A Comparative Analysis Of Alabama Praxis II Examination Scores Between Online And Traditional Graduate Students At An Alabama Institution Of Higher Learning

Winston Donnie Cobb

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A COMPARATIVE ANALYSIS OF ALABAMA PRAXIS II EXAMINATION
SCORES BETWEEN ONLINE AND TRADITIONAL
GRADUATE STUDENTS AT AN ALABAMA
INSTITUTION OF HIGHER LEARNING

By
Winston Donnie Cobb

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The purpose of this study was to compare the Alabama Praxis II test score outcomes between students who received degrees online versus traditional students at an Alabama regional institution of higher learning. A random sample consisted of 50 online graduate students and 50 on campus graduate students. The following 2 graduate master’s degree programs were selected for this study: the Master’s of Education (M.Ed.) degree in School Counseling and the Master’s of Science in Continuing Education (M.S.C.E.) degree in Guidance Counseling.

A summarization of the research questions for this study include the following: Is there a significant difference between online and traditional graduate students based on the Alabama Praxis II test scores; is there a significant difference between online and traditional graduate students based on gender, ethnicity, and age; and is there a meaningful relationship among age, GRE (Graduate Record Exam) score, and the
Alabama Praxis II test score between online and traditional graduate students at a small four-year regional university in Alabama?

The *t*-test performed on question one revealed a statistically significant difference between the 2 groups, and the online students earned higher scores than the campus students on the Praxis II test. The *t*-test was also used to answer part of question 2. When comparing African-American campus students to Caucasian campus students, the *t*-test revealed a statistically significant difference with Caucasians scoring higher between the two groups. An ANOVA was also used for question two to determine if there was a statistically significant difference of Praxis II test scores between campus age groups and online age groups. There were no significant differences in Praxis II test scores when students were grouped by age. One possible explanation for this finding is because the study only consisted of graduate students.

In conclusion, this researcher found evidence that online students scored higher on the Alabama Praxis II examination than traditional, on-campus students. This research was limited to a small university in west Alabama, and the researcher recommends that further research be conducted to include other institutions with a larger sample and greater distribution of demographic variables.
DEDICATION

This dissertation is dedicated to my wonderful wife, Allison, my two sons, Tyler and Lane, and to my parents, Winston and Janice Cobb. Thank you for your love, support, encouragement, and faith.
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There are so many people to whom I am thankful and indebted to for their guidance, support and assistance, for without them this dissertation would not have been completed. First, I would like to thank my major advisor, Dr. Anthony Olinzock, who guided me through this study. Dr. Olinzock’s words of encouragement gave me the confidence I needed to complete this study. I also want to thank my committee, Dr. James Adams, Dr. Ed Davis, and Dr. Chien Yu for their continued support, encouragement, and patience. I want to thank Mrs. Ann Ray, Instructional Systems Administrative Assistant, for always making sure my paperwork was always in order and for scheduling all the meetings with my committee. I’m also very grateful to Patricia Pratt and DeeAnn Andrews who were instrumental in the data collection. Others that I would like to mention and thank for their support, advice, and encouragements are Dr. Adrian Doss, Dr. Chen Guo, Dr. Wayne Bedford, and Dr. Ken Tucker. I would also like to thank my parents for teaching me that I can accomplish anything if I put my mind to it. I want to thank my sons, Tyler and Lane for their patience and understanding when I wasn’t able to play ball or go fishing because I had homework or a paper due. And finally, I want to thank my lovely wife, Allison. Without my wife’s support, none of this would have been possible. I thank God above for the blessings of life and for friends and family who helped make this dream come true.
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CHAPTER I
INTRODUCTION

Today’s advanced technology has made online education a viable alternative to the traditional classroom setting, especially for graduate students. Adult students now make up the majority of post-secondary students (Stallings, 2002). Non-traditional, adult learners face many obstacles in their pursuit of higher education. Most of them have full-time careers or part-time jobs. They have families who rightfully require their time and attention. Many of them live too far away from a college campus, and a long commute would place more difficulty in an already full lifestyle. Having the ability to take classes online is often the only way for many non-traditional, adult learners to earn a degree. Online education offers more flexibility in schedules, allowing students to fit classes into their busy lives. It eliminates the need for a long, costly commute.

The prevalence of such a student population facilitated a unique market, within the contexts of non-traditional and adult education, which fostered the origins of numbers of universities and colleges whose primary learning modality involves virtual learning. Similarly, low-residency programs also exist that require a minimal campus residency with the vast majority of the learning experience occurring through virtual modalities. Many of these institutions such as Northcentral University (NCU) and American Military
University (AMU) have achieved both regional accreditation and programmatic accreditation.

Accreditation

An example of a completely virtual institution, that achieved both regional accreditation and programmatic accreditation, is NCU, which is headquartered in Prescott, Arizona, and was founded during 1996 (Northcentral University [NCU], 2010). This institution serves a population of non-traditional and adult students and offers bachelor, master, and doctoral degrees (NCU, 2010). The accreditations of NCU were earned from the Higher Learning Commission of the North Central Association of Colleges and Schools and the Association of Collegiate Business Schools and Programs (NCU, 2010). The former entity represents regional accreditation whereas the latter entity represents programmatic accreditation. Graduates of the NCU programs achieved a variety of successes both personally and professionally. Many NCU graduates have careers as professors within traditional institutions of higher learning, have careers within the corporate sector, or have careers in government settings (NCU, 2010). Further, many NCU graduates pursue careers within the discipline of education (NCU, 2010).

Another example of a virtual institution that possesses regional accreditation is the AMU. This institution also possesses regional accreditation with the Higher Learning Commission of the North Central Association of Colleges and Schools (American Military University [AMU], 2009). AMU offers undergraduate and graduate degrees but does not offer doctoral programs (AMU, 2009). The student body of AMU is diverse and represents a multitude of non-traditional, adult learners whose individual situations or
personal preferences necessitate the pursuit of a virtual learning experience (AMU, 2009). Similar to the graduates of NCU, graduates of AMU programs also may pursue careers in a variety of disciplines—including education.

Numerous institutions exist that offer hybrid programs within the markets of non-traditional and adult populations. One of the oldest programs, domestically, is offered through the University of Phoenix (UOP), headquartered in Phoenix, Arizona. For over a quarter century, the UOP has offered alternative modalities of learning, serving the needs and wants of non-traditional and adult students (University of Phoenix [UOP], 2010). This institution also possesses regional accreditation and programmatic accreditation. The accreditations of UOP were earned from the Higher Learning Commission of the North Central Association of Colleges and Schools and the Association of Collegiate Business Schools and Programs (UOP, 2010). The former entity represents regional accreditation whereas the latter entity represents programmatic accreditation. Although many of the UOP learning experiences may occur without residency, its doctoral programs require students to attend several mandatory physical residency sessions during the duration of doctoral studies (UOP, 2010). Such a model represents a hybrid entity within the adult and non-traditional education markets. The graduates of the UOP programs pursue careers in business, academia, industry, and government settings (UOP, 2010).

NCU, AMU, and the UOP serve primarily a market of non-traditional, adult learners. However, many older, traditional institutions of higher learning also provide degree programs and learning opportunities that are competitors of the programs and learning opportunities provided by the aforementioned institutions. In fact, nearly all
universities offer some form of online education and each of these institutions possesses appropriate, regional accreditations and programmatic accreditations.

The accreditations of Liberty University (LU) include regional accreditation with the Southern Association of Colleges and Schools (SACS) and programmatic accreditation with the National Council for Accreditation of Teacher Education (NCATE) (Liberty University [LU], 2010). The accreditations of University of Florida (UF) include regional accreditation with the SACS and programmatic accreditation with the NCATE (University of Florida [UF], 2009). The accreditations of Colorado State University (CSU) include regional accreditation with the Higher Learning Commission of the North Central Association of Colleges and Schools and programmatic accreditation with the NCATE (Colorado State University, Division of Continuing Education [CSU], n.d.). The accreditations of Nebraska include regional accreditation with the Higher Learning Commission of the North Central Association of Colleges and Schools and programmatic accreditation with the NCATE (University of Nebraska [UF], 2010).

The programs offered by Liberty, Florida, Colorado State, and Nebraska also serve the markets of non-traditional, adult learners. Again, such learners often select to pursue such programs because of career situations or personal preferences. Depending on the program selected (i.e., masters/specialist/doctoral), various forms of residency may be mandated among enrolled students (LU, 2010; UF, 2009; CSU, n.d.; and UF, 2010). Each of these programs provides opportunities to pursue degrees in a variety of fields, including education, and the graduates of these programs may serve as educators in a variety of settings.
However, despite the accredited statuses of the aforementioned traditional and non-traditional institutions of higher learning that serve both physical and virtual class markets, debates concerning the quality of the online classes versus the traditional classroom setting continue to permeate academia and professional settings. Do online learners receive the same education as their traditional counterparts? Does their education suffer from the lack of face-to-face interaction with professor and fellow students? Do they perform as well on tests? Do they have the same success rate on standardized tests? Numerous studies have addressed these questions with inconclusive results.

Regardless of whether one graduates from a traditional or non-traditional institution of higher learning, a passing Praxis II test score is required of all individuals before a teaching licensure is granted within Alabama. In Alabama both physical and virtual education programs exist that culminate in the awarding of both undergraduate and graduate degrees and that require the successful completion of the Praxis II examination as a requirement to attain state licensure for teaching. However, at the host institution the successful completion of the Praxis II examination is a requirement for graduation (The University of West Alabama [UWA], 2010).

In Alabama the successful completion and the achievement of a passing examination score, with respect to the Praxis II examination, is a requirement of graduation in the host institution of higher learning. The basis for this examination requirement is expressed through its potential as a quality management tool to measure general and subject-specific knowledge and teaching skills (Praxis, 2010). Although one may satisfy the requirements of completing the examination, the standards for achieving
a satisfactory, passing score are subjective and vary among each individual state per the requirements of its respective government mandates (Praxis, 2010). The scoring of the examination is based upon the quantity of responses that are correct versus the overall quantity of questions completed (Praxis, 2010). Within the examination, no penalties are incurred for the submission of incorrect answers (Praxis, 2010).

