engagement is critical when discussing retention as it is within these cohorts that students can have direct access to a

supportive, knowledgeable, and active community with similar goals and aspirations of completing their specific degree.

An important theorization to illustrate is that students who enter into programs are motivated based on predetermined characteristics but maintain enrollment based on continuously evaluating their expectations of the program, of the faculty, and of their peers (Mendoza et al., 2016). This suggests that a better understanding of peer engagement will lead to more accurate engagement strategies of higher success. Peer engagement, as seen from other indicators, is supported by literature as an important factor of engagement for student success.

In fact, of the students encountered in one study, these learning community strategies obtained high positive impact on higher levels of engagement and lower rates of absences (Bonet & Walters, 2016). When considering the globalization of knowledge and the extent of diversification, peer engagement provides unique perspectives and critical knowledge that cannot be effectively obtained from a textbook. Learning communities are becoming more prevalent in colleges and universities as a way to promote intentional strategies of engagement. There are benefits, researchers suggest, in the connectivity and membership among students with common interactions, organizations, and coursework (Kampfe et al., 2016).

In fairness, some negative aspects can exist with cohorts or learning communities such as groupthink, social cliques, and potential for misconduct (Kampfe et al., 2016); however, research suggests that there are substantial benefits from working with peers. One quantitative study (Pruett & Absher, 2015) of community colleges provided results that were congruent to historic findings. In short, the development of students correlated to retention. When students failed to become intentionally mature, advanced, and enlightened as scholars and students, attrition increased. Interestingly, external factors such as parental education level, overall grade point

average, advanced course work, and others were found to significantly impact retention (Pruett & Absher, 2015). While these factors augment student success, they can influence the culture of engagement as well. In a qualitative study, researchers identify the importance and strength of an individual student's sense of community as being a strong predictor of that student's success (Mendoza et al., 2016). Peer engagement is associated with a positive sense of community through belonging, being valued, and having needs met (Mendoza et al., 2016). As such, it is the initial interaction with peers that ultimately results in a strong sense of community.

Conversely, disengagement in these communities results in a lack of energy, of involvement, and of development as a student and scholar (Vekkaila et al., 2014). When compared to other factors, it will be interesting to see how this crucial indicator fares. Actually, researchers are finding that building learning communities, peer mentors, and other forms of strategic peer interaction increase student engagement and retention. In fact, these strategies which utilize strength-based approaches have positive correlations to students' sense of belonging, self-efficacy, and retention (Soria & Taylor, 2016). The outcomes of current research indicate that successful programs promoting peer engagement are those that also identify student strengths and empower the students to hone them.

Institution. The second area of student engagement, with institutions of higher learning, has to do with the policies and practices of administration. One example emphasizes the effects of institutional engagement on student community and satisfaction. Though the use of contingent and temporary faculty may save money over time, research shows that this negatively effects student retention (Jaeger & Eagan, 2011). This illustrates why it is important to understand how institutions relate to student engagement, satisfaction, and a higher likelihood of pursuing a degree. As another example, community engagement of faculty and staff of institutions of higher

education provides positive outcomes (O'Meara et al., 2011) as students witness the effectiveness of working together and engaging beyond the textbook. At one time, however, the involvement of the greatest minds, most advanced technology, and contributions of knowledge into the community was scarcely recognizable (O'Meara et al., 2011). This is a trend that must change.

The role of engagement indicators and their ultimate effect on student retention is the focus of this dissertation study. Underestimated, to be sure, is the power of institutional engagement. Granted, there are many programs that are specifically designed and implemented for the undergraduate population of students who traditionally live on campus and have myriad engagement opportunities. In one study (Griffin, 2008), the goal was to understand the pattern of academic and institutional struggles in college students that ultimately led to attrition. In one case, institutional programs were designed to specifically address the needs of high school dropouts who had earned a GED and were perusing postsecondary education. Still, a challenge that continues to plague institutions of higher education is college preparedness of the students entering.

Often, the institutional engagement of students in higher education for graduate, doctoral, and even online is overlooked. While programs exist for younger, residential students, it is often the adult learners who are left marginalized when it comes to intentional strategies. To study and understand how colleges and universities can better serve and support adult-learners will improve success in undergraduate, graduate, and doctoral populations.

In truth, the more dissatisfied with the overall collegiate experience students become, the more their persistence diminishes (Jaeger & Eagan, 2011). Students who are introduced to and maintain consistent communication and relationship with full-time staff and faculty will build

stronger mentors and trusted advisors. As a result, this form of intentional institutional engagement leads to higher retention. As another example of institutional engagement, the transitional role from dependent to independent scholar can be successful with institutional support for program and resource design or it can be futilely mediocre as a result of unnecessary bureaucracy and budget restrictions. Within the stages of doctoral development, students naturally enter into a stage of self-directed and often isolating research. The ideal situation is for all stakeholders to aid the student in effectively navigating the process of academic preparation, practice, and success (Baker & Pifer, 2011). This is arguably a high-risk phase for attrition. With institutional support, programs are able to intentionally design and effectively implement social and academic support resources that mitigate the periods where mentors and advisors are virtually non-existent and offer little support for doctoral students (Baker & Pifer, 2011).

Institutional engagement requires drive from the administration down through faculty to nurture these partnerships with students as a means to apply faculty's skillsets to local, regional, and national problems and challenges (O'Meara et al., 2011). Beyond the transfer of knowledge that occurs in the classroom, engagement with faculty may include avenues of sharing expertise, community-building exercises, and other teaching and learning community situations (O'Meara et al., 2011). Just as communities began to work alongside the faculty who engaged them, students will perform in the same manner as a result of being included as an equally important member of a larger community of academic scholars. The concept of institutional engagement with students is epitomized by this microstudy due to the protocols and expectations of the university culture.

Although it should not be an unanticipated outcome, research does indicate the emotional well-being of students entering the university setting experience high levels of anxiety (Oliver et

al., 2010). Research further indicates that adult learners who are seeking academic and vocational success desire structure that promotes peer relationships and offers greater engagement opportunities beyond the coursework (Allen & Zhang, 2016). Institutions should include intentional strategies that offer campus involvement (online and on-campus) as a means to include older adult students. To be sure, both academic and educational factors represented the largest barriers for students at any level (Griffin, 2008) indicating some semblance of control over this factor. A positive experience with institutional engagement is critical for this population in order to effectively overcome these barriers and successfully complete educational goals.

Non-traditional students enrolled in distance learning, nonetheless, will reap benefits from strategic institutional involvement in their educational journeys. This may range from online communities, academic think-tanks, program initiatives, education programs, and many other policy driven outcomes. Institutions with specific actions designed to engage all students (even the nontraditional students) will pose a greater relevance, provide higher quality experiences, and improve retention of those students enrolled in their programs. Research finds, there are barriers restricting involvement of time, work, family, and other responsibilities of adult life; however, adult learners see benefits of such campus activities and student organizations but recognize that these opportunities are not designed nor marketed for older generations (Allen & Zhang, 2016). This is a missed opportunity for universities.

As such, institutions have deployed strategies to improve the well-being of students such as structure support initiatives, adjusted teaching styles and expectations, and more; however, there remains a struggle with teaching students how to effectively cope with the challenges and stressors of this new venture (Oliver et al., 2010). This is certainly true with adult learners. While there is a greater resiliency due to life experiences and broader responsibilities, the process and

actualization of returning to institutions of higher learning is daunting and cumbersome for many. Further, research suggests that high student success and satisfaction is reported at institutions that emphasize and implement student relationships and interactions with key resources as a means to develop independent scholars (Baker & Pifer, 2011). It is this type of institutional engagement that results in higher retention as the students identify their success with the institution that walked alongside them on their journey.

Curriculum. The third area of student engagement to study is that of the curriculum. As research into the concept of retention of doctoral students continues, it becomes clear that many quantitative studies exist of the undergraduate population and primarily qualitative research is available for graduate and post-graduate students. That leaves a large gap of quantitative outcomes of doctoral student retention. How this population interacts with the curriculum and the delivery and assessment of material is important to understand. One group of researchers applied a mixed methods study (Bagaka's, et al., 2015) to this opportunity and found that two main characteristics of successful doctoral programs persisted: mentoring and curriculum. As such, student engagement can be predictive of student success given the proper environment. To that end, as research identifies the importance of various types of student engagement such as curriculum, institutions of higher learning will be able to more effectively design strategies with the goal of increasing student retention. The engagement with the curriculum must not be overlooked. This focus of research includes the delivery model, the information presented, the assessment of knowledge, and vocational application, to name a few.

There is a paradigm shift from traditional models of education to more progressive delivery methods. This requires institutions and educators to examine the instruction design and improve it in accordance to research outcomes. The importance of curriculum engagement in the

study of student retention is that courses designed to facilitate student engagement will obtain and retain student interest leading to greater satisfaction. Still, the pursuit of program completion holds, according to this research, an emphasis on students embracing the opportunity to engage academically and socially into a community of scholars (Yu, 2015). This engagement and sense of community is not merely with people; rather, it is also with the course content and subject research. It is the engagement with the curriculum that promotes knowledge acquisition, retention, and application leading to higher degrees of satisfaction.

One study (Hurtt & Bryant, 2016) emphasizes the desire of contemporary students that course content be relevant to academic interests, career goals, economic return on investment, technological advancements, and changing global dynamics. In this situation, identical classes were studied with the curriculum and assignments of the course being changed to include interactions with experts from the field, research of program implications outside of the university, and journal writing assignments which catalogued the progression and application of the knowledge obtained. Through the application of universally designed learning (Tobin, 2014), for example, such as lecture captioning, step-by-step conceptual presentations, video interaction, and others, the curriculum is designed in a manner that emphasizes the capabilities of technology as a means to deliver accessible knowledge.

Another area of consternation is the argument over online learning. The support for flexibility and diversity geared toward older adult students and disadvantaged populations is as equally hailed as the criticism for electronic difficulties, non-traditional interaction, and inadequate knowledge transfer. This gap in the delivery information, training, and research is critical in order to compete in a growing globalized market and requires many nations to transition from industrial to informational through technology (Njenga & Fourie, 2010).

Researchers are challenging the belief in many myths surrounding technology as the solution for all educational challenges. One theory is based on the uniqueness of Generation Y to include their characteristics of being kinesthetic learners, their familiarity with electronic gaming simulations and interactions, and their assumed learning loss when the material is only delivered through traditional lecture and reading expectations (Hicks, 2007). The point is that curriculum engagement has a huge influence on student success, satisfaction, and retention and must not be overlooked.

To be sure, the incorporation of effective and intentional mentor programs raises student engagement; however, it is the emphasis on the curriculum and opportunities to develop students who are engaged in academic research and who are actively maturing as successful scholars that proves critical (Bagaka's, et al., 2015). This study shows how the integration and inclusion of students in the research environment and community offers positive outcomes regarding student satisfaction and ultimately program completion. Outcomes from studies of curriculum design indicated significantly higher assessment scores and a greater understanding and appreciation for the course content included both in and out of the academic community when compared to the other control assignments (Hurtt & Bryant, 2016). This study emphasizes that the lecture and exam genre of course design will benefit from the inclusion of applied knowledge opportunities such as inquiry-based learning as a means to validate research and assignment expectations.

A gap in research consists of the student perspective with respect to the material being taught and adherence to certain curriculum requirements. That is, the common reaction by universities to low retention and success rates typically includes tutors or support centers, faculty interventions, and peer interactions. Regarding curriculum, some researchers (Hylton, et al., 2016), however, are finding that students maintain feelings of being overwhelmed and

helplessness or they find the material to be irrelevant to the real world or their area of study. An interesting area of study emerges as more focus is placed on generational differences, as well. To be exact, one researcher looks at creative ways to merge critical components of curriculum material and assessment with the gaming fascination of a particularly younger generation (Hicks, 2007). This is a study on how to effectively communicate knowledge and application to younger students in a manner by which optimal retention is gained.

Similar to the previously noted study on student incorporation with the creative curriculum delivery models, another study emphasizes that academic integration by the student is predictive of satisfaction along with additional success of social integration (Yu, 2015). It must be noted that this study of student interaction models includes collaboration with the institution, faculty, peers, and family and the students' background and pre-college experience. With the controversial advent of online learning and programs struggling to produce quality scholars through the creative and effective use of technology, there are studies that identify risks and rewards for student retention. One particular group of researchers identifies that certain cohorts which have positive attributes to both student engagement and program outcomes based on the effective use of multiple technological outlets as a means to deliver curriculum content and assessment (Chen, et al., 2010). By its nature, technology opens the door for disadvantaged and inaccessible users to engage in certain programs; however, the extent to which students engage with peers, faculty, and the actual course material fluctuates based on the culture and expectations of the institution.

In response to motivations that keep a student engaged in programs of study, it will be helpful to ascertain how critical curriculum is to student success and retention. It is in this gap that institutions ought to explore ways to incorporate more deliberate active learning strategies

into curriculums that include peer-assisted collaborative learning, faculty mentor programs, and the like (Hylton, et al., 2016). Still, increased time with faculty and peers show no lasting and conclusive evidence of success. Interaction and belief in the curriculum and mutual support from strong leadership through the design of course material and assessments is suggestive of higher rates of satisfaction and success.

It is the manner of intentional strategies surrounding technology that must be studied, as well. For example, eLearning, or online learning, does not contain a redemptive power overarching all obstacles in the current age, but can be utilized to provide opportunities to those who otherwise would not have access (Njenga & Fourie, 2010). To be sure, technology is a medium for achieving the goal of knowledge transfer (Njenga & Fourie, 2010) and requires the deliberate application and design within the curriculum in order to maximize the learning experience. While one particular study does not show statistical evidence that the use of gaming and simulations increases learning retention, it does fortify that active involvement of the students with the curriculum through other means of engagement is an essential element of their experience (Hicks, 2007). This strongly implies that curriculums that are written with the students' involvement and interaction will be more successful with knowledge retention leading to greater program satisfaction by the student.

Finally, in response to technological advantages, course facilitators are using these opportunities to foster creative, innovative, and engaging learning environments that actually produce more critical learning outcomes through improving technological skills, empowering deeper research opportunities, building on higher order thinking, and maturing diverse social development through working groups (Chen, et al., 2010). One researcher (Tobin, 2014) provides clarity to the challenges of online learning. In one aspect, online courses can simply be

watered down repositories of information intended to be lecture material capsulated as a file download with accompanying discussion posts and elementary quizzes. Conversely, online course curriculum designed to provide quality interaction and social connection provide a more satisfying experience when obstacles of accessibility and technology are void (Tobin, 2014). In other words, adaptation is necessary to overcome barriers.

Faculty. Next, the student engagement with faculty has already shown to be a common response of institution to improve retention. Engagement indicators will present with varying importance and predictive power. Literature suggests that one of the most prevalent forms of student engagement is with the faculty. This is either by design or occurs organically through models of teaching. One such model, student-centered teaching, is building momentum in some communities as a means to improve or impact student learning and engagement (Bradford et al., 2016). It is the responsibility of the faculty to design and implement these strategies in the learning environment for ultimate positive results. In order to do so, the faculty must be available and be active in academic relationship with the student. To be sure, this is an important factor as instructor presence can be a critical part of establishing student-instructor connection (Joyner et al., 2014). Many institutions will invariably initiate engagement strategies based solely on the assumption that the student-faculty relationship should be the primary area of focus.

There are instances when the faculty engagement fails despite being one of the most influential predictors of student retention as it is sometime difficult to convince faculty to implement and integrate strategies into their routine and practices (Restiano, 2014). There is notable disconnect between traditional lecture-assessment models of education and those that utilize more contemporary theories of adult-learning. It is the application of the latter where students can experience social and academic interactions that help them develop a greater

perception of the world. There is another complication as well. Perhaps the advent of online teaching is forcing universities to reconsider the role of the faculty engagement as part of student motivation, success, and retention. The absence of physical face-to-face interaction requires teachers to utilize technology as a key element in the transaction of knowledge. As such, the absence of traditional interaction must be addressed especially in lieu of adult learners balancing outside life demands of their time and resources (Kearns, 2015).

Designing intentional strategies that emphasize faculty-student engagement is not simply the result of institutional mandates and policy. To be sure, the beliefs held by teachers affect their methodologies and outcomes. For instance, one researcher discovered that teachers who lacked the training or understanding of adult learning theory were more likely to struggle with incorporating life experience, communities of learning, and engagement in the learning process as theorized (Scherling, 2013). Faculty engagement with students, while common in certain environments, does require a change in thinking and application.

One study (Bradford et al., 2016) suggests that students tend to be more engaged when they feel the material will aid their career, they perceive themselves to be a good student, and they were motivated by grades. The role of the faculty can be paramount or detrimental to student success. While initiatives responding to financial support, academic planning, research development, and positive relationships are common responses to the problem of nearly 50% attrition in higher education programs, it is the cultivation and nurturing of the relationship between students and their professors that is perceived as the most critical (Holley & Caldwell, 2012). Institutions inherently respond to this epidemic by promoting and empowering professors to build and nurture relationships with their students that go beyond the simple equation of

knowledge transfer. Understandably, faculty engagement can occur through many avenues as part of the education experience.

One researcher (Felder, 2010) approached the relationship between faculty and students as a means to understand and document how these interactions are perceived with respect to their impact and importance. Three main outcomes are of note. First, faculty are perceived as considerate and helpful when they make time to share sincerity with students. Second, faculty who shared their own research allowed collaborations to form with students building an academic union. Third, as the student emerges as an expert in a particular field, the faculty are part of that development as a professional scholar. Student development is much more successful and transformative in the presence of engaged and active faculty. Still, faculty engagement is just one of many factors that may predict student retention in a program of study.

Researchers found positive correlations between such direct faculty and student engagement and learning impact and outcomes (Bradford et al., 2016). How this factor performs when compared to others is the purpose of this dissertation study. It is the interaction with the faculty as a role model, mentor, and research colleague that appears to provide the greatest impact to student development both socially and professionally (Holley & Caldwell, 2012). It is important to understand the value of this form of engagement and interaction from the students' perspective in order to design strategies to improve low retention outcomes.

Data suggests that greater interaction between students and faculty strongly correlates to retention across multiple aspects of higher education (Restiano, 2014). Success, defined as course completion and a pursuit of furthering the program of study, is determined by these interactions. Further, the faculty-student relationship is very predictive of degree satisfaction, retention, completion lead-time, and career aspirations as this is a way that students are

integrated into a research and academic community that aligns with the students' future profession (O'Meara et al., 2013). When institutions are seeking ways to improve retention, the focus must go beyond mere data and output. The sense of community that develops as a result of faculty-student engagement provides a solid emotional competency within the student.

In the end, research suggests that the perception of a caring and invested instructor leads to more successful teaching and learning (Joyner et al., 2014). Techniques that are showing positive qualitative outcomes for online faculty-student interaction are those that utilize intentional peer interaction and group work that is facilitated by the faculty who are learning to manage group and classroom dynamics (Kearns, 2015). Research suggests that teachers who intentionally design faculty interactions with students are finding greater engagement and retention as a result of these connections.

This competency of building faculty-based academic communities, therefore, leads to greater student success though many scholars have not truly explored the impact of institutions integrating strategies that build emotional competencies into advising and mentoring relationships (O'Meara et al., 2013). As a result of this kind of focus, faculty gain the trust and dedication of students by being committed to their success, by building relational bonds with them, and by eliciting collaborations with other students, scholars, and professionals (O'Meara et al., 2013). These are strategies whose efficacy needs documented but show great promise.

