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Student Participation and Grade Performance in the Tennessee College of Applied Technology Online Collaborative

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Student Participation and Grade Performance in the Tennessee College of Applied Technology

Online Collaborative

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ABSTRACT

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The purpose of this quantitative correlation study was to determine whether a significantly

statistical relationship exists between student participation and final grade performance within an

online environment at Tennessee Colleges of Applied Technology (TCAT) Regents Online

Degree Program (RODP). The study used data retrieved from the Desire2Learn (D2L) course

management system and the Student Information System (SIS) for the 2013-2014 academic year.

The stratified sample consisted of 360 individual students enrolled in either one or more of the

43 TCAT RODP course sections randomly selected from a total of 217 course sections offered

during 3 semesters. The courses were offered in an online setting and are representative of the

following academic programs: academic areas of Business Systems Technology (BST),

Computer Aided Drafting (CAD), and Computer Information Systems (CIS). The sample

included 261 students from the BST program, 42 students from the CAD program, and 57

students from the CIS program.   The gender demographics sample includes 273 females and 87

male students.

The hypotheses in this study were tested through data analysis using the Spearman's rho

correlation tests. The findings of the study revealed that no statistically significant relationships

exist between discussion activity, course login activity, and course content interaction and final

grade. The findings of the study indicated statistically significant relationships among course

content interaction and final grade for students enrolled in the BST program, course login

activity and final grade for students enrolled in the CAD program, and course login activity and

final grade for female students.

DEDICATION

This dissertation and all my educational endeavors is dedicated first and foremost to the Lord who blessed me with grace and mercy despite my responsibilities as a wife, mother and the loss of my father. He has a purpose for my life and the blessing of earning this doctorate degree aligns with His purpose for me.

This dissertation is also dedicated to my family. My magnificent, supportive husband Fayva Hollins, Sr. and my incredible children Parker Hollins, Taylor Hollins, and Fayva Hollins, II, who have been my source of motivation and support throughout this tremendous journey. To the memory of my father Leroy Burks, Jr. who always believed in me. My mother Sylvia Pentecost has always been my #1 fan and encouraged me. I have been blessed with the best brother, mother and father-in-law, aunts, and uncles, possible. I love each of you and appreciate all the words of encouragement and enjoyment you have shared with me through the years. Without my great family support and the love, I would not have made it. I thank you and dedicate this body of work to you.

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CHAPTER 1

INTRODUCTION

The roots of distance education date back to the 19th century, but the rapid advances in technology in the late 20th and early 21st centuries have prompted an unprecedented growth in this field (Addis, 2009). Current literature and studies by Sloan Consortium (2012) indicate that student enrollment continues to grow at an astounding pace in these online learning programs at colleges and universities around the world. As a result of this growth, the development of online programs and courses has also increased. Over 6.1 million students took at least one online course during the fall 2010 term in the U.S.; this is an increase of 560,000 over the number reported the previous year (Allen & Seaman, 2011). According to Allen and Seaman the 10% growth rate for online higher education enrollments far exceeds the less than 1% growth of the overall higher education student population (Allen & Seaman, 2011). In the early days of distance education online education was focused on targeting those students who may never have had the chance to attend a course offered on a college campus (Young Ju, Kyu Yon, & Su Mi, 2012). However, today's online education provides another option for students even when no physical limitations to attending exist. The use of electronic and printed technologies as the form of communication is what distinguishes distance education from other forms of education (Moore & Kearsley, 2005).

Technology has increased the access to education services globally, with institutions of higher learning widely embracing it for various reasons like sharing resources, covering distance, physical space, and cost effectiveness among others (Johnson & Berge, 2012). Institutions have

invested in online technology and its resources, and with continuing innovation the education sector has sought a breakthrough in the use of internet resources for teaching, learning, research, and other benefits that come along with it (Smith, 2012).

Among the other benefits of online learning, distance has been the key reason why American higher education institutions have opted to use online technology in offering their services. Today people engage in many activities in their daily lives, and time is of the essence. Due to their busy schedules, and since moving from one point to another involves time and money, American citizens who wish to further their studies face a challenge. Institutions have responded by making it possible to access education online where all the traditional standards, procedures, and structures are still laid down. E-learning has gradually come to be seen as an effective method of study, due to control measures put in place to evaluate its effectiveness based on the American education standards.

Numerous research studies have been conducted that indicate engaged students are more likely to perform well academically (Center for Comprehensive School Reform and Improvement, 2006). Student participation in online learning is often related to the percentage of the grade assigned to discussion (Jiang & Ting, 2000). Milligan, Littlejohn, and Margaryan (2013) identified three distinct types of online participants—active participants, passive participants, and lurkers. Pedagogical design elements in course management systems and discussion board interfaces may affect participation, learning, and course performance. In online learning environments faculty and administrators monitor and quantify student participation in lieu of face-to-face meetings. The online learning environment requires students' roles to be more active in their learning. In order to be successful it is imperative for students to be independent learner who do not rely on constant instructor interaction.

Online delivery has been introduced in several universities in the U.S, and the population of online students is growing immensely (Romero & Barberà, 2011). The Tennessee Colleges of Applied Technology (TCAT) offer all online programming and delivery through the Regents Online Degree Program (RODP). This program began in 2001 with other Tennessee Board of Regents members' community colleges and universities offering online associate and bachelor degree programs. The TCAT system is comprised of 27 campuses spread throughout Tennessee. In fall 2002 the TCATs implemented online programming. The TCATs offer certificates and diplomas online in the areas of Administrative Office Technology (AOT), Computer Information Systems (CIS), and Drafting and CAD Technology (CAD). The TCAT RODP program is collaborative in its approach. Each institution offers these online programs, allowing students to make a selection of home campus assignment for registration purposes, fee payment, and student information maintenance. The TCAT Central Office coordinates program offerings, instructor work load, and the course management system. For reporting and enrollment management purposes the TCAT Central Office also maintains a stand-alone, custom-built student information system, which is RODP Student Information System (SIS or RODP SIS).

Students enrolled in the online collaborative complete the admission and application at their self-selected home campus. The home campus maintains the student information system called DPC or SIMS. Program completion and placement data for students enrolled in the online programs are reported each year in the home campus annual report to the Council on Occupational Education (COE). COE is the academic accrediting body for the statewide TCAT system. In the event the program falls below COE's minimum student completion rate, the TCAT must take action to increase the completion rate to an acceptable level. In addition to completion rate requirement, COE mandates that the institution demonstrate accurate program

placement data each year. These placement data are reported each year in the annual report to COE.

The TCAT RODP courses are delivered via the Desire2Learn (D2L) course management system. D2L is the web-based framework with a set of instructional tools. The administrative aspects of D2L include class rosters, students' grades, discussion forums, class exercises, quizzes, and exams. The D2L system is focused on all aspects of teaching, learning, and teacher-student and student-student interaction.

<div align="center">Statement of the Problem</div>

Many researchers support the idea that student-to-student and student-to-instructor interactions are important elements in the design and successful implementation of online learning courses. However, as Picciano (2002) notes, "web-based learning requires adjustments on the part of students and teachers for successful interaction and participation to occur" (p. 21). Picciano continues by stating that most online courses provide the ability for student and instructor interaction via discussion boards. Picciano looked for links between student interaction and participation and online course performance but did not find a statistically significant relationship.

Motivated by the increasing enrollment and popularity of online learning and the questions surrounding its quality and rigor (Lowenthal & Leech, 2008), this study investigated if a correlation exists between the frequency of student participation and student academic achievement in the TCAT RODP. The literature suggests a positive correlation between increased interaction and increased learning (Cotton & Yorke, 2006; Yukselturk, 2010). More research needs to be conducted to ascertain whether students who actively participate earn higher grades than their peers who participate less. Institutions of higher learning continue to witness

advances in online delivery, and student retention, and graduation rates are critical to overall student success. Increasing student retention or persistence is a long term goal in all academic institutions.

Dell, Low, and Walker (2010) expressed the importance of continuing to study the issue of student achievement online. While there is agreement that participation in online asynchronous discussions can enhance student learning, it has also been identified that there is a need to investigate the impact of participation in online discussions on student course performance (Palmer, Holt, & Bray 2008). Other studies have suggested the level of student class participation has decreased because of the virtual systems and lack of physical attendance (Harrell, 2011). Online learning has also failed to control the student's behavior and other external factors that may hinder the student's performance. Such programs enclose personal behavior more than the skills (Driscoll, 2012).

Under the Council on Occupational Education (COE) accreditation governance, all programs must demonstrate program outcomes through systematic planning for assessing program effectiveness, efficiency, and relevancy. This can be achieved through systematic research in respect to: (a) program completion, (b) job placement, and (c) licensure examination (Council on Occupational Education, 2015). Therefore, the purpose of this study is to better understand the participation of TCAT RODP students who use online learning and examine relationships with their grade performance.

Research Questions

This study was focused on research questions that were designed to determine whether a significantly statistical relationship exists between student participation and final grade performance with an online environment at the TCAT RODP program.

The study's research questions are as follows:

Research Question 1. Are there significant relationships between final grades and student discussion activity, course login activity, and course content interaction?

Research Question 2. Among students in the BST program of study are there significant relationships between final grades and student discussion activity, course login activity, and course content interaction?

Research Question 3. Among students in the CAD program of study are there significant relationships between final grades and student discussion activity, course login activity, and course content interaction?

Research Question 4. Among students in the CIS program of study are there significant relationships between final grades and student discussion activity, course login activity, and course content interaction?

Research Question 5. Based on gender, are there significant relationships between male student final grades and student discussion activity, course login activity, and course content interaction?

Research Question 6. Based on gender, are there significant relationships between female student final grades and student discussion activity, course login activity, and course content interaction?

<u>Significance of the Study</u>

Although little is known about what factors influence student outcomes in an online learning environment, Beaudoin (2003) suggests that a high level of interaction and participation is desirable in distance education courses. Beaudoin's study found that performance cannot easily be correlated with participation. Although it found that highly participatory students achieved higher results, it also revealed that minimal online participation does not necessarily compromise student results.

This study will be one of few studies investigating the relationship between student participation and final grade performance for students enrolled in the TCAT RODP program. This study is significant due to the continued growth in online academic programs in higher education, especially in the state of Tennessee.

With the increasing demands placed on institutions to monitor the progress of students' participation and outcomes, data investigating the participation and grade performance among students can provide an easily accessible early indicator of students who potentially could be experiencing difficulties with their studies. These findings have the potential to inform educators by helping them understand the nature of participation as it relates to grade performance outcomes among students. This may lead to the introduction of changes to online course structure and delivery to ensure that they are suitable for diverse student populations.

<u>Definition of Terms</u>

For clarity and consistency the following term definitions are used throughout study.

1. *Classlist*: The Classlist provides a list of students currently enrolled in the Desire2Learn (D2L) course management system. It also provides a detailed student

progress feature allowing an instructor to track user progress (Desire2Learn Resource Center, 2015).

2. *Clock Hours*: Clock hours are a measure of student progress and is posted by faculty using the Student Information System (Council on Occupational Education, 2015).

3. *Council on Occupational Education (COE)*: The Council on Occupational Education is a regional accrediting association that serves institutions in an 11-state region (Council on Occupational Education, 2015).

4. *Course Content*: The Content tool allows the instructor to post and organize relevant learning materials for students enrolled in the Desire2Learn (D2L) course management system. Content material can range from basic text to multimedia files (Desire2Learn Resource Center, 2015).

    Desire 2 Learn (D2L): Desire 2 Learn is a software product used to organize and present course materials on the internet. Tennessee College of Applied Technology has a license for Desire2Learn (D2L), and every student enrolled in the online licensed practical nursing program has a student account for access to the course management system. Some of the features of D2L are course content, calendar, discussions, news, assessments, dropbox, grades, checklist, surveys, user progress, email, library, content modules, and chat (Desire2Learn Resource Center, 2015).

5. *Discussion board*: The Discussions tool can be used for online discussions between the instructor and the students or student-to-student. Students can post messages in a threaded discussion. Students can also attach documents to their messages (Desire2Learn Resource Center, 2015).

6. *Distance education*: Distance education is a mode of delivering instruction to students who are not physically present in a traditional, face-to-face classroom (ELearning Coach, 2015).

7. *Grade performance:* Grade performance is a measurement of academic success based upon student assessment, such as assignment and discussion board scores. For this study the final course grade as reported by faculty was used (Tennessee Board of Regents, 2015).

8. *Online course:* For the purpose of this study an online course is delivered over the internet (ELearning Coach, 2015).

9. *Online learning*: For the purpose of this study online learning is education in which instruction and content are delivered over the internet (ELearning Coach, 2015).

10. *Regents Online Degree Program (RODP)*: The Regents Online Degree Program is responsible for providing front line support and resources using the online delivery platform Desire2Learn. RODP is physically located at the Tennessee Board of Regents Central Office (Regents Online Degree Program, 2015).

11. *Student Participation*: For the purpose of this study student participation refers to the number of discussion postings, course login activity, and number of course interactions throughout the duration of the term (Desire2Learn Resource Center, 2015).

12. *Tennessee Board of Regents (TBR)*: The Tennessee Board of Regents is a governing body that mandates and controls the state of Tennessee's 27 Colleges of Applied Technology, 13 Community Colleges, and 6 universities (Tennessee Board of Regents, 2015).

13. *Tennessee Colleges of Applied Technology (TCAT) Regents Online Degree Program (RODP)*: The Tennessee Colleges of Applied Technology are part of the Regents On-line Degree Program (RODP). This program began in 2001 with the community colleges and universities offering online associate and bachelor degree programs. The TCATs implemented online programs in fall 2002. The TCATs offer certificates and diplomas online in the following areas: Business Systems Technology, Computer Information Systems, and Drafting and CAD Technology. The RODP program is a statewide collaborative (Regents Online Degree Program, 2015).

14. *Tennessee Colleges of Applied Technology (TCAT) Student Information System (SIS)*: Tennessee Colleges of Applied Technology (TCAT) Student Information System (SIS) is an online password-protected portal that houses student data related to online TCAT enrollment, grades, and posting of course login activity hours are maintained.

15. *Term:* A term is a portion of an academic year. TCAT academic year is divided into three terms. Each term consists of 72 academic instructional days (Tennessee Board of Regents, 2015).

<div align="center">Delimitations, Limitations, and Assumptions</div>

The fundamental limitation of this study is its narrow scope. The study accounted for only students enrolled in the TCAT RODP program in Tennessee. This study is delimited to courses being offered over the fall 2013, spring 2014, and summer 2014 terms. The study is further delimited to students who completed at least one semester of courses and whose participation and final course grades are available from the institution's course information system. It is assumed the data collected from D2L and the student information system are valid and reliable. It is also assumed that the methodology addressed the research questions

adequately. It is also assumed that the statistical tests were appropriate and capable of detecting relationships between the variables if relationships were present. Therefore, results of this study are not necessarily generalizable to other populations or other settings.

<div align="center">Overview of the Study</div>

Chapter 1 provides an overview of the study's rationale. Chapter 2 includes a review of current literature in the field of student participation, grade achievement, and online course delivery and a summary and conclusion about the discussions of relevant literature. Chapter 3 includes an explanation of research methodology that was used to address the research questions and analyze gathered data. Chapter 4 provides research results and analysis of data collected. Chapter 5 includes the summary of the study as well as implications and suggestions for future research.

CHAPTER 2

REVIEW OF LITERATURE

The use of technology in teaching and learning is not a new phenomenon. Whenever a

new piece of technology appears in society it is normally tested for applicability in academia. For

over 50 years scholars have been examining how the use of technology in education affects

teaching and learning (Poe & Stassen, 2010). From the time technologies such as interactive

television and radio were developed, the interest in using technology to make the learning

process more vigorous has increased. From the 1990s information technologies emerged as the

most effective tools for transforming teaching, learning, and thinking. Poe and Stassen (2010)

defined online teaching and learning as the process of a faculty availing instruction through the

internet (Minkler, 2008).

According to Poe and Stassen (2010) two parallel processes take place in the online

learning environment. First, students engage more in active learning and become more reflective.