The State of Alabama requires the successful completion and submission of satisfactory Praxis II examination scores as a component of its state teaching licensure processes and procedures (Praxis, 2010). All candidates must complete successfully and submit satisfactory Praxis II examination scores regardless of the subject area or discipline that is anticipated within the teaching career (Praxis, 2010). This requirement applies to all candidates who seek an initial Alabama professional educator certificates or alternative and preliminary certificates (Praxis, 2010).

However, within the academic literature, the researcher located few studies that examine the virtual versus physical academic programs associated with traditional settings versus non-traditional settings of academia involving Praxis II examination scores. Given this lack of information among historical and contemporary writings, an opportunity exists to contribute an original, unique manuscript within the academic literature that investigates this issue. Therefore, this study examines the Praxis II test scores and various demographics between the virtual and the physical academic settings of a rural, regional institution of higher learning whose primary mission is teaching.
Statement of the Problem

Most universities now offer some form of online courses and degrees. However, the debate still continues as to whether the online degree and online courses are equal to the traditional classroom setting. Numerous studies, including one by Johnson in 2001, which compared a traditional biology class to an online class, as well as a study by Chen, Lehman, and Armstrong, (1991) who compared attitudes in both traditional and online classes have been conducted. These studies show significant and non-significant differences in online versus traditional education. Still, the debate and concerns continue to be explored.

According to Anderson and Garrison (1997), interaction is essential in order for students to have success in education. The concern is that there is a lack of physical, face-to-face interaction between students and instructors in online education. In distance education, there is a lack of physical presence; students interact with one another and with the instructor in online forums such as chat rooms. Therefore, it is vital that online courses create a community of learners where interaction can take place. Students need to feel that their ideas can be shared, explored, and critiqued. Such interaction goes beyond social interaction and a simple exchange of ideas. This online learning community has to include different combinations of interaction between content, instructors, and students (Anderson & Garrison, 1997).

Another problem faced by many students who enroll in online classes is that they do not have the skills they need to complete the course successfully. Students are attracted to online education for the following obvious reasons: convenience and flexibility. Some students do not consider if they are ready for an online learning
environment (Pillay, Irving, & McCrindle, 2006). Many educators and online course designers maintain that institutions should provide resources, including readiness training programs, for students who are not competent for online courses. It is the responsibility of educators to make certain that students are prepared to be successful in online learning environments (Watkins, 2004).

Purpose of Study

The purpose of this study is to compare the Alabama Praxis II test score outcomes between students who received degrees online versus traditional students at an Alabama regional institution of higher learning. Therefore, this study investigated the following research problem and question: Is there a difference in the Alabama Praxis II examination score between the virtual settings and the physical academic settings of a rural, regional institution of Alabama higher learning whose primary mission is teaching?

Research Questions

The following questions were used to guide this study:

Question 1: Is there a statistically significant difference in the Alabama Praxis II test scores between online graduate students and traditional graduate students at a small, four-year regional university in Alabama?

Question 2: Is there a statistically significant difference in the Alabama Praxis II test scores based on gender, ethnicity, and age between online graduate students and traditional graduate students at a small, four-year regional university in Alabama?
Question 3: Is there a meaningful relationship among age, GRE score, and the Alabama Praxis II test scores between online graduate students and traditional graduate students at a small, four-year regional university in Alabama?

Significance of the Study

Because of the increased number of online courses and degree programs which lead to teacher certification, there is a need to determine if students in online courses perform as well on standardized tests as those in traditional classroom settings. This study compares scores on one standardized test—the Alabama Praxis II Examination. In order to improve the contents of both physical and virtual degree programs, educators need to be aware of any significant differences between the Alabama Praxis II examination scores.

This study is unique because of its focus regarding a rural institution of higher learning. Among the literature references, a variety of studies exist that consider the arguments comparing and contrasting virtual versus traditional learning environments and programs. Examples of these studies include the writings of Dutton, Dutton, and Perry (2002), McMahon and Oliver (2001), and Hittelman (2001). Discussions regarding the specific considerations and arguments of these authors are provided in Chapter II of this study. However, despite the contents of these writings, few of them approach the issue from the perspective of a rural institution of higher learning. Therefore, this study is needed because it provides a unique contribution to the academic literature through its consideration of a rural institution of higher learning whose primary mission encompasses the function of teaching.
Another unique characteristic of this study involves the mission of the institution. Previous studies were conducted at nationally prominent institutions whose primary functions involved research missions and which were categorized as research-based institutions of higher learning. Discussions regarding the specific considerations and arguments of these authors are provided in Chapter II of this study. However, despite the contents of these writings, few of them approach the issue from the perspective of a teaching institution of higher learning. Instead, the host environment of this study consists of a four-year, regional institution whose primary mission is teaching. Therefore, this study is needed because it provides a unique contribution to the academic literature through its focus on an institution whose primary focus is teaching.

Limitations of the Study

The generalization of this study is limited to students enrolled in a master’s degree program in school counseling in rural west Alabama. The data are based on the Alabama Praxis II Examination scores for graduate students in the College of Education between 2007 and 2009. The data are also limited to those graduates with the degree of Master’s of Education (M.Ed.) in school counseling and the degree of Master’s of Science in Continuing Education (M.S.C.E.) in guidance counseling. The study compares the first attempt of Praxis II test scores of graduates who received their degrees online versus the scores of graduates whose degrees were obtained through attending traditional, physical classes. The results of the study are valuable to educators, administrators, and students in the state of Alabama.
Potential bias may influence this study because of the subjective characteristics associated with the specifications of acceptable Praxis II examination scores among the states that require the reporting of a successful examination outcome. Each individual state, that requires the Praxis II examination as a component of its licensing processes and procedures, may establish its unique parameters regarding the acceptableness of the scores with respect to any mandated criteria that defines a satisfactory, passing scoring outcome. Therefore, the specific standards, describing a satisfactory Praxis II test score, vary among the states that require the completion of the Praxis II examination as a necessity of teacher licensure. Only the Alabama standards are considered within this research initiative. Therefore, because of such influences among states and the examination of only Alabama data sets, the outcomes of this research may not be applicable among all states that require the Praxis II examination or other institutions within the state of Alabama.

Delimitation

This study is limited to a small four-year teaching university whose primary mission is providing quality education in rural west Alabama and its surrounding areas. The records for the sample of the study are taken from records provided by the College of Education, including scores of traditional and online students who had taken the Praxis II exam. The sample consists of a random sample of 50 traditional graduate students and 50 online graduate students between the academic years of 2007 to 2009.
Definition of Terms

Terms that are unique to this study, technical in nature, or subject to multiple interpretations are defined as follows for this study:

Family Educational Rights and Privacy Act (FERPA) – A federal law that protects student educational records (Ed.gov, 2010).

National Council for Accreditation of Teacher Education (NCATE) – Accrediting agency for schools, colleges, and education departments. NCATE is recognized by the U. S. Department of Education and the Council for Higher Education (NCATE, n.d.).

Non-Traditional, Adult Learners – Refers to students who are generally older than traditional 18–21 year old student.

Online Graduate Students – Refers to students who complete all courses without ever attending a class on campus.

PRAXIS II – An educational assessment test that various states use as part of their teacher certification and licensing process. The Praxis II assessment test evaluates students on specific subject matter and upon successful completion are considered “Highly Qualified” (ETS, 2006).

Southern Association of Colleges and Schools (SACS) – Accrediting agency for institutions of higher learning in the southern United States (Southern Association of Colleges and Schools Commission on Colleges [Sacsoc], 2010).

Traditional (on-campus) Graduate Students – Refers to students who complete all courses at the host institution.
CHAPTER II

LITERATURE REVIEW

This chapter presents the related research literature used in this study and is divided into the following sections: (a) Changes in Education, (b) Distance Education: A Perspective of Virtual Collaboration, (c) Learner Attrition, (d) Barriers (Institutional, Situational, and Dispositional), and (e) Comparison Studies.

Changes in Education

Today’s post-secondary students vary greatly from those of a generation ago. For many non-traditional, adult learners, obtaining a college degree was almost impossible due to the restraints of career, family, time, and distance from a college campus. Online education, in its various forms, has made it possible for adults to take classes toward a post-secondary degree. They are able to choose the hours that fit into their busy lifestyles and to join classes from their own personal computers. In fact, non-traditional, adult learners now make up the majority of post-secondary students (Stallings, 2002).

Because of the changing nature of post-secondary education, most institutions are trying to gain a portion of the adult-learner education market. Some institutions now claim to be “distance learning” institutions, offering correspondence formats or online web-based formats. More traditional institutions work within their own institutional
walls by offering online courses to augment their traditional classroom courses. Those
colleges that use a mix of the “old” and “new” methods are currently known as “hybrid”
or “blended” models (Young, 2002).

Today’s statistics regarding the age of college students are impressive. Currently,
farther than one in five college students is a traditional 18–22 year old undergraduate
student living on campus. Most of the students are now older, part-time students who are
combining education with full-time jobs. Today’s employers recognize that a
baccalaureate degree is now necessary for entry-level managerial positions. It is also
realized that advancement into upper level and executive positions requires advanced
degrees. In many situations, advancement may be dependent upon an employee
obtaining a college-level or advanced degree (Kozlowski, 2002).

The demand for distance education continues to grow, and many institutions now
offer entire degree programs online (Roach, 2002). Three companies make up the top
three players among a wide field of web-based or intranet course delivery. They are
Washington, DC-based Blackboard Inc., Denver-based eCollege, and Massachusetts-
based WebCT Inc. They all provide web-based course management systems and handle
student administration, content development, and authoring. Most systems incorporate
student tracking and grading features, individual or group email, and announcements.
Blackboard, WebCT, etc., also have the ability to view PowerPoint slides and videos and
listen to audio. These programs have a means for administering quizzes and exams as
well (Fichter, 2002). Those platforms that allow for asynchronous courses with student
discussions are better. Both Blackboard and eCollege support asynchronous course
delivery with an option for synchronous (live) chat and white-board (real-time) applications (Smith, & Rose, 2003).