It is important when teaching adult learners, based on the prescribe andragogic precepts, to obtain the experience of designing and implementing effective learning environments and instruction. One major contemporary shift in the theory is moving from teacher-centered to learner-centered (Scherling, 2013). In this study, outcomes indicated that many faculty, specifically adjunct, would benefit from mentoring of their own in manners of learner-centered

instructional practices and activities (Scherling, 2013). This serves as a means to enhance faculty-student engagement and increase, ultimately, student sense of community, success, and retention.

      Spirituality. The final independent variable is that of spiritual and/or religious engagement. The purpose for the inclusion and study of spirituality is to understand the importance of this intrinsic engagement indicator and the inclusion of community. Among this sample population from Liberty University doctoral programs, it is assumed that there will be a bias affecting the data outcomes regarding spirituality due to the evangelical nature of the institution. However, the hope of this research is to determine if there is a significant importance of spirituality as a predictor to student retention. As institutions are struggling to increase the rate of retention in higher education, doctoral programs will find more success when designed with intentional response to the data collected in this study. The goal is to acknowledge if a statistical significance exists for these student engagement indicators and how these items contribute to one's overall sense of community and sense of student success. Ultimately, high correlations in these outcomes will provide a potential prediction of student retention.

      The sense of spirituality, perceived benefits of religious practices, and situational awareness goes well beyond how a student feels; rather, the promotion and nurturing of positive emotions is observed to have a direct influence on students' engagement (D'Errico, et al., 2016). To be sure, spiritual and emotional engagement is linked to the ability to maintain interest in the subject matter. With respect to spirituality, the same principle exists that a person's emotional state can be affected and influenced by their spiritual strengths, practices, and beliefs. If a student obtains the ability to utilize spirituality as a means to moderate negative emotions and promote

positive emotions, then spirituality can effectively be significantly helpful maintaining engagement in the subject or program.

The retention rate of doctoral students is repeatedly reported as roughly 50% program completion. Understandably, there are many factors for such high attrition. Stressors, most certainly, are present. Students are forced to navigate, mitigate, and cope with these stressors in order to maintain progress and strive toward completion. Among the internal processes is a spirituality component that can provide insight into the importance of various engagement indicators. If spirituality is statistically significant within the sample population, then intentional engagement strategies can be designed to include the freedom to express, practice, and mature one's spirituality as a means to promote program completion.

One pair of researchers provide a longitudinal study on the importance of religiosity and/or spirituality as a positive combatant against depression, stress, and cognitive vulnerability (Berry & York, 2011). Therefore, it is necessary to recognize the importance of spirituality in university settings. Spirituality provides students with the tools and resources to engage others with similar beliefs, to lean on others for support and encouragement, and to rely on one's faith to improve emotional health. As such, student commitment and completion will increase.

An important study of the "spiritual, but not religious" population reveals that this population is rapidly increasing in secular universities (Astin, 2016). This student population, while not identifying with a particular religious paradigm, is often excluded from such social gatherings that would edify more orthodox renditions of religiosity and thereby, dealing with stressors. While understanding the various modalities of navigating stressors, one researcher (Tone, 2015) suggests that a person under stress will initiate internal processes which allows that

person to assess and appraise the situation and ultimately deploy coping mechanisms. One of these coping mechanisms for many people is spirituality or religiosity.

This dissertation study looks to understand the predictive power of various engagement indicators on doctoral student retention. As such, it is important to recognize that religious engagement is a critical element to consider. Too often, spirituality is discarded as too innately personal or unmeasurable in terms of quantitative findings that fail to be directly observable (Terry et al., 2015). However, when researchers examine the impact of one's spiritual practices and beliefs on emotion, motivation, and other intrinsic daily actualities, there is a significant cause to engage spirituality in the intentional evidence-based strategies that institutions are utilizing.

Research suggests (D'Errico, et al., 2016) that emotions are significantly associated with increased participation in spiritual activities. As professors are managing the learning environment, it is important for them to be attuned to the potential for negative emotions, to be aware of adverse effects they have on the process of knowledge acquisition, and mitigate such detriments that would squash positive outcomes. To that end, institutions, research suggests, should appreciate the buffering effect of spirituality to reduce stressors and depression that are common among students by intentionally designing interventions that respond to emotional difficulties and recognize the potential benefits of students' spirituality (Berry & York, 2011). To conclude, there are populations of students that represent a growing number of people who participate in discussion regarding religious freedoms, tolerance, and interfaith relationships (Astin, 2016). The observation concludes that sense of community and inclusion are missing in the groups of students that are often alienated due to a failure to identify with, participate in, and practice a certain religious characteristic (Astin, 2016).

Therefore, the opposite strategy is suggested. When students are given the opportunity to gather, practice, and proclaim a religious or spiritual preference, their overall sense of community increases. With the advent and growth of evidence-based programs in professional fields of business, manufacturing, health and human services (Terry et al., 2015), it is imperative to include spirituality in the discussion of such programs designed to improve retention across institutions of higher learning as evidence does suggest that spiritual engagement is one way to reduce stressors that would otherwise be detrimental barriers to the educational process. This completes the survey of the five main engagement indicators within this study.

Related Literature

An interesting theory emerges as the study of engagement and retention continues. Namely, engagement leads to an overall sense of community. The need exists to measure the effect of engagement indicators on both student sense of community and student satisfaction. The former may very well moderate the latter. As such, an exploration of student sense of community is needed to gain a better appreciation of its importance to retention.

Sense of community. A sense of community is paramount to college retention; however, this phenomenon is rarely studied in university populations. With respect to engagement indicators for doctoral student retention, the ability to foster and promote avenues for building a sense of community among academic peers, professionals, and programs becomes more critical. This may come in the form of resident, on-campus interactions, scholarly memberships, and others which will strengthen student engagement and persistence (Jacobs & Archie, 2008). Research exists regarding the importance of community and belonging in the classroom as it relates to student success. However, it is sparse, typically revolving around a convenient sample

of undergraduate students, and utilizing the qualitative data collection of surveys. The outcomes

of these studies remain relevant to this dissertation study, nonetheless.

As 50% of doctoral students, or roughly 40,000 yearly, fail to complete the degree

program, researchers are finding that the failure is most likely in the negative effects that social

isolation has on functioning, well-being, and social cohesion (Ali & Kohun, 2007). It is

important that any engagement strategy an institution or department attempts to implement takes

into account the damaging potential of isolation and the meaningful benefits of community

within the student population. Studying the online community of doctoral programs, one

researcher stresses the critical importance of addressing the social needs of students through

fostering a cohort experience, a supportive faith interaction within the cohort, an on-campus

orientation with faculty and peers, and the freedom and safety to navigate through challenges and

tragedy with others in the program (Byrd, 2016). These four main elements of an online doctoral

program were shown, through interviews and phenomenological study, to have the most

powerful impact on developing a sense of community among the students.

Certain indicators of student engagement among a doctoral candidate population are

measured as a means to better understand the potential power for retention within the program.

Of those measured, the sense of community as perceived by the student may be critical in this

research, especially for students who are attending online and hybrid formats of study where

community is more difficult to obtain. In truth, a secure sense of community within an academic

environment complete with strong mentoring relationships is integral in aiding the completion of

doctoral degrees (Nolte, et al., 2015). As this dissertation study will examine, the student's

satisfaction of research knowledge, mentorship, and peer interaction will directly affect success

and retention (Young, 2016) and is indicative of a strong sense of community.

The study of the academic-social experiences of students at a two-year school in line to transfer to a four-year school, for example, stresses the importance of the student developing a sense of belonging in the classroom and integrating within the institution as a direct indicator of academic success (Pichon, 2016). The sense of belonging to a larger community resulted in higher educational quality and satisfaction with faculty and peers; furthermore, the levels of student persistence and commitment increased (Pichon, 2016). The gap exists in the field of doctoral student education and there is a lack of quantitative date on the subject all around.

As a means to illustrate the gap in research surrounding student sense of community, one researcher looks at a unique movement occurring in some of America's major universities. Student-initiated retention is a way to respond to the failed engagement strategies aimed at improving retention (Maldonado, 2010). In these communities, students recognize the risks associated with high attrition and respond in a manner that is relevant directly from the source of greatest concern. Emerging adult populations are being studied for their unique qualifications, priorities, and cognition as a means to better understand what motivates retention. One dominant characteristic is the importance of relationships as a formative element of retention (Brown, 2016). These relationships may present in the form of peers, leaders, mentors, organizations, and those closest to the individual.

It is important to note that studies that do exist (mainly on first-year students) indicate that student persistence and the intent to return to the university the following year were positively influenced by the overall sense of community felt by the student (Jacobs & Archie, 2008). Later on in their academic careers, research shows that social isolation is a major contributor to the decision of doctoral students to leave their respective programs prior to completing their degrees (Ali & Kohun, 2007). Rather than dismissing this apparent failure to

lack of student commitment or resiliency, the problem may be deeper entrenched in the social constructs of community.

A study of self-determination theory will show that certain social-cultural conditions engage a person's inherent psychological needs resulting in a dynamically shaped behavior (Guiffrida, 2006). For example, a study of college student motivation shows that both family and career expectations play a major role in the behavior to continue with the program (Guiffrida, 2006). The research to understand the application of motivation as a means to improve retention has migrated to the influential power of the communities the students are in. In other words, the expectations to succeed may not be as influential as those communities who emit the expectations. To be sure, when a person feels a meaningful connection through these relationships, there is a greater chance of deeper commitment to the group. It is this sense of belonging that demonstrates a pivotal aspect of retention (Brown, 2016). The emerging adult will continue and increase his or her meaningful involvement and contribution to educational goals, civic programs, religious ministries, and more as the sense of belonging to a community grows (Brown, 2016). For the doctoral student, this sense of community must be harnessed.

While seeking a plausible solution, the results of research surveys were categorized into three main groups: structural student empowerment within the academic community, permanent coalition focusing on the issue of retention, and retention as a community process describing the process of building and sustaining retention strategies (Maldonado, 2010). As it were, the findings indicate a strong need for students to engage and invest in a community relevant to their academic goals. The result, therefore, is that retention happens organically. In a different study, research indicated other elements of socialization which had direct mediating effects on student satisfaction in the doctoral experience. In this study, the four main influential areas of

socialization were experienced with mentoring and advising, understanding the requirements of the program, internalizing the potential use of the degree, and overall experience with the doctoral degree journey (Castillo, 2011). This study focused more on the interaction between the student and the scholastic community.

Additionally, the concern of retention rates declining is one that is exasperated within underserved and minority populations. The promotion of a sense of belonging within these populations proved to be critical for a sense of identity as well (Toya, 2011). It was evident from the outcomes of research that increases in student sense of community through intentional social exchanges correlated to higher degrees of engagement (Byrd, 2016). As such, community is an important culture to foster among adult students, though this catalyst to student success is often overlooked.

Still, a student's sense of belonging to this community directly related to persistence, satisfaction, and socialization (Castillo, 2016). The importance of this study shows that community and relationships can manifest in multiple ways; however, it is the perception of the student to belong to a community that shows the greatest efficacy for ensuring retention. It is important for institutions of higher education to recognize the prominence of students drawing support from and nurturing communities as a means to successfully complete doctoral programs (Guiffrida, 2006). Important to acknowledge in the research for this dissertation study is that the student's cultural norms and community support nurture a sense of motivation and engagement resulting in greater retention. In all, the sense of community as perceived by the student may prove to be an even more powerful predictor of retention than initially thought.

Summary

Concluding this literature review, an original hypothesis develops along with complimentary research questions. There are assumptions that student engagement increases satisfaction and that certain engagement is more significant. Taken as a whole, the collective measurement of engagement may also increase the overall sense of community. The overarching hypothesis, therefore, is that increased student engagement will increase sense of community and student satisfaction as a predictor of retention. To be sure, literature suggests that retention is improved when students perceive success through satisfaction. It is the theory of this researcher that satisfaction will be significantly moderated with a higher sense of community. In order to achieve this, students must engage the learning process through the certain indicators studied here.

As such, logical questions emerge out of this study. The first assumption seeks a proof of concept from the undergraduate population to the doctoral population. The second assumption asks if engagement indicators have a statistically significant hierarchy of importance in order to intentionally design engagement strategies as an intentional means to improve retention. To improve student retention, institutions may use this quantitative research as a means to further study which dependent variable is most statistically relevant to students.

The foundation of this study is an applicable theory that encompasses andragogy, engagement, and retention. That is to say, understanding the intricacies of adult learners will provide the basis for statistically relevant engagement strategies that result in higher rates of retention. Observed outcomes in studies show that adults engaged in learning communities are motivated by assignments and assessments that use real life examples and application as a means to increase value to the knowledge outside of the classroom (Sutton, 2014).

There are individual studies and assumptions made in correlation to the engagement indicators. Most of these studies are qualitative in nature and measure only a few of these engagement indicators. The majority of studies surrounding retention take advantage of the convenient sampling and large population of undergraduate students. Still, in their study of retention characteristics of students at one college, researchers identify qualitative outcomes consistent for most students: expectation of the learning environment, expectations to understand their progress, expectations for institutional support, and expectations of personal devotion to academic and social communities (Mendoza et al., 2016).

As discussed, there are many studies regarding student retention primarily in the undergraduate population. While data exists that provides some direction for engagement strategies, there remains many concerns about this approach. Primarily, retention rates continue to be alarmingly low. Further, the studies that exist in response to the doctoral population are most commonly qualitative in nature and only focus on one or two factors of engagement. These outcomes, while relevant, fail to consider how effective multiple indicators may be to the adult learner as contributing to the student sense of belonging to an academic community.

The deployment and scale of this study have assumptions. First, the pattern of higher engagement increasing higher retention, as seen in undergraduate studies, is transferrable to the doctoral level. Second, there is a hierarchy of importance or influence of various engagement indicators that is measurable in this population. Third, these outcomes will be utilized in the planning and execution of forthcoming engagement strategies. Further, future studies will be completed that track engagement indicators in doctoral students over their academic journey in order to more intricately measure the potential for predictive power.

With that being noted, it is the prediction of this researcher that student sense of community will emerge as both statistically significant to the engagement indicators and a significant moderator of student satisfaction. As such, sense of community will exist as a strong predictor of retention. The implication of this outcome may provide more precise data that will be useful for institutions of higher learning from which to design retention strategies.

CHAPTER THREE: METHODOLOGY

Overview

At the core of this study is the search for understanding of how to improve very poor retention rates of doctoral students in university programs. There are many reports indicating rates as low as 50% retention on average across the United States. This is certainly concerning for institutions of higher learning as evidenced by many responding with designed initiatives as a means to increase retention rates among their respective programs. Many assumptions can be made as to why students leave programs and fail to complete the requirements. To be sure, some of these reasons are legitimate and cannot be prevented. The effect of other reasons for attrition, however, may be mitigated if a proper understanding is obtained.

Design

The purpose of this study was to understand the predictive power of specific individual engagement indicators on doctoral retention in order to better serve the student success goals of program completion and institutional goals of student retention. In short, this research may help identify what is more important or influential to students with respect to their engagement in specific factors. Those factors include student engagement with the peers that are part of the education cohort, the institution of higher learning, the curriculum and material being learned, the faculty presenting and assessing the learning process, and the spiritual importance and action as part of the educational journey. These engagement indicators relate to the outcome variables of student sense of community within the academic setting and the student satisfaction with the overall program. These outcome variables, to be sure, correlate to student success and retention.

Another pursuit of this research was to ultimately equip programs with quantitative data necessary for the intentional design of engagement strategies in order to deliberately engage

doctoral students and reduce doctoral student attrition. Currently, there is little quantitative data on doctoral retention. Further, there are few studies on this population in general. While much of the research available consists of quantitative data from undergraduate convenience samples and qualitative data of graduate samples, there are few studies that provide analysis of the combination of factors through a quantitative research design as is found here. This combination of engagement indicators provided a quantitative correlation to certain outcomes that directly predict retention. Based on the effect associated with student sense of community and student satisfaction, institutions of higher learning will be more successful at intentionally designing retention strategies in response to actual student data.

Research Questions

Most research, by means of convenience and sheer volume, is completed using the undergraduate population. Still, the principle of retention remains the same. One difference to consider is that doctoral students tend to be more experienced adult learners balancing many other aspects of responsible adulthood. Therefore, this population is truly unique and required closer evaluation. Quantitative data is also in short supply for the doctoral population as many of the research studies thus far tend to be qualitative studies and interviews. This study, therefore, attempted to collect and analyze quantitative data on the doctoral population in response to various forms of student engagement, student sense of community, and student satisfaction.

That underpinning brought the researcher to the development of assumptions, hypotheses and research questions. It was assumed that meaningful student engagement would lead to a more fulfilling sense of community among academic peers which would increase student satisfaction of the overall program ultimately resulting in higher rates of retention and degree completion. To assess the empirical support of this, this study sought to understand the

hierarchical importance of certain student engagement indicators (peers, institution, curriculum, faculty, and spirituality), to identify the effects of each independent variable on sense of community and on satisfaction, and to determine if sense of community statistically increases the power of student satisfaction. The research questions are as follows.

RQ1: Are engagement indicators of doctoral students statistically significant to student satisfaction?

RQ2: Are engagement indicators of doctoral students statistically significant to sense of community?

RQ3: What is the moderating effect of sense of community on the interaction between these engagement indicators and student satisfaction?

Hypotheses

Three main expectations arose from the preliminary research of this study. First, as previously noted, quantitative research exists that illustrates that higher engagement in the undergraduate population results in higher levels of retention. Based on existing qualitative surveys and focus group outcomes, the same quantitative results were expected in the doctoral population. Second, a study of various engagement indicators were expected to reveal a hierarchy of importance and influence in the doctoral population in response to what are known characteristic of communities. That is, certain modes of engagement effect the outcomes of higher retention more than others. The third expectation of this study was that the subsequent hierarchy of engagement indicators, if one significantly existed, would be useful for creating intentional engagement strategies that are data-driven and based on these quantitative outcomes. The hypotheses are as follows.

H_a1: There will be a statistically significant interaction between engagement indicators and student satisfaction.

H_a2: There will be a statistically significant interaction between engagement indicators and sense of community.

H_a3: Sense of community will be have a strong enough power that it significantly moderates the relationship between engagement indicators and student satisfaction.

Assumptions

Acknowledgement of certain assumptions are important to note. Two primary assumptions arose for this study to build upon. The first assumption was that the efficacy of engagement on undergraduate retention would translate to doctoral students in order to conclude that higher levels of engagement equal higher levels of retention. Second, a hierarchy of engagement indicators in doctoral students would arise as a result of this study which would correlate to and be predictive of student sense of community, student satisfaction and, in due course, student retention. These assumptions were important to acknowledge in order to respond to the research questions. First, the efficacy of undergraduate retention must prove true at the doctoral level. Without drawing this conclusion, the continuation of the study would have been jeopardized as it was initially designed. The goal of determining a common power of certain engagement indicators was predicated on the idea that engagement results in retention.