Second, teachers and students participate in learning via technology, and in the process they

understand the technology more by using it. Experts in education have observed that online

learning is effective only when it is delivered by instructors who have vast experience in the

subject being taught. Poe and Stassen have identified two approaches to online learning:

asynchronous and synchronous learning. Synchronous learning refers to real time instruction and

collaboration through the internet. Some of the tools used in synchronous learning include live

chat, video and audio conferencing, shared whiteboards, virtual hand raising, and data and

application sharing among others.

Conversely, asynchronous learning employs the time-delayed capacity of the internet.

Some of the tools used in asynchronous learning include email, file attachments, newsgroup and

bulletin boards, and threaded discussion among others. Teachers facilitate asynchronous courses that do not take place in real time. This means that teachers and students participate in course activities according their own schedules as opposed to having coordinated class sessions (McDonald, 2012).

<u>Historical Overview of Tennessee Colleges of Applied Technology Online Collaborative</u>

In fall 2001 the Tennessee Board of Regents (TBR) launched the Regents Online Degree Program (RODP) in response to the governing board's mandate to increase access to higher education for adult Tennesseans, to maximize the effective use of technology for delivery of college-level instruction, to provide student access to web-based courses and degrees, and to encourage and support collaboration among TBR institutions (Tennessee Board of Regents, 2015). The RODP mission is to improve access to high quality, affordable, and student-centered learning opportunities through cooperation among Tennessee Board of Regents' institutions, through the use of technology (Tennessee Board of Regents, 2015). A principal objective of this initiative is to become the provider of good quality associate, baccalaureate, and master's degree programs to Tennesseans who cannot complete their degrees without asynchronous, online access. The vision of RODP is to provide a better life for Tennesseans through education.

The RODP program began offering online associate's and bachelor's degree through the TBR community colleges and universities in 2001. In the fall of 2002 the Tennessee Colleges of Applied Technology (formerly TTC) began offering online certificates and diplomas in the academic areas of Business Systems Technology (BST), Computer Aided Drafting (CAD), and Computer Information Systems (CIS). With the addition of the TCAT institutions, the RODP program was a TBR system-wide online consortium offered at all 46 campuses.

The RODP uses technology to advance the achievement of the TBR strategic planning. In 2003 the guiding principles for the RODP program were established and these principles continue to be at the cornerstone of the online program's efforts (Helton & Melton, 2004). Those principles include:

- Shall base ongoing assessment, planning, and decision making on reliable, broad-based data, and stakeholders input

- Shall ensure academic integrity in the selection, development, and maintenance of the degree programs

- Shall provide support for pedagogical and technological innovations and shall maximize economies of scale in configuring its programs

- Shall provide collaborative delivery of education programs to meet the learning needs of underserved populations

- Shall pay priority attention to programs that provide collaborative delivery of needed educational services and meet statewide workforce needs

- Shall use educational technology, innovation, and teaching strategies that produce the most learning by engaging students actively, collaboratively with other students, and in frequent contact with faculty

- Shall be accountable for performance excellence measured in terms of both satisfying stakeholders and meeting key performance indicators

- Shall ensure quality and effectiveness in all aspects of the online learning delivery

- Shall develop programs around demonstrable learning outcomes, assist the learner to achieve these outcomes, and assess learning progress by reference to these outcomes

- Shall ensure high quality, comprehensive services to current and potential students.(Helton & Melton, 2004, p. 2242)

RODP students choose a home institution (one of the 46 participating campuses) for admission, registration, and the awarding of their degree but are free to take RODP classes from other RODP institutions. Students apply for any RODP course to their degree programs at their home campuses. Through the collaborative students have access to 24/7 technical help desk support, virtual library services, online bookstore, and integration of course management and administrative systems (Regents Online Degree Program, 2015).

Historical Overview of Distance Education

In the early days of distance education, the primary focus was to target those students who did not have the chance to attend a course offered on a college campus. However, today's online education is another way for students to attend class even when no physical limitations to attending exist. The use of electronic and printed technologies as the form of communication distinguishes distance education from other forms of education (Kearsley & Moore, 2005). The roots of distance education date back to the 19th century, but the rapid advances in technology in the late 20th and early 21st centuries have prompted an unprecedented growth in this field (Addis, 2009).

Larreamendy-Joerns and Leinhardt (2006) provided a historical overview of distance education. Distance education has grown considerably and has had a major impact on higher education. The authors considered the promises and related concerns about college-level learning under the online education programs had a measure of attention in the educational

literature. It is held that to best perceive the potential offered and the accompanying limitations faced from online education plans there is a need for tracing the surrounding issues relating the online education programs to the concept of distance learning. From the history of distance learning three historical themes can be highlighted: the need for democratization, the call for liberal education, and the societal need for quality education. These have formed the basis of the present-day adaptation of online education in terms of three views: the presentational view, the view of performance-tutoring, and the view of epistemic-engagement. These educational visions inform the development of the initiatives of online education. Emphasis is placed on the potential of online education to contribute to the democratization and advancement of efficient teaching of online programs. The success of the program should be measured from the responsiveness to the social, political, and economic needs of the society.

More than 6.7 million students were enrolled in at least one online college level course in the U.S. during 2011. The previous year's enrollment was approximately 560,000 less (Allen & Seaman, 2013). According to Allen and Seaman higher education experienced a 9.3% growth rate for online higher education, beating out the less than 1% growth of the overall postsecondary student population. Distance education in higher education is a growing trend and here to stay.

The use of technological support in delivering coursework in postsecondary education has shown a genuine explosion. This has not only brought about new alternatives to the traditional use of conventional classrooms but also serves as a reason for expanding the learning experiences of the students beyond the common use of classroom ideology. The most recent use of technology in education is the concept of distance education. In this approach to learning use of the Internet is primary (Garton, Holloway, & Wegner, 1999). They examined the effects of distance learning on student achievement. The study compared curriculum design over two

semesters among traditional and online students. It found the traditional students had an average score of 93% as compared to the average 92% by the online students. Over the years distance education has become the most widely used alternative of educational delivery in many universities globally (Altbach, Reisberg, & Rumbley, 2009). In most cases switching to an Internet-based educational delivery system is instituted by the universities and learning institutions without regard to the impact that the change will have on the students learning using this mode (Anderson, Boyles, & Rainie, 2012). Finnegan, Lee, and Morris (2009) observed that students engaged in the online web-based learning programs tend to show a positive perception of the system in terms of their feelings about their experience compared to students who are not engaged in the system. They underscored significant differences between online participation of students, their persistence, and their levels of achievement across different fields. In an effort for higher education to address the need for greater access to learning, online courses and degree programs have grown increasingly popular since 2000 (Bichsel, 2013).

Myring, Bott, and Edwards (2014) observed that online education has been steadily growing, and this growth is likely to proceed in the future. According to Allen and Seaman (2011) enrollment in online education increased 9%, but the general enrollment in college education did not change. The significant growth in online education has led 69% of executive leaders in colleges to consider online education an important component of their long-term goals (Myring, Bott, & Edwards, 2014).

According to a 2013 report released by Pernsteiner (2014) colleges have experienced financial challenges in the recent past. For instance, local and state support for college education decreased to $5,906 per full-time student, the lowest local and state support for students since 1988. (Kidd, 2010). The cost incurred in training college instructors to teach effectively in an

online environment can be expensive. Due to the drop in state support, colleges are increasingly adopting online education as a means of increasing their market share while generating revenue. Bacow, Bowen, Guthrie, Lack, and Long (2012) conducted a study among college administrators that identified strengths and weaknesses of online education in teaching and learning. Most college administrators perceive students taking online courses need to have more discipline than their counterparts engaged in face-to-face learning. A perceived weakness of online education is retention because fewer online students complete their courses and attain their degrees compared to their counterparts on campuses (Anderson, 2008). This is a major challenge because state legislators are increasingly emphasizing student retention and graduating rates. Another weakness facing online education is failure by some employers to recognize online degrees.

In a study conducted by Kearsley (2005), members of college faculty considered it best practice to align course objectives with instruction materials, student engagement, and exams throughout the development and delivery of high quality online education. A well-structured online learning environment ensures that students are satisfied and improves face-to-face learning in the event instructors are using both. Online courses also increase creativity among students because they encourage the use of multimedia tools and several educational technologies.

Baran, Correia, and Thompson (2011) identified reasons institutions of higher learning have failed to understand and embrace online education in teaching and learning. One of the practices identified by these researchers that prevents the adoption of online education is the tendency of college instructors to use traditional education techniques in the online environment. These scholars observed that college instructors tend to emulate the teaching practices of professors they view as effective. Lack of experience in online instruction can result in

instructors adopting traditional classroom techniques that have been considered ineffective in face-to-face instruction when teaching online (Baran et al., 2011).

Baran et al. (2011) agreed that teaching online is different from face-to-face instruction and as a result online education needs to have its own pedagogies. The limitations of the online environment require teachers to be creative in establishing meaningful and effective learning experiences. The researchers identified the common roles played by teachers while teaching in a virtual environment: technical, managerial, social, and pedagogical.

Within the online context the pedagogical role of a teacher means facilitating the learning process; the social role entails encouraging students to work together; the managerial role of a teacher in an online environment entails designing and organizing discussions, while the technical role is to make the technology transparent so the learner may concentrate on the academic task (Moore & Kearsley, 2012). These scholars developed the above roles at the time online education was emerging when the primary online activity was online discussions. The increase in virtual environments and other online learning tools prompted scholars to call for a redefinition of the role of instructors influenced by technology. This role of an instructor employed user-generated content, reflective learning, collaboration, and informality (Berge, 2008).

Finnegan et al. (2009) presented an investigative approach to student behavior and their persistence and achievement in an online self-paced course. They found there was a significant difference in the behaviors of completers and withdrawers. Additionally, it showed significant difference in behaviors of students enrolled in different academic courses. Morris, Finnegan, and Wu (2005) contributed a study that examined the relationship of student engagement to student persistence and student success. The study tracked the student behavior in online general

education. The finding results indicated the barriers to presence are isolation and decreased engagement. The study found students who withdraw from an online course spend less time engaged in learning activities than their successful counterparts.

Consequently, scholars came up with three categories describing the roles of an online instructor that promote teacher engagement. The roles of an online teacher include organizing and designing instruction, direct instruction, and facilitating discourse (Moore & Kearsley, 2012). Other researchers, such as Liu, Bonk, Magjuka, Lee, and Su, (2005), identified different roles of an online instructor. The categories of the roles associated with the online instructor are administrator, designer, technologist, content facilitator, researcher, assessor, process facilitator, and counselor (McGreal, 2004). Apart from assuming different roles, online instructor are supposed to have certain competencies. Generally, online teachers are presumed to have assessment-related competencies, communication competencies, and technology-related competencies (McGreal, 2004).   Baran and Correia (2014) identified factors that determine whether an online teaching and learning program will be successful. Some of the factors identified include the time invested in organizing and planning online courses, the mechanism in place to manage the courses, increased social presence, and increased teaching presence. These factors influence the development of cognitive and social skills among students, perceived learning, and student satisfaction. These researchers have also identified seven practices adopted by online educators to contribute to an effective learning environment for students. These practices include understanding and developing course content, designing and structuring the online materials, improving teacher-student relationships, knowing the students, maintaining teacher presence, evaluating online courses, and guiding student learning.

Other characteristics that help determine the success of online instructors include giving students prompt feedback, encouraging group and individual learning, and having self-discipline. Baran and Correia (2014) examined how college instructors translate from face-to-face teaching to teaching in an online environment. When transitioning from the traditional classroom to online teaching college instructors take up new roles and acquire new skills that will make them efficient in an online environment. The manner in which college instructors adapt to teaching online determines whether they will succeed in the transition process.

Baran and Correia (2014) identified external and internal barriers to the successful adoption of online education. External barriers include training and support, time, and equipment, while internal barriers include the attitude and perception teachers have toward teaching and learning online and adopting technology in the curricula. The pedagogical belief teachers have towards adopting technology is crucial in integrating technology in teaching. In addition studies such as Moore (2013) have shown that teachers' personal characteristics and the way in which they perceive the online environment strongly influence their proficiencies in using technology and their perceptions of readiness to use technology.

Hockridge (2013) investigated the types of professional developments that cater to the needs of online educator and found that teachers favored activities they could use immediately in their projects, integrate in their schedules, and that enabled them to follow-up on students' progress. Teachers also preferred online activities that were based around curricula, supported their learning schedules, offered support staff, and were controlled by a unit leader or a program chair (Baran & Correia, 2014).

McLoughlin and Marshal (2000) found that in order for students to learn online effectively they first should be taught certain skills. One of the skills students need is

articulation, which requires students to be aware of their thinking and how they arrive at conclusions. A second skill that students need to have in order to learn effectively online is self-regulation. Self-regulation entails the ability to plan for personal study and adjusting personal strategy in order to attain a goal or complete a task (Culnan & Carlin, 2009). A third skill students need to have while learning online is the ability to have a flexible range of learning strategies. Some of the strategies include self-motivation, concentration, paying attention to the task at hand, note taking, and analytical reading. A fourth critical skill for student learning in a virtual environment is the ability to conduct self-evaluation/self-assessment.

 Fox (2013) sought to debunk some of the assumptions surrounding teaching and learning online. Contrary to the opinion held by some academics that online education will erode the quality of higher education, Fox argues that online education can actually strengthen higher education. Another fear is that colleges will use online instruction to cut operational cost by reducing teaching staff. According to Fox this fear is unfounded because colleges do not intend to replace their existing courses with purely online courses.

Moreover, it has been observed that since online education was introduced the number of students receiving credits that are equivalent to a C or better grade has increased from 59 % to 91%. A second myth debunked by Fox (2013) is that online education undermines small group discussion and face-to-face interaction with instructors. Fox argues that this assumption is true, but the goal of online education is not to replicate classroom experiences.

In spite of the criticism online education has faced, Calderon and Sorenson (2014) indicated that the level of trust of online education among Americans has increased to 37%, which is a 7% increase from 2011. This study also indicated that employers in America are more

likely to hire people with online degrees, and 59% of all Americans hold this view (Calderon &

Sorenson, 2014).

Calderon and Sorenson (2014) noted that online universities and colleges are continuing

to evolve, as well as the opinions business leaders and Americans have towards them. However,

in spite of the fact that opinion and attitude towards online education has improved, people still

tend to favor traditional delivery of education. Calderon and Sorenson also noted that the growth

of online colleges has the potential to increase the accessibility of higher education while

lowering the cost.

According to Krakovsky (2010) message boards, email, high-speed internet, and

podcasting have reduced the necessity for college students to attend classes in the traditional

way. Nevertheless, the demand for higher education has continued to significantly increase,

which resulted in 2.4 million students in the U.S taking one or more online courses by 2008. In

2002 1.6 million students were taking online courses. These figures do not take into account

students enrolled in the free noncredit online courses offered through iTunes U that provides

over 250,000 free lecturers to more than 600 institutions. In 2011 elite institutions of higher

learning such as the Massachusetts Institute of Technology and Yale demonstrated their support

of educational technology by offering free online courses to anyone in the world.

However, scholars have observed that more and more elite institutions of higher learning

are reaching the masses through online education as a philanthropic gesture in that they do not

grant degrees to most students they mentor online (Farnsworth & Bevis, 2006). This has been

attributed to the fact that elitist schools are exclusive, and admitting more students through

online degree programs would undermine their brands. The challenges faced by institutions of

higher education and the acceptance of open-access free courses relate to access, affordability, and student success.

For-profit colleges have also experienced significant online growth. Public colleges are rejecting applications from thousands of students every year, and this creates a huge opportunity for for-profit colleges to offer degrees at all levels (Finkelstein, 2000). Online colleges tend to recruit students through advertisements that promise instant enrollment and 24/7 access. Traditional universities normally use tuition fees from classes with high enrollment to compensate for losses incurred in offering less popular courses. By contrast, for-profit online colleges can directly target educational programs that are most popular, such as education, healthcare, business, and computer science, especially information technology. I stopped reading this chapter in detail here. You get an idea of the kinds of things I'm saying. I've scrolled through the rest of Chapter 2 and marked things that pop out at me.