Numerous studies which are cited in Chapter II were conducted to determine both the advantages and disadvantages of online learning. Students must decide whether online, traditional, or a combination of both will provide them with the best educational alternatives and the best chance of academic success.

Miller and Lu (2003) claim that online learners often carry extra “baggage” into the online learning environment, including job and work-related pressure, family issues, lifestyle adjustments and even generational concerns that could affect their success. Convenience and flexibility have long been the major advantages of distance education, but many students actually live within 10 miles of a campus that offers the same course in a traditional classroom setting (Wright, 1999). Considering that fact, convenience and flexibility may be only two of several factors that contribute to the rise in online learning. Hittelman (2001) found that 71% of students chose online classes because of convenience and 57% chose it to fulfill requirements of an associate’s-level degree. Of the students in the study, 54% chose distance education because they wanted to improve job skills or opportunities; 36% chose it because of instructor reputation; 30% enrolled in distance education to meet transfer requirements, and 29% chose it simply for personal interest.

Distance Education: A Perspective of Virtual Collaboration

In order to address the first research question, it is imperative to investigate existing theoretical developments in the aspect of distance education vs. brick and mortar education. No matter in which environment, electronic or physical, education is a
collective, teamwork-oriented, and dynamic process that receives input from multiple stakeholders, including instructor, students, staff, and technology providers. Following such notions, it is suggested that a thorough literature review is desired to render solid understandings regarding collaborations in both virtual and physical classroom settings.

According to Shim et al. (2002), a major change over the past 20 years has been the transition from individual stand-alone computers to the current highly interconnected telecommunications network environment. This change has become an important enabler for distance learning, allowing students to make group-based decisions despite time and physical differences. Another important driving force of today’s online education lies in the industrial companies who promote evolution of communication technology. Graduates are expected to master computing skills that are widely adopted in business firms, hence pointing out the directions of university education in terms of curriculum design and teaching methodology.

Since education is team based, collaboration is essential in spite of what method, web or classroom, is utilized. Team collaboration has been heavily studied in the discipline of Information Systems (IS). For instance, Alavi and Keen (1989) define a business team as a small, self-regulating work group that normally focuses on organizationally assigned tasks. Collaboration occurs within the context of cooperative work and is defined as many people working together in a systematic way in the same production process (Wilson, 1994).

Shim et al. (2002) also pointed out that geographically distributed virtual teams are a major part of the decision making process instead of just individuals. These virtual teams are formed when students interact with each other during their learning process of
working on school projects and homework assignments. These geographically dispersed teams are able to complete their assigned tasks due to the benefits of distance learning. McGrath and Hollingshead (1993) argued that distance learning enables students to overcome constraints such as time and space that often burden face-to-face meetings.

Face-to-face collaboration contains unique features that are environmentally feasible and context specific. In other words, a virtual team is born with deficiencies that are impossible to overcome. It has been researched that collaboration support systems are ineffective in certain circumstances because these systems exclude certain non-primary communication channels such as facial expression and voice tone, thus hindering the readiness and accuracy of information exchange.

User satisfaction is a widely recognized factor, although not the only one, leading to learning success. Empirical studies have been conducted to validate the significant certain relationship between the degree of satisfying use experience and positive learning outcome. It is argued that face-to-face teams generally report greater satisfaction with the group interaction process than virtual teams (Warkentin, Sayeed, & Hightower, 1997; Walther & Burgoon, 1992). Therefore, since it is inevitable for virtual team to take its place in today’s society, Information Communication Technology (ICT) is becoming a necessary tool. In addition, stakeholders, especially service providers, must strive to enhance the satisfaction level of virtual collaborations.

Shim et al. (2002) argued that the most important goal of virtual teamwork is to foster interaction, inclusion and participation. The purpose of doing so is to nurture team members’ feelings of “being there,” or as Zack (1993) defined, social presence. Social presence is defined as the extent to which a communications medium allows participants
to experience each other as being psychologically close or present (Fulk & Boyd, 1991). With this fact in mind, designers of web communication technology incorporate such features as video conferencing, e-motion animations, and synchronous voice exchange service. These features address the limitations of text-based communications to improve user satisfaction; thus, virtual team collaboration is able to utilize some communication channels that used to be seen only in traditional face-to-face collaborations.

Given the fact that online education calls for adjustments mainly on the user’s side, this research is designed to investigate the differences, if there are any, between online and traditional settings where students work together on common tasks. Therefore, a measurement, the Praxis II exam, is used to evaluate students’ performance in both settings.

Learner Attrition

Many institutions have reported an increase in student attrition rates. According to Picciano (2002), some distance learning programs report attrition rates as high as 50%. O’Brien and Renner (2002) stated that attrition rates for Internet classes ranged from 35% to 50%. Considering that traditional classes have an attrition rate of 14%, these rates are extremely high. Dutton, et al. (2002) argued that even though average grades for online students were at least as good as the grades of traditional students, the online students were less likely to complete the course. Students with poor study skills tend to drop out of online courses at a higher rate. Other factors, of course, enter into attrition rates, including the economy, employment trends, and government or private funding; the precise cause of learner attrition is unknown (McMahon & Oliver, 2001).
Hittelman (2001) conducted a five-year study of distance education learners in the California Community College System and found that an average of 53% of learners completed distance education sessions (46% attrition rate); on the other hand, an average of 65% completed non-distance education sessions (35% attrition rate). Hittelman (2001) found that the completion rates for distance education tended to increase with the age of the learner. For learners under the age of 18, the completion rate was 50%. The completion rate dropped to 42% for learners who were 18 and 19 and to 46% for those who were 20 to 24 years of age. Completion rates increased for learners over age 24. For the age group 25-29, there was a 52% completion rate, compared with the 34-38 age group, in which there was a 58% completion rate. The age group 35-39 had a 61% completion rate, while the age group 40-49 had a 63% completion rate. The oldest age group, 50+, saw a 65% completion rate.

Hittelman (2001) also found that gender may play a role in distance education completion rates. Of the 172,703 distance learners that were identified by gender, 64% were female and 36% were male. On average, 52% of the female students completed the course, while only 49% of the male students completed the course.

To the contrary, another study reported contradictory results. Serban (2000) conducted a comparative study of online and traditional courses at Santa Barbara City College and found that hybrid courses actually had the highest course attrition rate at 47%. Online courses, however, had an attrition rate of 18%, compared with 24% for the college as a whole and 23% for traditional classes.
Barriers

Another problem facing distance learners is a set of barriers that can hinder participation. Those barriers that cause the most problems are time constraints and costs. Other barriers are situational in nature and include job responsibilities, family, and work issues. There are also institutional barriers, such as organizational policies and procedures. Finally, there are dispositional barriers, which include attitudes and self-confidence (Morgan & Tam, 1999).

Institutional Barriers

There are institutional barriers that may limit online participation. These barriers include the institution and the different ways in which courses are offered, administered, and managed (Qureshi, Morton, & Antosz, 2002). Some institutions offer online programs independently or as part of a consortium (Curry, 2003). Some offer only a few select online courses, while others offer entire degree programs online. Administration, policies, procedures, and management can all have a negative effect on distance learners. In addition, other support functions, such as financial aid, registrars, and student services play an important role in student retention (Ryan, 2002). When these elements lack a “face,” they may become even more distant than they already are. Issues involving financial matters, class scheduling, and transcripts can also add to learner stress. Ryan (2002) further states that higher education must provide distance students with all the support and services they need to create learning opportunities that meet their life style and work needs and still address the issues that hinder their academic success.
Online learners also need timely feedback and clear communication from the instructor (Ryan, 2002). If students do not get the feedback they need from their instructors, they are more likely to feel disconnected and not finish the course. Many learners also cite lack of clear instructions as a reason for not finishing the course. Since these students lack face-to-face, daily interaction with their professors, communication and feedback are vital through online means (Morgan & Tam, 1999).

Online students also face a dilemma that did not exist for prior generations of learners. They must have technical skills and computer knowledge in order to be successful in distance education. Often students become frustrated with their lack of computer skills and may drop the course simply because they cannot handle the technology (Miltiadou & McIsaac, 2000). Technology within the online education field is changing rapidly. Many institutions are eager to incorporate the newest technology and often subject learners to constant courseware adjustments. It is important for the faculty to make sure that the technology does not impede communication between students and faculty (O’Brien & Renner, 2002). It is preferable that the faculty maintain a stable learning platform and to introduce new technology to students slowly. Many courseware options may seem attractive but may cause confusion in online classes and require learners to seek technical support (Smith & Rose, 2003). Online faculty should teach students how to use course technology at the beginning of the course and should also have a technical support structure in place to meet the needs of online learners throughout the course (Miltiadou & McIsaac, 2000).

The role of the teacher is even more important in online classes than in traditional classes. Online faculty should have the proper training and knowledge to offer online
courses. In addition to having mastery of their field, they are also expected to be skilled in instructional design, educational technology, and communication skills. Bryan (1998) claims that it is rare for instructors to have the multitude of skills necessary for the online learning environment. O’Brien and Renner (2002) emphasize that in order for faculty to communicate effectively, they should view their teaching format from the perspective of a student. Instructors chosen for online teaching should be selected carefully. Unfortunately, many institutions do not give priority to faculty training and development. Online learners are often left feeling isolated, so it is vital that faculty find ways to build rapport and engage their students in meaningful dialogue. If institutions do not encourage faculty to develop such relationships, students become dissatisfied and often not complete the course (Dooley, Richards, & Linder, 2002).