Second, in response to the principle regarding the hierarchy of community characteristics, specific engagement indicators ought to show more significance than others. As this particular study of the doctoral population measured the indicators of peers, institution, curriculum, faculty, and spirituality, it was hypothesized that there was a common order of significance among the sample group. The goal was to identify the prominent statistically significant indicators. This

ultimately leads to the statement solidifying the research; the most prominent engagement indicators should be significant to both student sense of community and student satisfaction. A weakness of this study was that a sample population was not followed over a period of years and, therefore, gaps exist. However, if sense of community and satisfaction among this population presumably associates to the completion of a doctoral degree, then a correlation with prominent engagement indicators may possibly predict retention.

Participants and Settings

The ideal sample population is described here. Liberty University is a private, non-profit Christian university located in Lynchburg, Virginia. Maintaining as the largest Christian university in the world, there are roughly 15,000 residential students and over 100,000 online students. It is considered a doctoral research university with doctoral programs including behavioral sciences, business, education, music, nursing, and divinity. There are many undergraduate programs offered as well. In 2015 (Source: Liberty-University-Economic-Impact-2015.pdf), Liberty University graduated 560 Doctorate students. Two of the top four programs of study were Education and Psychology.

Multiple doctoral programs agreed to participate in this study. First, the Doctor of Education in Community Care and Counseling of the School of Behavioral Sciences, which is optionally 100% online, equips professional counseling and ministry leaders. This program is designed to assist those already involved in counseling careers or pastoral positions to gain a more diverse knowledgebase and to enhance the careers of those who complete the program.

A second program that provided participants was the Ph.D. in Counselor Education and Supervision of the School of Behavioral Sciences. This hybrid program includes both online and required intensives. The program is designed to mentor and prepare established professionals to

further their careers through enhancing effective counseling practices, education, and supervision. Other programs of noted participation were the Doctor of Ministry in Pastoral Counseling, Doctor of Professional Counseling Ph.D., and Graduate Certificate in Pastoral Counseling.

Through the direction and help of this dissertation chair, permission was obtained through the directors of each program. Upon Institutional Review Board (IRB) exemption, each director was given a copy of certifying approval and compliance with IRB regulations. Having obtained exemption from the IRB and the participating programs, the data collection commenced. The potential sample from the Community Care and Counseling program was roughly 500 students, potential from the Counselor Education and Supervision program was roughly 100 students, and the potential balance of the programs was over 1,000. The goal was roughly 50-200 participants from each program equaling 300-600 doctoral students as the sample population.

As a matter of note, the actual sample of doctoral students (N=61) consisted of 22 males and 39 females. The ages ranged from 24 to 82 (mean age = 44.43, SD = 11.348) with 55.7% White or Caucasian, 26.2% Black or African American, and the balance identifying as Hispanic or Latino, Native Hawaiian or Pacific Islander, American Indian or Alaskan Native, Asian, or other. Regarding the program format, 80.3% noted participating in primarily online programs and the balance included intensives. The programs of study included 43 Doctor of Education in Community Care and Counseling Ed.D. students, 9 Doctor of Philosophy in Counselor Education and Supervision Ph.D. students, 7 Doctor of Ministry in Pastoral Counseling students, 1 Doctor of Professional Counseling Ph.D. students, and 1 Doctorate Certificate in Pastoral Counseling student.

Instrumentation

This section describes the various survey and scale instruments that were used in this study along with a representation of the qualifying data collected. To begin, the National Survey of Student Engagement, or NSSE Survey, aims to identify the quality of undergraduate education. This survey is categorized into four themes: learning with peers, campus environment, academic challenge and experiences with faculty. Typically, the survey is given in a Likert format that can be recoded to reflect agreement to or participation in a statement being never, sometimes, often, and very often. While the entire survey is deployed amongst first-year and senior undergraduate students, for the purposes of this research, a condensed selection will be used for doctoral students.

National Survey of Student Engagement (NSSE)

The National Survey of Student Engagement (Kuh, 2003) is a measurement tool of collegiate quality respective of educational activities that are related to learning and professional development. Four subscales exist for NSSE: Learning with Peers (e.g., *During the current school year, how often have you explained course material to one or more students*), Campus Environment (e.g., *How much does your institution emphasize using learning support services*), Academic Challenge (e.g., *During the current school year, how often have you connected your learning to societal problems or issues*), and Experience with Faculty (e.g., *During the current school year, how often have you communicated about career plans with a faculty member*).

Table 1

Peer Engagement (NSSE1)

Factor	Statement
Collaborative learning	Asked another student to help you understand course material
	Explained course material to one or more students
	Prepared for exams by discussing or working through course material with other students
	Worked with other students on course projects or assignments
Discussions with diverse others	People from a race or ethnicity other than your own
	Taught course sessions in an organized way
	People from an economic background other than your own
	People with religious beliefs other than your own
	People with political views other than your own

Table 2

Institution Engagement (NSSE2)

Factor	Statement
Supportive environment	Providing support to help students succeed academically
	Using learning support services (tutoring services, writing center, etc.)
	Encouraging contact among students from different backgrounds (social, racial, etc.)
	Providing opportunities to be involved socially
	Providing support for your overall well-being (recreation, health care, counseling, etc.)
	Helping you manage your non-academic responsibilities (work, family, etc.)
	Attending campus activities and events either online or in person (performing arts, athletic events, etc.)
	Attending events that address important social, economic, or political issues either online or in person

Table 3

Curriculum Engagement (NSSE3)

Factor	Statement
Higher-order learning	Applying facts, theories, or methods to practical problems or new situations
	Analyzing an idea, experience, or line of reasoning in depth by examining its parts
	Evaluating a point of view, decision, or information source
	Forming a new idea or understanding from various pieces of information
Reflective and integrative learning	Combined ideas from different course when completing assignments
	Connected your learning to societal problems or issues
	Included diverse perspectives (political, religious, racial, etc.) in course discussions or assignments
	Examined the strengths and weakness of your own views on a topic or issue
	Tried to better understand someone else's views by imaging how an issue looks from his or her perspective
	Learning something that changed the way you understand an issue or concept
	Connected ideas from your courses to your prior experiences and knowledge

Table 4

Faculty Engagement (NSSE4)

Factor	Statement
Student-faculty interaction	Communicated about career plans with a faculty member
	Worked with faculty on activities other than coursework (committees, student groups, etc.)
	Discussed course topics, ideas, or concepts with a faculty member outside of class
	Discussed your academic performance with a faculty member
Effective teaching practices	Clearly explained course goals and requirements
	Taught course deliverables in an organized way
	Used examples or illustrations to explain difficult points
	Provided feedback on a draft or work in progress
	Provided prompt and details feedback on completed assignments or tests

The Religious Commitment Inventory-10 (RCI-10)

The Religious Commitment Inventory-10 (Worthington et al., 2003) is brief 10-item screening assessment of one's religious commitment using a 5-point Likert scale from 1-Not at all true of me to 5-Totally true of me. Two subscales measure intrapersonal religious commitment (6 items) (e.g., *My religious beliefs lie behind my whole approach to life*) and interpersonal commitment (4 items) (e.g., *Religious beliefs influence all my dealings in life*).

Table 5

Religious Engagement (RCI)

Factor	Statement
Religious Commitment	I often read books and magazines about my faith.
	I make financial contributions to my religious organization.
	I spend time trying to grow in understanding of my faith.
	Religion is especially important to me because it answers many questions about the meaning of life.
	My religious beliefs lie behind my whole approach to life.
	I enjoy spending time with others of my religious affiliation.
	Religious beliefs influence all my dealings in life.
	It is important to me to spend periods of time in private religious thought and reflection.
	I enjoy working in the activities of my religious organization.
	I keep well informed about my local religious group and have some influence in its decisions

Sense of Community Index 2 (SCI-2)

The Sense of Community Index 2 (Chavis, et al., 2008) is a quantitative tool that measures the overall sense of community within the constructs of social sciences using a Likert scale. Four subscales exist including reinforcement of needs (e.g., *Community members and I value the same things*), membership (e.g. *I can recognize most of the members of this community*), influence (e.g., *I care about what other community members think of me*), and shared emotional connection (e.g., *I feel hopeful about the future of this community*).

The Sense of Community Index is a highly used quantitative measure in the social sciences. The administrators of the survey have the autonomy to define what the community parameters are and is, in fact, instructed to specify this on the survey rather than using the ambiguous phrase "your community." Within this study, the community is defined as the doctoral academic peers and faculty that make up potential and actual interactions, supports, and

collaborations for the individual student. The revised second edition of this survey (Sense of Community Index 2) uses a Likert scale approach, has 24 items, and measures four sub-categories: reinforcement of needs, membership, influence, and shared emotional connection. In order to minimize the length of this specific research, only the questions pertaining to the first two sub-categories will be used. As such, participants will rate how well the following statements represent how they feel about their doctoral academic community: not at all, somewhat, mostly, or completely.

Table 6

Sense of Community (SCI)

Factor	Statement
Reinforcement of needs	I get important academic needs of mine met because I am part of this doctoral community
	Doctoral community members and I value the same things
	This doctoral community has been successful in getting the academic needs of its members met
	Being a member of this doctoral community makes me feel good
	When I have an academic problem, I can talk about it with members of this doctoral community
	People in this doctoral community have similar academic needs, priorities, and goals
Membership	I trust people in this doctoral community
	I can recognize most of the members of this doctoral community
	Most doctoral community members know me
	This doctoral community has unique identifiers (such as logos, culture, social media groups, etc.) that people can recognize
	I put a lot of time and effort into being part of this doctoral community
	Being a member of this doctoral community is a part of my identity

Student Satisfaction Inventory (SSI)

The Student Satisfaction Inventory (Bryant, 2006) is a demonstrative tool used to identify performance and effectiveness of institutions of higher education in response to research indicative of low satisfaction contributing to student attrition. Subscales include Academic

Advising Effectiveness (e.g., *My academic advisor helps me set goals to work toward*),

Instructional Effectiveness (e.g., *Faculty are fair and unbiased in their treatment of individual*

students), and Student Centeredness (e.g., *Students are free to express their ideas on this*

campus). Included are questions directly related to the dissertation process, student

understanding, and progress thereof. The Likert statement asks participants to describe their

satisfaction regarding the doctoral program in which they are currently participating.

Immediately following this table is a representation of qualifying data that was collected.

Table 7

Student Satisfaction Inventory (SSI)

Factor	Statement
Student Satisfaction	Gained academic knowledge expected at his/her degree level
	Developed capacity for independent and critical thinking
	Relevance of courses toward your degree
	Logical and orderly thinking skills as a scholar
	Analytical skills as a researcher
	Extracurricular activities associated with the university
	Overall satisfaction of the program
	Would recommend this program to others
	Instructor's effectiveness and classroom/course management
	Individual attention given to students
	Supplementary instructional materials (journal articles, books, media, etc.)
	Academic advising (from advisor, staff, faculty, etc.)
	Instructor's treatment of student and evaluation of student's performance
	Availability for consultation with faculty
	Services provided by university administration
	Admission and Acceptance process
	Tuition and Fees associated with the program
	Student Records and Registration Process
	Orientation services when entering program
	Friendly school atmosphere while interacting with program
	Facilities provided in general (either online or on campus)
	Library Services (either online or on campus)
	Process for completing the doctoral dissertation
	Preparatory coursework related to doctoral dissertation completion
	Understanding for choosing a doctoral dissertation topic

Expectations for workload and commitment for a doctoral dissertation
Understanding of required outcomes for a doctoral dissertation

Table 8

Sample Qualifiers

Factor	Statement
Data Qualifiers	Age
	Gender
	Ethnicity
	Relationship Status
	Employment Status
	Program Format
	Current Course Load
	Program of Study

Procedures

Data was collected through a standardized Likert survey consisting of multiple scales and surveys. Each survey section, to be sure, included questions that directly correlated to the engagement indicators (peers, institutional, curriculum, faculty, and spirituality), the student sense of community, and the student satisfaction. Additionally, a brief series of qualifiers were collected which included date of birth, gender, ethnicity, and other socio-economic considerations.

Having constructed this survey in the Qualtrics platform, the hyperlink to the survey was disseminated through the appropriate points of contact for each program and out to each of the participating students. Incentives for participation were given to each student by means of randomly drawn gift cards for those participants who completed the survey within a given period of time. Those students who wished to be entered into the drawing were asked to provide a means of contact. There were one $100 Amazon gift card and four $50 Amazon gift cards

awarded. After a given period of time, access to the survey was terminated in order to begin data analysis.

A Likert survey was designed to provide ease for both the respondent and the researcher. The structure allowed the participants to rate their degree of agreement to a statement. It was, to be sure, a manner of adding quantitative data to qualitative statements. For example, a particular statement referenced a student's participation in a campus activity to which she may strongly agree, agree, be neutral, disagree, or strongly disagree. This ordinal scale is applicable to data analysis by means of identifying each variable with an assigned score value, checking for normal distribution, and allowing flexibility for comparing various combinations of each grouping.

This was a convenience sampling of doctoral students, to be sure, which are incentivized by electing to participate in a random drawing for gift cards. Within the study, qualifying markers of students were collected and each engagement indicator was treated as its own factor. There are roughly 8-10 questions per factor to minimize the length of time required for the participant. The survey given for this study was a combination of multiple psychometrically supported studies. Components from each survey that were relevant to this research were used. Only elements that pertained to the independent variables, the moderating variable, and the outcome variable were included as a way to keep the estimated time of completion around 20 minutes for those questions specifically relating to this study.

Data Analysis

Herein is the section that describes the data analysis methodology. Given here is an explanation of the variables used during the study methods. Next, the research questions and hypotheses are integrated in the organization of this exploration. Research models are clarified to

indicate the thought process building up to the collection and analysis process. This is followed by the analysis procedures and statistical validity of the research design of this study.

Variables

There are five independent variables of student engagement that were measured in this study. Each provided a glimpse into various aspects of the academic journey for the student. To begin, peer-learning can present many challenge that are both positive and negative; nonetheless, this form of engagement may be the most prevalent of all, especially in traditional settings. Next, institutional engagement looked at the manners that students engage in programs, services, and the processes that are associated with the university. This high-level engagement is important for establishing the culture of the university of which a student is committing to become a part.

For the third independent variable, the matter of curriculum development, course structure and delivery, and content delineation is a way to measure the involvement and trust that students place in the both the content they are learning and the manner by which it is delivered. Next is that of the faculty. Student engagement with their faculty provides an opportunity to foster a successful teaching transaction of knowledge as well as maintain the attention and interaction of the student. This leads to the influence of religious engagement. Finally, the spiritual engagement of the student is one measure of the intangible elements of student success. This measure of engagement may delineate how powerful, if at all, faith and intrinsic beliefs are to student success.

The two variables of student sense of community and student satisfaction were measured as two separate dependent variables initially. Alone, they serve as two outcome variables; however, within a third research model, the former moderates the latter. Student sense of community is a measure of inclusion and empowerment. This scale considered the role of the

academic community and the contribution of the student as a way to measure the importance of being an active member of a community and the influence on success. The last measurement of this study was the student satisfaction which simply collects the overall perspective and approval of the students' journey. The combination and analysis of the independent engagement variables, the moderating variable, and the outcome dependent variable directly links to student retention. As this study is not a longitudinal study over the course of students' careers, it was not possible to ascertain actual retention from this sample. Still, increased rates of student satisfaction are a demonstrated indicator of student retention. Further, it is this researcher's hypothesis that increased rates of student sense of community is even more statistically significant.

Hypothesis and research questions

Most research, by means of convenience and sheer volume, is completed using the undergraduate population. Still, the principle of retention remains the same for doctoral students. One difference to consider is that doctoral students tend to be more experienced adult learners balancing many other aspects of responsible adulthood. Therefore, this population is truly unique and required closer evaluation. Quantitative data is also in short supply for the doctoral population as much of the research thus far tended to be qualitative studies and interviews. This study, therefore, attempted to collect and analyze quantitative data on the doctoral population in response to various forms of student engagement, student sense of community, and student satisfaction.

That led to the development of research questions and one overarching hypothesis. It was theorized that meaningful student engagement would lead to a more fulfilling sense of community among academic peers which would ultimately increase student satisfaction of the overall program resulting in higher rates of retention and degree completion. To arrive at a

conclusion about the validity of this theory, this study sought to understand the hierarchical importance of certain student engagement indicators (peers, institution, curriculum, faculty, and spirituality), to identify the effects of each independent variable on sense of community and satisfaction, and to determine if sense of community statistically increased the power of satisfaction.

Therefore, the research questions were: 1) Are these engagement indicators (peer, institution, curriculum, faculty, religion) statistically significant to student satisfaction?, 2) Are these engagement indicators (peer, institution, curriculum, faculty, religion) statistically significant to sense of community?, 3) What is the moderating effect of sense of community on the interaction between these engagement indicators (peer, institution, curriculum, faculty, religion) and student satisfaction? The hypothesis was that sense of community would have a statistically significant moderating effect increasing the power of the outcome variable.

Research models

For the purposes of this research method model, the independent engagement indicators (X_1-X_5) represented peer engagement, institutional engagement, curriculum engagement, faculty engagement, and spiritual engagement. The dependent outcome variable (Y) represented student satisfaction and the dependent moderating variable (W) represented student sense of community. Together there were a possible combination of 15 different interactions.

In order to explain the structure of this model, an examination of the parts is needed. First, the engagement indicators were a series of five different ways in which students may engage or interact with others while in pursuit of their degrees. This interaction may come in the form of engagement with other peers, the institution, the curriculum, the faculty, and their personal beliefs of spirituality. One research question, to be sure, was to seek which of the five

are found to have a generally more predictive power than the others. As a result of this, institutions of higher learning may be further prepared to design and implement more intentional engagement strategies.

There were two dependent variables studied within this model. First, the outcome variable of student satisfaction measured the students overall impression of the program and their performances thereof. While this relates to and indicates a strong correlation to retention, the ultimate scope of this research, there was a possible moderating variable to consider as well. Second, the student sense of community resulted from their involvement and engagement with the particular engagement indicators. Anecdotally, more involvement with peers was assumed to result in higher levels of sensing that one is a mutually beneficial member of that community. A primary research question, therefore, was to discover how much statistical power, if any, student sense of community has in moderating the outcome variable of student satisfaction.

As noted, there were a total of 15 possible hypotheses to consider with this particular model. As each engagement indicator can truly stand alone as a dependent variable, this researcher treated all independent variables uniquely. As a result, three main hypotheses emerged as areas of study.