Studies indicate that most students who take online courses are traditional, but their time and location prevent them from attending face-to-face lectures. Some of the students are working, serving in the military, or have children who depend on them (Finkelstein, 2000). This has led some scholars to conclude that some students enroll in online classes because it is the most convenient option for them while others do so because this is their only option. Krakovsky (2010) observed that online education may be convenient, but the convenience come with a price. People normally think that online courses are cheaper, but this is not always the case.

Generally, students studying online saved in on-campus living costs, transportation costs, and time, but the tuition they pay is almost the same as that paid by on-campus students. For instance, the University of Phoenix has the same tuition fee for students studying online and students studying on campus (Amirault, 2012). The reason some educators have given for the

high cost of online education is that quality instruction requires more labor. Online colleges have grown over the years, but experts in education have observed that online colleges have not yet offered real competition to traditional colleges. In addition, most students still favor the traditional face-to-face instruction (Pearcy, 2014).

Tanyel and Griffin (2014) compared the outcomes of online education and face-to-face learning over a period of 10 years. The results of this study showed a significant difference in the GPAs attained by online students and those that received face-to-face instruction. The results of the study indicated that students receiving face-to-face instruction had GPA score that was on average 15 grade points higher than that of online students. The findings of this study also indicated that the difference in GPA between online students and those taught in the traditional classes become significant as more courses are offered online.

Tanyel and Griffin (2014) contradicted previous studies that found that there is no difference in terms of average GPA achievement between online students and those taught in the traditional classroom. The reason previous studies did not find any difference in GPA is because these studies were conducted when the number of students taking online courses was small. Studies have also indicated that not all students can succeed in online education because students need specific skills, attitude, and maturity in order to succeed online.

Cho (2012) found orienting online students is one of the most crucial factors that determines their success. Online students can easily feel isolated and lost if they do not receive proper orientation. According to Cho a second area of concern for online students is the failure of these students to interact with fellow students, a factor that can undermine interactive activities such as online discussions and collaboration. Novice online leaners normally face several technical problems because they may not be familiar with the technology used. The

impact of online orientation on student achievement is one area scholars have identified as needing more research.

Cho recommended that future research address the impact of online orientation on student achievement can be done by comparing a group of online students who received orientation with another group that were not provided with orientation.

Dykman and Davis (2008) investigated and assessed the reasons that lead more people to appreciate online education. One of the reasons that has made people prefer online education is that it enables more people to access higher education easily. Online education has increased the access to higher education enormously (Kearsley, 2000). Modern economies need a highly educated workforce, and the traditional mode of education cannot produce enough qualified workers. A second reason people prefer online education is that it provides lifelong learning. Learning online makes it possible for individuals to continue learning throughout their careers. Online education also provides an avenue that workers can use to develop or completely change their careers.

Another reason online education is gaining popularity is that the information provided online tends to be more current. Online students can access the latest research, academic theories, ideas, and paradigms (Dykman & Davis, 2008). Raj (2011) sought to address the unique challenges colleges face in developing online courses. One of the challenges colleges face in providing online education is ensuring that accessing high quality information is part of the course provision. A second challenge is equipping students with skills that will enable them to take advantage of the information offered online. A third challenge colleges face is providing the necessary help to online students to assist them in searching for information.

According to Raj (2011) the main issue students raised concerning online learning is that most online portals were not student-friendly. Students do not like how tutors present information online, and this makes many of them struggle with online learning. Moreover, students are concerned about the amount of money they use to print information from the internet; female students raised the most concern. Online students are also concerned that the online platform is not an avenue for raising academic questions.

<u>Definition of Distance Education</u>

Distance education is defined by the United States Distance Learning Association (Simonson, 2008) as education in which "the teaching and learning process is not limited to a physical location. Location is not significant. Technology is used to bridge the instructional gap between the educators and the student" (p. 45). Distance education can also be referred to by a variety of terms such as distance learning, online learning, eLearning, e-instruction, and web-based instruction.

A diversity of models facilitates the delivery of instruction at a distance. Allen and Seaman (2013) provided four distinct classifications for the various modes of course delivery:

1. Traditional: No online technology resources are used to facilitate the instructional process.

2. Web Facilitated: Face-to-face content delivery is the primary mode with approximately one to 29% usage of online technology resources.

3. Blended/Hybrid: Thirty to 79% of content is delivered via online technology resources through a combination of both face-to-face and online instructional methods.

4. Online: Eighty percent or more of the teaching and learning takes place online, with no face-to-face class time. (p. 7)

In addition to the modes of course delivery, facilitation may be conducted in one of two programming types. Synchronous requires the teaching and learning process take place within the same time frame. Asynchronous is not as restrictive and allows the teaching and learning process to happen at the most convenient time for the learner (Benshoff & Gibbons, 2011).

The United States Distance Learning Association (2010) defined the assortment of distance learning options as follows:

> Programming for distance learning provides the receiver many options both in technical configurations and content design. Educational materials are delivered primarily through live and interactive classes. The intent of these programs is not necessarily to replicate face-to-face instruction. Interactivity is accomplished via telephone, one-way video and two-way audio, two-way video or graphics interactivity, two-way computer hookups, or response terminals (Fenton & Watkins, 2010, viii).

<u>Studies on Student Participation and Academic Performance</u>

Academic performance of a student in an online program has everything to do with the national emphasis on the use of information technologies in supporting educational programs (Chapman, 2005). From the example of the Health Informatics course, information technologies in online programs is intended to provide such students with basic information and understanding about information systems and how they can be applied in information technology beyond the learning environment. The essence of seeking the technological support is giving students the opportunity of gaining the needed exposure for conceptual and experiential educational opportunities that will enable them to develop the required skills. It is expected that this will enhance their ability to manage their learning process through information technology as well as in their field practice.

Students enter a class with predetermined expectations about their learning experiences, expectations of performance in the class, and the needs that the class has to address. They also have unique expectations of what the instructors need to respond to in order to achieve their learning experiences as students (Mupinga, Nora, & Yaw, 2006). However, given the uncertainties in the student make-up of the online classes, the online students may have characteristics that are unclear. This makes it hard for curriculum developers to effectively assess the efficacy of the online courses. Virtually all individuals have their own unique learning styles and personal qualities that broadly influence how they acquire information during the learning process. This is thought to be further affected by the way the individual interacts with peers in the learning environment and how they participate in the learning experiences.

Mupinga et al. (2006) implicitly observed that some of the students in the online learning environment acquire knowledge through active and interactive involvement in the lesson. The learning experience had a significant impact on student success. The study presented a recommendation for the online course design to identify and accommodate student learning styles, needs, and expectations. On the other hand, some students tend to restrict their focus on facts, while some prefer using visual aids to understand the information. Some further learn using the written and spoken instructions. There is a whole diversity of information acquiring capabilities that the online programs and learning process have to provide in reasonable measure. Therefore, in any course of study it is expected that students with these varying learning styles will be present. This arises from the variations in their social backgrounds and their levels of course preparedness, which further influence how they engage with the online learning environment. In an online class many students are convinced by the program's convenience and flexibility in matching with their schedules. However, it remains unknown to the tutor and

assessors what the learning characteristics of the students are, hence the difficulties in designing effective instruction and assessment plans.

Chapman (2005) examined the need for online instruction to address the challenges of engaging students in collaborative teaching and learning. The author attempted to determine the effects of collaborative learning on academic achievement, persistence, and perceptions of students toward collaboration. The study answered five research questions related to collaboration, student final grade, instructional techniques, active enrollment, and student responses to course evaluations. The results of the study indicated a significantly positive correlation between student performance and their perception. Chapman's research employed collaborative learning as an instructional strategy to promote student participation in an online collaborative course.

According to Keramids (2012) online coursework was a common education plan that several institutions offering higher education included in their educational strategic plans. This has been grouped among special education as it embraces the value of distance learning technology in personnel development and training programs. This is particularly important for field personnel in rural areas or for the preparation of field staff to work in remote rural areas where access to the learning facilities is impaired. The recent trend shows that undergraduate students are becoming increasingly interested in taking their courses online. However, the question of the preparedness of tutors and students for successful online coursework in terms of their skill-sets is yet to be addressed. In particular, there is a challenge in how the learning process can be measured because of the limited interaction between the teacher and the student or between students in the same online class.

Picciano (2002) observed that the social and communicative interactions between the student and teacher as well as between a student and fellow students are common elements in the learning process in a typical conventional classroom setting. This included the ability of the student in asking intelligent questions, sharing an opinion with others in the classroom, or simply objecting to a point of view that is raised in the class during a reading session/assignment. These are all very fundamental activities in the learning process. In the same manner, web-based learning will also requires deliberate adjustment from the student's end as well as from the teacher's end to ensure successful interactions. Because of this need many online courses have been designed to provide the learners with the ability of interacting directly with each other through electronic bulletin boards, lesson discussion boards, by e-mail, or by a synchronous chat area. In some advanced plans the online lessons are organized through the virtual teaching concept that uses live streaming of the lesson by the tutor to the student through video conferencing. The successful implementation of these online courses depends mainly on how this interaction is facilitated. It is common for tutors to encourage the students, and in some cases, require the students to show a certain amount of dedicated participation through posting on the discussion boards in response to online discussions by making it affect the final grade for the course. Given the recognition that student-teacher and student-student interactions are an important tool for measuring the efficacy of an online program, the question is on the nature and measure of the interaction among these groups would essentially affect the performance of the student.

Thurmond (2003) suggested that interaction between the teacher and students or among the students in a conventional traditional classroom cannot be compared to the interaction occurring in an online course class. The author defined and presented four forms of interaction in

an online learning environment. They were as follows: 1) learner-content, 2) learner-learner, 3) learner-instructor, and 4) learner-interface. By understanding the various modes of interaction that must take place inside an online learning environment, course design and layout that enhance interaction opportunities for students can positively impact academic performance. Manscuso-Murphy (2007) provided details of educational practices that should be implemented to enhance an effective online learning environment and student success. This research presented in this article further validated the need for interaction. These differences in the way they interact are mainly caused by the media used for instruction in the Web-based course. In spite of the difference in pedagogical media, the component of interaction designed and integrated into the traditional classroom course has a significant chance or even more in a Web-based course class. As such because there is a significant proliferation of Web-based classes and training, these variations in the mode of interaction between the conventional and Web-based classes for pedagogical platforms need to be moderated so that we can assess the impact that the interaction has on the efficacy of a Web-based course.

In the view of Fredericksen, Pickett, Pelz, Swan, and Shea (2000) the valuation of the learners by the instructors was a critical factor in the determination of the success of the online learning. This comes in many forms. One good example is how the online discussion is held. When grading an online discussion it has to contain authentic (real) questions and should be frequent enough to sustain the contact. When such interactions are positively maintained and enthusiastically taken, the students can learn more in the online environment. The State University of New York (SUNY) implemented an online learning network that is a system-wide approach to higher education. This paper examined four factors that contributed to their successful implementation of an online asynchronous learning environment. The author details

the course design process, which largely impacts successful online teaching and learning, student participation, engagement, and academic performance. SUNY shared course management tips that faculty must incorporate into online facilitation process that also impacts the instructor-student interaction, thereby positively impacting student participation. The extensive implementation of policies and the literature of the contingency theory had been applied as a support to the study of the variation of student attitudes about the efficacy of online programs. These are key influences in the implementation of the online course learning policy. It is asserted that the many problems in the determination of the impact of online coursework on student participation and academic performance in an online program are functions of the lack of integration of the policy matters and the context of the education institutionalization of the online programs (Mitchell & Geva-May, 2009). These included the organization and players in the educational organization. Mitchell and Geva-May observed that when the fit between the two is close the level of resistance to the technology and policy adaptation is lower. As such, if the policy on online interaction between the teachers and the students can be implemented, it will be easier to measure of the efficacy of the online program and there will be a greater chance of acceptance among the players. This notwithstanding, the Post-secondary Online Learning policy is being implemented in a politically complex environment polarized by competing interests academically, socially, and economically streaming from internal and external sources.

Coldwell, Craig, Patterson, and Mustard (2008) conducted a study to investigate any relationships between the participation, demographics and academic performance of students enrolled in an online course. The study measured three characteristics of participation: time spent in the online learning environment, number of messages read and posted, and the number

of content files viewed. They found those students who earned higher grades participated substantially more in the online learning environment than those who earned lower final grades.

Finnegan et al. (2009) conducted a study to examine student behavior in online courses and its relationship to persistence and achievement. The study included eight variables of student online behavior were measured for 1) frequency and 2) duration of participation. They found the number of discussion posts read, number of original posts, number of follow-up posts, seconds reading discussions, and seconds on content were statistically significant and were good predictors of final grade.

<u>Online Course Design Impact on Student Success</u>

Fayer (2014) investigated students' perception about four important course design elements and their impact on student success specifically related to online course instruction. The study found student success were related with the following course design factors: 1) strong course organization, 2) timely feedback, 3) confidence in the instructor's content ability and consistent support, and 4) relevance of both feedback and coursework.

In a study by Reisetter, LaPointe, and Korcusk (2007) online learning was found to be a distinctly different experience from face-to-face learning suggesting that instructors should design their courses with specific elements that support online learning as a unique delivery method.

Ladyshewsky (2013) determined that instructors play a key role in the satisfaction of online learners through instructor presence and the creation and support of classroom social networks. An instructor's competent online presence proved to be valuable to a positive online classroom atmosphere, increasing student engagement and a sense of community.

Research conducted by Young and Bruce (2011) found offering encouragement, facilitation, and supporting student community interaction all played a role in improving student engagement and learning therefore, impacted student success.

When examining effective practice for the online classroom, Hathcock (2012) established a guide detailing the essential elements of effective online learning. Three key components to an effective online classroom included instructor presence, instructor feedback, and the organization of the course itself. Implementing these three elements into the course design and facilitation of an online course will shape the student's learning experience.

In 2005 the Quality Matter (QM) program was established by the MarylandOnline (MOL) consortium. QM is a research-based project that created a design rubric to improve student learning, engagement, and satisfaction in online courses through better course design (Legon & Runyon, 2007). The rubric includes eight standards (i.e. course overview and introduction, learning objectives, assessment and measurement, resources and materials, learner engagement, course technology, learner support, and accessibility). Research conducted by Ralston-Berg and Nath (2008) indicated student perspectives of quality in courses are in line with the Quality Matters standards. In this study 182 online students participated and all items in the QM rubric were valuable to the students.

<u>Gender Impact on Student Participation</u>

Coldwell et al. (2008) study on the relationship between participation, demographics, and academic achievement for students enrolled in an online course found on average women outperformed men. Female students earned on average a grade of 72%, while male students achieved an average grade of 63%.

Gunn, McSporran, MacLeod, and French (2003) investigated student participation in online learning activities and found lower participation related to course visits and discussion board engagement were more characteristic of male student behavior.

Arbaugh (2000) analyzed the effects of gender on participation and found female students consistently had higher participation patterns than their male classmates.

Chapter Summary

Universities have the technology to provide collaborative engagement through their online program offerings. However, the focus must now be placed upon ensuring that the education content and resources provided can be used by all students and that there are viable means of arriving at detailed analysis between participation and student outcomes.

Mancuso-Murphy (2007), for instance, cited previous research studies from 2001 to 2006 that examined best practices for online nursing courses. One theme that was common among this study as well as the previous work are that educational practices in online learning environments positively impact academic performance. Mancuso-Murphy noted the following educational practices related to active learning: prompt feedback, time on task, collaboration, and interaction among peers and student-faculty interaction. As observed by the author this study proposes a solution to the manner of educating online students despite the mechanism and approach to be adopted in facilitating such programs.

Much emphasis is placed on research related to the relationship between the participation of students in online programs and their academic performance in the programs and the interaction level between the teachers and the students. However, this study suggests that an effort should be made to streamline the interactions in the form of discussions so that the

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threshold of the level of interaction that causes meaningful positive student performance academically in the online program can be determined.

The literature has identified that the shift in learning accountability from the instructor to the student in online learning is one of the major difficulties that exists in the transition to wholly online courses. Educators need to consider the demographics of their students undertaking online learning to ensure that they are providing suitable environments for them all. It is necessary to gain an understanding of the relationship between students' participation and performance in online learning environments and how different students participate and perform in OLEs. This could enable institutions to better target their audiences for these types of courses to ensure that students are going to participate and perform to the best of their ability.