Situational Barriers

There are also situational barriers that affect online learners and their ability to succeed in distance education. These barriers include personal issues, such as home life, legal issues, and relationship issues and concerns. Other barriers include the learner’s health, peer pressure, work and employment concerns, and class schedules (Qureshi et al., 2002). Home life issues include things such as family problems, which may make online success difficult. It also concerns the learner’s support structure or lack thereof. There may also be limitations due to the physical environment of the learner. Relationship issues are also important when considering whether a learner is successful in an online course. Issues involving boyfriends/girlfriends, husbands/wives, marriage, divorce, and children all have a major impact on a learner’s completion of a distance
education class. Employment and work issues are also a major factor in a learner’s life, especially for full-time workers who have job requirements that take up a large amount of time. There may also be issues regarding fitting tuition into an already tight budget. Each of these issues can be related to other barriers and are often beyond the learner’s control. These concerns greatly impact a learner’s success in distance education (Brooks, 2003).

**Dispositional Barriers**

Dispositional barriers are barriers that are within the control of the learner. These barriers include learner attitudes, self-discipline, motivation, and self-confidence. Banner and Cannon (1999) maintain that two of the most important characteristics an online student must possess are self-discipline and self-motivation. They claim that self-discipline is the prioritization of things based on what is best for you. Many people see self-discipline as simply a method a person uses to direct his efforts. However, it is closely tied to a person’s goals and pursuits. Developing self-discipline does not mean becoming self-involved or excluding others from one’s life. It also does not mean overlooking the interests, needs, and feelings of others, which becomes a form of selfish behavior. Developing self-discipline is not an easy task for many learners. According to Banner and Cannon, self-discipline means (1) resisting activities that do not contribute to the gaining of knowledge; (2) setting high standards for oneself; (3) having order to create a level of achievement, and (4) delaying immediate gratification, knowing that one will reap greater benefits later.
In an online learning environment, students must have the ability for independent learning; however, there must be a mechanism to exchange information as well as receive adequate feedback and guidance from the instructors (Kozlowski, 2002). Sadly, faculty guidance and feedback are not always consistently available online. Many students have expressed dissatisfaction with the amount of feedback from faculty as well as the quality of the interaction. They may also feel isolated from faculty as well as from other students. These factors may lead to procrastination and low levels of participation (Woods, 2002).

Students who experience dispositional barriers can succeed in distance learning, however, if they have enough self-confidence. Mandel and Marcus (1995) suggest that self-confidence is a dominant trait in overachievers. Online learners especially require self-confidence, since underachievers “are notorious for generating lots of activity but no real action” (p. 21). High achievers are those who do more than just list their goals; they have clear objectives and are committed to reaching them. They believe that their goals are of great value to themselves as well as to others, and they develop step-by-step strategies for accomplishing their goals. High achievers have great energy and are willing to work long and hard. They acknowledge the support of others in achieving their goals. Online learners benefit from self-confidence (O’Keefe & Berger, 1994).

Becoming a self-motivated learner is also necessary for online students. When a learner moves from high school to college, he goes from a teaching environment to a learning one. It becomes the student’s responsibility to focus, question, and communicate, as well as to remember, integrate, and apply new knowledge. Those students who have dispositional barriers can overcome them and succeed in the online
environment if they develop sufficient self-confidence, self-discipline, and self-motivation.

Today’s students must also decide which format will provide them with the highest probability of academic success: traditional, online, or hybrid. The answers to these questions are not always easily answered. Not all learners are prepared for the online environment. Dutton et al. (2002) argue that students in online classes have more responsibilities and that they live farther from campus; both factors may make distance learning more challenging. Another responsibility for online learners is work and childcare. According to Ryan (2002), “Higher education must provide distance students with services, support, and learning opportunities that fit their lifestyle and work needs while addressing issue that impede their academic success” (p. 4).

Another problem facing distance learners is the fact that not all classes are suitable for online delivery. The number of web-based courses is rapidly growing, but that does not mean that every course is instructionally sound. Course developers have to decide if the content of a particular course is appropriate for the web; they must also determine how the course objectives will be met and assessed, along with the limitations of the technology. Many learners begin an online course not knowing if the class meets the standards for successful delivery (Miltiadou & McIsaac, 2000).

Comparison Studies

Comparative studies between traditional classroom settings and various types of distance education classes have been conducted for several decades. Most of these studies revealed no significant difference between the various modes of instruction. One
of the earliest studies compared grade distribution in traditional college courses to those in corresponding correspondence courses (Crump, 1928). Loder (1937) found that grades earned by students in a traditional classroom were not significantly different from those earned by students who listened to the same lecture in another room by loudspeaker. In another study designed to compare the performance of students who listened to radio broadcasts with students who learned from printed material, there was no significant difference (Woelfel & Tyler, 1945).

From 1946 through the 1970’s, distance education changed, being offered more through film and televised instruction than by correspondence. Stromberg (1952) found that television was an effective method of teaching college credit students in their homes. Also, no significant difference was found in traditional instruction compared to television instruction for Army basic training courses (Kanner, Runyon, & Desiderato, 1954). In fact, Schramm (1962) summarized a compilation of 393 studies comparing instructional television and traditional classroom studies. The results of 83 studies showed differences in learning in favor of instructional television, 255 studies reported no significant differences, and 55 studies showed differences in learning in favor of traditional classroom. To summarize, 65% of a very large number of comparisons between televised and classroom teaching showed no significant difference.

A 1973 study was among the first to compare computer-based instruction to classroom teaching. It showed no significant difference between student success in learning basic concepts of calculus and the use or non-use of computer-aided instruction (Lang, 1973). Wilkinson (1980) also found no significant difference after studying several decades of research relating to the use of media in instruction. Clark (2001)
wrote, “media are mere vehicles that deliver instruction but do not influence student achievements any more than the truck that delivers our groceries causes changes in our nutrition” (p. 2).

Studies concerning distance education from the mid 1980’s through the mid 1990’s focused mainly on teleconferencing. This method is similar to traditional face-to-face instruction, so it was not surprising when Weingand (1984) found no significant difference to support the idea that face-to-face was any more effective than teleconferencing. Another study in 1985 reported that students in interactive television classes achieved as well on the post test as the students who were in traditional classroom settings (Robinson, Collins, & West, 1985).

Gehlauf, Shatz, and Frye (1991) conducted a study to ascertain whether students were receiving the same education achievement in courses delivered by technology as in face-to-face learning environments. They found no significant difference between the two groups.

Online courses with at least some asynchronous components became more widely used in the late 1990’s. Goldberg (1997) conducted a study comparing the academic performance of three groups of students. One group received only distance instruction; another had only traditional instruction; the third group received a combination of distance and traditional instruction. Students in the distance education and the traditional education groups achieved approximately the same level. The students in the group that was exposed to both methods of delivery, however, achieved a higher level of performance.
There are numerous studies conducted in which the final result showed no significant difference in various areas. Fallah and Ubell (2000) did a blind study of a graduate test which found little or no significant difference in student performance when comparing traditional classroom settings with web-based instruction. They also did a comparative analysis of learner satisfaction as well as learner outcomes with the same groups. This study showed that students in traditional learning environments had a slightly higher level of satisfaction with their learning experience. However, there was no significant difference in the quality of learning between the two groups. Johnson (2001) compared a traditional introductory biology class to the same class taught online. Based on the post test, the online students were just as successful as the ones who learned in the traditional class. They acquired the same content, graphing skills, and reasoning ability; further, they also gained a positive attitude toward science. In another study, Dzuiban, Hartman, and Moskal (2004) researched differences between online, traditional, and blended instruction at the University of Central Florida. The results of the study showed no significant difference between online and traditional student success rates. They did find, however, that the retention rate was significantly lower for the online classes.

Despite the numerous studies showing no significant difference between traditional and online instruction, there are also many reports of significant differences. One of the first studies to show a significant difference was conducted in 1975 and showed that distance education is significantly more effective than face-to-face instruction. The study noted that distance learning often used a blended approach, often using synchronous videoconferencing. In 1984, Partin and Atkins studied the differences
between synchronous televised courses and traditional courses. They found that the students who received the televised courses had a significantly higher percentage of A’s and B’s. Kulik, Kulik, and Shwalb (1986) conducted a study in which they found that students who experienced computer-based instruction showed moderately higher achievement levels than students in traditional classrooms. Szabo (1987) also showed that students scored significantly higher when they were exposed to computer-based instruction.

Conversely, a study in 1991 showed traditional students performing better than online students. Chen et al. (1991) researched student success as well as attitude in both traditional and computer conferencing classes. They measured scores on achievement tests, time on task, drop-out rates, and student attitudes. Students taking traditional courses scored higher on the achievement tests; those students in computer-based learning scored lower. The attitudes of students showed a significant difference. Those students in the traditional classes had a much more positive attitude toward the course than those who received computer-mediated instruction.

One study in 1993 involved students who were pursuing a master’s degree. Souder (1993) studied the results of a take-home test in two groups: those who were in a live broadcast, televised graduate course in management of technology, and those taking the same course who were in a traditional classroom on campus. The students who participated in the distance learning course actually performed better on the test than the students in the traditional class. Another experiment involved critical thinking skills within a face-to-face classroom guided by a teacher and a computer-supported class. The students in the computer-supported class performed better, due to the fact that the class
brought in more outside world material and enabled students to see a link between
creative ideas and solutions. The critical thinking level for this class was also higher than

The UOP, which offers degrees entirely online, reported that their online
graduates scored 5 – 10% higher on standardized tests compared to graduates of
traditional programs at three public universities in Arizona (Vasarhelyi & Graham, 1997).

In 1998, Day, Raven, and Newman researched the results of web-based instruction on
success in a technical writing course. They found that students who took the writing
class online had higher achievement scores than students in a traditional classroom
setting. Morrissey (1998) investigated the effect of the Internet on management
education. This study found that online students outperformed those students in face-to-
face environments. However, in the area of satisfaction and group attitudes, the
outcomes were more positive for the traditional group.