First, the engagement indicators were studied for an effect on the outcome variable of student satisfaction (Figure 1). The more engaged students are with the each of the different independent variables, prior studies indicate that their overall satisfaction will increase. While many of these studies are based on undergraduate population, it was important to show efficacy in the doctoral population as well.
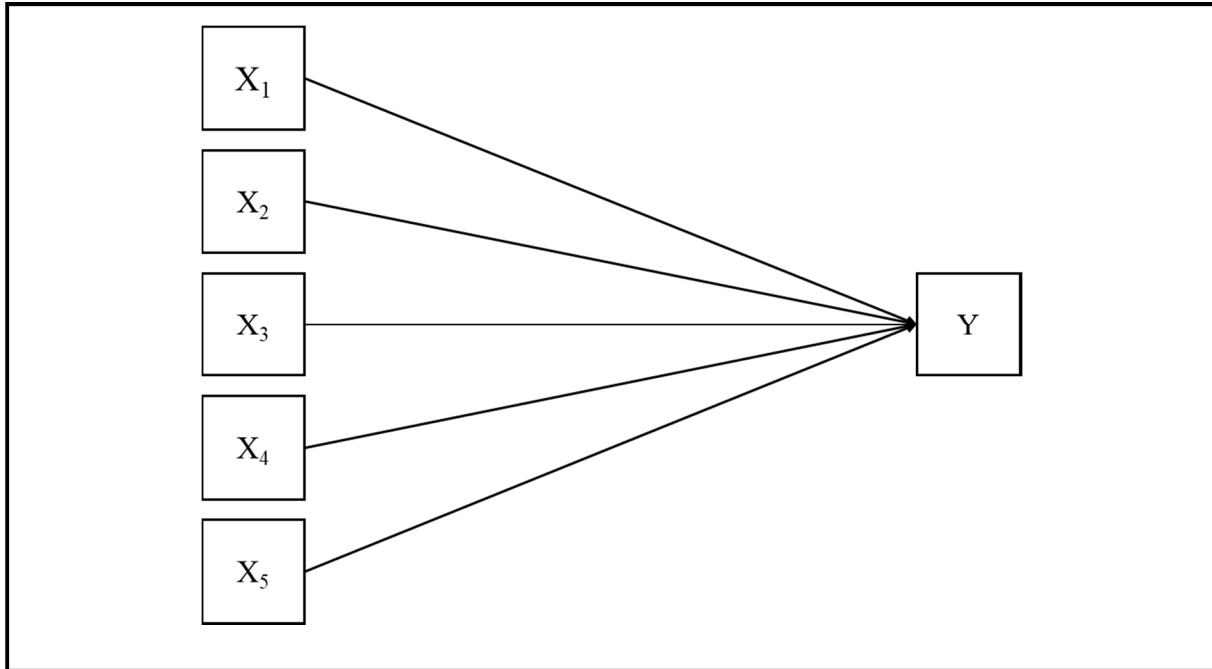
Figure 1 Student Satisfaction

The engagement indicators were studied for whether they increased the student sense of community (Figure 2). This second hypothesis was another basis of this research. That is, the issue of poor retention in doctoral programs may include an element of students feeling as though they do not relate to and identify with an academic community. If this shows to be the case, then institutions that are seeking to improve their poor retention rates may consider ways to develop and nurture community among the students.
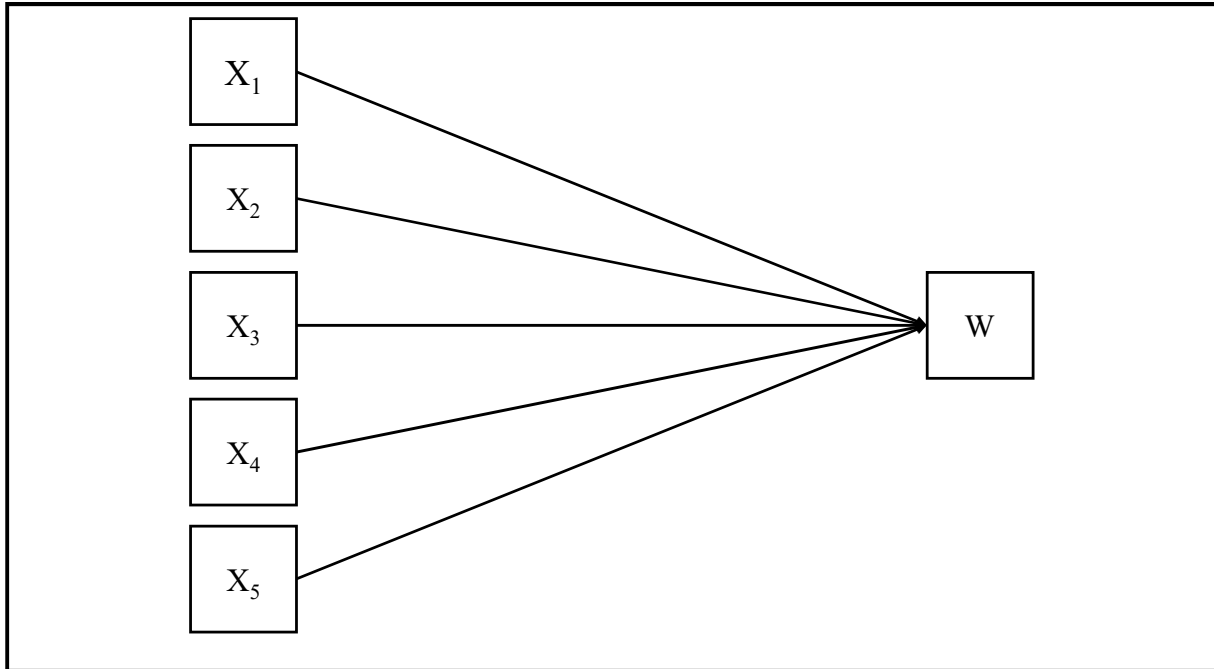
Figure 2 Sense of Community

Finally, the third hypothesis to consider was that of moderation and outcome variables (Figure 3). The engagement indicators were studied for their effect on, in some manner, student satisfaction. This hypothesis considered the moderating effect of student sense of community as well. That is, student satisfaction may become more statistically significant when the moderating factor of sense of community was included. All of these hypotheses ultimately point to retention. More specifically, meaningful engagement generates a more fulfilling sense of community which increases student satisfaction resulting in higher rates of retention.
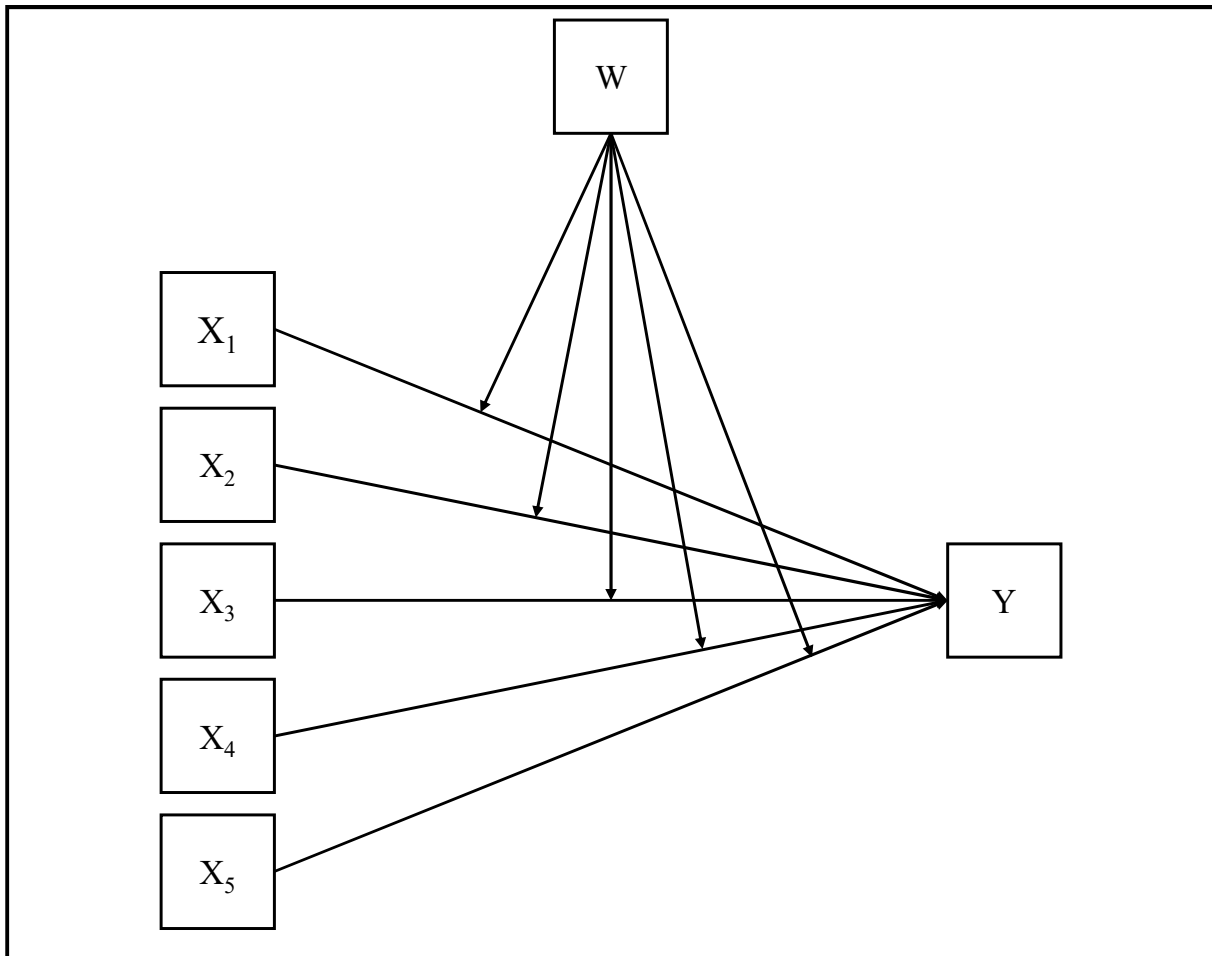
Figure 3 Sense of Community as Moderator

Analysis procedures

The purpose of this correlation study was to understand the relationship among these variables. Specifically, the independent variables of student engagement could provide some level of correlation to student sense of community and ultimately student satisfaction. While this study was not able to prove causation of the outcome variable, it was useful in predicting the power of influence of each independent variable. Therefore, the ultimate goal is to utilize the predictive outcomes to formulate methodologies that are designed to increase student retention.

Multiple regression data analysis was useful to ascertain and predict the value of an independent variable on the dependent variable. The purpose of this analysis procedure was to

show the correlation and relative contribution of each predictor to the total variance. In this case, the predictor variables of student engagement were studied to understand the predictive value on student sense of community and student satisfaction. While student satisfaction directly correlates to retention, student sense of community served as a moderator in this study. In the structure of this data analysis (Figures 1-2) two dependent variables formulated different hypotheses. That is, engagement indicators (X1-X5) will have a measurable variance with respect to sense of community (W) and to satisfaction (Y) independently. However, there was a third equation to consider (Figure 3). While independent variables of engagement will affect the outcome variable of student satisfaction, the moderating variable of sense of community will affect the strength of this relationship.

Statistical validity

There are strengths and weakness with every study. This particular study was no different. As mentioned, the future study of retention may include a longitudinal perception over the period of time required for a student to complete a degree. While this was a study of student retention, the sampling was taken at a distinct period of time and failed to follow the students through their academic careers. Still, the design of the study related to retention by means of understanding the impact of engagement and community on satisfaction which is shown to be an indicator of retention.

The understanding of internal, external, and statistical validity is important to address, nonetheless. Internal validity ascertains whether the research was designed and implemented correctly. At the stage of the research design and sample population when deployed, there were, of course, both strengths and weaknesses. First, the study was based on prior empirical research that indicated students engage in their academic careers at varying degrees of commitment.

Further, research shows that student satisfaction is a predictor of retention. Therefore, this study was designed to provide an understanding of which engagement indicators effected the outcome of satisfaction. However, the sample may have presented a religiously positive bias as it was procured from a Christian institution. Plus, the sample did not include a program that was delivered completely as a tradition on-campus program.

External validity looks beyond the study to understand if the outcomes are applicable beyond this sample group. Again, discussion and further research will help with this explanation. As noted, much of the prior research uses the convenience sample of undergraduate students. The external validity of those outcomes was shown through the sampling of doctoral students for this specific study. Additionally, there was no direct measurement of retention in this study; however, prior research does indicate that a measurement of student satisfaction is, in fact, a predictor of retention.

Finally, statistical validity is important with this particular study especially. Essentially, 15 different research models were possible given the extent of the variables. There were three basic precepts when this is simplified based on the engagement indicators, the moderating sense of community, and the outcome of satisfaction. To statistically validate the research and show that the outcome variable has a low probability of occurring simply by chance, all three hypotheses must be tested. The goal, therefore, was to show whether engagement indicators would have a statistically significant effect on sense of community and satisfaction separately and to show how much effect, if any, the moderator of sense of community would have on satisfaction.

To close, Type I and Type II errors are addressed. Type I errors occur when a statistic calls for a rejection of the null hypothesis even though it is factually true. Conversely, Type II

errors occur when a statistic does not give enough evidence to reject the null hypothesis even though it should be factually rejected. In the case of this research, engagement variables may have no statistical significance on either outcome variable even though they will have some influence. There are certainly other factors that lead to retention and attrition that this research does not measure. Another error, therefore, was to discount variables other than engagement, community, and satisfaction that did not exist in this study.

CHAPTER FOUR: RESULTS

Overview

The focus of this study is to understand how specific student engagement indicators predict student satisfaction and whether student sense of community has a moderating effect on the outcome. As student satisfaction is strong predictor of retention and completion, this research will aid in the design and implementation of retention strategies. The overarching hypothesis is that, while various engagement indicators are important and present with certain degrees of statistical significance, student sense of community will have a strong enough moderating power to warrant consideration in future retention strategies.

Research Assumptions

What follows are brief observations pertaining to various assumptions that must be acknowledged before moving forward with the analysis. They begin with an exploration that engagement is a predictor of satisfaction in this doctoral sample as is observed in undergraduate studies. Next, given the nature of community, it is assumed that certain engagement indicators will provide greater significance than others. This is followed by the research questions addressing the precept that engagement indicators are statistically correlated to both student satisfaction and student sense of community. Finally, the power of moderation from sense of community on the dependent variable of student satisfaction is measured.

For this study, therefore, the following engagement indicators serve as the independent variables: Peer Engagement (NSSE1), Institution Engagement (NSSE2), Curriculum Engagement (NSSE3), Faculty Engagement (NSSE4), and Religion Engagement (RCI). The dependent variable is Student Satisfaction (SSI) and the moderating variable is Sense of

Community (SCI). For additional linear regression model studies, all five engagement models have been totaled into one variable (Eng5).

The iteration of the data analysis after accounting for initial data mining, congruencies, and observing expected normal and negatively skewed distribution, includes the following results in response to research assumptions, questions, and post hoc testing. First, the assumption involving proof of concept that the doctoral population will respond to engagement in a similar manner to undergraduate populations is explored. The second assumption includes a response to the observed power of each predictor variable. Regarding the research questions, each is examined the same way in order to further understand how the independent variables interact with the dependent variable, the moderator variable, and the complete interaction of the moderator variable on the interaction between the independent variable the dependent variable.

To conclude the analysis, there are two distinct post hoc outputs that are recorded within this work. Foremost, the change in R-squared will show the amount of variance being accounted for by the addition of the moderator. Following this is a final examination of the coefficients and conditional effects of the predictor variables where quantitative moderators are the mean plus/minus one standard deviation from the mean. This entirety of analysis with the current data offers substantial research upon which the interpretation of the outcomes is generated.

Variable correlation

The first assumption, as a point of clarification, creates congruency with prior studies. As noted in the literature review, quantitative research with the convenience sample of the undergraduate population suggests that higher levels of engagement correlate to greater student satisfaction. As the sample population of this research is of doctoral students, it is important to show whether the same phenomenon exists. Therefore, one underlying assumption of this

research is that the efficacy of engagement studies in the undergraduate population will translate to the doctoral population; higher levels of engagement equal higher levels of satisfaction.

Undergraduate studies report higher engagement by students with peers, the institution, the curriculum, and the faculty results in higher student satisfaction. While spirituality has been used in other studies, religious engagement was chosen for this this study due to the sample population being from an evangelical university. As a rule, each engagement holds a strong correlation to undergraduate student satisfaction. As Table 1 shows, within this study of the doctoral population, similar correlations exist.

Table 9

Independent Variable Correlations

		NSSE1	NSSE2	NSSE3	NSSE4	RCI
Peer NSSE1	Pearson Correlation	1	.344**	.468**	.207	.053
	Sig. (2-tailed)		.007	.000	.109	.687
	N	61	61	61	61	61
Institution NSSE2	Pearson Correlation	.344**	1	.262*	.513**	. 282*
	Sig. (2-tailed)	.007		.041	.000	.028
	N	61	61	61	61	61
Curriculum NSSE3	Pearson Correlation	.468**	.262*	1	.440**	.365**
	Sig. (2-tailed)	.000	.041		.000	.004
	N	61	61	61	61	61
Faculty NSSE4	Pearson Correlation	.207	.513**	.440**	1	. 270*
	Sig. (2-tailed)	.109	.000	.000		.036
	N	61	61	61	61	61
Religious RCI	Pearson Correlation	.053	.282*	.365**	.270*	1
	Sig. (2-tailed)	.687	.028	.004	.036	
	N	61	61	61	61	61

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

In this correlation analysis, the independent variables represent NSSE1 Peer Engagement, NSSE2 Institution Engagement, NSSE3 Curriculum Engagement, NSSE4 Faculty Engagement, and RCI Religious Engagement. This analysis is run to understand the existence or lack of correlation between each of the predictor variables in this study. As most interactions are statistically significant, only those which are not will be noted here. The correlation between NSSE1 Peer Engagement and NSSE4 Faculty Engagement is not significant ($p = .109$). Likewise, the correlation between NSSE1 Peer Engagement and RCI Religious Engagement is not significant ($p = .687$). All other factor correlations are significant at the .05 or .01 level (2-tailed).

Variable significance

The second assumption is that, when compared to each other, certain areas of engagement will suggest greater significance. The question, consequently, is which specific engagement indicators propose greater power, or influence, than others. This is important when considering the aforementioned adult learning theory suggesting learning communities provide greater learning outcomes. With this sample being primarily fashioned with distance learning students, the online elements pose a risk to the construction, implementation, and success of learning communities.

As sense of community is hypothesized as a significant moderator in this study, certain areas of student engagement have performance expectations. Given the defining attributes of sense of community and the relationships and interactions thereof, it is presumed that the engagement indicators relating to peers and faculty will have stronger correlations than other variables. Andragogy also supports this characterization. The outcomes of this study, however,

indicate interesting levels of influence when considering the amount of variability (R-squared) being accounted for by each factor.

Table 10

Factor Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Peer NSSE1	61	26.00	12.00	38.00	24.6066	5.70169
Institution NSSE2	61	18.00	8.00	26.00	16.0984	4.40721
Curriculum NSSE3	61	26.00	18.00	44.00	34.5902	6.89535
Faculty NSSE4	61	13.00	7.00	20.00	15.9836	3.50472
Religious RCI	61	30.00	10.00	40.00	32.9672	7.72219
Valid N (listwise)	61					

Descriptive statistics are recorded to illustrate primarily relationships of range and standard deviation for each factor. Tables 1 and 2 show the data as all means were centered for continuity across analysis. Actual non-centered values are recorded in the text. The following are the results of this analysis. NSSE1 Peer Engagement; N = 61, M = 24.6066, SD = 5.70169. NSSE2 Institution Engagement; N = 61, M = 16.0984, SD = 4.40721. NSSE3 Curriculum Engagement N = 61, M = 34.5902, SD = 6.89535. NSSE4 Faculty Engagement N = 61, M = 15.9836, SD = 3.50472. RCI Religious Engagement N = 61, M = 32.9672, SD = 7.72219.