CHAPTER 3

METHODOLOGY

The purpose of this study was to determine whether a significantly statistical relationship exists between student participation and final grade performance within an online environment at Tennessee Colleges of Applied Technology (TCAT) Regents Online Degree Program (RODP).

This quantitative, nonexperimental relationship correlation study determined the nature and strength of the relationship between student participation and final grade performance within an online learning environment. A correlation study was chosen for this research in order to establish which variables have a reasonable chance of being significant related to the educational phenomenon being studied.

<u>Research Questions and Corresponding Null Hypotheses</u>

The research questions were designed to determine the relationship between student participation and final grade performance by analyzing student discussion activity and course access. The following research questions and corresponding null hypotheses guided this study:

Research Question 1. Are there significant relationships between final grades and student discussion activity, course login activity, and course content interaction?

$Ho1_1$: There is no significant relationship between student discussion activity and final grade.

$Ho1_2$: There is no significant relationship between course login activity and final grade.

$Ho1_3$: There is no significant relationship between course content interaction and final grade.

Research Question 2. Among students in the BST program of study, are there significant relationships between final grades and student discussion activity, course login activity, and course content interaction?

Ho2$_1$: Among students in the BST program of study, there is no significant relationship between student discussion activity and final grade.

Ho2$_2$: Among students in the BST program of study, there is no significant relationship between course login activity and final grade.

Ho2$_3$: Among students in the BST program of study, there is no significant relationship between course content interaction and final grade.

Research Question 3. Among students in the CAD program of study, are there significant relationships between final grades and student discussion activity, course login activity, and course content interaction?

Ho3$_1$: Among students in the CAD program of study, there is no significant relationship between student discussion activity and final grade.

Ho3$_2$: Among students in the CAD program of study, there is no significant relationship between course login activity and final grade.

Ho3$_3$: Among students in the CAD program of study, there is no significant relationship between course content interaction and final grade.

Research Question 4. Among students in the CIS program of study, are there significant relationships between final grades and student discussion activity, course login activity, and course content interaction?

Ho4$_1$: Among students in the CIS program of study, there is no significant relationship between student discussion activity and final grade.

Ho4$_2$:   Among students in the CIS program of study, there is no significant relationship

between course login activity and final grade.

Ho4$_3$:   Among students in the CIS program of study, there is no significant relationship

between course content interaction and final grade.

Research Question 5. Based on gender, are there significant relationships between male

student final grades and student discussion activity, course login activity, and course content

interaction?

Ho5$_1$: There is no significant relationship between male student discussion activity and

final grade.

Ho5$_2$:   There is no significant relationship between male student course login activity and

final grade.

Ho5$_3$:   There is no significant relationship between male student course content

interaction and final grade.

Research Question 6. Based on gender, are there significant relationships between female

student final grades and student discussion activity, course login activity, and course content

interaction?

Ho6$_1$: There is no significant relationship between female student discussion activity and

final grade.

Ho6$_2$:   There is no significant relationship between female student course login activity

and final grade.

Ho6$_3$:   There is no significant relationship between female student course content

interaction and final grade.

The stratified sample consisted of 360 individual students enrolled in either one or more of the 43 TCAT RODP courses was randomly selected from a total of 217 course sections offered during three semesters. The courses are online and representative of the following academic programs: academic areas of Business Systems Technology (BST), Computer Aided Drafting (CAD), and Computer Information Systems (CIS), all offered in the 2013-2014 academic year. The courses consisted of 18-week modules, that involve 72 days of instruction. The sample of courses account for 20% of the total number of courses offered in fall 2013, spring 2014, and summer 2014. See Table 1 for the number of courses included in the study for the 2013-2014 academic year. Table 2 shows the courses and their descriptions.

Table 1

Number of TCAT RODP Course Sections Included in Study

Term	Total Number of Course Sections Offered During Study Period	Number of Course Sections Included in Study
Fall 2013	81	16
Spring 2014	71	14
Summer 2014	65	13

Table 2

TCAT RODP Course Name, Course Number, and Course Descriptions Offered During 2013-2014

Course Name/Course Number	Course Description
Office Technology Foundations BSTT1100	Technology Foundations is designed to enhance and/or develop Reading For Information, Applied Mathematics, and Locating Information skills that serve as a foundation for business systems technology and that are necessary for employment in the technical workforce. This course uses the KeyTrain online to deliver the subject matter. No textbook is required. Students will develop problem-

Course Name/Course Number	Course Description
	solving skills, will enhance communication skills, and will be encouraged to become independent thinkers. This course is designed for beginning students in the BST program.
Professional Development BSTT1130	This course is designed to help students assess their strengths and weaknesses with respect to personality and productivity. It offers direction in using that information to pave the way for students to attain realistic goals and objectives in preparation for successful employment.
Business Math and Personal Finance BSTT1160	Students will learn basic operations of 10-key calculators and how to apply those skills in calculating problems in Business Math and Personal Finance. The Business Math and Personal Finance skills learned can be applied to various business settings.
Keyboarding/Document Processing BSTT1150	This keyboarding course is designed for the beginning student. The major objectives are to develop touch control of the keyboard and proper keyboarding techniques, to build basic speed and accuracy, and to provide practice in applying those basic skills to the formatting of e-mails, reports, letters, memos, tables, and other kinds of personal and business communications to prepare the student for work in an office environment.
Business Communications BSTT1200	Business Communications prepares you for the tasks that lay ahead in your office career. You will learn how to type letters, reports, and various office documents that will be not only accurate and professional but will convey your abilities to use the computer as a tool to further your career.
Spreadsheet Applications BSTT1220	This course is designed to teach the student how to create number-intensive documents such as payroll records and sales analysis. Spreadsheets simplify what-if analysis, chart creation, multiple worksheet analysis, and simple database functions. The students will learn to create and format spreadsheets and charts, to develop problem-solving skills through the development of formulas mandatory in spreadsheets, and to manage and integrate data.
Employability Skills BSTT1250	This class will provide you with the skills you need to search for job opportunities; apply for jobs; create a cover letter, resume, and follow-up letter; perform successfully in an interview; and remain current in your profession.
Accounting BSTT1300	This is a manual accounting course. You will learn how accounts increase/decrease; how to analyze business transactions and the affect the transaction has on the bottom line (income or loss) of the business. You will learn how to develop and read financial

Course Name/Course Number	Course Description
	statements. At the completion of this class you will understand how users of financial statements use the accounting information to make decisions regarding loans, investments, purchasing, and expanding their businesses. Although automated systems have taken the place of manual accounting (old fashion bookkeeping), you must thoroughly understand how accounting records are developed so you will know what is going on inside an automated system.
Customer Relations Management and Ethics BSTT1320	This course is designed to teach the student how to build good relationships with the customer and maintain these relationships through the appropriate choice of responses. The student is also guided in how to make the correct choice when faced with ethical dilemmas.
Public Communications BSTT1325	This course is designed to teach the student effective communication using face-to-face and written communication methods.
Collections Management BSTT1330	This course is designed to teach the student the skills needed to complete the collection process from locating the debtor to closing the file. It also explains the limitations put on collections agents by the Fair Debt Collection Practices Act.
Medical Ethics BSTT1355	This course introduces the student to the legal principles and ethical issues affecting all healthcare professionals in the United States. The role of the allied healthcare professional will be emphasized throughout this course. Medical Ethics is an intensive text-based course that requires hours of reading as well as reviewing to build knowledge.
Medical Transcription BSTT1365	Students will learn medical transcription techniques, technologies, and editing skills needed to prepare to work in the medical transcription profession. The main objectives is to provide the students with a knowledge of the content and formats of medical reports typically dictated in clinic, hospitals, and hospital ancillary and support facilities. Progressive transcription skill-building is achieved through medical specialty-based patient studies.
Intro to Medical Coding BSTT1375	The focus is learning the coding rules for the CPT, ICD-9-CM, ICD-10-CM, and Level II (HCPCS) coding systems and then applying the rules to code patient services. In addition, a variety of payment systems are presented-DRG, APC, RUGS III. The medical topics of Medicare fraud/abuse, HMOs, and PROs are also reviewed.
Electronic Health Records BSTT1380	Students will learn both theory and hands-on work for transitioning from a paper-based medical record to an

Course Name/Course Number	Course Description
	electronic health record. The course is about the application of technology in health care. Students who complete this course should be able to transfer their knowledge to other health record software as the basic functions are the same.
Basic Drafting Technique CAD1100	Drafting is the language used globally by engineers, architects and designers to communicate ideas and information in graphical form. This course will introduce you to the terminology and skills of basic drafting that are necessary for manual and CAD drafters. You will first learn about the drafting occupations and the various disciplines of drafting and design. Then, we will focus on developing your freehand lettering skills. Finally, we will study the basic geometric elements and forms that make up all physical objects.
Intro to CAD CAD1104	Introduction to CAD is an introductory course in computer aided design. It will introduce you to use the computer as a tool to create basic 2D drawings. In this course, you will be using AutoCAD®, one of the most widely used computer aided design software programs. You will gain knowledge in basic concepts, terminology, and techniques for CAD applications.
Intermediate CAD CAD1114	This course continues with intermediate to advanced concepts and commands that are designed to increase the user's productivity. Emphasis will be placed on the tools used for creating & editing blocks, inserting blocks from the AutoCAD Design Center, inserting drawings as an external reference, inserting raster images, using drawing standards, advanced layouts, and e-transmittal. The course will also allow an experienced user to enhance their existing skills.
Solid Modeling CAD1128	Geometric models in three dimensions provide accurate information on the shape of a part for use in computer-aided engineering (CAE) or computer-aided manufacturing (CAM) applications. This course will introduce you to the terminology related to solid modeling and create of parts, assemblies and drawings using SolidWorks design automation software.
Sketching and Shape Description CAD1200	Sketching is one of the oldest, easiest and quickest methods of communication and also one of the most important skills an aspiring drafter must master. This course is designed to teach you correct freehand drawing and visualization skills. The course begins with a study of freehand sketching techniques and the different line types used. Next orthographic and pictorial visualization skills

Course Name/Course Number	Course Description
	are studied.
Technical Drawing II CAD1204	A drawing that is submitted for production must contain complete instructions so the part can be manufactured. This is accomplished by the use of proper *Dimensioning and Notation* on the drawing. It is critical that drafters be proficient in standard dimensioning practices. This course is designed to introduce you to the methodology of dimensioning practices and to help you develop skill in its application.
Tech Foundations for Drafting and CAD CAD1210	Technology Foundations is designed to enhance and/or develop language and mathematical skills that serve as a foundation for drafting technology and that are necessary for employment in the technical workforce.
Working Drawings CAD1230	In this course you will develop a complete set of production drawings required to manufacture and assemble a mechanical device. You will also be required to draw upon the skills developed thus far and develop new ones. The course begins with an overview of the design process and continues with a study of manufacturing materials and processes, standard hardware items, welding processes as well as detail and assembly drawings.
Tech Foundations for CIT/CIS CIST1110	Technology Foundations is designed to enhance and/or develop Reading For Information, Applied Mathematics, and Locating Information skills that serve as a foundation for computer information systems technology and that are necessary for employment in the technical workforce. This course uses the KeyTrain online to deliver the subject matter. No textbook is required.
Computer Concepts CISTT1130	This course will give you an overview of various aspects of the computer industry, including, but not exclusive to: the internal working of the computer, computer peripherals, operating systems, software applications, programming languages, networking, and the Internet.
Presentation Software (Graphics Presentation) CISTT1160	Students will learn to make multimedia presentations using Microsoft PowerPoint. Class instruction will cover basic skills and use of presentation software. Course projects and assignments will focus on skills building of the PowerPoint software.
Databases CISTT1210	This course provides a comprehensive presentation of Microsoft Access. Topics include creating, querying, and maintaining a database; creating a data access page, reports, forms, combo boxes; using OLE fields, hyperlinks, and sub-forms; creating an application system using the Switchboard Manager, creating a report using design view, working with charts and PivotTable objects, administering

Course Name/Course Number	Course Description
	a database system, specifying user-level security, and Access data in other applications.
Project Management CISTT1220	Students will learn important project management skills, including planning a project, creating schedules, communicating project information, assigning resources, and tracking progress using the popular Microsoft Project software.
Information Systems Customer Service (Help Desk) CISTT1300	This course will discuss the different types of service desks that exist, how they are measured by the organization they support, the varying roles and skills required within a typical service desk, and the process and technologies commonly used to ensure the service desk is operating efficiently and effectively. You will be introduced to references to ITIL® V3 best practices, leading quality and IT service management frameworks and standards.
Basic Computer Hardware Theory CISTT1305	This course is an introduction to Basic Computer Hardware using Lab Sim®. In eleven modules, you will learn material covered in the A+ Essentials exam (220-701) This course is designed to cover everything you need to know to pass the A+ Essentials exam
Introduction to Networking (Lab Sims) CISTT1315	This course is an introduction to the world of Networking computers. Once you have successfully completed this course, you will have mastered the fundamentals of networking computers. This course focuses on configuring, managing, and troubleshooting the elements of a basic network infrastructure.
Client and Server Computer Systems CISTT1335	In this course we will gain the basic concepts of programing for the client and server side. You will become familiar with and create some dynamic web pages and understand how a dynamic web site works. Last but not least we will touch on the use of databases in a web site and understand the basics for its use. My intent is to give you all an enjoyable learning experience, and to give you a confidence to take your web pages one step further.

Instrumentation

Student participation and grade performance were retrieved through Desire2Learn (D2L),

which is a software product used to organize and present course materials on the internet. Every

student enrolled in the online courses is issued a student account for access to the course

management system. Some of the features of D2L are course content, calendar, discussions, news, assessments, dropbox, grades, checklist, surveys, user progress, email, library, content modules and chat. The D2L user progress tool also captures the frequency (date and time stamp) when students log into the system.

Participation was measured by the total number of discussion posts a student has authored and replied to within D2L environment, the number of interactions with course content within the D2L environment, and the recorded number of clock hours in which a student was engaged in a course for the given term period.

<div align="center">Data Collection</div>

The quantitative data analyzed in this study were retrieved and collected from the D2L course management system. The system administrator provided the researcher data from online courses. Student data were provided to the researcher excluding any student personal identifying information by the system administrator prior to forwarding the remaining data to the researcher. The student data were provided to the researcher anonymously identified as generated by the course management system.

The researcher met with the Tennessee Colleges of Applied Technology system administrator to receive the data necessary for this study. The system administrator provided the random selection of course sections offered in the TCAT RODP program during fall 2013, spring 2014 and summer 2014. Using the reporting tool available through D2L, discussion activity and the course content interaction applicable for this study was extracted and provided to the researcher devoid of any personal identifiers. Using the SIS, student data pertaining to completed clock hours and grade performance information was extracted and provided to the researcher devoid of any personal identifiers. All information was extracted and downloaded to a

<div align="center">57</div>

Microsoft Excel spreadsheet by the system administrator. Information was obtained through the D2L course management system using auto-generated student identification numbers to protect the identity of the participants.

The data were extracted from D2L and the TCAT RODP student information system by Tennessee Colleges of Applied Technology personnel. It was then sent to the researcher in an Excel file to avoid transmission of any personally identifiable data. The Excel file was then imported and analyzed using Statistical Package for Social Sciences (SPSS).

The original dissertation prospectus involved a study that consisted of the entire population of TCAT online consortium course sections offering in 2013-2014, which totaled 217 online course sections and over 2,000 duplicated headcounts. Due to the lack of personnel and monetary restrictions imposed by the Desire2Learn (D2L) to provide the data sets needed to conduct the study, Tennessee Board of Regents, D2L system administrators recommended a management data set that was accessible and retrievable by in-house staff. As a result, the study population was adjusted to include a sample of courses that account for 20% of the total number of course sections offered in fall 2013, spring 2014, and summer 2014. The study now includes a stratified sample consisted of 360 individual students enrolled in either one or more of the 43 TCAT RODP course sections randomly selected from a total of 217 course sections offered during three semesters.