Few studies exist to prove a negative significant difference for distance education.
Efendiogio and Murray (2000) investigated Chinese executives in an MBA program who
were taught through tutored video instruction. Comparatively, they found that those
Chinese executives who were taught in a traditional classroom received significantly
higher grades.

Stinson and Claus (2000) investigated the results of electronic classrooms on an
English composition class. After the first two semesters, there were no dropouts in the
electronic classrooms. In the conventional classroom setting, the dropout rate was a little
over 10%. They also found that students in the electronic classrooms usually turned in
their papers on time; in the traditional classrooms, however, 20% of the papers were
turned in late. Students in the electronic classrooms also had an average one-half grade higher than those in the conventional classrooms.

One reason why online students often outperform their counterparts in traditional classrooms is because they are prone to participate more in the class because they are usually older and more mature (Colorito, 2001). In addition, synchronous learning networks often result in increases in student performances, even when course standards are higher (Kashy, Albertelli, Kashy, & Thoennessen, 2001). In fact, online students at Louisiana State University had slightly higher grades than students in conventional classrooms (Lynch, 2002).

To summarize, this researcher has found that more adults are obtaining a college degree due to online education. Currently less than one in five college students are traditional 18–22 year old undergraduates. Studies reveal that convenience and flexibility are the major advantages to pursuing an online degree.

Telecommunication networks have become one of the most significant developments over the past 20 years. Industrial companies are also a major force behind the drive of online education who promote the evolution of communication technology. To foster social presence, designers of web communication technology incorporate features such as video conferencing, animations, and synchronous voice exchange. The development of course management programs such as Blackboard and WebCT have also contributed to online education.

This researcher also found that learner attrition rates for online students range from 35% to 50% compared to approximately 14% for traditional students. These
numbers are attributed to poor study habits. However, the successful completion of online courses tends to increase with the student’s age.

Several barriers exist for online students: institutional barriers, situational barriers, and dispositional barriers. Institutional barriers consist of administration, management, financial aid, registration, and technology. Situational barriers include personal issues, relationships, health, employment, and class schedules. Dispositional barriers are learner attitudes, self-discipline, motivation, and self-confidence. This research also includes several studies that support significant differences and non-significant differences between online and traditional students.
CHAPTER III
RESEARCH METHODOLOGY

This chapter is divided into the following: (a) Research Questions,
(b) Population/Sample, (c) Characteristics of the Host Research Environment,
(d) Procedures, (e) Data Collection, and (f) Data Analysis.

Research Questions

The following questions were used to guide this study:

Question 1: Is there a statistically significant difference in the Alabama Praxis II test scores between online graduate students and traditional graduate students at a small, four-year regional university in Alabama?

Question 2: Is there a statistically significant difference in the Alabama Praxis II test scores based on gender, ethnicity, and age between online graduate students and traditional graduate student, at a small, four-year regional university in Alabama?

Question 3: Is there a meaningful relationship among age, GRE score, and the Alabama Praxis II test scores between online graduate students and traditional graduate students at a small, four-year regional university in Alabama?
Population/Sample

The population for this study consisted of students who were enrolled in a master’s degree program between the academic years of 2007 to 2009 at a small four-year teaching institution in rural west Alabama, and had taken the Alabama Praxis II exam. The data collected was limited to those graduates with the degrees of MED in school counseling and MSCE in guidance counseling. Random samples of 50 traditional students and 50 online students were selected for this study.

The Characteristics of the Host Research Environment

The host environment for this study is a rural institution of higher learning whose primary mission is preparing teachers. This institution is a regional entity, and serves the populaces of Alabama and Eastern Mississippi. Both undergraduate and graduate degrees are offered by this institution, but a doctoral program is not offered by this entity. This institution possesses regional accreditation with the Southern Association of Colleges and Schools. Programmatic accreditations of this institution include the Association of Collegiate Business Schools and Programs and the NCATE.

The host institution was founded in 1835 as a church supported academy for women called Livingston Female Academy. Since that time, the institution has undergone many name changes, and in 1995 was renamed the University of West Alabama in order to reflect the institution’s mission as a regional university. Both virtual and residential degree programs are offered within both the graduate and undergraduate degree offerings of this institution. This institution serves a student body of
approximately 5,000 graduate and undergraduate students, with approximately 2,780 online students (The University of West Alabama [UWA], 2008).

The demographic characteristics of this institution demonstrate a variety of backgrounds. Recent estimates indicate that approximately 67% of the student body reside in the State of Alabama with 33% of the student body from other states. According to recent data, approximately 50% of the student body is Caucasian, 49% of the student body is minority, and 1% of the student body is international (UWA, 2008). Recent data indicates that approximately 63% of the student body is female whereas 37% of the student body is male (UWA, 2008). The faculty to student ratio is 1:18 within this institution (UWA, 2008). Approximately 77% of the faculty members possess terminal degrees. Within the College of Education of the host institution, all individuals must successfully complete the Praxis II examination as a requirement of graduation.

Procedures

Regardless of whether one graduates from a traditional or non-traditional institution of higher learning, a passing Praxis II examination score is required of all individuals before a teaching licensure is granted within the State of Alabama. Therefore, the data collection instrument is the Alabama Praxis II examination. Original data sets regarding an instance of the Alabama Praxis II examination were obtained directly from the host institution via the College of Education. The data sets consist of attributes regarding the ethnicity, age, gender, Graduate Record Exam (GRE), Miller Analogies Test (MAT), Graduate Grade Point Average (GPA) and overall score of individuals who completed the Praxis II examination.
Because of the legal and ethical concerns associated with the FERPA, the confidentiality of the participants was of paramount importance. The obtained data sets did not contain any information that personally identified the individuals who completed the Alabama Praxis II examination. The obtained data sets did not contain any information that uniquely identified the institutional, student-related, degree-related, or course-related attributes associated with the individuals who completed the Alabama Praxis II examination. Only the characteristics of ethnicity, age, gender, and overall testing score were contained within the data sets.

The considerations of both the physical and virtual securities were necessary for ensuring the integrity of the obtained data sets. Physical security mechanisms included housing the data sets within the College of Education of the host environment, where key-lock access was necessary for accessing the data sets. Virtual security mechanisms included housing the data sets among the computer systems of the host environment. Access to these computer systems required the use of an institutional, personnel network account, and all virtual, data locations required the use of encrypted password access. Only this researcher and the appropriate network administrators were enabled to access the virtual storage areas in which the data sets were stored.

Data Collection

Within the State of Alabama, both physical and virtual education programs exist that culminate in the awarding of both undergraduate and graduate degrees and that require the successful completion of the Alabama Praxis II examination as a requirement of graduation. Within the State of Alabama, the successful completion and the achieving
of a passing examination score, with respect to the Praxis II examination, is a requirement of graduation within the host institution of higher learning. All graduate degree candidates must successfully complete and submit satisfactory Praxis II examination scores regardless of the subject area or discipline that is anticipated within the teaching career (Praxis, 2010). Therefore, the Alabama Praxis II examination represents the tool through which the collecting of data occurred within this research study.

The basis for this Alabama Praxis II examination requirement is expressed through its potential as a quality management tool to measure teaching skills, general and subject-specific knowledge. This requirement applies to all candidates who seek to obtain Alabama professional educator certificates, preliminary certificates, or alternative certificates. The State of Alabama requires the successful completion and submission of satisfactory Praxis II examination scores as a component of its state teaching licensure processes and procedures (Praxis, 2010).

Although one may satisfy the requirements of completing the examination, the standards for achieving a satisfactory, passing score are subjective and vary among each individual state per the requirements of its respective government mandates (Praxis, 2010). The scoring of the examination is based upon the quantity of responses that are correct versus the overall quantity of questions completed (Praxis, 2010). Within the examination, no penalties are incurred for the submission of incorrect answers (Praxis, 2010). The data sets used within this research initiative were taken only from scores that were submitted to the State of Alabama, with respect to its parameters of acceptable score outcomes, as a component of its teacher licensing processes and procedures.
Data Analysis

This research involved the use of quantitative techniques to examine each of the aforementioned research questions. The Excel data analysis software was the tool through which the processing of the Alabama Praxis II examination score data sets occurred.

Summary descriptive statistics and a $t$-test were used for research question one to determine if there is a statistically significant difference in the Alabama Praxis II test scores between online graduate students and traditional graduate students at a small, four-year regional university in Alabama. Levene’s Test for Equality of Variance was used to determine if the homogeneity of variance assumption was maintained at $p > .05$. For research questions two, an Analysis of Variance (ANOVA) was used to determine if there was a statistically significant difference in the Alabama Praxis II test scores based on age between online graduate students and traditional graduate students, at a small, four-year regional university in Alabama. Finally, a Pearson $r$ was used for research question three to determine if there was a meaningful relationship between age and the Alabama Praxis II test scores between online graduate students and traditional graduate students at a small, four-year regional university in Alabama.
Chapter IV is a presentation of demographic and Praxis II test score data collected from a study conducted at a small, rural university in West Alabama. The purpose of this study was to compare the Praxis II test score outcomes between students who received degrees online versus traditional, on-campus students at an Alabama regional institution of higher learning. Existing data were collected by extracting students’ Praxis II test scores and demographic information from the university’s DataTel system. All data was confidential and the students’ names and identification numbers were eliminated prior to the researcher obtaining the information for the study.

The data collected spanned the years of 2007-2009. A random sample of 50 online students was extracted from a population of 272 graduates, and a random sample of 50 on-campus students was extracted from a population of 58 graduates. There were two graduate master’s degree programs selected for this study: the M.Ed. degree in School Counseling and the M.S.C.E. degree in Guidance Counseling. These students are required to pass the same Praxis II test upon completion of their study in order to graduate from the institution. A passing score on the Praxis II exam is also required in order to teach in the state of Alabama.
The following data analysis reports the results related to the three research questions that guided this study.

1. Is there a statistically significant difference in the Alabama Praxis II test scores between online graduate students and traditional graduate students at a small, four-year regional university in Alabama?