The results of the regression between engagement and student satisfaction indicate the following variance as reported by R-squared. Based on the percentage of variability, the order of influence is: faculty, curriculum, institution, religion, and peers. That is, the R-squared outcome indicates the amount of variance being accounted for by each predictor variable. Faculty Engagement (NSSE4) was significantly correlated, $R^2 = .544$, $F(1,59) = 70.312$, $p < .000$. Curriculum Engagement (NSSE3) was significantly correlated, $R^2 = .271$, $F(1,59) = 21.930$, $p < .000$. Institution Engagement (NSSE2) was significantly correlated, $R^2 = .252$, $F(1,59) = 19.829$,

$p < .000$. Religion Engagement (RCI) was significantly correlated, $R^2 = .168$, F(1,59) = 11.898, $p = .001$. Peer Engagement (NSSE1) was significantly correlated, $R^2 = .110$, F(1,59) = 7.274, $p < .000$.

Research Results

Two foundational research questions that will be answered are whether doctoral engagement indicators are individually statistically significant to student satisfaction and to student sense of community. The design of this research indicates that Student Satisfaction (SSI) and Student Sense of Community (SCI) are both dependent variables. Based on the literature review, it is hypothesized that Sense of Community will act as a moderator between the Engagement Indicators and Student Satisfaction. Determining that the independent variables are statistically significant to both dependent variables is crucial to understanding the predictive capacity of the moderator. These are the first two research questions.

Research question 1

First, engagement indicators will have a statistically significant effect on student satisfaction as shown in Figure 1 from Chapter Three. For the purposes of this illustration, X_1 represents NSSE1 Peer Engagement, X_2 represents NSSE2 Institution Engagement, X_3 represents NSSE3 Curriculum Engagement, X_4 represents NSSE4 Faculty Engagement, X_5 represents RCI Religion Engagement, and Y represents SSI Student Satisfaction.

For each of the variables, the scales were totaled and the means were centered. No scores with missing data were considered in these evaluations. Upon review on histograms and boxplots, no abnormalities were considered to be deviant. The histograms were normally distributed except for curriculum engagement (NSSE3) and religious engagement (RCI) which were both negatively skewed. After performing ANOVA analysis on the dependent variable of

student satisfaction and the predictor variables of individual engagement indicators, the results

show that all five independent variables are statistically significant.

Table 11

Regression NSSE1, SSI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2212.163	1	2212.163	7.274	.009[b]
	Residual	17942.034	59	304.102		
	Total	20154.197	60			

a. Dependent Variable: Student Satisfaction SSI

b. Predictors: (Constant), Peer NSSE1

Table 12

Regression NSSE2, SSI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5069.673	1	5069.673	19.829	.000[b]
	Residual	15084.524	59	255.670		
	Total	20154.197	60			

a. Dependent Variable: Student Satisfaction SSI

b. Predictors: (Constant), Institution NSSE2

Table 13

Regression NSSE3, SSI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5461.334	1	5461.334	21.930	.000[b]
	Residual	14692.862	59	249.032		
	Total	20154.197	60			

a. Dependent Variable: Student Satisfaction SSI

b. Predictors: (Constant), Curriculum NSSE3

Table 14

Regression NSSE4, SSI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10958.604	1	10958.604	70.312	.000[b]
	Residual	9195.592	59	155.857		
	Total	20154.197	60			

a. Dependent Variable: Student Satisfaction SSI

b. Predictors: (Constant), Faculty NSSE4

Table 15

Regression RCI, SSI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3382.355	1	3382.355	11.898	.001[b]
	Residual	16771.842	59	284.269		
	Total	20154.197	60			

a. Dependent Variable: Student Satisfaction SSI

b. Predictors: (Constant), Religious RCI

Additional analysis was completed. To ensure the validity of the outcomes with one final regression, the researcher created a variable of the total predictors (Eng5). The same significance was shown following the analysis.

Table 16

Regression Eng5, SSI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9993.995	1	9993.995	58.035	.000[b]
	Residual	10160.201	59	172.207		
	Total	20154.197	60			

a. Dependent Variable: Student Satisfaction SSI

b. Predictors: (Constant), Engagement Five Eng5

Research question 2

Second, engagement indicators will have a statistically significant effect on student sense of community as shown in Figure 2 from Chapter Three. For the purposes of this illustration, X1 represents NSSE1 Peer Engagement, X2 represents NSSE2 Institution Engagement, X3 represents NSSE3 Curriculum Engagement, X4 represents NSSE4 Faculty Engagement, X5 represents RCI Religion Engagement, and M represents SCI Sense of Community.

While sense of community serves as the moderator is this research, it is important to determine the interaction between the engagement indicators and this dependent variable prior to exploring potential moderation. All variables were totaled and centered and the histograms were analyzed in the prior analysis. No abnormalities were detected. Each of the independent variables showed statistical significance to sense of community except for the interaction with religious engagement as shown through the subsequent ANOVA analysis.

Table 17

Regression NSSE1, SCI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	783.293	1	783.293	18.855	.000[b]
	Residual	2451.068	59	41.544		
	Total	3234.361	60			

a. Dependent Variable: Sense of Community SCI

b. Predictors: (Constant), Peer NSSE1

Table 18

Regression NSSE2, SCI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	858.039	1	858.039	21.304	.000[b]
	Residual	2376.322	59	40.277		
	Total	3234.361	60			

a. Dependent Variable: Sense of Community SCI

b. Predictors: (Constant), Institution NSSE2

Table 19

Regression NSSE3, SCI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	545.879	1	545.879	11.980	.001[b]
	Residual	2688.482	59	45.567		
	Total	3234.361	60			

a. Dependent Variable: Sense of Community SCI

b. Predictors: (Constant), Curriculum NSSE3

Table 20

Regression NSSE4, SCI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	658.876	1	658.876	15.094	.000[b]
	Residual	2575.485	59	43.652		
	Total	3234.361	60			

a. Dependent Variable: Sense of Community SCI

b. Predictors: (Constant), Faculty NSSE4

Table 21

Regression RCI, SCI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	88.802	1	88.802	1.666	.202[b]
	Residual	3145.559	59	53.315		
	Total	3234.361	60			

a. Dependent Variable: Sense of Community SCI

b. Predictors: (Constant), Religious RCI

Additional analysis was completed. To ensure the validity of the outcomes with one final regression, the researcher created a variable of the total predictors (Eng5). Despite the lack of significance with the final predictor, the same output was shown following this analysis.

Table 22

Regression Eng5, SCI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1030.422	1	1030.422	27.585	.000[b]
	Residual	2203.939	59	37.355		
	Total	3234.361	60			

a. Dependent Variable: Sense of Community SCI
b. Predictors: (Constant), Engagement Five Eng5

Research question 3

A third research question remains that will analyze the combined interaction of all variables. The chief hypothesis is that student sense of community will have a statistically significant moderating effect on the interaction between engagement indicators and student satisfaction as shown in Figure 3 from Chapter Three. For the purposes of this illustration, X1 represents NSSE1 Peer Engagement, X2 represents NSSE2 Institution Engagement, X3 represents NSSE3 Curriculum Engagement, X4 represents NSSE4 Faculty Engagement, X5 represents RCI Religion Engagement, Y represents SSI Student Satisfaction, and M represents SCI Sense of Community.

As previously shown, a linear regression model determined the correlation and significance of each independent variable to the two individual dependent variables. The next regression is to analyze the moderating effect, if any, that sense of community as each independent variable interacts with student satisfaction. While all correlations of the individual predictors remain statistically significant to student satisfaction, it is the change in the percentage of variability caused by the moderation that is worthy of note. This actually strengthens the understanding of whether the hypothesis is both true and relevant.

Table 23

Regression SSI, NSSE1, SCI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2212.163	1	2212.163	7.274	.009[b]
	Residual	17942.034	59	304.102		
	Total	20154.197	60			
2	Regression	6493.722	2	3246.861	13.786	.000[c]
	Residual	13660.475	58	235.525		
	Total	20154.197	60			

a. Dependent Variable: Student Satisfaction SSI

b. Predictors: (Constant), Peer NSSE1

c. Predictors: (Constant), Peer NSSE1, Sense of Community SCI

Table 24

Regression SSI, NSSE2, SCI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5069.673	1	5069.673	19.829	.000[b]
	Residual	15084.524	59	255.670		
	Total	20154.197	60			
2	Regression	7637.444	2	3818.722	17.695	.000[c]
	Residual	12516.752	58	215.806		
	Total	20154.197	60			

a. Dependent Variable: Student Satisfaction SSI

b. Predictors: (Constant), Institution NSSE2

c. Predictors: (Constant), Institution NSSE2, Sense of Community SCI

Table 25

Regression SSI, NSSE3, SCI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5461.334	1	5461.334	21.930	.000[b]
	Residual	14692.862	59	249.032		
	Total	20154.197	60			
2	Regression	8438.680	2	4219.340	20.889	.000[c]
	Residual	11715.517	58	201.992		
	Total	20975.746	60			

a. Dependent Variable: Student Satisfaction SSI

b. Predictors: (Constant), Curriculum NSSE3

c. Predictors: (Constant), Curriculum NSSE3, Sense of Community SCI

Table 26

Regression SSI, NSSE4, SCI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10958.604	1	10958.604	70.312	.000[b]
	Residual	9195.592	59	155.857		
	Total	20154.197	60			
2	Regression	12314.597	2	6157.299	45.554	.000[c]
	Residual	7839.599	58	135.166		
	Total	20154.197	60			

a. Dependent Variable: Student Satisfaction SSI

b. Predictors: (Constant), Faculty NSSE4

c. Predictors: (Constant), Faculty NSSE4, Sense of Community SCI

Table 27

Regression SSI, RCI, SCI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3382.355	1	3382.355	11.898	.001[b]
	Residual	16771.842	59	284.269		
	Total	20154.197	60			
2	Regression	8488.755	2	4244.377	21.103	.000[c]
	Residual	11665.442	58	201.128		
	Total	20154.197	60			

a. Dependent Variable: Student Satisfaction SSI

b. Predictors: (Constant), Religious RCI

c. Predictors: (Constant), Religious RCI, Sense of Community SCI

Additional analysis was completed. To ensure the validity of the outcomes with one final regression, the researcher created a variable of the total predictors (Eng5). The significance and change in F value are shown here.

Table 28

Regression SSI, Eng5, SCI

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9993.995	1	9993.995	58.035	.000[b]
	Residual	10160.201	59	172.207		
	Total	20154.197	60			
2	Regression	10817.005	2	5408.503	33.596	.000[c]
	Residual	9337.191	58	160.986		
	Total	20154.197	60			

a. Dependent Variable: Student Satisfaction SSI

b. Predictors: (Constant), Engagement Five Eng5

c. Predictors: (Constant), Engagement Five Eng5, Sense of Community SCI

Post Hoc Testing

Two post hoc analyses were performed as a way to clarify these outcomes. Initially, the

change in R-squared is explored to understand the percentage of variance being accounted for

prior to and after the moderation occurs. Following this study, coefficients are examined to

ascertain the conditional effects, assuming there are any, of the focal predictor at interval values

of the moderator. The results are as follows.

R-square change

The analysis has shown that the engagement indicators predominantly have statistically

significant correlations to both of the dependent variables individually. To be sure, analysis

shows that sense of community typically maintains significance even as a moderator. To

understand how much influence the moderator has, the following outcomes show how the R-

square Change emphasizes the power, or lack of power, in the moderating variable.

Table 29

R-square Change SSI, NSSE1, SCI

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.331[a]	.110	.095	17.43853	.110	7.274	1	59	.009
2	.568[b]	.322	.299	15.34684	.212	18.179	1	58	.000

a. Predictors: Student Satisfaction SSI, Peer NSSE1
b. Predictors: Student Satisfaction SSI, Peer NSSE1, Sense of Community SCI

Table 30

R-square Change SSI, NSSE2, SCI

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.502[a]	.252	.239	15.98968	.252	19.829	1	59	.000
2	.616[b]	.379	.358	14.69034	.127	11.899	1	58	.001

a. Predictors: Student Satisfaction SSI, Institution NSSE2
b. Predictors: Student Satisfaction SSI, Institution NSSE2, Sense of Community SCI

Table 31

R-square Change SSI, NSSE3, SCI

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.521[a]	.271	.259	15.78073	.271	21.930	1	59	.000
2	.647[b]	.419	.399	14.21238	.148	14.740	1	58	.000

a. Predictors: Student Satisfaction SSI, Curriculum NSSE3
b. Predictors: Student Satisfaction SSI, Curriculum NSSE3, Sense of Community SCI

Table 32

R-square Change SSI, NSSE4, SCI

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.737[a]	.544	.536	12.48429	.544	70.312	1	59	.000
2	.782[b]	.611	.598	11.62607	.067	10.032	1	58	.002

a. Predictors: Student Satisfaction SSI, Faculty NSSE4
b. Predictors: Student Satisfaction SSI, Faculty NSSE4, Sense of Community SCI

Table 33

R-square Change SSI, RCI, SCI

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.410[a]	.168	.154	16.86026	.168	11.898	1	59	.001
2	.649[b]	.421	.401	14.18197	.253	25.389	1	58	.000

a. Predictors: Student Satisfaction SSI, Religious RCI
b. Predictors: Student Satisfaction SSI, Religious RCI, Sense of Community SCI

As with prior models, additional analysis was completed. To ensure the validity of the

outcomes with one final regression, the researcher created a variable of the total predictors

(Eng5). The R-square Change of the entirety of independent variables is shown here.

Table 34

R-square Change SSI, Eng5, SCI

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.704[a]	.496	.487	13.12276	.496	58.035	1	59	.000
2	.733[b]	.537	.521	12.68803	.041	5.112	1	58	.028

a. Predictors: Student Satisfaction SSI, Engagement Five Eng5
b. Predictors: Student Satisfaction SSI, Engagement Five Eng5, Sense of Community SCI

Coefficients and conditional effects

A secondary post hoc analysis explores coefficients and conditional effects of the

predictor variables. As with prior analyses, each independent variable is examined separately to

understand the specific interaction of engagement within this sample. Not surprisingly, this level

of scrutiny reveals a great deal of clarity regarding these variables.

In this analysis, the independent variable (X) represents NSSE1 Peer Engagement, the

dependent variable (Y) represents SSI Student Satisfaction, and the moderating variable (W)

represents SCI Sense of Community. Table 35 shows the data as all means were centered for

continuity across analysis. Actual non-centered values are recorded in the text.

Table 35

Coefficient and Conditional Effect SSI, NSSE1, SCI

	R	R-sq	MSE	F	df1	df2	p
Model[a]	.6628	.4393	198.2542	14.8861	3.0000	57.0000	.0000

	coeff	se	t	p	LLCI	ULCI
constant	2.6091	1.9550	1.3346	.1873	-1.3057	6.5239
Peer NSSE1	.3051	.3669	.8316	.4091	-.4296	1.0339
Sense of Community SCI	1.4425	.2866	5.0341	.0000	.8687	2.0163
Int_1[b]	-.1288	.0373	-3.4502	.0011	-.2035	-.0540

Conditional effects[c] of the focal predictor at values of the moderator:
Focal predictor: Peer NSSE1 (X) Moderator variable: Sense of Community SCI (W)

SCI	Effect	se	t	p	LLCI	ULCI
-7.3421	1.2505	.4712	2.6537	.0103	.3069	2.1941
.0000	.3051	.3669	.8316	.4091	-.4296	1.0399
7.3420	-.6402	.4442	-1.4410	.1550	-1.5298	.2494

a. Outcome Variable: Student Satisfaction SSI (constant)
b. Int_1 : Peer NSSE1 * Sense of Community SCI
c. Values for quantitative moderators are the mean plus/minus one SD from mean.

The interaction between X and Y, when means are not centered, is significant ($p = .0010$)

and the interaction between W and Y is significant ($p < .0000$). When the moderation is

accounted for (X*W), the significance remains ($p = .0011$). Referring to the conditional effects

of the focal predictor NSSE1 (X) and the moderator variable SCI (W), the significant effect ($p =$

.0103) is only presence in one standard deviation below the moderator SCI (W) variable mean.

In this analysis, the independent variable (X) represents NSSE2 Institution Engagement, the dependent variable (Y) represents SSI Student Satisfaction, and the moderating variable (W) represents SCI Sense of Community. Table 36 shows the data as all means were centered for continuity across analysis. Actual non-centered values are recorded in the text.

Table 36

Coefficient and Conditional Effect SSI, NSSE2, SCI

	R	R-sq	MSE	F	df1	df2	p
Model[a]	.6572	.4319	200.8604	14.4464	3.0000	57.0000	.0000

	coeff	se	t	p	LLCI	ULCI
constant	2.0238	2.0157	1.0040	.3196	-2.0127	6.0602
Institution NSSE2	1.4537	.4973	2.9232	.0050	.4579	2.4495
Sense of Community SCI	1.0221	.2908	3.5145	.0009	.4397	1.6045
Int_1[b]	-.1234	.0535	-2.3056	.0248	-.2307	-.0162

Conditional effects[c] of the focal predictor at values of the moderator:
Focal predictor: Institution NSSE2 (X) Moderator variable: Sense of Community SCI (W)

SCI	Effect	se	t	p	LLCI	ULCI
-7.3421	2.3600	.7003	3.3698	.0014	.9576	3.7624
.0000	1.4537	.4973	2.9232	.0050	.4579	2.4495
7.3420	.5474	.5596	.9781	.3322	-.5733	1.6680

a. Outcome Variable: Student Satisfaction SSI (constant)
b. Int_1 : NSSE2 * SCI
c. Values for quantitative moderators are the mean plus/minus one SD from mean.

The interaction between X and Y is significant ($p = .0059$) and the interaction between W and Y is significant ($p = .0015$). When the moderation is accounted for (X*W), the significance remains ($p = .0248$). Referring to the conditional effects of the focal predictor NSSE2 (X) and the moderator variable SCI (W), the significant effect is present in one standard deviation below ($p = .0014$) and at ($p = .0050$) the moderator SCI (W) variable.

In this analysis, the independent variable (X) represents NSSE3 Curriculum Engagement, the dependent variable (Y) represents SSI Student Satisfaction, and the moderating variable (W) represents SCI Sense of Community. Table 37 shows the data as all means were centered for continuity across analysis. Actual non-centered values are recorded in the text.

Table 37

Coefficient and Conditional Effect SSI, NSSE3, SCI

	R	R-sq	MSE	F	df1	df2	p
Model[a]	.6575	.4323	200.7360	14.4672	3.0000	57.0000	.0000

	coeff	se	t	p	LLCI	ULCI
constant	.9404	1.9848	.4738	.6375	-3.0342	4.9150
Curriculum NSSE3	.8620	.2957	2.9154	.0051	.2699	1.4540
Sense of Community SCI	1.0957	.2758	3.9733	.0002	.5435	1.6479
Int_1[b]	-.0460	.0394	-1.1674	.2479	-.1248	.0329

Conditional effects[c] of the focal predictor at values of the moderator:
Focal predictor: Curriculum NSSE3 (X) Moderator variable: Sense of Community SCI (W)

SCI	Effect	se	t	p	LLCI	ULCI
-7.3421	1.1994	.3750	3.1987	.0023	.4485	1.9503
.0000	.8620	.2957	2.9154	.0051	.2699	1.4540
7.3420	.5245	.4487	1.1689	.2473	-.3740	1.4230

a. Outcome Variable: Student Satisfaction SSI (constant)
b. Int_1 : NSSE3 * SCI
c. Values for quantitative moderators are the mean plus/minus one SD from mean.