<div align="center">Data Analysis</div>

The research questions in this study were addressed by a series of Spearman rho correlations. All analyses were conducted at the .05 level of significance. Table 3 contains a visual depiction of each research question and the associated independent and dependent variables.

Table 3

Independent and Dependent Variables for Each Research Question

Research Question	Independent Variables	Dependent Variable
1	Discussion postings and student participation	Final grade
2	BST program enrollment and student participation	Final grade
3	CAD program enrollment and student participation	Final grade
4	CIS program enrollment and student participation	Final grade
5	Male student and student participation	Final grade
6	Female student and student participation	Final grade

CHAPTER 4

FINDINGS

The purpose of this quantitative correlation study is to determine whether a significantly statistical relationship between student participation and final grade performance within an online environment exists. The study used data retrieved from the Desire2Learn (D2L) course management system and the Student Information System (SIS) for the 2013-2014 academic year.

The stratified sample consisted of 360 individual students enrolled in either one or more of the 43 TCAT RODP course sections randomly selected from a total of 217 course sections offered during three semesters. The courses are online and representative of the following academic programs, academic areas of Business Systems Technology (BST), Computer Aided Drafting (CAD), and Computer Information Systems (CIS), all offered in the 2013-2014 academic year. The BST program of study sample of the population included 261 students. The CAD program of study sample of the population included 42 students. The CIS program of study sample of the population included 57 students. Figure 1 shows a visual representation of percentages of students enrolled in each of the academic programs. The gender demographics profile of study sample includes 273 females and 87 males. Figure 2 shows a visual representation of percentages of the study gender profiles.
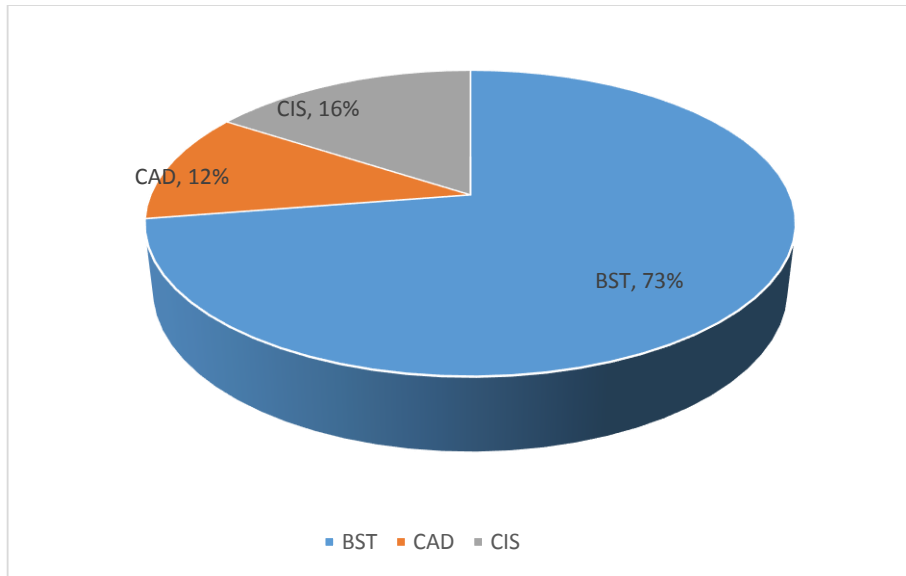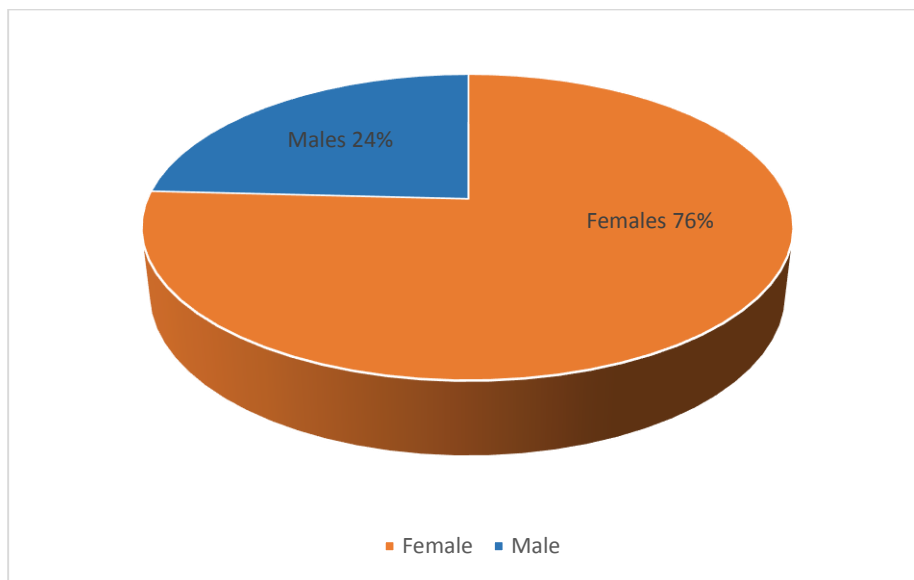
Figure 1. Percentage of students by program

Figure 2. Percentage of student by gender

Results

Preliminary analyses of the independent and dependent variables used in this study showed violations of the assumptions of the Pearson's correlation coefficient. Using the One-Sample Kolmogorov-Smirnov test to evaluate whether or not a variable was normally distributed showed that all four variables deviated from a normal distribution ($p < .05$).

In addition, examination of three scatterplots with Final Grade regressed on each of the three independent variables (Discussion Activity, Course Login Activity, and Course Content Interaction) each indicated a problem with heteroscedasticity. Nonnormality and heteroscedasticity are violations of the assumptions of the Pearson's correlation coefficient. Therefore, Spearman's rho, the nonparametric counterpart to Pearson's correlation, was used to evaluate the null hypotheses. The histograms with normal distributions superimposed and the scatterplots are in Appendix C.

<u>Analysis of Research Questions</u>

<u>Research Question 1</u>. Are there significant relationships between final grades and student discussion activity, course login activity, and course content interaction?

$Ho1_1$: There is no significant relationship between student discussion activity and final grade.

$Ho1_2$: There is no significant relationship between course login activity and final grade.

$Ho1_3$: There is no significant relationship between course content interaction and final grade.

As shown in Table 4, Spearman rho correlation were computed to test the relationship between final grades and student discussion activity, course login activity, and course content interaction. The results revealed a weak negative correlation and no statistically significant correlations exist.   As a result of the analysis, $Ho1_1$, $Ho1_2$ and $Ho1_3$ were retained. In general, the results suggest that students' final grades are not affected by participation in discussion activity, course login activity, or course content interaction.

Table 4

Spearman rho Correlation for Final Grade with Types of Student Participation

	N	Spearman's rho	*p*
Discussion Activity	360	- .10	.072
Course Login Activity	360	- .10	.052
Course Content Interaction	360	- .04	.474

Research Question 2. Among students in the BST program of study, are there significant

relationships between final grades and student discussion activity, course login activity,

and course content interaction?

Ho2$_1$: Among students in the BST program of study, there is no significant relationship

between student discussion activity and final grade.

Ho2$_2$: Among students in the BST program of study, there is no significant relationship

between course login activity and final grade.

Ho2$_3$: Among students in the BST program of study, there is no significant relationship

between course content interaction and final grade.

As shown in Table 5, Spearman rho correlation were computed to test the relationship

between BST students' final grades and student discussion activity, course login activity, and

course content interaction. The results revealed a weak negative correlation for all the variables.

At the .05 level of significance, no statistically significant relationship exists between BST final

grade and discussion activity and course content interaction. However, the relationship between

course login activity and BST final grade is statistically significant. As a result of the analyses,

Ho2$_1$ and Ho2$_3$ were not rejected and Ho2$_2$ was rejected. In general, the results suggest that BST

students' final grades are not affected by participation in discussion activity or course content

interaction. However, BST students' final grades are impacted course login activity.

Table 5

Spearman rho Correlation for Students Enrolled in the BST Program for Final Grade with Types

of Student Participation

	N	Spearman's rho	*p*
Discussion Activity	261	- .09	.138
Course Login Activity	261	- .17	.006*
Course Content Interaction	261	- .01	.846

* Statistically significant at the .05 level

Research Question 3. Among students in the CAD program of study, are there significant

relationships between final grades and student discussion activity, course login activity,

and course content interaction?

$Ho3_1$: Among students in the CAD program of study, there is no significant relationship

between student discussion activity and final grade.

$Ho3_2$: Among students in the CAD program of study, there is no significant relationship

between course login activity and final grade.

$Ho3_3$: Among students in the CAD program of study, there is no significant relationship

between course content interaction and final grade.

As shown in Table 6, Spearman rho correlation were computed to test the relationship

between CAD students' final grades and student discussion activity, course login activity, and

course content interaction. The results revealed a weak positive correlation between CAD final

grades and discussion activity and course login activity; a weak negative correlation been CAD

final grades and course content interaction. The relationship between course login activity and

final grade for students enrolled in the CAD program is statistically significant. The relationship between course content interaction and discussion and final grade for students enrolled in the CAD program is not statistically significant. As a result of the analyses, $Ho3_1$ and $Ho3_3$ were not rejected and $Ho3_2$ was rejected. In general, the results suggest that CAD students' final grades are not affected by discussion activity or course content interaction. However, CAD students' final grades are impacted by course login activity.

Table 6

Spearman rho Correlation for Students Enrolled in the CAD Program for Final Grade with Types of Student Participation

	N	Spearman's rho	p
Discussion Activity	42	.12	.449
Course Login Activity	42	.34	.028*
Course Content Interaction	42	- .01	.951

* Statistically significant at the .05 level

Research Question 4. Among students in the CIS program of study, are there significant relationships between final grades and student discussion activity, course login activity, and course content interaction?

Ho4$_1$: Among students in the CIS program of study, there is no significant relationship between student discussion activity and final grade.

Ho4$_2$: Among students in the CIS program of study, there is no significant relationship between course login activity and final grade.

Ho4$_3$: Among students in the CIS program of study, there is no significant relationship between course content interaction and final grade.

As shown in Table 7, Spearman rho correlations were computed to test the relationship between students enrolled in the CIS program and final grades and student discussion activity, course login activity, and course content interaction. The results revealed a weak negative correlation and no statistically significant correlation exist. As a result of the analysis, $Ho4_1$, $Ho4_2$, and $Ho4_3$ were retained. In general, the results suggest that CIS students' final grades are not affected by participation in discussion activity, course login activity, or course content interaction.

Table 7

Spearman rho Correlation for Students Enrolled in the CIS Program for Final Grade with Types of Student Participation

	N	Spearman's rho	*p*
Discussion Activity	57	-.17	.201
Course Login Activity	57	-.01	.930
Course Content Interaction	57	- .07	.597

Research Question 5. Based on gender, are there significant relationships between male student final grades and student discussion activity, course login activity, and course content interaction?

$Ho5_1$: There is no significant relationship between male student discussion activity and final grade.

$Ho5_2$: There is no significant relationship between male student course login activity and final grade.

$Ho5_3$: There is no significant relationship between male student course content interaction and final grade.

As shown in Table 8, Spearman rho correlation were computed to test the relationships between male student's final grades and student discussion activity, course login activity, and course content interaction. The results revealed weak negative correlations between male student final grades and discussion activity and course content interaction and a weak positive correlation between male student final grade and course content interaction. No statistically significant relationship exists among any of the variables. As a result of the analyses, Ho5$_1$, Ho5$_2$, and Ho5$_3$ were retained. In general, the results suggest that male students' final grades are not affected by participation in discussion activity, course login activity, or course content interaction.

Table 8

Spearman rho Correlation for Male Students for Final Grade with Types of Student Participation

	N	Spearman's rho	p
Discussion Activity	87	-.15	.169
Course Login Activity	87	.04	.741
Course Content Interaction	87	- .19	.070

Research Question 6. Based on gender, are there significant relationships between female student final grades and student discussion activity, course login activity, and course content interaction?

Ho6$_1$: There is no significant relationship between female student discussion activity and final grade.

Ho6$_2$: There is no significant relationship between female student course login activity and final grade.

Ho6$_3$: There is no significant relationship between female student course content

interaction and final grade.

As shown in Table 9, Spearman rho correlation were computed to test the relationship

between female student's final grades and student discussion activity, course login activity, and

course content interaction.   The results revealed a weak negative correlation exist between all

variables. The relationship between course login activity and final grade for female students is

statistically significant. However, the relationship between female student final grade and

discussion activity and course content interaction is no statistically significant. As a result of the

analyses, Ho6$_1$ and Ho6$_3$ were not rejected and Ho6$_2$ was rejected. In general, the results suggest

that female students' final grades are not affected by participation in discussion activity or course

content interaction. However, female students' final grades are impacted by course login

activity.

Table 9

Spearman rho Correlation for Female Students for Final Grade with Types of Student

Participation

	N	Spearman's rho	p
Discussion Activity	273	-.07	.247
Course Login Activity	273	-.14	.021*
Course Content Interaction	273	.01	.815

* Statistically significant at the .05 level

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this quantitative correlation study is to determine whether a significantly statistical relationship between student participation and final grade performance for students enrolled in one of three academic programs (BST, CAD, or CIS) offered by the TCAT online consortium during the 2013-2014 academic year. The researcher examined the student participation (discussion activity, course login activity, and course content interaction) and final grade performance for overall sample, program enrollment, and gender. Summary, conclusions, and recommendations are presented in the following sections.

Summary

For this study student participation, program enrollment, gender, and final grade for students enrolled in TCAT online consortium for academic year 2013-2014 were retrieved. The stratified sample consisted of 360 individual students enrolled in either one or more of the 43 TCAT RODP course sections randomly selected from a total of 217 course sections offered during three semesters. The courses were offered in an online setting during 2013-2014 and are representative of the following academic programs, academic areas of Business Systems Technology (BST), Computer Aided Drafting (CAD), and Computer Information Systems (CIS). The resulting data set population sample included 261 students from the BST program, 42 students from the CAD program and 57 students from the CIS program. The gender demographics sample included 273 females and 87 male students. The study used data retrieved from the Desire2Learn (D2L) course management system and the Student Information System (SIS) for the 2013-2014 academic year.

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The research questions in this study were analyzed using a series of Spearman rho's correlation tests.

Research Question 1 was focused on final course grade relationships between student discussion activity, course login activity, and course content interaction. In general, the results suggest that students' final grades are not affected by participation in discussion activity, course login activity, or course content interaction.

Research Question 2 was focused on final course grade relationships between student discussion activity, course login activity, and course content interaction for students enrolled in the BST program. In general, the results suggest that BST students' final grades are not affected by participation in discussion activity or course content interaction. However, BST students' final grades are impacted course login activity.

Research Question 3 was focused on final course grade relationships between student discussion activity, course login activity, and course content interaction for students enrolled in the CAD program. In general, the results suggest that CAD students' final grades are not affected by discussion activity or course content interaction. However, CAD students' final grades are impacted by course login activity.

Research Question 4 was focused on final course grade relationships between student discussion activity, course login activity, and course content interaction for students enrolled in the CIS program. In general, the results suggest that CIS students' final grades are not affected by participation in discussion activity, course login activity, or course content interaction.

Research Question 5 was focused on final grade relationships between discussion activity, course login activity, and course content interaction for male students. In general, the

results suggest that male students' final grades are not affected by participation in discussion activity, course login activity, or course content interaction.

Research Question 6 was focused on final grade relationships between discussion activity, course login activity, and course content interaction for the female student. In general, the results suggest that female students' final grades are not affected by participation in discussion activity or course content interaction. However, female students' final grades are impacted by course login activity.

Conclusions

The findings of this study showed that no statistically significant relationships exist between student participation (discussion activity, course login activity, and course content interaction) and final grade. The test results did disclose statistically significant relationships among course content interaction and final grade for students enrolled in the BST program, course login activity and final grade for students enrolled in the CAD program, and course login activity and final grade for female students. This study does not support studies conducted by Coldweld et al., (2008); and Finnegan et al., (2009) that concluded that student participation is statistically significant to final grade.

Female student participation through course login activity and final grade are statistically significant. These findings are consistent with studies conducted by Coldwell et al., (2008); Gunn et al., (2003); and Arbaugh (2000) that found female students outperformed male students in the areas of student participation and final grade.