2. Is there a statistically significant difference in the Alabama Praxis II test scores based on gender, ethnicity, and age between online graduate students and traditional graduate students at a small, four-year regional university in Alabama?

3. Is there a meaningful relationship among age, GRE score, and the Alabama Praxis II test scores between online graduate students and traditional graduate students at a small, four-year regional university in Alabama?

Demographics

The two samples of participants included a random selection of 50 graduates from the online teacher education program and of 50 graduates from the campus teacher education program. Table 4-1 shows that 46 of the 50 campus graduates (92%) were female, and 4 (8%) were male. The online group consisted of 45 (90%) female, and 5 (10%) male, revealing that the vast majority of graduate students are female.
Table 4-1  
Gender of Participants

<table>
<thead>
<tr>
<th></th>
<th>Campus</th>
<th>%</th>
<th>Online</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>46</td>
<td>92</td>
<td>45</td>
<td>90</td>
</tr>
<tr>
<td>Male</td>
<td>4</td>
<td>8</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4-2 reveals that 60% of the Campus group is African-American while 40% are Caucasian. The online group is quite different with only 26% African-American, and 72% Caucasian. The online group consists of one (2%) Asian graduate.

Table 4-2  
Ethnicity of Participants

<table>
<thead>
<tr>
<th></th>
<th>Campus</th>
<th>%</th>
<th>Online</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>30</td>
<td>60</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>Caucasian</td>
<td>20</td>
<td>40</td>
<td>36</td>
<td>72</td>
</tr>
<tr>
<td>Asian</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

Although not shown in a table, of the 46 female campus students, 27 are African-American and 19 are Caucasian. Of the 45 online female students 11 are African-American, 33 are Caucasian, and one is of Asian ethnicity. There are only four male campus students; three are African-American and 1 is Caucasian. The online program contained five male students; two are African-American and three are Caucasian. This information reveals that Caucasians make up the majority of online students, whereas African-Americans make the majority of campus students.
The two graduate study master’s degree programs selected for this study were the M.Ed. degree in School Counseling and the M.S.C.E degree in Guidance Counseling. These two curricula are very similar, but both meet the needs of students differently. There are three levels of certification in Alabama. A person who has completed a Bachelor’s degree receives a “Class B” certification; a person who completes a Master’s degree receives a “Class A” certification; and a person who completes a Specialist degree and/or Doctoral degree receives a “Class AA” certification (Education-online, 2010). When a student graduates with the M.Ed. in School Counseling, the graduate receives a Class “A” Alabama teaching certificate from the Alabama Department of Education. Although the M.S.C.E. graduates complete same degree requirements, they do not receive a Class “A” certification from the Alabama Department of Education because they did not complete a bachelor’s degree in education which is a Class “B” certification. M.S.C.E. graduates are required to take and pass the Praxis II exam because it is a requirement for graduation at the University of West Alabama. Career opportunities for graduates from M.S.C.E. degree are within the private sector, such as counselors for mental health facilities, hospitals, hospice; some become teachers at community colleges. Table 4-3 shows that 96% of the students who completed the M.Ed. program were campus graduates and 88% of the students who completed an online program were M.Ed. graduates.
Table 4-3

Degrees of Participants

<table>
<thead>
<tr>
<th></th>
<th>Campus</th>
<th>%</th>
<th>Online</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Counseling.</td>
<td>48</td>
<td>96</td>
<td>44</td>
<td>88</td>
</tr>
<tr>
<td>M.Ed.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Guidance</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Counseling M.S.C.E</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

The summary descriptive statistics in Table 4-4 show the demographic characteristics for age of the online group. The average age, represented by the mean, is 36.42 with a standard deviation of 8.31. The greatest frequency of age was 28 years old.

Table 4-4

Summary Statistics - Age Online Group Score

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>36.42</td>
</tr>
<tr>
<td>Median</td>
<td>35.00</td>
</tr>
<tr>
<td>Mode</td>
<td>28.00</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>8.31</td>
</tr>
<tr>
<td>Range</td>
<td>31.00</td>
</tr>
<tr>
<td>Minimum</td>
<td>25.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>56.00</td>
</tr>
<tr>
<td>Count</td>
<td>50.00</td>
</tr>
</tbody>
</table>

The summary descriptive statistics based on Praxis II test scores for the online group are shown in Table 4-5. The average Praxis II online Group score, represented by the Mean, is 626 with a standard deviation of 55.51. The greatest frequency of score was 630. Students who are seeking a “Class A” certification from the state of Alabama must
score 520 or higher. The University of West Alabama also requires a score of 520 on the Praxis II exam as a requirement for graduation (UWA, 2010).

Table 4-5

Summary Statistics - Praxis II Online Group Score

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>626.00</td>
</tr>
<tr>
<td>Median</td>
<td>625.00</td>
</tr>
<tr>
<td>Mode</td>
<td>630.00</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>55.51</td>
</tr>
<tr>
<td>Range</td>
<td>210.00</td>
</tr>
<tr>
<td>Minimum</td>
<td>520.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>730.00</td>
</tr>
<tr>
<td>Count</td>
<td>50.00</td>
</tr>
</tbody>
</table>

The summary descriptive statistics in Table 4-6 are based on GRE test scores for the online group. The average composite GRE online group score, represented by the mean, is 807.06 with a standard deviation of 151.61. The greatest frequency of score was 840. No minimum GRE score is required by the institution studied.
Table 4-6

Summary Statistics - Composite GRE Online Scores

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>807.06</td>
</tr>
<tr>
<td>Median</td>
<td>840.00</td>
</tr>
<tr>
<td>Mode</td>
<td>840.00</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>151.61</td>
</tr>
<tr>
<td>Range</td>
<td>570.00</td>
</tr>
<tr>
<td>Minimum</td>
<td>520.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>1090.00</td>
</tr>
<tr>
<td>Count</td>
<td>17.00</td>
</tr>
</tbody>
</table>

The summary descriptive statistics in Table 4-7 are based on the MAT scores of the online group. The average MAT online test score, represented by the mean, is 340.26 with a standard deviation of 134.04. The greatest frequency of score was 379. No minimum MAT score is required by the institution studied.

Table 4-7

Summary Statistics - Composite MAT Online Scores

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>340.26</td>
</tr>
<tr>
<td>Median</td>
<td>391.00</td>
</tr>
<tr>
<td>Mode</td>
<td>379.00</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>134.04</td>
</tr>
<tr>
<td>Range</td>
<td>412.00</td>
</tr>
<tr>
<td>Minimum</td>
<td>25.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>437.00</td>
</tr>
<tr>
<td>Count</td>
<td>19.00</td>
</tr>
</tbody>
</table>
The summary descriptive statistics in Table 4-8 show the demographic characteristics for age of the campus group. The average age, represented by the mean, is 34.36 with a standard deviation of 8.05. The greatest frequency of age was 30 years old.

Table 4-8
Summary Statistics - Age Campus Group

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>34.36</td>
</tr>
<tr>
<td>Median</td>
<td>32.00</td>
</tr>
<tr>
<td>Mode</td>
<td>30.00</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>8.05</td>
</tr>
<tr>
<td>Range</td>
<td>33.00</td>
</tr>
<tr>
<td>Minimum</td>
<td>23.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>56.00</td>
</tr>
<tr>
<td>Count</td>
<td>50.00</td>
</tr>
</tbody>
</table>

The summary descriptive statistics based on the Praxis II test scores for the campus group are shown in Table 4-9. The average Praxis II campus group score, represented by the mean, is 587.60 with a standard deviation of 42.36. The greatest frequency of score is 600.
Table 4-9

Summary Statistics - Praxis II Campus Group

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>587.60</td>
</tr>
<tr>
<td>Median</td>
<td>590.00</td>
</tr>
<tr>
<td>Mode</td>
<td>600.00</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>42.36</td>
</tr>
<tr>
<td>Range</td>
<td>160.00</td>
</tr>
<tr>
<td>Minimum</td>
<td>520.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>680.00</td>
</tr>
<tr>
<td>Count</td>
<td>50.00</td>
</tr>
</tbody>
</table>

The summary descriptive statistics in Table 4-10 are based on the GRE test scores for the campus group. The average composite GRE campus group score, represented by the mean, is 587.50 with a standard deviation of 47.17. The greatest frequency of score is 600.

Table 4-10

Summary Statistics - Composite GRE Campus

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>587.50</td>
</tr>
<tr>
<td>Median</td>
<td>600.00</td>
</tr>
<tr>
<td>Mode</td>
<td>600.00</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>47.17</td>
</tr>
<tr>
<td>Range</td>
<td>110.00</td>
</tr>
<tr>
<td>Minimum</td>
<td>520.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>630.00</td>
</tr>
<tr>
<td>Count</td>
<td>4.00</td>
</tr>
</tbody>
</table>

The summary descriptive statistics in Table 4-11 are based on the MAT scores for the campus group. The average MAT campus test score, represented by the mean, is 381.63 with a standard deviation of 20.61. The greatest frequency of score is 375.
Table 4-11

Summary Statistics - Composite MAT Campus

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>381.63</td>
</tr>
<tr>
<td>Median</td>
<td>375.00</td>
</tr>
<tr>
<td>Mode</td>
<td>375.00</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>20.61</td>
</tr>
<tr>
<td>Range</td>
<td>104.00</td>
</tr>
<tr>
<td>Minimum</td>
<td>351.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>455.00</td>
</tr>
<tr>
<td>Count</td>
<td>35.00</td>
</tr>
</tbody>
</table>

Outcomes of First Research Question

Research question one asked: “Is there a statistically significant difference in the Alabama Praxis II test scores between online graduate students and traditional graduate students at a small, four-year regional university in Alabama?” In order to address question one, the researcher performed a $t$-test. Levene’s Test for Equality of Variance showed the homogeneity of variance assumption was maintained, $p > .05$. The researcher used a $t$-test to determine if the Praxis II test scores of the campus and online group were significantly different. As shown in Table 4-12, the mean for the campus group is 587.60 and the mean for the online group is 626 with a difference of 38.4. The results of the $t$-test ($t = -3.89, p < .05$) indicated the groups were significantly different with the online group earning significantly higher scores.
Table 4-12