The interaction between X and Y is not significant ($p = .0650$) and the interaction between W and Y is not significant ($p = .0647$). When the moderation is accounted for (X*W), the significance is still nonexistent ($p = .2479$). Referring to the conditional effects of the focal predictor NSSE3 (X) and the moderator variable SCI (W), there is some significant effect detected one standard deviation below ($p = .0023$) and at ($p = .0051$) the moderator SCI (W) variable.

In this analysis, the independent variable (X) represents NSSE4 Faculty Engagement, the dependent variable (Y) represents SSI Student Satisfaction, and the moderating variable (W) represents SCI Sense of Community. Table 38 shows the data as all means were centered for continuity across analysis. Actual non-centered values are recorded in the text.

Table 38

Coefficient and Conditional Effect SSI, NSSE4, SCI

	R	R-sq	MSE	F	df1	df2	p
Model[a]	.7987	.6379	128.0437	33.4670	3.0000	57.0000	.0000

	coeff	se	t	p	LLCI	ULCI
constant	1.5308	1.6290	.9397	.3513	-1.7312	4.7928
Faculty NSSE4	2.6891	.5224	5.1473	.0000	1.6429	3.7352
Sense of Community SCI	.8306	.2287	3.6310	.0006	.3725	1.2886
Int_1[b]	-.1340	.0652	-2.0557	.0444	-.2645	-.0035

Conditional effects[c] of the focal predictor at values of the moderator:
Focal predictor: Faculty NSSE4 (X) Moderator variable: Sense of Community SCI (W)

SCI	Effect	se	t	p	LLCI	ULCI
-7.3421	3.6729	.5273	6.9657	.0000	2.6170	4.7288
.0000	2.6891	.5224	5.1473	.0000	1.6429	3.7352
7.3420	1.7052	.8520	2.0014	.0501	-.0009	3.4113

a. Outcome Variable: Student Satisfaction SSI (constant)
b. Int_1 : NSSE4 * SCI
c. Values for quantitative moderators are the mean plus/minus one SD from mean.

The interaction between X and Y is significant ($p < .0006$) and the interaction between W and Y is significant ($p = .0100$). When the moderation is accounted for (X*W), the significance remains ($p = .0444$). Referring to the conditional effects of the focal predictor NSSE4 (X) and the moderator variable SCI (W), there is significance one degree of separation below ($p < .0000$), at ($p < .0000$), and standard deviation above ($p = .0501$) the moderator SCI (W) variable.

In this analysis, the independent variable (X) represents RCI Religious Engagement, the dependent variable (Y) represents SSI Student Satisfaction, and the moderating variable (W) represents SCI Sense of Community. Table 39 shows the data as all means were centered for continuity across analysis. Actual non-centered values are recorded in the text.

Table 39

Coefficient and Conditional Effect SSI, RCI, SCI

	R	R-sq	MSE	F	df1	df2	p
Model[a]	.6589	.4342	200.0668	14.5791	3.0000	57.0000	.0000

	coeff	se	t	p	LLCI	ULCI
constant	-.3252	1.8332	-.1774	.8598	-3.9962	3.3458
Religious RCI	.8413	.2474	3.4004	.0012	.3459	1.3368
Sense of Community SCI	1.3216	.2556	5.1707	.0000	.8098	1.8334
Int_1[b]	.0352	.0308	1.1436	.2576	-.0264	.0968

Conditional effects[c] of the focal predictor at values of the moderator:
Focal predictor: Religious RCI (X) Moderator variable: Sense of Community SCI (W)

SCI	Effect	se	t	p	LLCI	ULCI
-7.3421	.5829	.2911	2.0025	.0500	.0000	1.1657
.0000	.8413	.2474	3.4004	.0012	.3459	1.3368
7.3420	1.0998	.3740	2.9405	.0047	.3509	1.8488

a. Outcome Variable: Student Satisfaction SSI (constant)
b. Int_1 : RCI * SCI
c. Values for quantitative moderators are the mean plus/minus one SD from mean.

The interaction between X and Y is not significant ($p = .7697$) and the interaction between W and Y is not significant ($p = .8733$). When the moderation is accounted for (X*W), the significance is absent ($p = .2576$). Referring to the conditional effects of the focal predictor RCI (X) and the moderator variable SCI (W), the significant effect is present in one standard deviation below ($p = .0500$), at ($p = .0012$), and one standard deviation above ($p = .0047$) the moderator SCI (W) variable.

CHAPTER FIVE: DISCUSSION

Overview

This research explored the relationship between students' sense of community, student satisfaction, and doctoral program retention. The model understood that various sources of student engagement correlated with student satisfaction and that higher degrees of satisfaction would translate to more frequent cases of retention. The sample included doctoral students as retention and completion across the country averages around 50% in this population. Building on the understanding of adult learning theories, student sense of community should illustrate the importance and value of collaboration within this population. Nevertheless, the data outcomes emphasized the risk that online and distance learning poses to adult learners. Namely, the distal nature of this academic delivery method and the practices thereof introduce a loss of opportunity and effectiveness in higher education with respect to academic communities and peer engagement. Here within, a discussion of the findings and the implications of these outcomes are presented, limitations of this study are noted, and, finally, recommendations for further research are given. To be sure, a significant risk to academic communities was discovered as a result of studying a predominantly online non-proximal student population.

Discussion

At the core of this research is a question built upon what we know about andragogy and the expansion of online education. While much can be learned through the study of doctoral experiences, it is the spirit behind this work that transcends the sample population. If innovators of higher education and stewards of those under their tutelage are to advance excellence, then they must being willing to recognize one very complex outcome. There is an introduced risk associated with online non-proximal communities that tells us more about adult learning theory

as experience through distance learning. The study of an online doctoral program helps further this discussion.

Andragogy

A reminder of critical elements to this study are presented here. As adult learning theory, or andragogy, has been explained, a brief reminder is given here. Knowles provides his model of adult learners assumptions to include: 1) self-management of learning, 2) empowerment of learners leading to increased motivation, 3) reliance on life experience to aid in learning, 4) goals and objectives for learning, and 5) practical, real-world solutions to problems encountered (Chametzky, 2014). An emerging threat to higher education challenges institutions to apply andragogic principles to online learning environments in order to heighten the student experience and outcome excellence.

Distance learning

The population sampled for this study, for clarification, are primarily distance learning online students. Distance learning is growing in popularity due to many benefits associated with this particular education delivery model. To be sure, there are financial benefits, increases in accessibility, ease of assignment completion, and more experience by both the student and institution. Still, the distance between students, peers, faculty, and the institution poses unique threats. In many cases, adult learners are "isolated from classmates and instructors, and they may slip through the cracks of traditional student and social support systems, putting them at risk to suffer from silent or hidden conditions or abuse without being able to visually communicate to others their need for help" (Thompson & Porto, 2014). This risk alone should be a cause for concern. The consequences not only are realized in the lack of high performing program experience and excellence, but there may be additional personal detriments from such shortfalls.

Non-proximal communities

Much of the strategies that emerge in online education include intense faculty engagement and feedback as the outcomes of this study strongly support. It is important to stress that "successful online course design and delivery should cement rigorous course content with relevant problem solving activities that can be immediately applied to adult learners' lives and goals" (Zorn-Arnold & Conaway, 2016). The realities of non-proximal learning communities require greater attention due to the nature of this phenomenon. The further removed from the core of the learning environment a student is, the higher the risk of poor engagement, lower motivation, and greater attrition grows. In short, distal adult learners lack the convenience of learning communities as experienced in traditional classroom environments.

Associated risk

If one understands the precepts of andragogy and subscribes to the theory, the risks associated with online or distance learning becomes clear. There is "a challenge for those educators not well versed in the area of adult learning and what adult learners bring to the learning environment" (Schultz, 2012). This is, of course, to the detriment of the student. More to the point of this research, online and distance learning, by default, creates a gap between adult learners and introduces a void in the contributions of each member of the class or community. This leads to the purpose of this research and how it all fits into the larger field of study.

The scope of this research is to improve the retention rates of higher education programs by improving the experience and excellence of online programs. Within the field of higher education, this research brings attention to the missed opportunities associated with lack of peer interaction in adult education. Learning cohorts and academic communities provide a multitude of perspectives, experiences, collaborations, and support. If not fostered and nurtured, online

education outcomes are at risk of being less effective and transformative than potential suggests. By studying a small online doctoral population, the key andragogic element of learning communities based of shared experiences and perspectives is not being emphasized, nurtured, and promoted as greatly as it could be. How this researcher arrives at this conclusion is explained next.

Regarding this study, the overarching hypothesis is grounded in andragogy; specifically, it is hypothesized that student sense of community (as a means to learn from shared experience, perspectives, and support) is such a significant moderator between variables that it can actually serve as a predictor of student satisfaction. The idea is that the andragogic principle of adult learning communities will be realized in students' sense of belonging and contributing to that academic community. It is further hypothesized that higher levels of sense of community can predict higher instances of retention and completion.

There are two main assumptions and three succinct research questions that construct this research. As a literature review suggests, there are numerous collections of data from the convenience sampling of undergraduate traditional students that suggest higher levels of engagement equates to higher levels of satisfaction. The same holds true within this study of the doctoral population. That is the first assumption. The second is that, given the nature of communal relationships and the importance of learning communities as proposed by andragogy, faculty and peer engagement will be the highest of all the independent variables. This assumption of peer engagement was not supported by the outcomes of this study.

As a means to confirm the interaction between five independent variables, a moderating variable, and a dependent variable, correlation and regression analysis for all interaction were completed. The following are the three research questions. The first is the baseline interaction

between the types of engagement (peer, institution, curriculum, faculty, and religious) and student satisfaction. Next is the interaction between the five types of engagement and the outcome variable of sense of community. Finally, the same interactions as the baseline are again analyzed with sense of community as a moderator.

The research design consisted of two assumptions based on prior research indicated in the literature review, three research questions consisting of the correlation and potential moderation between five independent variables and two dependent variables, and two post hoc tests to clarify the outcomes. This section will provide further detail into the outcomes of the assumptions and research questions. To be sure, the proof of concept is provided through the correlations between the five engagement variables and student satisfaction. Further, the inability to confirm the second assumptions regarding peer engagement provides interesting debate and opportunity to identify a significant risk of online distant learning. The results of the research questions are included as well. While the hypothesis is based on a functional implication of what identifies a community, it is the sense of community, according to andragogic understanding, that leads this researcher to anticipate a moderation of this variable on student satisfaction.

The hypothesis for this study includes the idea that sense of community may ultimately be a predictor of retention through the variable of student satisfaction. That is, as student satisfaction leads to higher retention, per the literature, then it is presumed that a higher sense of community will predict both student satisfaction and retention. According to andragogy, adult learners excel when they are given the opportunity to engage peers, among other things, through experience, perspective and support. The opportunity that presents as a result of this study, therefore, is to improve the online learning experience by nurturing academic communities.

The first assumption to discuss is the proof of concept that this doctoral sample will perform similarly to undergraduate populations. Among the sample population of doctoral students who answered all survey questions, the correlation study indicates that, while the correlation does not exist between all variables, there is statistical significance between each predictor independent variable and the outcome dependent variable of Student Satisfaction. As per the data outcomes and results (Table 1), the strength of these correlations are such; Faculty NSSE4 (F = 70.312), Curriculum NSSE3 (F = 21.930), Institutional NSSE2 (F = 19.829), Religious RCI (F = 11.898), and Peer NSSE1 (F = 7.274). The assumption that the correlation will exist, as undergraduate studies have shown, is confirmed. The order of strength is unique to this study.

The second assumption is that certain engagement indicators will prove stronger based on the facets of this sense of community study. That is, it is assumed that the interactive relationships between students and their faculty and peers will be stronger based on certain adult learning theories that suggest adult learning communities enhance the learning experience and increase the excellence of academic learning outcomes. The results of this study, as seen by the R-squared Variance, show a different outcome. Faculty (R^2 = .544), Curriculum (R^2 = .271) and Institution (R^2 = .252) are the strongest. Interestingly, the weakest is once again Peer (R^2 = .110) which is preceded by Religion (R^2 = .154). This second assumption is not confirmed under the auspice of this study. Important to note is that 80.3% of the respondents identify as strictly online students where peer interaction is limited and poses a risk to adult learning communities.

To begin addressing the research questions, the researcher needed to test whether the engagement indicators were significantly correlated to the outcome variables individually. The first analysis is of the Student Satisfaction dependent variable. According to the analysis, the

following outcomes were observed: Faculty NSSE4 (F(1,59) = 70.312, *p* < .000), Curriculum

NSSE3 (F(1,59) = 21.930, *p* < .000), Institution NSSE2 (F(1,59) = 19.829, *p* < .000), Religious

RCI (F(1,59) = 11.898, *p* = .001), Peer NSSE1 (F(1,59) = 7.247, *p* = .009). As such, each

independent variable significantly correlates to the dependent variable of student satisfaction.

Even with one dependent variable being used as a moderator, the relationship is

important to document. To answer this questions, the same analysis was completed using Sense

of Community as the outcome variable. These results were observed: Faculty NSSE4 (F(1,59) =

70.312, *p* < .000), Curriculum NSSE3 (F(1,59) = 21.930, *p* < .000), Institution NSSE2 (F(1,59) =

21.304, *p* < .000), Peer NSSE1 (F(1,59) = 18.885, *p* < .000), Religious RCI (F(1,59) = 6.449, *p* =

.202). Two important observations emerge from this analysis. One is that the order of power

changes with religious engagement having the least influence on sense of community. The

second is that there is no statistical significance between religious engagement and sense of

community.

The final research question is the crux of the entire study. Using five avenues of student

engagement, the researcher seeks to understand the moderating influence of Sense of

Community, if one exists, on Student Satisfaction as the outcome variable. With moderation, the

influence of variables presents as: Faculty NSSE4 (F(2,58) = 45.554, *p* < .000), Religious RCI

(F(2,58) = 21.103, *p* < .000), Curriculum NSSE3 (F(2,58) = 20.889, *p* < .000), Institution NSSE2

(F(2,58) = 17.695, *p* < .000), Peer NSSE1 (F(2,58) = 13.786, *p* < .000). In this scenario, all

interactions are significant. The order of influential power changes dramatically with religious

engagement moving into the second position. The statistical significance is only part of

understanding the outcomes. The analysis continues beyond the assumptions and research

questions to post hoc testing.

Two post hoc tests were performed to further understand the interaction of these variables. If the researcher is trying to understand the importance of building a Sense of Community among students in accordance to adult learning theory, then there must be an understanding of how much Sense of Community influences Student Satisfaction. The R-squared Change indicates the percentage of variance being accounted for by the dependent and moderating variables.

Regarding R-squared Change, Peer Engagement (NSSE1) accounts for 9.5% (R^2 = .095) of the variance in Student Satisfaction; however, when Sense of Community moderates, this increases to 29.9% (R^2 = .299) of the variance. Institutional Engagement (NSSE2) accounts for 25.2% (R^2 = .252) before and 37.9% (R^2 = .379) after moderation. Curriculum Engagement (NSSE3) accounts for 27.1% (R^2 = .271) before and 41.9% (R^2 = .419) after moderation. Faculty Engagement (NSSE4) accounts for 54.4% (R^2 = .544) before and 61.1% (R^2 = .611) after moderation. Religious Engagement (RCI) accounts for 16.8% (R^2 = .168) before and 42.1% (R^2 = .421) after moderation. Based on this, the moderator has the most influence on Religious Engagement (R^2 Change = .253) and the least influence on Faculty Engagement (R^2 Change = .067). The interaction between all variables with moderation is statistically significant.

The final post hoc test involves analysis of the coefficients and the conditional effects of the predictor variables. It is in this analysis that revelation of the nature of these interactions and frequency distributions exists. That is, when you multiply the independent variables and the moderating variables separately, the return calculation of coefficients is a stronger and more accurate outcome of the regression. For this analysis, the dependent variable of Student Satisfaction is constant. In the case of this research a couple variable interactions are not statistically significant.

The interaction between NSSE1 Peer Engagement and SCI Sense of Community is significant (p = .0011) at only one standard deviation below the mean. The interaction between NSSE2 Institution Engagement and SCI Sense of Community is significant (p = .0248) at one standard deviation below and at the mean. The interaction between NSSE3 Curriculum Engagement and SCI Sense of Community is not significant (p = .2479) and warrants no further testing. The interaction between NSSE4 Faculty Engagement and SCI Sense of Community is significant (p = .0444) at all recorded variance below and above the mean. Finally, the interaction between RCI Religious Engagement and SCI Sense of Community is not significant (p = .2576) and warrants no further testing. The important observation here is that the interaction of the moderator as a coefficient changes the outcomes of this analysis. With the presence of the moderator in this coefficient analysis, peer, institution, and faculty engagement are statistically significant in that order; however, curriculum and religious engagement are no longer statistically significant.

Implications

The literature notes that low retention is a major concern among institutions of higher learning due to lost potential and resources. Further, strategies to counter high attrition include andragogic precepts and the study of adult learning communities. These communities offer such an important avenue to further student knowledge by sharing perspectives and experiences among peers; however, this study reveals that these opportunities are being missed or not recognized as suggested by the outcomes of this doctoral online sample population. Peer engagement is one of the weakest predictors of student satisfaction and barely registers significant correlation to sense of community as a moderating variable.

Another aspect of the literature that supports the need to address these missed opportunities is the credence given to academic communities and the benefits of intentionally nurturing such interactions (Bagaka's, et al., 2015, Nolte, et al., 2015). Modifications to several components of the online experience (such as collaborative learning activities, significant real-world application, etc.) are needed to ensure the community of learners are contributing and receiving meaningful outcomes (Chametzky, 2014). Additionally, with respect to Knowles and his theory of adult learning, "the most effective learning occurs when…learners are cooperative, collaborative, and supportive in a 'learning community'" (Schultz, 2012). In this online doctoral program, the data suggests that these learning communities do not exist or are simply undervalued. Consider the following data.

While the sample size may be too small to measure overall statistical significance ($p =$ .221), a cross tabulation between program format (Online, Intensives) and Sense of Community (SCI) reveals an intriguing interaction. Students who are enrolled in online courses only are normally distributed (N = 49, M = 31.0408) to Sense of Community (SCI) while students who are enrolled in intensives are negatively skewed (N = 12, M = 35.0833) in their distribution to Sense of Community (SCI). This hints that higher outcomes of Sense of Community (SCI) correlate with education models and course structures that bring students together. Again, the sample size is too small to be definitive; still, it does raise the question of how influential student interaction is and what forms of interaction outside of the academic experience should be encouraged.

There are certain research outcomes that are worthy of note beginning with the independent variables of Peer Engagement, Institution Engagement, Curriculum Engagement, Faculty Engagement, and Religious Engagement. For each of these variables, a brief explanation

is given regarding the outcomes from the data analysis. Interesting outcomes manifest for the types of student engagement that may be unique to this population and to online programs in general.