Recommendations of Practices

The findings and conclusions of this research have led to the following recommendations for practice.

1. Final grade is calculated as the cumulative grade average of worker characteristics, skills and theory grade as well as implement a grading rubric that creates a framework detailing clear and specific instructions to students about participation and how participation will be scored;

2. Establish a consistent application of Quality Matter course design standards specifically related to the forms of leaner interactions incorporated in the course to motivate students and promote learning;

3. Instructors must integrate in the course design course activities that foster engagement with the course content;

4. Institute a common practice of mandatory participation in online discussion forum as a part of student participation and final grade calculation;

5. Require students to access course a minimum number of times per week and engage in a student-centered course activity.

Recommendations for Future Studies

One suggestion for future research is to examine whether course design is a predictor of student success in an online course. The need to maintain quality in the process of designing, developing and delivering online education are important issues for student success. Online courses that fail to meet quality standards set by researchers and institutions can influence the quality of the educational experience in an online education course. The focus of online course

design, delivery, and development should be placed on ensuring that the educational content and resources provided aid in learning for all students.

Another suggestion for future research is to examine whether demographics such as race, age, and financial status influence the level of student participation in an online course. As educators, the need to be concerned with what motivates a student to learn is important. The challenge of keeping students engaged and motivated is a common issue regardless of educational delivery. The typical methods used to address attrition and persistence in a traditional face-to-face learning setting will differ from a model for the online student population. Factors such as race, age, and socioeconomic status are influences that can impact the level of participation for an online student.

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APPENDICES

Appendix A

ETSU IRB Consent

EAST TENNESSEE STATE
UNIVERSITY

Office for the Protection of Human Research Subjects • Box 70565 • Johnson City, Tennessee 37614-1707
Phone: (423) 439-6053 Fax: (423) 439-6060

September 17, 2015

Tachaka Hollins
1004 Lily Ann Court
LaVergne, TN 37086

Dear Tachaka Hollins,

Thank you for recently submitting information regarding your proposed project "Student Participation and Grade Performance in the Tennessee College of Applied Technology Online Collaborative ".

I have reviewed the information, which includes a completed Form 129 and separate study description.

The determination is that this proposed activity as described meets neither the FDA nor the DHHS definition of research involving human subjects. Therefore, it does not fall under the purview of the ETSU IRB.

IRB review and approval by East Tennessee State University is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities are human subject research in which the organization is engaged, please submit a new request to the IRB for a determination.

Thank you for your commitment to excellence.

Sincerely,
Stacey L. Williams, Ph.D.
Chair, ETSU IRB

Full
AAHRPP

Accredited Since December 2005

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Appendix B

Data Collection Approval

October 1, 2015

Mr. James King, Vice-Chancellor
Tennessee Board of Regents
1415 Murfreesboro Road
Nashville, TN 37217

Dear Vice-Chancellor King:

I am in the data collection process of my dissertation. My study title is "Student Participation and Grade Performance in the Tennessee College of Applied Technology Online Collaborative".

This study aims to determine if there is a significant relationship between student participation and final grade performance for students enrolled in the Tennessee Colleges of Applied Technology (TCAT) Regents Online Degree Program (RODP). If approved, the study will analyze the participation and final grade performance of students enrolled in the TCAT RODP program during the academic year 2013-2014. The study independent variables include number of discussion postings, course management logins, number of interactions with course content, and on-time dropbox submissions. The dependent variable is the final grade.

This will be a quantitative study using data extracted from the Desire2Learn (D2L) course management system. Student data will be provided to the researcher excluding any student personal identifying information by the system administrator prior to forwarding the remaining data to the researcher. This quantitative, non-experimental relationship correlation study will attempt to determine the nature and strength of the relationship between student participation and final grade performance within an online learning environment. A correlation study was chosen for this research in order to establish which variables have a reasonable chance of being significant determinants of the educational phenomenon being studied.
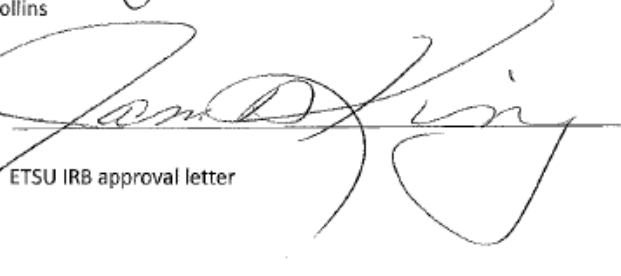
In order to maintain the integrity of the data as well as adhere to TBR Policy 2:08:00:00, I will need assistance from Academic Affairs/ROCC to retrieve the data excluding student name identifiers and provide in an excel spreadsheet format.

I am seeking your approval for access to the student data to conduct my research.

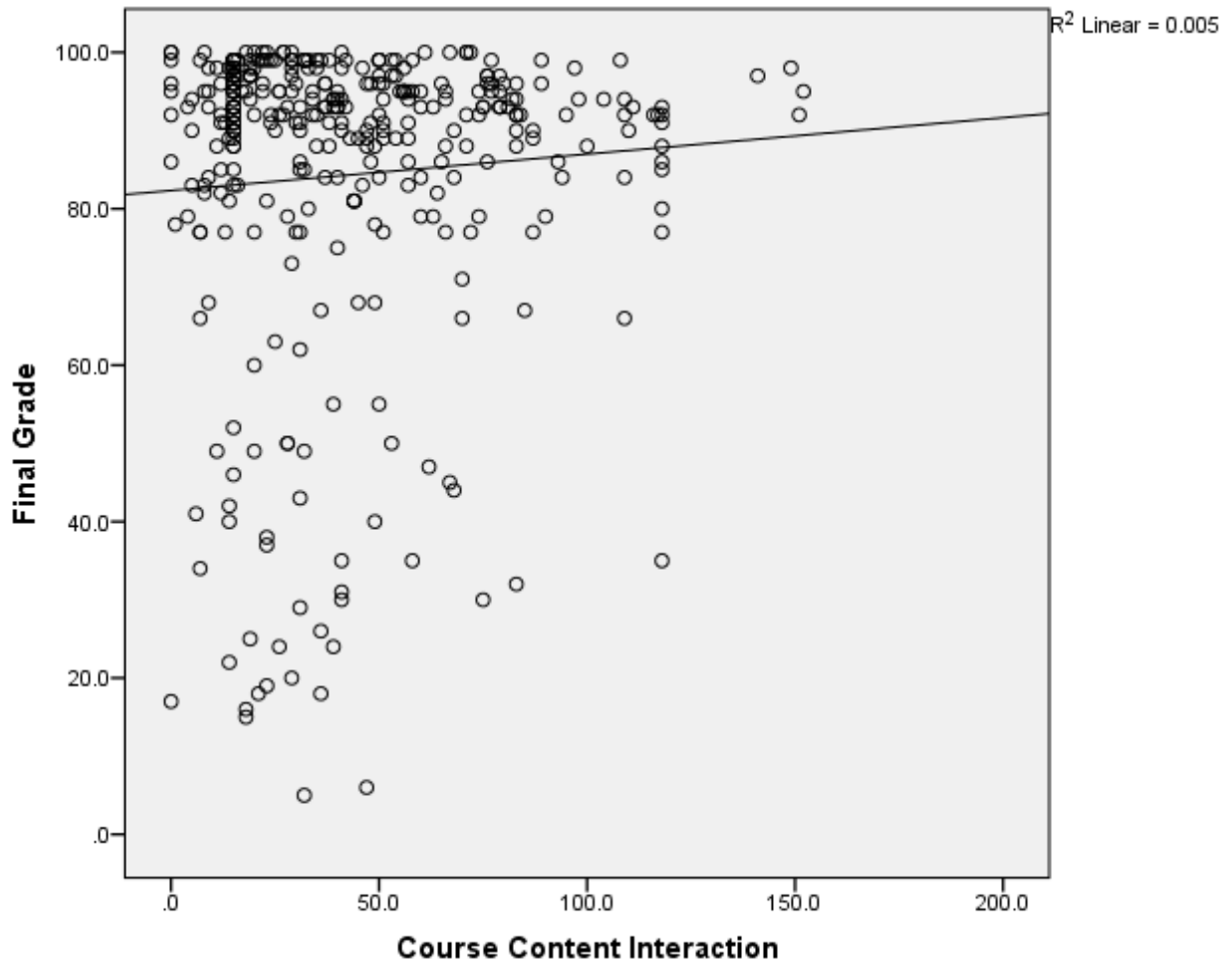Thank you for your attention to my request.

Sincerely,

Tachaka Hollins
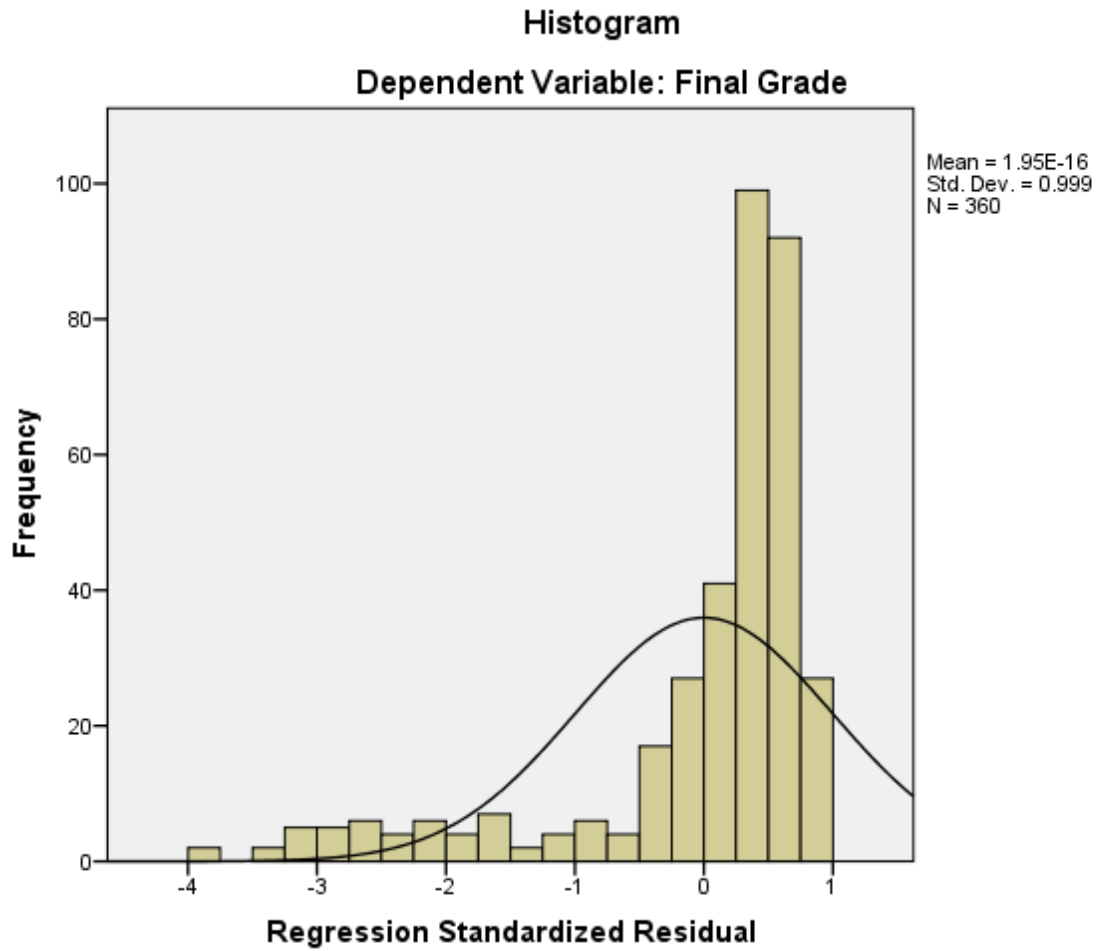
Approved:

Enclosure: ETSU IRB approval letter

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Appendix C

Pearson's Correlation

Examination of the Assumptions of Pearson Correlation: Final Grade and Course Content
Interaction

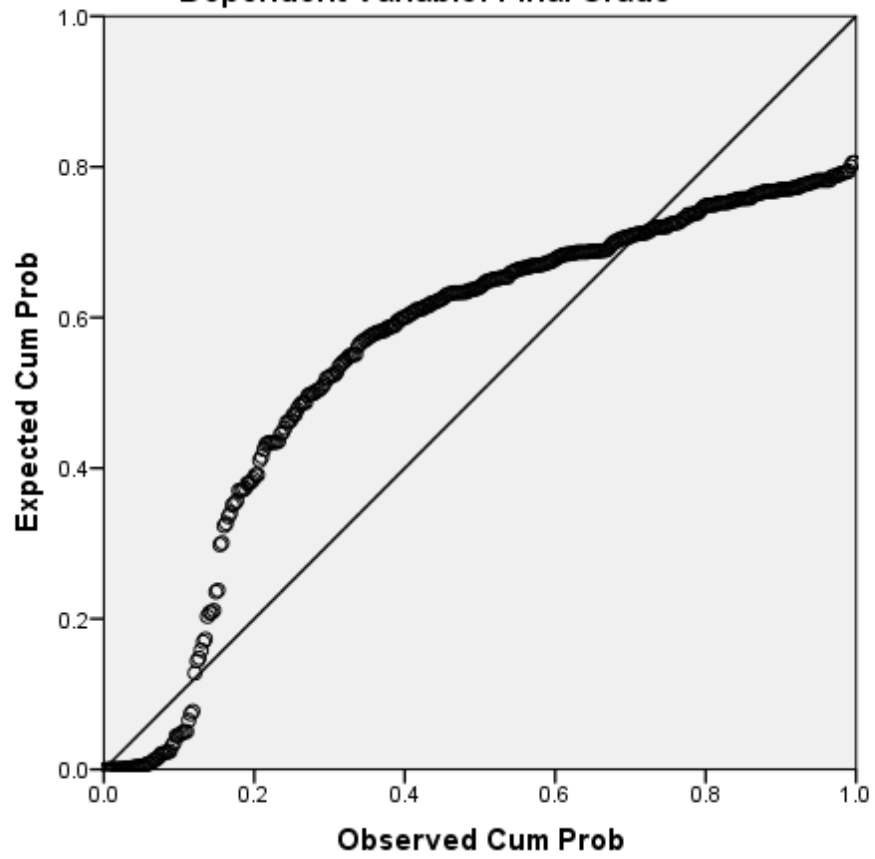Scatterplot of final grade with course content interaction

Histogram

Dependent Variable: Final Grade

Mean = 1.95E-16
Std. Dev. = 0.999
N = 360

Histogram of the Standarized Residuals of Model for Final Grades Regressed on Course Content Interaction

Residuals are not normally distributed.

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Final Grade

The normal probability plot shows deviation from normality.