*t*-test: Campus Scores vs. Online Scores

<table>
<thead>
<tr>
<th></th>
<th>Praxis II Campus Score</th>
<th>Praxis II Online Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>587.60</td>
<td>626.00</td>
</tr>
<tr>
<td>Variance</td>
<td>1794.12</td>
<td>3081.63</td>
</tr>
<tr>
<td>Observations</td>
<td>50.00</td>
<td>50.00</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>2437.88</td>
<td></td>
</tr>
<tr>
<td>Df</td>
<td>98.00</td>
<td></td>
</tr>
<tr>
<td>t Stat</td>
<td>-3.89</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>t Critical two-tail</td>
<td>1.98</td>
<td></td>
</tr>
</tbody>
</table>

Outcomes of Second Research Question

The second research question ask “Is there a statistically significant difference in the Alabama Praxis II test scores based on gender, ethnicity, and age between online graduate students and traditional graduate students at a small, four-year regional university in Alabama?” The Levene’s test for Equality of Variance showed the homogeneity of variance assumption was maintained p > .05. In order to address the question, the researcher performed a *t*-test as shown in Table 4-13. The mean for African-American group is 576.67 and the mean for the Caucasian group is 604 with a difference of 27.33. The results of the *t*-test (*t* = -2.33, *p* < .05) indicate the groups were significantly different with Caucasians earning significantly higher scores.
Table 4-13

$t$-test: Praxis II Scores Based on Ethnicity of Campus Group

<table>
<thead>
<tr>
<th></th>
<th>African-American Praxis II Score</th>
<th>Caucasian Praxis II Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>576.67</td>
<td>604.00</td>
</tr>
<tr>
<td>Variance</td>
<td>1740.23</td>
<td>1498.95</td>
</tr>
<tr>
<td>Observations</td>
<td>30.00</td>
<td>20.00</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>1644.72</td>
<td></td>
</tr>
<tr>
<td>Df</td>
<td>48.00</td>
<td></td>
</tr>
<tr>
<td>t Stat</td>
<td>-2.33</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>t Critical two-tail</td>
<td>2.01</td>
<td></td>
</tr>
</tbody>
</table>

In order to address the difference in Praxis II test scores based on gender of on-campus students, the researcher performed a $t$-test. The Levene’s test for Equality of Variance indicated the homogeneity of variance assumption was maintained, $p > .05$. As shown in Table 4-14, the mean for male group is 590 and the mean for the female group is 587.39 with a difference of 2.61. The results of the $t$-test ($t = .12$, $p > .05$) indicate that there is no significant difference in scores based on gender.
Table 4-14

$t$-test: Praxis II Scores Based on Gender of Campus Group

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Praxis II Scores</td>
<td>Mean</td>
<td>590.00</td>
</tr>
<tr>
<td></td>
<td>Variance</td>
<td>3000.00</td>
</tr>
<tr>
<td></td>
<td>Observations</td>
<td>4.00</td>
</tr>
<tr>
<td></td>
<td>Pooled Variance</td>
<td>1830.98</td>
</tr>
<tr>
<td></td>
<td>Df</td>
<td>48.00</td>
</tr>
<tr>
<td></td>
<td>$t$ Stat</td>
<td>0.12</td>
</tr>
<tr>
<td></td>
<td>$P(T&lt;=t)$ two-tail</td>
<td>0.91</td>
</tr>
<tr>
<td></td>
<td>$t$ Critical two-tail</td>
<td>2.01</td>
</tr>
</tbody>
</table>

In order to address the difference in Praxis II test scores based on ethnicity of online students, the researcher performed a $t$-test. The Levene’s test for Equality of Variance indicated the homogeneity of variance assumption was maintained, $p > .05$. As shown in Table 4-15, the mean for African-American group is 604.29 and the mean for the Caucasian group is 634.44 with a difference of 30.15. The results of the $t$-test ($t = -1.76, p > .05$) indicate the groups are not significantly different.
Table 4-15

$t$-test: Praxis II Scores Based on Ethnicity of Online Group

<table>
<thead>
<tr>
<th></th>
<th>African-American Praxis II Score</th>
<th>Caucasian Praxis II Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>604.29</td>
<td>634.44</td>
</tr>
<tr>
<td>Variance</td>
<td>3426.37</td>
<td>2779.68</td>
</tr>
<tr>
<td>Observations</td>
<td>14.00</td>
<td>36.00</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>2954.83</td>
<td></td>
</tr>
<tr>
<td>Df</td>
<td>48.00</td>
<td></td>
</tr>
<tr>
<td>t Stat</td>
<td>-1.76</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>t Critical two-tail</td>
<td>2.01</td>
<td></td>
</tr>
</tbody>
</table>

In order to address the difference in Praxis II test scores based on gender of online students, the researcher performed a $t$-test. The Levene’s test for Equality of Variance indicated the homogeneity of variance assumption was maintained, $p > .05$. As shown in Table 4-16, the mean for the online female group is 626.67 and the mean for the online male group is 620 with a difference of 6.67. The results of the $t$-test ($t = .25$, $p > .05$) indicated there were no significant difference based on gender.
Table 4-16

$t$-test: Praxis II Scores Based on Gender of Online Group

<table>
<thead>
<tr>
<th></th>
<th>Female Praxis II Online Score</th>
<th>Male Praxis II Online Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>626.67</td>
<td>620.00</td>
</tr>
<tr>
<td>Variance</td>
<td>3145.45</td>
<td>3100.00</td>
</tr>
<tr>
<td>Observations</td>
<td>45.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>3141.67</td>
<td></td>
</tr>
<tr>
<td>Df</td>
<td>48.00</td>
<td></td>
</tr>
<tr>
<td>t Stat</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>t Critical two-tail</td>
<td>2.01</td>
<td></td>
</tr>
</tbody>
</table>

For question two the researcher performed an ANOVA single factor with age as the independent variable and Praxis II test score as the dependent variable. Participants are placed in three age groups: less than 30, greater than 29 but less than 40, and greater than 39. Table 4-17 shows the average score of the age group less than 30 are 571.33. The average score of the age group of greater than 29 and less than 40 are 593.60, and the average score of age group greater than 39 are 597.00. The results of the ANOVA ($F = 1.65$, $p > .05$) indicated no statistically significant difference in Praxis II test scores based on age.
Table 4-17
ANOVA: Praxis II Scores Based on Age of Campus Group

<table>
<thead>
<tr>
<th>Groups</th>
<th>Count</th>
<th>Sum</th>
<th>Average</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &lt; 30</td>
<td>15.00</td>
<td>8570.00</td>
<td>571.33</td>
<td>1340.95</td>
</tr>
<tr>
<td>Age &gt; 29, &lt; 40</td>
<td>25.00</td>
<td>14840.00</td>
<td>593.60</td>
<td>1840.67</td>
</tr>
<tr>
<td>Age &gt; 39</td>
<td>10.00</td>
<td>5970.00</td>
<td>597.00</td>
<td>2134.44</td>
</tr>
</tbody>
</table>

ANOVA

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>Df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>5752.67</td>
<td>2.00</td>
<td>2876.33</td>
<td>1.65</td>
<td>0.20</td>
<td>3.20</td>
</tr>
<tr>
<td>Within Groups</td>
<td>82159.33</td>
<td>47.00</td>
<td>1748.07</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Total               | 87912.00 | 49.00 |

An ANOVA, single factor was generated to determine if there was a statistically significant difference in the Praxis II test scores among the three different age groups of online students. Table 4-18 shows the average score for the age group less than 30 are 624.62. The score for the age group of greater than 29 and less than 40 are 627.83, and the average score of the age group greater than 39 are 624.29. The results of the ANOVA (F = .02, p > .05) indicated there is no difference in the Praxis II test scores based on age for the campus group.
Table 4-18

ANOVA: Praxis II Scores Based on Age of Online Group

<table>
<thead>
<tr>
<th>Groups</th>
<th>Count</th>
<th>Sum</th>
<th>Average</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &lt; 30</td>
<td>13.00</td>
<td>8120.00</td>
<td>624.62</td>
<td>2243.59</td>
</tr>
<tr>
<td>Age &gt; 29, &lt; 40</td>
<td>23.00</td>
<td>1444.00</td>
<td>627.83</td>
<td>3517.79</td>
</tr>
<tr>
<td>Age &gt; 39</td>
<td>14.00</td>
<td>8740.00</td>
<td>624.29</td>
<td>3580.22</td>
</tr>
</tbody>
</table>

ANOVA

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>142.76</td>
<td>2.00</td>
<td>71.38</td>
<td>0.02</td>
<td>0.98</td>
<td>3.20</td>
</tr>
<tr>
<td>Within Groups</td>
<td>150857.24</td>
<td>47.00</td>
<td>3209.73</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>151000.00</td>
<td>49.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Outcomes of Third Research Question

The third research question ask “Is there a meaningful relationship among age, GRE score, and the Alabama Praxis II test scores between online graduate students and traditional graduate students at a small, four-year regional university in Alabama?” The correlation matrix is shown in Table 4-19. Only a low association is found between the pretest score and the Praxis II score, \( r = .31\).
Table 4-19

Correlation Matrix among Age, Pretest, and Praxis II - Online Group

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Praxis II Score</th>
<th>Pre-Test Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Praxis II Score</td>
<td>0.0485</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Pretest Score</td>
<td>-0.1971</td>
<td>0.31663</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4-20 shows the correlation matrix among Age, Praxis II test scores and Pre-test scores for the campus group. The results of Table 4-20 indicate there is no meaningful relationship among age, Praxis II test scores and Pretest scores for the campus group.