The first variable was expected to be more powerful by the researcher based on andragogic principles and undergraduate studies. As a result of analyzing the outcomes of this study, it is now assumed that the nature of online programs diminishes these outcomes. Peer Engagement (NSSE1) is a low predictor of Student Satisfaction (SSI), yet receives nearly a quarter of its statistical significance from the moderator of Sense of Community (SCI). Further, the coefficient power suggests a strong influence shared by this independent and moderator variable pair.

Next, the variable of Institution Engagement (NSSE2) performed as expected. While undergraduate population may take more advantage of opportunities to engage in campus amenities and programs, online students may rely more heavily on digital, media, and communication support systems. As such, this variable remains primarily in the middle of all interactions within this analysis.

As andragogy suggests, adult learners pursue learning that is relevant to their real-world application. Additionally, the curriculum must be challenging and augment their personal and professional experiences. Curriculum Engagement (NSSE3), not surprisingly, is a strong predictor of Student Satisfaction (SSI), yet is not significant when the coefficient analysis is complete. In other words, in the current online delivery model, Sense of Community (SCI) fails to moderate sufficiently.

It was highly anticipated that the fourth engagement factor would perform the strongest for two chief reasons. One, the nature of online interactions places the faculty directly in contact

with students for the majority of all decisions, outcomes, and assessments. Two, andragogic principles suggest a strong support system from faculty enhances the student experience. To be sure, Faculty Engagement (NSSE4) is the greatest predictor of Student Satisfaction (SSI), outperforms all other variables in coefficient analysis, and receives the least amount of moderation from Sense of Community (SCI). Indeed, most student engagement strategies in higher education rely heavily on faculty-to-student mentorship.

Finally, the influence of Religious Engagement (RCI) was studied based on a sample population attending an institution of higher learning with expressed evangelical principles. It came as a surprise to the researcher that this variable performed the weakest of all variables. Religious Engagement (RCI) is the lowest predictor of Student Satisfaction (SSI) and remains statistically insignificant when the coefficient analysis is complete. The former is not extraordinarily astonishing; however, the indication that religious commitment is not significantly moderated by Sense of Community (SCI) may be somewhat alarming in that these outcomes indicate a stark separation between one's faith community and one's academic community. At the very least is the suggestion that an academic community may not foster a shared faith among its members.

A brief exploration of Liberty University (www.liberty.edu) characteristics is needed to clarify this cause for concern. Within the Doctrinal Statement, the university proclaims clearly stated evangelical beliefs and principles through a series of affirmative statements. There are affirmations about God, His Son who is Jesus, the Holy Spirit, and the condition of mankind. Likewise, this list includes statements of redemption through belief in and proclamation of the work of Jesus, the confession of sins, and the indwelling of the Holy Spirit. Finally, the

importance of the local assembly of believers who are organized to carry out the commission to evangelize, to teach, and to administer ordinances of believers is stressed.

Upon reading the Mission Statement, the university identifies as an academic community keeping with the traditions of evangelical institutions of higher education. Further, the Philosophy of Education holds, among other points, that God is the source of truth, that people are able to know and value themselves, others, and God, and that education involves the whole person. Liberty University vows to, among other things, educate men and women who will contribute to their communities, emphasize excellence in the education process, promote a synthesis of academic knowledge and a Christian worldview, promote diverse elements, knowledge and understanding of other cultures, and encourage commitment to the Christian life.

While these affirmations and statements of Liberty University are both foundational and transformative, perhaps there is room to examine the efficacy through application of these principles. There is strong emphasis placed upon the evangelical Christian values and beliefs that one would expect from a faith-based organization. Also, the importance of excellence in education is admirable and fully realized. Finally, the equipping of students to enter the world with academic preparation and a strong Christian worldview is clearly an institutional priority. However, for a university with an online student population exceeding 85% of the total population (Source: Liberty-University-Economic-Impact-2015.pdf), the emphasis on producing individuals who are both educated and spiritually prepared in excellence is missing one critical element.

Traditional (or on-campus) students have the organic and natural opportunity to interact with each other, form lifelong bonds and friendships, spend meaningful time outside of the classroom settings, and experience the amenities that the university campus has to offer. These

roughly 15,000 students experience sense of community in powerful ways that the other roughly 100,000 online students do not. The university is founded on transformation through academic and Christian excellence, to be sure. The argument is made, therefore, that opportunities for the large majority of Liberty University students to experience communities that will transform both them and the world is at risk, is missed altogether, and/or is simply overlooked due to the non-proximal aspects of online education.

Something that should be alarming to an institution founded on and operating by Christian values is the lack of power, correlation, and statistical significance that Religious Engagement (RCI) has as part of this study. As a review, this variable has no correlation to peer engagement ($p = .687$), has the largest standard deviation (SD = 7.72219), has the weakest R-squared predictor variance ($R^2 = .110$) to Student Satisfaction (SSI), is not statistically significant to Sense of Community (SCI), and is not significant in coefficient analysis ($p = .2576$). To be sure, Religious Engagement (RCI) was negatively skewed to higher scores and is significantly correlated ($p = .001$) to Student Satisfaction (SSI). However, the lack of correlation, predictive power, and influence of Religious Engagement (RCI) suggests a separation between faith practices of students and their academic community.

The lack of significance that Sense of Community (SCI) has within certain variables of online doctoral student engagement offers the prospect to enhance these areas. That is, there is the opportunity to increase intentional Peer Engagement (NSSE1) in order to capitalize on the potential of adult learning communities so that experience and excellence are increased. This, likewise, is applicable to Curriculum Engagement (NSSE3). One precept of andragogy includes the necessity of adult learners to accept the purpose and application of the material they are consuming and to be part of the process to design and dictate what that material may be.

Certainly, emphasis can be increased to those strategies that integrate faith and academia as a means to strengthen and empower this community. The incorporation of students into academic communities that include prominence of Religious Engagement (RCI) within those same communities may result in stronger support systems. All of these suggestions ultimately lead to the goal of increasing retention in doctoral programs.

Christian Worldview Consideration

Liberty University boasts its ability and success of "Training Champions for Christ" which was a foundational component at the inception of the school. The vision of the founder, Dr. Jerry Falwell, was to develop Christ-centered men and women with values, knowledge, and skills that are affirmed by doctrinal precepts and are essential to impact the world. Data from this study indicates that some of that vision and focus may be waning with respect to encouraging Christian community among Liberty University's student body and alumni population.

One unexpected outcome of the data analysis was the lack of correlation (p=.202) between Religious Engagement (RCI) and Student Sense of Community (SCI). The online delivery model creates certain barriers to interaction and involvement among this population, to be sure. All the same, there was expected, especially at a Christian university, to be a stronger interaction between the university claiming to generate champions established in Christ and students who share in the likeminded community of faith.

Another perspective of this finding was discovered in the post hoc testing that revealed a significant importance of a students' sense of academic community. When comparing all variables individually, the two variables that were impacted greatest by the moderation of Student Sense of Community (SCI) were Peer Engagement (NSSE1) and Religious Engagement (RCI). Religious Engagement was strengthened the most, a 24.7% increase, by this moderation

of community. This stresses how crucial the intentional cultivation of academic communities is to building a community of believers such as those attending Liberty University.

A final statistical review of coefficient and conditional effect emphasizes the concern of this researcher. When considering the interaction of Religious Engagement and Student Sense of Community (RCI * SCI) on Student Satisfaction, there was no significant effect (p=.2576). This indicates that students, particularly the online population as predominantly sampled in this study, do not experience a strong Christian community as part of their academic career.

Considering the implications of these outcomes in response to Liberty University's mission to train champions, unifying an army may be more transformative rather than graduating individuals. The transaction of diplomas is certainly fiscally lucrative and enhances the brand of this Christian institution at the detriment of the more important vision of cultivating life-long warriors who are united in Christ and prepared to enter the world together. It is concerning that the data show an apparent emphasis on generating silos of individuals purchasing degrees rather than making disciples of Christ to be part of the larger body of believers equipped to change the world.

It was during the post hoc analysis of coefficients and conditional effects that another interesting outcome was discovered. In short, the lack of peer interaction and engagement negatively affects student satisfaction over time. As shown in Table 35, the focal predictor and moderator variable conditional effect of Peer Engagement (NSSE1) and Sense of Community (SCI) is statistically significant (p=.0103) only at the lowest interaction with the outcome variable of Student Satisfaction (SSI).

Consider the effect values of the mean (M) and plus/minus one standard deviation (*SD*) from the mean. The values for effect are the standardized slopes at three distinct levels. One *SD*

below the mean has an effect value of 1.2505 (*p*=.0103). At the mean, the effect value is .3051 (*p*=4091). One *SD* above the mean has an effect value of -.6402 (*p*=.1550). As noted, the statistical significance exists for low values of the moderator and is not statistically significant for medium and high values of the moderator. The conclusion, based on this table, is that low peer engagement has a negative long-term effect on student satisfaction.

Peer engagement is significantly correlated with student satisfaction when the engagement is at the lower limits. When the interaction is at the mean or above one *SD* of the mean, this is no longer significant. Imagining the slopes of these three interactions, the impact on this research is clear. The further away one gets from the initial interaction of the conditional effect with peer engagement and sense of community, the less significant this interaction has on student satisfaction. In other words, a lack of peer engagement will most decisively result in low student satisfaction. As this study indicates, low student satisfaction results in low retention.

Higher education, specifically in the online delivery model, must transcend the consumer mentality of the transaction between a student and an institution of higher learning if it is to be effective in equipping and preparing life-long scholars and experts. Building an academic community is critical. When looking at the consistent problem of low retention rates in graduate programs, it is important to understand that a lack of peer interaction and engagement is having negative effects on student satisfaction.

Limitations

There are a few limitations that surfaced during this research to note. One of the disappointing restrictions of this study was that the sample size was less than ideal. While the opportunity was there, the population of doctoral students in the School of Behavioral Sciences did not yield more data.

As for the method of collecting data, the noted doctoral programs in the School of Behavioral Sciences at Liberty University we invited and reminded to participate in this study through email which included a hyperlink to an anonymous survey. There was a notable calamity with the emails that may account for the low response rate. Following a templated introduction to the researcher, the recipients of the emails easily misunderstood the nature of this study and who the targeted sample was intended to be. Additionally, the format of the email was very similar to many of the institutional emails that tend to frequently fill student email inboxes which are subsequently overlooked. A third known deterrent of this study was the length. This dissertation was part of a data collection process that included graduate students to be used in another study; therefore, the survey was uncommonly lengthy and resulted in many incomplete samples that were not used during the analysis.

Despite these inordinate setbacks, an adequate sample size was achieved resulting in outcomes that were partially expected and some that came as a surprise. Given the nature and size of the sample (primarily online and relatively small), the outcomes require further research. The awareness gained by this research, to be sure, emphasizes a potential risk in online education programs due to the lack of intentional strategies that include peer groups as part of the academic community. For the purposes of the outcomes, there is substantial data to incite discussion and present reasonable arguments; however, as quantitative studies of doctoral populations are scarce, a larger sample size would have added greatly to the field of study had there been a substantial response increase.

Another noted weakness of this study is that it is a snapshot of one particular time across all levels of program progress. A study between different advanced years in the program may be helpful to compare a snapshot of first year students to a snapshot of students who are nearing

completion. Another limitation is that this researcher was not able to perform a longitudinal study over the entire career of students to measure Sense of Community (SCI) involving each of these engagement variables. This could further ascertain potential correlation to and prediction of retention and completion of online doctoral programs. To be sure, a control group not receiving intentional engagement strategies compared to a study group receiving intentional engagement strategies would be a fascinating study.

The Sense of Community Index (SCI) is a solid gauge of community support, trust, and inclusion. Still, with respect to academic communities, this researcher feels that there may be better studies and scales available that measure and report on these unique communities specifically. Academic communities present with challenges, outcomes, motivations, and membership. It is a limitation of this study that a clear sense of academic communities was not acquired; to be sure, the outcomes may have been much different.

In this study, the vast majority of respondents were online students only. There is no comparison to strictly on-campus students. With further conversation about academic communities being nurtured outside of the classroom, the on-campus population, by nature of proximity, has an increased opportunity for higher correlations and power of community. This comparison is not specifically a limitation as it is out of scope of this study; however, it would be helpful to show how important academic communities are when researching retention in online programs.

A final limitation to note is that this study includes no measurements of strategies or description for online academic communities that are currently in use for this doctoral online population. That is, this researcher has not collected qualitative outcomes from professors who teach these students. There are tools such as online video, opportunities for group audio calls,

written material in the form of discussion boards, and even group assignments that require some pretense of collaboration between students. One must question whether these activities promote or even carry the expectation of building an academic community that shares perspectives, experiences, struggles, and successes.

Recommendations

To begin the final section of recommendations, this researchers offers comments regarding potential solutions to the weaknesses discovered in this study. Understanding community is an overarching theme of this research. To that point, the outcomes of this research, in light of the surprising deficiencies of Peer Engagement (NSSE1), Religious Engagement (RCI), and this online sample population, raise these questions. How is community developed? Why is it important? Is it important in academic pursuits? Do academic communities have benefits beyond the classroom or education? This may be a conversation about the culture of the community, as well. The strategies for strengthening academic communities and providing excellence to the student may be outside of the curriculum, assignments, and academic environment. That is, strategies to nurture these interactions for online students may be more successful if casual and social interaction is designed into the syllabus rather than hoping interaction takes place amidst the coursework. Students could pray for one another, appreciate new perspectives, and lean into the collective experiences with no graded expectations.

Anecdotal examples of such experiences that transcend the rubrics bear to mind prior comments from this study. Consider the relationships, experiences, perspectives, and interactions that occur organically among traditional on-campus students. There is naturally occurring community that grows out of these connections that arguably last well beyond the academic career. Online communities are difficult to foster due to the non-proximal nature of distant

learning; all the same, nurturing communities consisting of online students can be just as transformative. This is something that cannot be forced through group projects, assigned workgroups, required discussion board posts, or simply processing facetime during internet lectures. There must be a more effective way. Some suggestions follow.

Curriculum design

One recommendation, based on the precepts of andragogy and examples from the literature review (Harper, 2011), is to allow the students more autonomy in the design of curriculum and/or degree completion. While there are certain requirements, such as foundational courses, total credit hours, and key elements of other specific requirements, the generality of this particular degree allows for some ownership and creativity from the students. Another way to look at this is to consider how students anticipate using their degree and how they may more appropriately prepare for their specific vocational or ministry goals. Perhaps this autonomy comes in the form of assignment manifestation. If a student anticipates teaching, the rubric allows for the output of syllabus design. If the student is augmenting a counseling license, the assignment requirements are met through the implementation of a therapy plan. The idea is to allow the adult learners the creativity to apply and demonstrate the knowledge gained in manners that are relevant to their career goals.

On-campus opportunities

This researcher has been able to participate in many intensive courses over the entirety of the academic career. It is in those exchanges with other students that community was naturally established and flourished. Email addresses and phone numbers were exchanged and friendships were built. Because these on-campus opportunities were provided, students have stronger connections to each other, to the faculty, to the program, and ultimately to the university.

Understanding that cost to travel to the university and obtain housing for a student is a legitimate concern, there are ways to provide on-campus experiences and nurture academic communities by having strategic intensive courses scattered at key moments in the completion of a degree such as in the first year, prior to beginning dissertation research, or toward the beginning of cognate coursework.

Faculty as mentors

Strategies that has a great deal of emphasis in the literature review (Bell, et al., 2014) is the use of faculty members as mentors. These strategies manifest in many different forms. The recommendation is given, therefore, to explore the many various applications of faculty mentors to understand which are more effective in gaining trust in the community, keeping students engaged in the process, and ensuring future retention and completion in the program of study. The access to faculty, in an online environment, is more critical as distance learning students, by nature of the lack of proximity, have a higher risk of isolation, confusion, and demotivating experiences. Consider the benefits of a vast network of mentors whose exclusive role was simply to regularly connect via phone, video, and email with online students. *That* is a self-sustaining university community. This researcher recalls the opposite effect of completing an online undergraduate degree at Liberty University having never even seen a professor or classmate and, to this day, having no idea what paths with amazing people may have crossed.

Cohort supports

A final recommendation combines the prior two thoughts. Cohorts are difficult in self-paced programs where students may move ahead in the completion plan or take lighter loads than others. Still, cohort supports, similar to academic advisors or faculty mentors, can be assigned to a specific group of students who have experienced each other by taking courses

together, can encourage community among this group by maintaining connection and communication, and can foster interaction that transcends academia by promoting communities of adults who are all undertaking a very difficult journey together. The support systems may be comprised of student mentors further along in their journey, recent graduates who attest to the possibility of completion, student leaders who are chosen as cohort cheerleaders and encouragers. The idea, once again, is the development of a healthy community that is not constrained to assignments, rubrics, and grades.

Consider the guidelines of Andragogy as proposed by Knowles in these six assumptions related adult learning motivation: 1) Adults need to know the reason for learning something (Need to Know), 2) Experience provides the basis for learning activities (Foundation), 3) Adults need to be responsible for their decisions on education; involvement in the planning and evaluation of their instruction (Self-conceptualization), 4) Adults are most interested in learning subjects having immediate relevance to their work and/or personal lives (Readiness), 5) Adult learning is problem-centered rather than content-oriented (Orientation), 6) Adults respond better to internal versus external motivators (Motivation) (Schultz, 2012). In this summation, it is the foundational elements of experience that guides this theory to the importance of academic communities. Additionally, it is intrinsic motivation that is fueled by expanding one's knowledge and perspective that tangible application can be enhanced through these academic communities.

Having reviewed the precepts of adult learning theory, consider these additional recommendations. First, the results of the interaction between Peer Engagement (NSSE1) and Sense of Community (SCI) could indicate two things: the community of peer learners is not important in online education or the population sampled is not experiencing an academic community due to the nature of distance learning and therefore cannot recognize the potential

benefits. Prior research indicates that academic communities do have a significant influence on retention (Brown, 2016). Assuming online distance learning creates barriers to the academic experience of doctoral students, correction strategies that develop and nurture peer communities suggest positive outcomes. Further, the connection between online learners and motivation, as suggested by andragogic theory, could provide a clearer picture of what outcomes students are expecting. The lack of these outcomes may be the detriment that results in attrition. To that point, one could explore variances within attitudinal and behavioral engagement variables to clarify intrinsic thought and acquired actions.

Finally, three important recommendations will further this conversation in powerful ways. It is assumed, based upon outcomes of this research, that there is a distinct difference in the Sense of Community (SCI) moderating power between online and on-campus samples. Having a measure of community compared between online and on-campus communities would be enlightening. Additionally, measuring community among those same populations years after graduation may strongly suggest the power of community. Further, this study would be suited for a repeat study with a larger sample population across multiple universities. Once the outcomes are analyzed, programs may be examined to determine best practices and program lessons learned. To close, while Sense of Community (SCI) is a powerful tool, it may not be adequately designed for higher education. Therefore, using a similar research design, there may be benefits to using a more accurate scale or measure of academic communities.

REFERENCES

Akobirova, Z. (2011). International doctoral students: relationships between engagement in academic-social activities and self-perceived academic gains (Unpublished doctoral dissertation). University of Kansas, Lawrence, KS.