Scatterplot
Dependent Variable: Final Grade
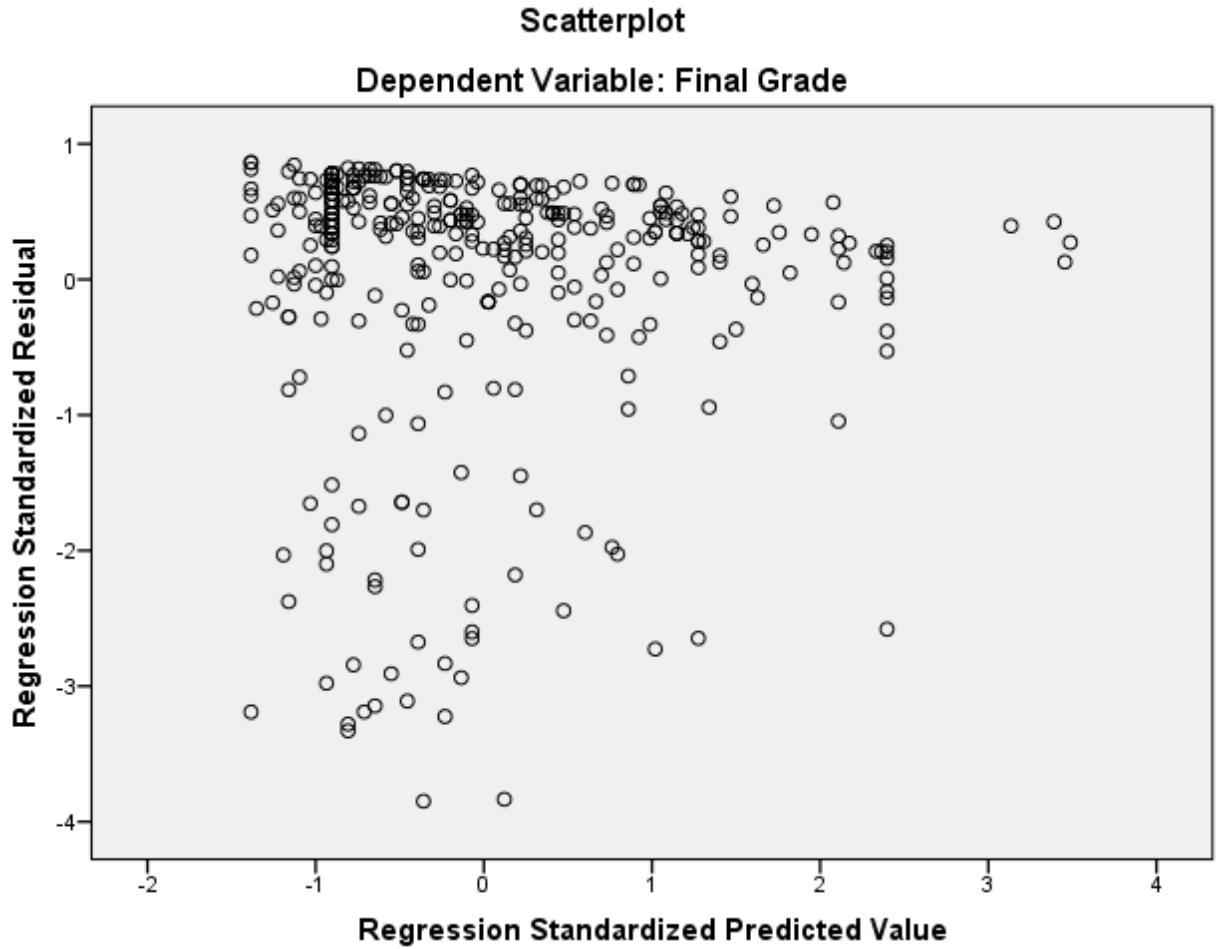
Scatterplot shows heteroscedasticity

Final Grade and Course Content Interaction: Tests for heteroscedasticity are significant.

Violation of assumption of homoscedasticity

Breusch-Pagan test for Heteroscedasticity (CHI-SQUARE df=1)
   13.254
Significance level of Chi-square df=1 (H0:homoscedasticity)
   .0003

Koenker test for Heteroscedasticity (CHI-SQUARE df=1)
   5.042
Significance level of Chi-square df=1 (H0:homoscedasticity)
   .0247

Examination of Assumptions of Pearson Correlation: Final Grade and Course Login Activity
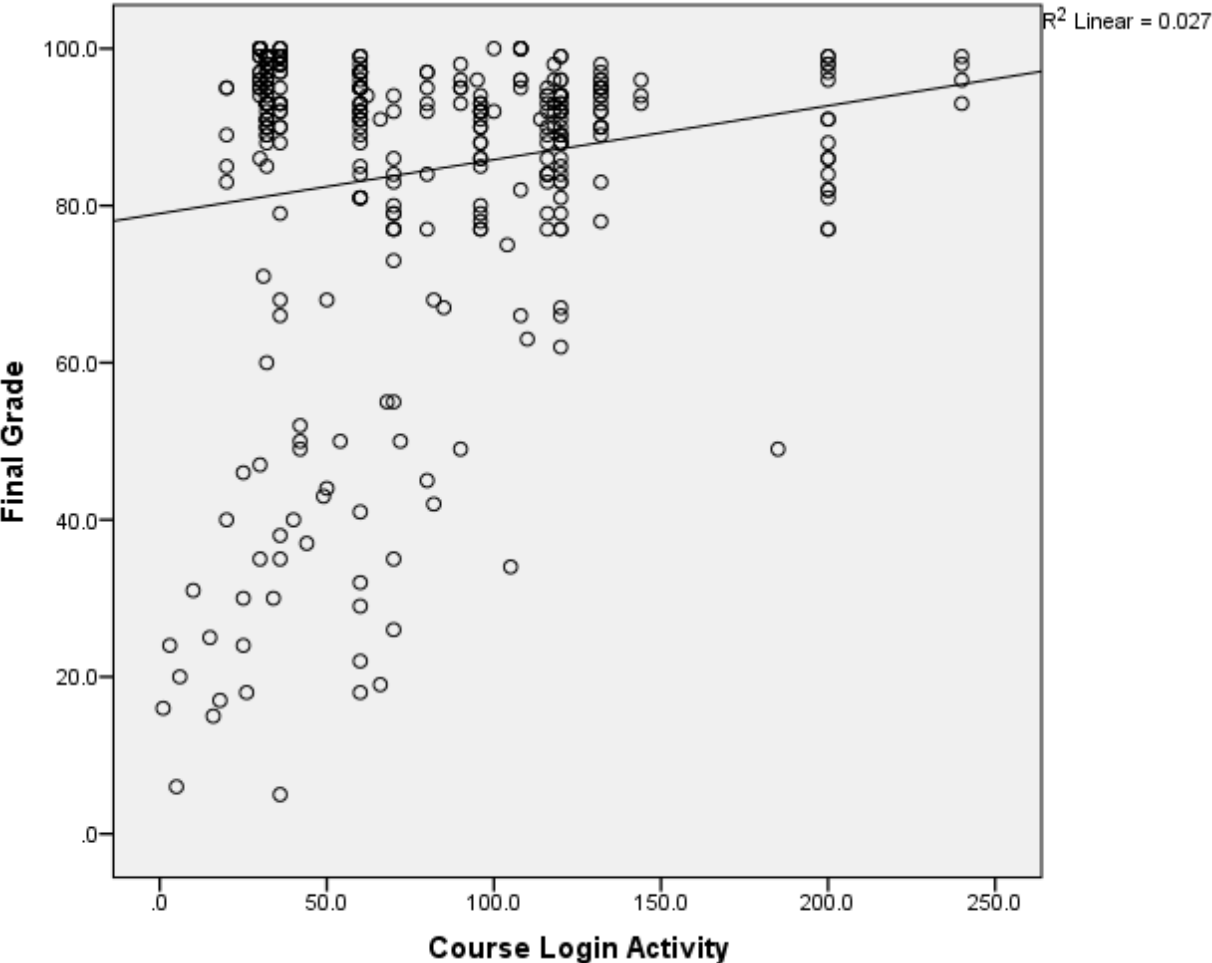
Scatterplot for Final Grades with Course Login Activity
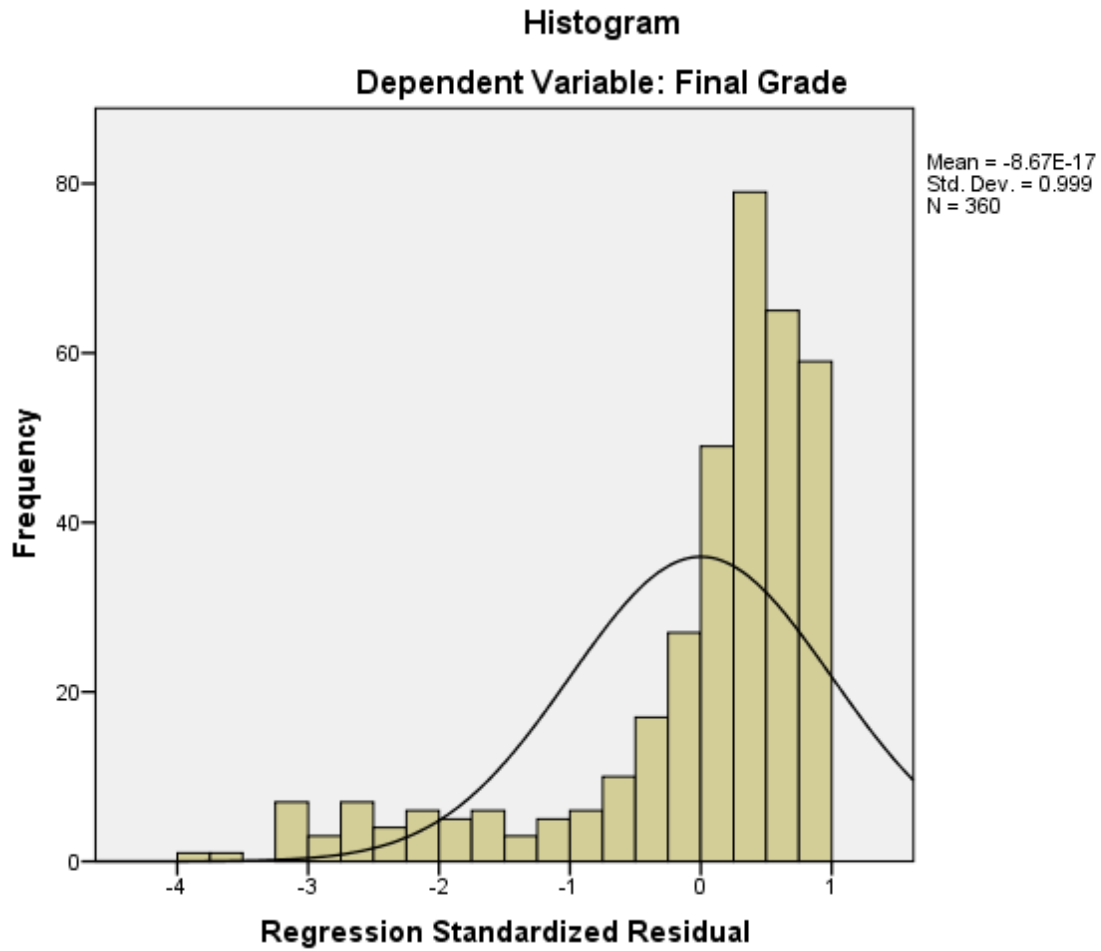
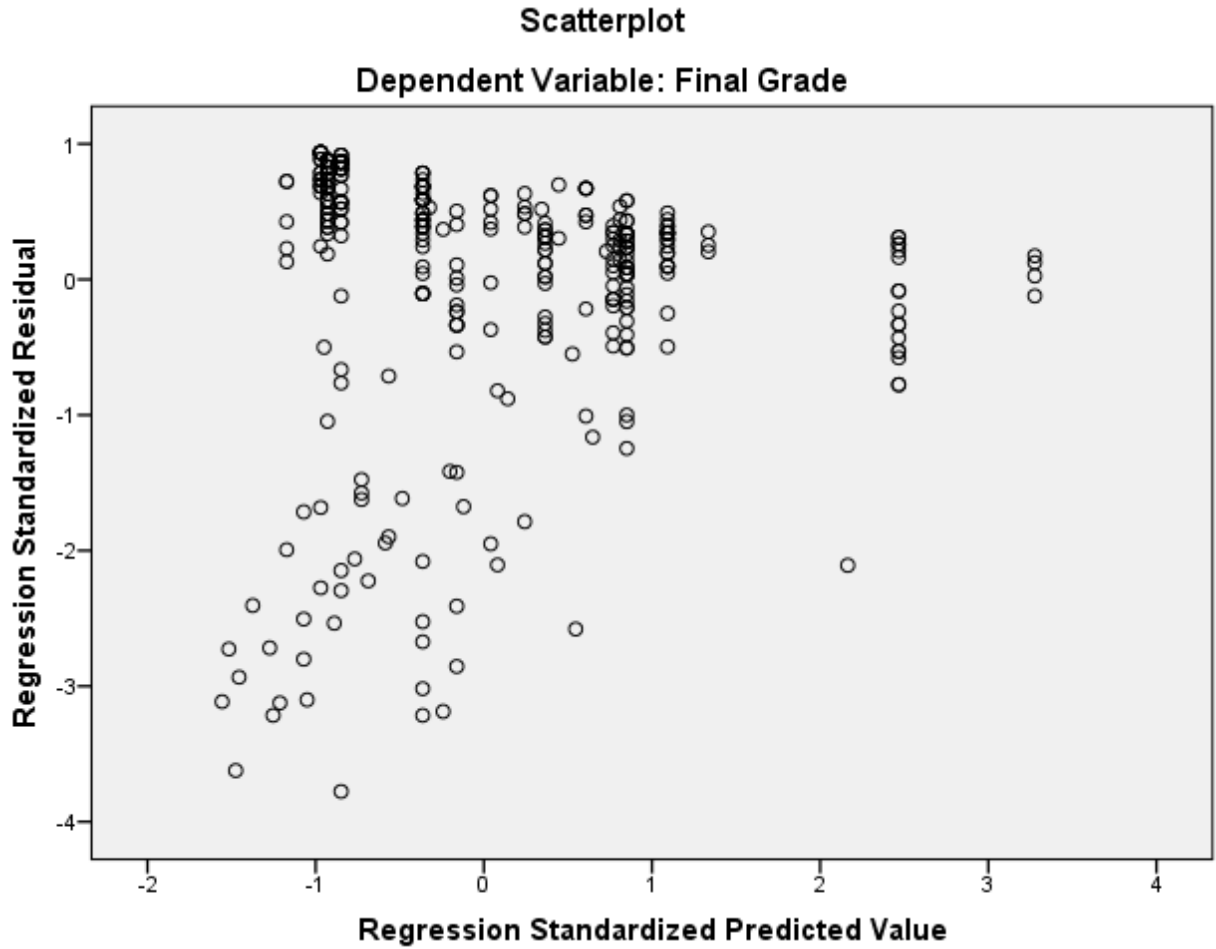Histogram of the Standarized Residuals of Model for Final Grades Regressed on Course Login Activity

Residuals are not normally distributed

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Final Grade

Normal probability plot shows deviations from normality

Scatterplot

Dependent Variable: Final Grade
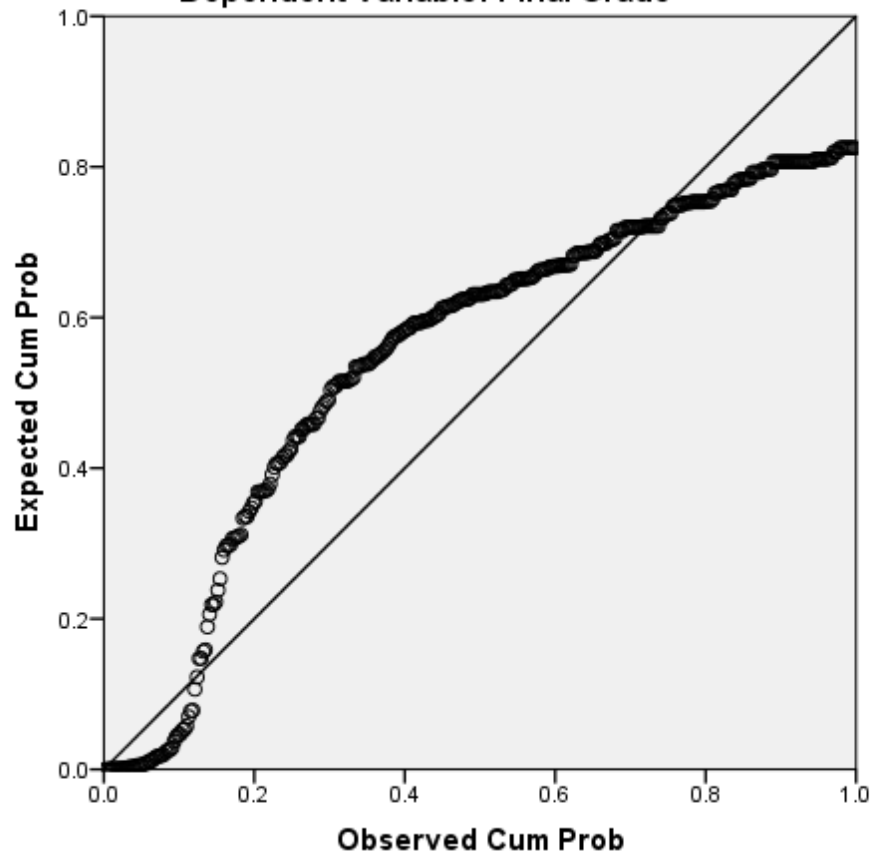
Scatterplot of standardized residuals regressed on standardized predicted values show heteroscedasticity

Final Grade and Course Login Activity: Both tests show statistical significance.