Table 4-20

Correlation Matrix among Age, Pretest, and Praxis II - Campus Group

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Praxis II Score</th>
<th>Pretest Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
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Table 4-21 was used as a basis for interpreting the correlations among age, pretest scores and Praxis II test scores for the online group in Table 4-19 and the campus group in Table 4-20.
Summary

The purpose of this study was to compare the Praxis II test score outcomes between students who received degrees online versus traditional, on-campus students at an Alabama regional institution of higher learning. The questions for this study were:

1. Is there a statistically significant difference in the Alabama Praxis II test scores between online graduate students and traditional graduate students at a small, four-year regional university in Alabama?

The \( t \)-test was performed to answer question one. The Praxis II test scores for the campus group had a mean of 587.60 and the online group had a mean of 626. The \( t \)-test revealed a statistically significant difference between the two groups, and the online students earned higher scores than the campus students on the Praxis II test. The online group scored an average of 38.4 points higher than the campus group.

2. Is there a statistically significant difference in the Alabama Praxis II test scores based on gender, ethnicity, and age between online graduate students and traditional graduate students at a small, four-year regional university in Alabama?
A *t*-test was used to answer part of question two. When comparing African-American campus students to Caucasian campus students, the *t*-test revealed a statistically significant difference between the two groups. The campus Caucasian group scored an average of 27.33 points higher than the African-American group on the Praxis II test. A *t*-test was used to compare campus male Praxis II test scores to female Praxis II test scores and results indicated no significant difference. When online African-American Praxis II test scores were compared to online Caucasian Praxis II test scores, no significant differences were found. A *t*-test was used again to test the online female Praxis II test scores compared to online male Praxis II test scores, indicating no significant difference in the scores.

An ANOVA was also used for question two to determine if there was a statistically significant difference of Praxis II test scores between campus age groups and online age groups. There were no significant differences in Praxis II test scores when students were grouped by age.

3. Is there a meaningful relationship among age, GRE score, and the Alabama Praxis II test scores between online graduate students and traditional graduate students at a small, four-year regional university in Alabama?

A Pearson *r* correlation was used to answer question three. There was a low association between the pretest score and Praxis II test score for the online group. No other meaningful relationships were found among the variables.
Chapter V presents the summary of the study, summary of the findings, conclusions, and recommendations for future studies. The purpose of this study was to compare the Praxis II test score outcomes between students who received degrees online versus traditional, on-campus students at an Alabama regional institution of higher learning.

Due to the advancement of computer technology and the development of the Internet and course management programs such as Blackboard and WebCT, a constantly growing number of students are pursuing degrees through online programs. Many non-traditional students and professionals are able to pursue undergraduate and graduate degrees while still maintaining their careers and providing for their families. Online programs, especially asynchronous classrooms in which there is not a set time for classes, offer students more flexibility in schedules.

While most institutions of higher learning provide online programs and degrees, and these institutions meet accrediting criteria, the debate still continues as to whether online students acquire the same quality education as students who receive their degrees by attending a class on campus with the professor in the classroom. Some of the questions often asked: 1) Are test scores as good? 2) Are online graduates hired with
same respect as traditional graduates? 3) Are students able to handle the technology required for online education?

To address the issues concerning online quality education, the researcher developed the following questions to guide the study. 1) Is there a statistically significant difference in the Alabama Praxis II test scores between online graduate students and traditional graduate students? 2) Is there a statistically significant difference in the Alabama Praxis II test scores based on gender, ethnicity, and age between online graduate students and traditional graduate students? 3) Is there a meaningful relationship among age, GRE score, and the Alabama Praxis II test score between online graduate students and traditional graduate students?

Summary of Findings and Conclusion

Based on the statistical analysis of chapter IV, this researcher has to come to the following conclusions.

Question one asks whether there is a statistically significant difference in the Alabama Praxis II test scores between online and traditional graduate students. In order to address question one, the researcher performed a t-test. According to this researcher’s findings, there is a significant difference of test scores in favor of online students. This finding is in support of Hittleman (2001) and Colorito (2001) who indicated that online students perform better. However, such findings do not support their view that older students performed better. In fact, question three of this study asked if there is a correlation between age and the Praxis II test score, and there was no meaningful correlation found between age, pretest scores, and Praxis II test scores. Hittleman (2001)
found that online learners tend to perform better and complete courses more often when over the age of 24. Hittleman (2001) also reports that the majority of online students are female and that a higher percent of females have better scores than males. Colorito (2001) also states that online students perform better because they are older and more mature. The demographics of this study also support Hittleman’s (2001) findings that the majority of online students are female, but this researcher found no significant differences based on gender.

Question two asks if there is a statistically significant difference in the Alabama Praxis II test scores based on gender, ethnicity and age between online graduate students and traditional graduate students. In order to address question related to gender and ethnicity, the researcher performed a *t*-test. According to the statistical analysis, this study found no differences in scores based on gender or age for online and traditional students. Also, research shows that when considering the ethnicity of on-line students, there was no significant difference. However, a significant difference was found when ethnicity was studied among campus graduates. The analysis shows that on campus Caucasians scored significantly higher on the Praxis II than African-American graduates. This result could reflect that this institution serves an economically depressed region with a large portion of the population consisting of minorities. No significant differences were found when comparing online students based on ethnicity.

The researcher performed an ANOVA single factor with age as the independent variable and Praxis II test score as the dependent variable. The graduates were divided into three age groups: less than 30, greater than 29 but less than 40, and greater than 39.
This researcher found no significant differences when comparing age to the Praxis II test scores of online graduates and on-campus graduates.

Chapter II of related literature provides examples of instances where both significant and non-significant differences of test scores were found between online and on-campus students. Miller and Lu (2003), claim that online learners often carry extra “baggage” into online classes, including work-related pressures, family issues, and generational concerns that affect progress. Morgan and Tam (1999) refer to other issues, known as institutional barriers, such as organizational policies and procedures, and dispositional barriers, such as attitudes and self-confidence. These barriers are just a few examples that are given as to why students are successful or not successful in online education. Findings from this research indicate that in spite of various barriers, online students performed as well or better than on-campus students.

Additional Conclusions

Based on the preceding discussions and summary of the findings, there was a significant difference between the Praxis II test scores of online students and on-campus students. This study found that online students scored higher than campus students. One reason for this finding might be that there was a larger population of online students from which to choose for the study. Another reason could be that this institution serves an economically depressed region where the majority of the population consists of minorities. The fact that this institution serves an economically challenged region could also explain why a significant difference was found between African-American scores and Caucasian scores with the on-campus students. Caucasian students scored higher
than African-American students in the campus group. An alternate reason for Caucasians scoring higher could be that the majority of the campus group consists of African-Americans.

One interesting finding that does not support previous research is that age did not reflect a difference in scores between online and campus groups. An explanation might be that the average age for online students was 36, and the average age for campus students was 33.

Recommendations for Further Study

Based on the preceding discussions and summary of the findings, the following recommendations are suggested.

1) It is recommended that future studies should address comparisons between graduate student Praxis II test scores and undergraduate student Praxis II test scores.

2) It is recommended that the host institution scores be compared to other institutions in Alabama and even national institutions.

3) It is recommended that ACT scores and undergraduate GPA scores be considered as a pretest for correlation to Praxis II test scores.

Other Recommendations

Based on what this researcher has learned from this study, the following recommendations are made if a similar study is conducted in another setting:
1) The researcher might find institutions that have a greater population from which to choose.

2) The researcher might find institutions that have a greater diversity of students in addition to African-Americans and Caucasians.

3) The researcher might choose other online and traditional degrees to compare.

4) The researcher might also select other tools to measure differences, such as graduate GPA scores.
REFERENCES


Colorado State University, Division of Continuing Education. (n.d.). About us. Retrieved from http://www.learn.colostate.edu/about


Dooley, K. E., Richards, L., & Linder, J. R. (2002). Let’s consider the learner: Top 10 course design considerations. *Proceedings of The 9th Annual International Distance Education Conference*. Austin, TX.


APPENDIX A

DATATEL COLUMN HEADINGS
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APPENDIX B

LETTER OF VERIFICATION FROM UNIVERSITY OF WEST ALABMA
July 12, 2010

Ms. Christine Williams
Mississippi State University
Starkville, Mississippi

Dear Ms. Williams,

Please accept this letter as verification that University of West Alabama data given to Mr. Winston Donnie Cobb for the purpose of completing his doctorate degree is confidential and contains no identifiable information. No names, identification numbers, etc. are revealed within the data.

If you need additional information, please do not hesitate to email me at ppratt@uwa.edu or call me at 205-652-3550.

Sincerely,

Patricia R. Pratt
Director of Institutional Effectiveness
Assistant to the Provost
APPENDIX C

INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL LETTER
July 28, 2010

Winston Donnie Cobb
288 Beehive Rd
Sawyerville, AL 36776

RE: IRB Study #10-212: A Comparative Analysis of Alabama Praxis II Examination Scores between Online and Traditional Graduate Students at an Alabama Institution of Higher Learning

Dear Mr. Cobb,

The above referenced project was reviewed and approved via administrative review on 7/28/2010 in accordance with 45 CFR 46.101(b)(4). Continuing review is not necessary for this project. However, any modification to the project must be reviewed and approved by the IRB prior to implementation. Any failure to adhere to the approved protocol could result in suspension or termination of your project. The IRB reserves the right, at anytime during the project period, to observe you and the additional researchers on this project.

Please note that the MSU IRB is in the process of seeking accreditation for our human subjects protection program. As a result of these efforts, you will likely notice many changes in the IRB’s policies and procedures in the coming months. These changes will be posted online at http://www orc.msstate.edu/human/ahrpp.php.

Please refer to your IRB number (#10-212) when contacting our office regarding this application.

Thank you for your cooperation and good luck to you in conducting this research project. If you have questions or concerns, please contact me at owilliams@research.msstate.edu or call 662-325-5220.

Sincerely,

Christine Williams
IRB Compliance Administrator

cc: Anthony Olinzock