Ali, A., & Kohun, F. (2007). Dealing with social isolation to minimize doctoral attrition--a four stage framework. *International Journal of Doctoral Studies*, *2*, 33-49.

Allen, T. O., & Zhang, Y. (2016). Dedicated to Their Degrees. *Community College Review*, *44*(1), 70-86.

Arum, R., & Roksa, J. (2011). *Academically adrift: Limited learning on college campuses*. Chicago: The University of Chicago Press.

Association for the Study of Higher Education (2014). Student Engagement in Online Learning: What Works and Why. *ASHE Higher Education Report*, *40*(6), 1-14.

Astin, A. W. (2016). "Spirituality" and "Religiousness" among American College Students. *About Campus*, *20*: 16–22.

Astin, A.W., Astin, H.S., & Lindholm, J.A. (2011). *Cultivating the spirit: How college can enhance students' inner lives.* San Francisco: Jossey-Bass.

Bagaka's, J. G., Badillo, N., Bransteter, I., & Rispinto, S. (2015). Exploring student success in a doctoral program: The power of mentorship and research engagement. *International Journal of Doctoral Studies*, *10*, 323-342.

Baker, V & Pifer, M. (2011). The role of relationships in the transition from doctoral student to independent scholar. *Studies in Continuing Education*, *33*(1), 5-17.

Bender, T. (2012). Discussion-based online teaching to enhance student learning: theory, practice, and assessment. (2nd ed.). Sterling, VA: Stylus.

Berry, D. M. and York, K. (2011). Depression and religiosity and/or spirituality in college: A longitudinal survey of students in the USA. *Nursing & Health Sciences*, *13*: 76–83.

Blackley, S., & Sheffield, R. (2015). Digital andragogy: A richer blend of initial teacher education in the 21st century. *Issues in Educational Research*, 25(4), 397-414.

Bonet, G., & Walters, B. R. (2016). High impact practices: student engagement and retention. *College Student Journal*, *50*(2), 224-235.

Bradford, J., Mowder, D., & Bohte, J. (2016). You Can Lead Students to Water, but You Can't Make Them Think: An Assessment of Student Engagement and Learning through Student-Centered Teaching. *Journal of the Scholarship of Teaching & Learning*, *16*(4), 33-43.

Braxton, J. M., Doyle, W. R., Jones, W. A., & M. (2014). *Rethinking College Student Retention*. San Francisco: John Wiley & Sons.

Brill, J. L., Balcanoff, K. K., Land, D. M., Gogarty, M. M., & Turner, F. (2014). Best practices in doctoral retention: Mentoring. *Higher Learning Research Communications, 4*(2), 26-37.

Brookfield, S. (2013). *Powerful techniques for teaching adults*. San Francisco: Wiley & Sons.

Brown, M. G. (2016). Relationships matter: the impact of relationships upon emerging adult retention. *Christian Education Journal*, *13*(1), 7-27.

Bryant-Rockenback, A. & Mayhew, M. (2013). *Spirituality in college students' lives: Translating research into practice*. New York: Routledge.

Byrd, J. C. (2016). Understanding the Online Doctoral Learning Experience: Factors that Contribute to Students' Sense of Community. *Journal of Educators Online*, *13*(2), 102-135.

Castillo, E. F. (2011). *The effect of socialization on doctoral student persistence in engineering: A structural equation model* (Unpublished doctoral dissertation). University of Southern California, Los Angeles, CA.

Chalmers, D., & Hunt, L. (2013). *University teaching in focus: a learning-centred approach*. Abingdon, Oxon: Routledge.

Chametzky, B. (2014) Andragogy and Engagement in Online Learning: Tenets and Solutions. *Creative Education*, 5, 813-821.

Chen, P. S. D., Lambert, A. D., & Guidry, K. R. (2010). Engaging online learners: The impact of Web-based learning technology on college student engagement. *Computers & Education*, *54*(4), 1222-1232.

Christenson, S. L., Reschly, A. L., & Wylie, C. (2012). *Handbook of research on student engagement*. New York: Springer.

Cochran, J., Campbell, S., Baker, H., & Leeds, E. (2014). The Role of Student Characteristics in Predicting Retention in Online Courses. *Research in Higher Education*, *55*(1), 27-48.

D'Errico, F., Paciello, M., & Cerniglia, L. (2016). When Emotions Enhance Students' Engagement In E-Learning Processes. *Journal of E-Learning & Knowledge Society*, *12*(4), 9-23.

de Freitas, S. I., Morgan, J., & Gibson, D. (2015). Will MOOCs transform learning and teaching in higher education? Engagement and course retention in online learning provision. *British Journal of Educational Technology*, *46*(3), 455-471.

Ehiobuche, C., & Justus, B. (2014). Students as Global Citizens; Can Dialogue Enhance Engagement and Learning Outcome. *Global Education Journal*, *2014*(4), 114-138.

Ehrenberg, R. G., Jakubson, G. H., Groen, J. A., So, E., & Price, J. (2007). Inside the black box of doctoral education: What program characteristics influence doctoral students' attrition and graduation probabilities? *Educational Evaluation and Policy Analysis*, *29*(2), 134-150.

Ekoto, C., Gaikwad, P. (2015). The impact of andragogy on learning satisfaction of graduate students. *American Journal of Educational Research, 3*(11), 1378-1386.

Felder, P. (2010). On Doctoral Student Development: Exploring Faculty Mentoring in the Shaping of African American Doctoral Student Success. *The Qualitative Report*, *15*(3), 455-474.

Felten, P., Gardner, J. N., Schroeder, C. C., Lambert, L. M., & Barefoot, B. O. (2016). *The undergraduate experience: focusing institutions on what matters most*. San Francisco, CA: Jossey-Bass.

Firmin, R., Schiorring, E., Whitmer, J., Willett, T., Collins, E. D., & Sujitparapitaya, S. (2014). Case study: using MOOCs for conventional college coursework. *Distance Education*, *35*(2), 178-201.

Fry, H., Ketteridge, S., & Marshall, S. (2003). *A handbook for teaching and learning in higher education: Enhancing academic practice*. London: Routledge.

Golde, C. M. (2005). The role of the department and discipline in doctoral student attrition: lessons from four departments. *Journal of Higher Education*, *76*(6), 669-700.

Gould, J. (2013). *Learning theory and classroom practice in the lifelong learning sector* (2nd ed.). Moorabbin, Vic.: Hawker Brownlow Education.

Griffin, J. G. (2008). A case study: The preparedness of adult education students for college-level education. (Unpublished doctoral dissertation). Liberty University, Lynchburg, VA.

Guiffrida, D. A. (2006). Toward a cultural advancement of Tinto's theory. *Review of Higher Education*, *29*(4), 451-472,421.

Harper, L. & Ross, J. (2011). An application of Knowles' theories of adult education to an undergraduate interdisciplinary studies degree program. *The Journal of Continuing Higher Education*, *59*(3), 161-166.

Hicks, M.A. (2007). Cognitive retention of generation y students through the use of games and simulations (Unpublished doctoral dissertation). Argosy University, Sarasota, FL.

Holley, K. & Caldwell, M. (2012). The Challenges of Designing and Implementing a Doctoral Student Mentoring Program. *Innovative Higher Education*, *37*(3), 243-253.

Hurtt, B., & Bryant, J. (2016). Instructional Design Changes in an Undergraduate A&P Course to Facilitate Student Engagement and Interest. *Journal of College Science Teaching*, *46*(2), 26-31.

Hylton, K., Hylton-Fraser, K., Guthrie-Dixon, N., & Wilson, K. (2016). Leading and Managing Change to Impact Student Engagement and Attainment - A Case Study of 1st year General Chemistry University Students. *International Studies in Educational Administration (Commonwealth Council for Educational Administration & Management (CCEAM))*, *43*(3), 31-42.

Jacobs, J., & Archie, T. (2008). Investigating sense of community in first-year college students. *The Journal of Experiential Education*, *30*(3), 282-285.

Jaeger, A. J., & Eagan, M. K. (2011). Examining retention and contingent faculty use in a state system of public higher education. *Educational Policy*, *25*(3), 507-537.

James, S., Swan, K., & Daston, C. (2016). Retention, Progression and the Taking of Online Courses. *Online Learning*, *20*(2), 189-210.

Jarvis, P. (2010). *Adult education and lifelong learning: Theory and practice*. (4th ed.) New York, NY: Routledge.

Johnson, B. A. (2014). Transformation of Online Teaching Practices through Implementation of Appreciative Inquiry. *Online Learning*, *18*(3), 1-21.

Johnson, D. M., Edgar, L. D., Shoulders, C. W., Graham, D. L., & Rucker, K. J. (2016). Relationship between engagement and satisfaction among seniors at a mid-south land grant university. *College Student Journal*, *50*(3), 335-346.

Johnson, M. (2010). *Students' attitudes, perceptions, and expectations towards instructional technology in higher education: A diffusion of innovations*. Bloomington, IN: iUniverse.

Joyner, S. A., Fuller, M. B., Holzweiss, P. C., Henderson, S., & Young, R. (2014). The Importance of Student-Instructor Connections in Graduate Level Online Courses. *Journal of Online Learning & Teaching*, *10*(3), 436-445.

Kampfe, J. A., Chasek, C. L., & Falconer, J. (2016). An Examination of Student Engagement and Retention in an Honors Program. *Journal of the National Collegiate Honors Council*, *17*(1), 219-235

Kearns, L. (2015). The experience of teaching online: Its impact on faculty professional development and innovation (Unpublished doctoral dissertation). Pennsylvania State University, State College, PA.

Kenner, C. & Weinerman, J. (2011). Adult learning theory: Applications to non-traditional college students. *Journal of College Reading and Learning, 41*(2), 87-96.

Lear, J. (2007). Interactive class design and sense of community in online distance education classes: A mixed methods research study (Unpublished doctoral dissertation). University of Nebraska, Lincoln, NE.

Lehmuller, P. (2010). *The effect of multiple interventions on freshman college student engagement and retention* (Unpublished doctoral dissertation). University of North Carolina at Charlotte, Charlotte, NC.

Lo, A. W., Reeves, J., Jenkins, P., & Parkman, R. (2016). Retention Initiatives for Working Adult Students in Accelerated Programs. *Journal of Research in Innovative Teaching*, *9*(1), 2-17.

Lovitts, B. (2002). *Leaving the ivory tower: The causes and consequences of departure from doctoral study*. Lanham, MD: Rowman & Littlefield Publishers.

Maldonado, D. E. Z. (2010). *Toward a student -initiated retention organization methodology: A political history of retention at UCLA* (Unpublished doctoral dissertation). University of California, Las Angeles, CA.

McDonald, W. M., & Palmer, P. J. (2002). *Creating campus community: In search of Ernest Boyer's legacy*. San Francisco: Jossey-Bass.

Mendoza, P., Suarez, J. D., & Bustamante, E. (2016). Sense of Community in Student Retention at a Tertiary Technical Institution in Bogotá. *Community College Review*, *44*(4), 286-314.

Merriam, S. B. (Ed.). (2010). *J-B ACE Single issue adult and continuing education ser.: Third update on adult learning theory: new directions for adult and continuing education* (1). Hoboken, US: Jossey-Bass.

Merriam, S., Baumgartner, L., & Caffarella, R. (2007). *Learning in Adulthood: A Comprehensive Guide* (3rd ed.). San Francisco, CA: Jossey-Bass.

Njenga, J. & Fourie, L. (2010). The myths about e-learning in higher education. *British Journal of Educational Technology, 41*(2), 199-212.

Nolte, M. C., Bruce, M. A., & Becker, K. W. (2015). Building a community of researchers using the research mentoring model. *Journal of Counselor Preparation and Supervision*, 7(2).

Nygaard, C. (2013). *Student engagement: identity, motivation and community*. Faringdon (Oxfordshire): Libri.

Oliver, E. J., Markland, D., & Hardy, J. (2010). Interpretation of self-talk and post-lecture affective states of higher education students: A self-determination theory perspective. *British Journal of Educational Psychology*, *80*(2), 307-323.

O'Meara, K.A., Knudsen, K., & Jones, J. (2013). The role of emotional competencies in faculty-doctoral student relationships. *The Review of Higher Education, 36*(3), 315-347.

O'Meara, K., Sandmann, L. R., Saltmarsh, J., & Giles, D. E. (2011). Studying the professional lives and work of faculty involved in community engagement. *Innovative Higher Education, 36*(2), 83-96.

Oyler, D. R., Romanelli, F., Piascik, P., & Cain, J. (2016). Practical Insights for the Pharmacist Educator on Student Engagement. *American Journal Of Pharmaceutical Education*, *80*(8), 1-8.

Pascarella, E. T., Mayhew, M. J., Rockenbach, A. B., Bowman, N. A., Seifert, T. A., Wolniak, G. C., & Terenzini, P. T. (2016). *How college affects students. 21st century evidence that higher education works*. San Francisco, CA: Jossey-Bass.

Pichon, H. W. (2016) Developing a sense of belonging in the classroom: community college students taking courses on a four-year college campus. *Community College Journal of Research and Practice*, *40*(1), 47-59.

Pruett, P. S., & Absher, B. (2015). Factors Influencing Retention of Developmental Education Students in Community Colleges. *Delta Kappa Gamma Bulletin*, *81*(4), 32-40.

Quaye, S. J., & Harper, S. R. (2015). *Student engagement in higher education: theoretical perspectives and practical approaches for diverse populations* (2nd ed.). New York: Routledge.

Restiano, C. (2015). A correlation analysis of faculty interaction with undergraduate students in online courses and student course completion rates (Unpublished doctoral dissertation). Liberty University, Lynchburg, VA.

Rhoads, R. A. (1997). *Community Service and Higher Learning: Explorations of the Caring Self*. Albany: State University of New York Press.

Rockinson-Szapkiw, A. & Spaulding, L. (2014). *Navigating the doctoral journey: A handbook of strategies for success*. New York: Rowman & Littlefield.

Samaroo, S., Cooper, E., & Green, T. (2013). Pedandragogy: A way forward to self-engaged learning. *New Horizons in Adult Education & Human Resource Development*, *25*(3), 76-90.

Scherling, S. (2013). Learner-centered instructors' beliefs about adult learning: a phenomenological study (Unpublished doctoral dissertation). Liberty University, Lynchburg, VA.

Schultz, R. (2012). A critical examination of the teaching methodologies pertaining to distance learning In Geographic education: Andragogy in an adult online certificate program. *Review of International Geographical Education Online (RIGEO)*, 2(1), 45-60.

Schunk, D. H., & Zimmerman, B. J. (2012). *Motivation and self-regulated learning: theory, research, and applications*. New York: Routledge.

Seidman, A. (2012). *College student retention: Formula for student success* (2nd ed.). Lanham: Rowman & Littlefield.

Smart, J., & Paulsen, M., eds. (2011). *Higher Education: Handbook of Theory and Research*. Volume 26. Dordrecht, NL: Springer.

Soria, K. M., & Taylor Jr., L. (2016). Strengths-Based Approaches in College and University Student Housing: Implications for First- Year Students' Retention and Engagement. Jo*urnal of College & University Student Housing*, *42*(2), 60-75.

Strayhorn, T. (2012). *College students' sense of belonging: A key to educational success for all students.* New York: Routledge.

Struble, K.D. (2014). Efficacy of hybrid coursework on retention rates in online higher education (Unpublished doctoral dissertation). Liberty University, Lynchburg, VA.

Sutton, R. (2014). Unlearning the Past: New Foundations for Online Student Retention. *Journal of Educators Online*, *11*(3), 1-30.

Taylor, E. W., & Cranton, P. (2012). *The handbook of transformative learning: theory, research, and practice*. San Francisco: Jossey-Bass.

Terry, J., Smith, A., Warren, P., Miller, M. (2015). Incorporating evidence-based practices into faith-based organization service programs. *Journal of Psychology & Theology, 43*(3), 212-223.

Thompson, J. & Porto, S. (2014). Supporting wellness in adult online education. Open Praxis, 6(1), 17-28.

Tinto, V. (2012). *Completing college: Rethinking institutional action*. Chicago: The University of Chicago Press.

Tobin, T. J. (2014). Increase online student retention with universal design for learning. *Quarterly Review of Distance Education*, *15*(3), 13-24.

Tone, L.A. (2015). Exploring the relationship between attachment style, stress perception, and religious coping in the evangelical missionary population (Unpublished doctoral dissertation). Liberty University, Lynchburg, VA.

Toya, G. J. (2011). *Cultural center staff: A grounded theory of distributed relational leadership and retention* (Unpublished doctoral dissertation). University of California, San Diego, CA.

Vekkaila, J., Pyhältö, K., & Lonka, K. (2014). Engaging and disengaging doctoral experiences in the behavioural sciences. *International Journal for Researcher Development*, *5*(1), 33-55.

Vekkaila, J., Pyhältöa, K., & Lonkaa, K. (2013). Focusing on doctoral students' experiences of engagement in thesis work. *Frontline Learning Research. 2*(1), 12-34.

Veletsianos, G. (2010). *Emerging technologies in distance education*. Edmonton: AU Press.

Virtanen, V., Taina, J. & Pyhältö, K. (2017) What disengages doctoral students in the biological and environmental sciences from their doctoral studies?, *Studies in Continuing Education*, *39*(1), 71-86.

Wankel, C. (2013). *Increasing student engagement and retention using classroom technologies: Classroom response systems and mediated discourse technologies*. Bingley: Emerald.

West, D., Heath, D., & Huijser, H. (2016). Let's Talk Learning Analytics: A Framework for Implementation in Relation to Student Retention. *Online Learning*, *20*(2), 150-170.

Wray, D. (1999). Developing teachers and leaders for effective adult education. *Leaven*, *7*(2), 95-99.

Woods-Warner, E. (2014). The student experience: The effect of three college retention practices on first-generation success outcomes (Unpublished doctoral dissertation). Liberty University, Lynchburg, VA.

Young, K. (2016). *Program satisfaction and outcome perceptions of cohortbased doctoral students in education programs* (Unpublished doctoral dissertation). University of Louisiana at Monroe, Monroe, LA.

Yu, H. (2015). Student retention at two-year community colleges: A structural equation modeling approach. *International Journal of Continuing Education & Lifelong Learning*, *8*(1), 85-101.

Zorn-Arnold, B., & Conaway, W. (2016). The keys to online learning for adults: The six principles of andragogy, part III. *Distance Learning*, 13(2), 1-5.

APPENDIX A

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

January 15, 2018

Adam Roberson
IRB Exemption 3064.011518: Exploring the Relationship between Students' Sense of
Community, Student Satisfaction, and Graduate and Doctoral Program Retention

Dear Adam Roberson,

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

Your study falls under exemption category 46.101(b)(2), which identifies specific situations in
which human participants research is exempt from the policy set forth in 45 CFR 46:101(b):

> (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey
> procedures, interview procedures or observation of public behavior, unless:
> (i) information obtained is recorded in such a manner that human subjects can be identified, directly or
> through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside
> the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the
> subjects' financial standing, employability, or reputation.

Please note that this exemption only applies to your current research application, and any
changes to your protocol must be reported to the Liberty IRB for verification of continued
exemption status. You may report these changes by submitting a change in protocol form or a
new application to the IRB and referencing the above IRB Exemption number.

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

Sincerely,

G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
The Graduate School

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Liberty University | Training Champions for Christ since 1971