Violation of the Assumption of Homoscedasticity

Breusch-Pagan test for Heteroscedasticity (CHI-SQUARE df=1)
  72.860
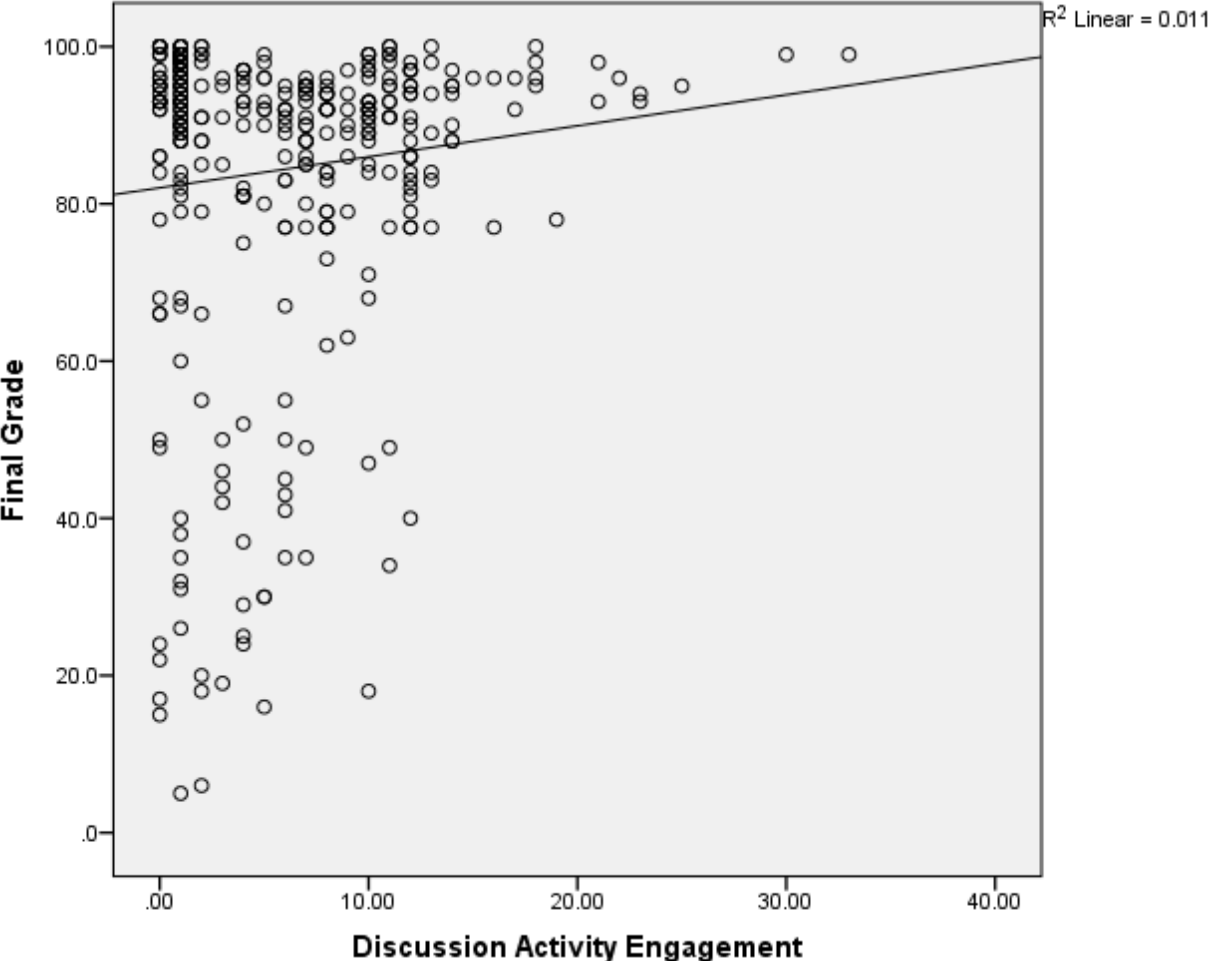Significance level of Chi-square df=1 (H0:homoscedasticity)
  .0000
Koenker test for Heteroscedasticity (CHI-SQUARE df=1)
  31.321
Significance level of Chi-square df=1 (H0:homoscedasticity)
  .0000

Examination of Assumptions of Pearson Correlation: Relationship between Final Grade and Discussion Activity Engagement

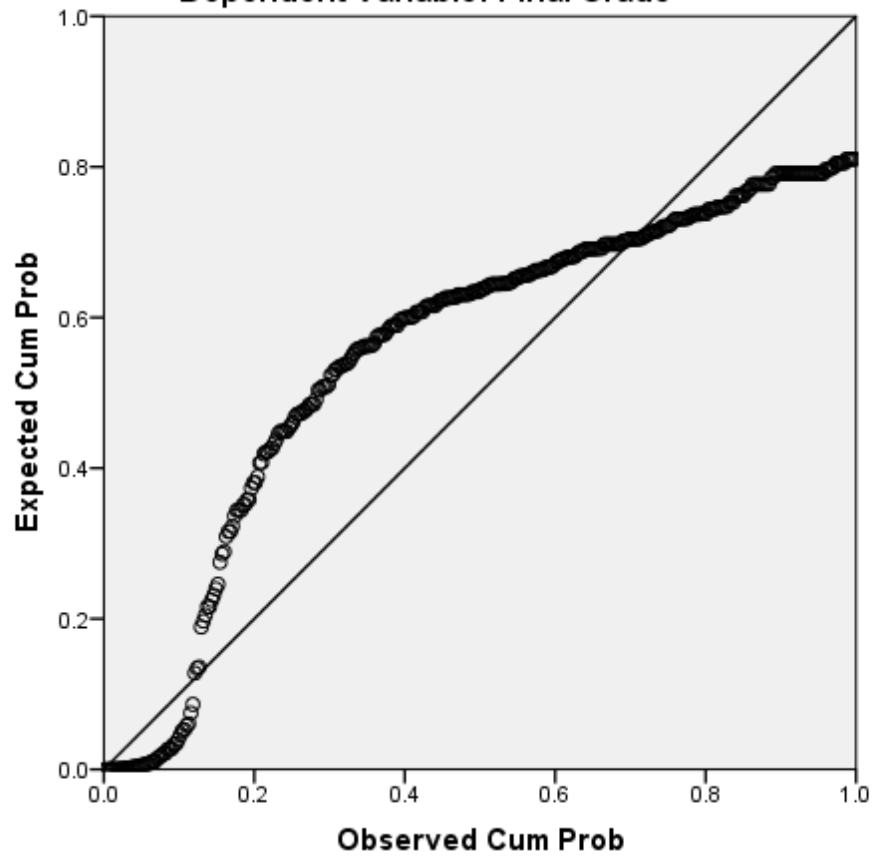Scatterplot of Final Grades with Discussion Activity Engagement Scores

Histogram

Dependent Variable: Final Grade

Mean = 5.63E-16
Std. Dev. = 0.999
N = 360
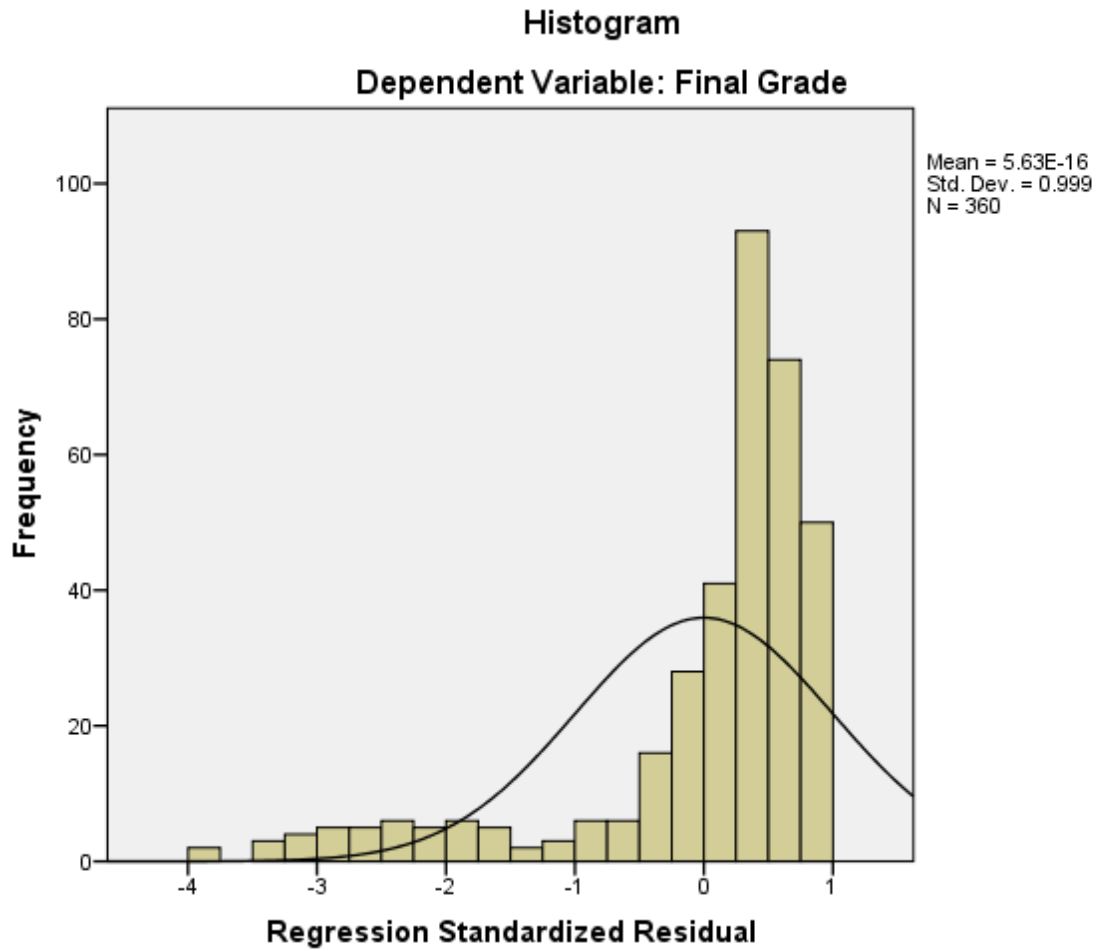
Histogram of the Standarized Residuals of Model for Final Grades Regressed on Discussion Activity Engagement
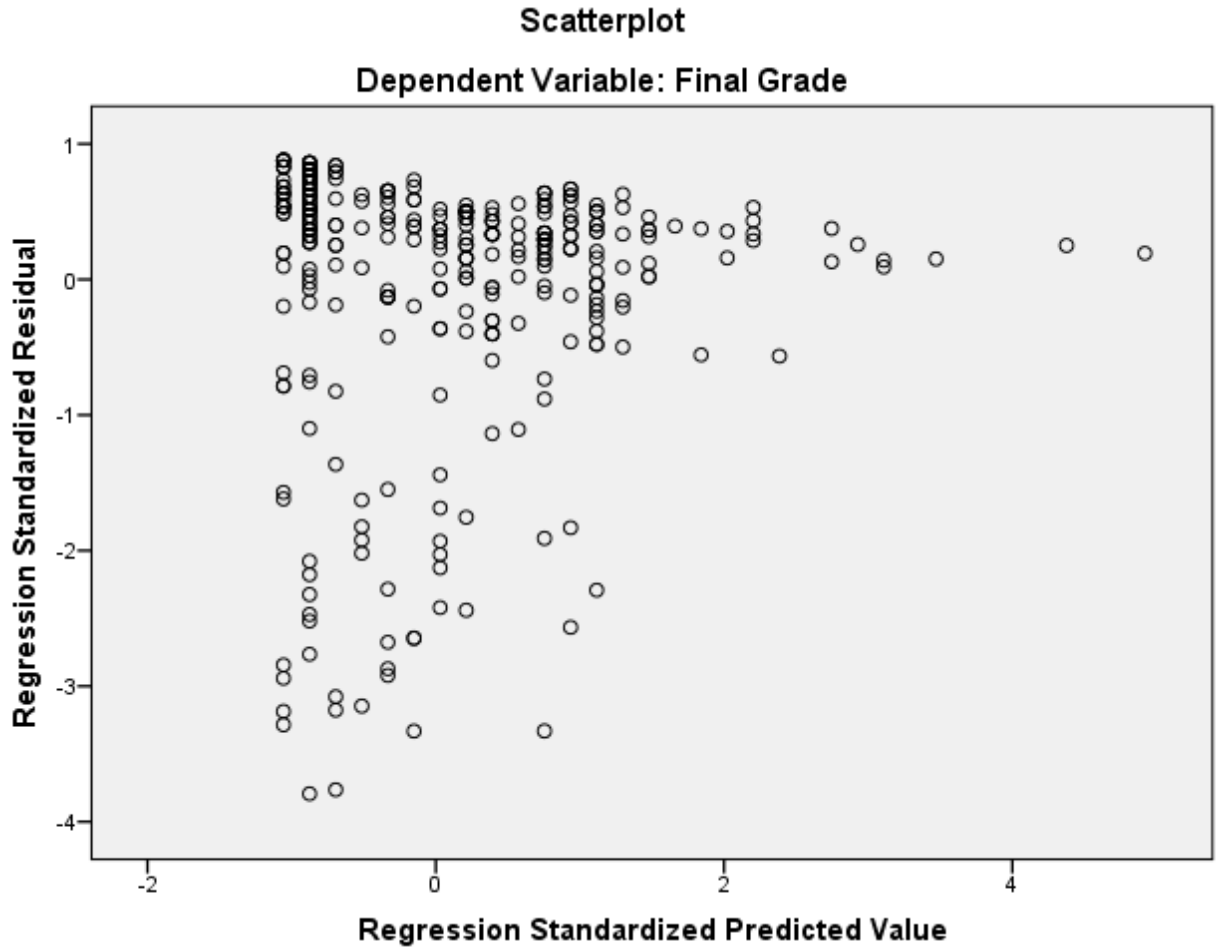
Standardized residuals are not normally distributed.

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Final Grade

The normal p-p plot indicates deviations from normality.

Scatterplot

Dependent Variable: Final Grade

Scatterplot for Residuals for Final Grades and Discussion Activity Engagement. Scatterplot shows heterscedasticity.

Final Grade and Discussion Activity Engagement: Both tests for heteroscedasticity show statistical significance.

Violation of the assumption of homescedasticity

Breusch-Pagan test for Heteroscedasticity (CHI-SQUARE df=1)
  28.993
Significance level of Chi-square df=1 (H0:homoscedasticity)
  .0000

Koenker test for Heteroscedasticity (CHI-SQUARE df=1)
  11.319
Significance level of Chi-square df=1 (H0:homoscedasticity) .0008

VITA

TACHAKA INEZ HOLLINS

EDUCATION
East Tennessee State University, Johnson City, Tennessee,
Doctor of Education in Educational Leadership; 2016

Tennessee State University, Nashville, Tennessee
Non-Profit Management, Graduate Certificate; 2012

Middle Tennessee State University, Murfreesboro, Tennessee
Master of Business Education: Training and Development;
2007

Middle Tennessee State University, Murfreesboro, Tennessee
Bachelor of Business Administration: Computer Info Systems;
2004

PROFESSIONAL
EXPERIENCE
Director of Regents Online Continuing Education
Tennessee Board of Regents, Nashville, Tennessee
2009-Present

Coordinator of Training and Development
Tennessee Board of Regents, Nashville, Tennessee
2005-2009

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Tennessee Colleges of Applied Technology, Nashville,
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Tennessee State University
2009-2011

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Tennessee Colleges of Applied Technology
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Cable ATHENA Award
Nominee, 2016