

COMPARING TRADITIONAL AND ONLINE INSTRUCTION: EXAMINING
DEVELOPMENTAL COURSEWORK AT AN ALABAMA COMMUNITY COLLEGE

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COMPARING TRADITIONAL AND ONLINE INSTRUCTION: EXAMINING
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DEDICATION

To my incredible wife, Heather, and my beautiful children, Israel, Jubilee, and Jerusalem: the encouragement and strength I have gotten from you is the only reason I have been able to see this thing through to the end. You encouraged me when I was disheartened, and helped me when I was stressed. To my mother and father, Dennis and Tina, I never would have taken on this endeavor if it were not for your encouragement and the confidence you had in me. If it were not for you two, I never would have made it out of my second year as an undergraduate. I could not have done any of this without all of you, nor would I have wanted to.

ABSTRACT

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The purpose of this quantitative study was to determine the effect that course format had on student success rates and withdrawal rates at an Alabama community college from 2012 to 2014. The goal was to determine if students who were enrolled in online, hybrid, or face-to-face developmental courses were more or less likely to withdraw from those courses and to determine if those students were more or less likely to receive higher or lower grades than their counterparts. The study used archived data from the college to collect a sample that included all students who had enrolled in developmental courses at the college between 2012 and 2014 ($n = 3,863$). To determine the effect, if any, that course format had on student withdrawal rates from developmental classes a chi-square test was conducted that found that course format had a statistically significant effect on student withdrawal rates. To determine the effect, if any, that course format had on student success rates (student grade), a one-way ANOVA test was performed. The results of that ANOVA suggested that course format had a statistically significant effect on student success rates. At the conclusion of the research, suggestions are made for practice, as well as the implications that these results have on future policies and decision-making at the college for students who enroll in developmental education courses.

KEY WORDS: Developmental education, Course format, Withdrawal rates, Student success rates, Online, Face-to-face, Hybrid, Best practices

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CHAPTER I

INTRODUCTION

Introduction to the Problem

America's community colleges have been providing higher education opportunities to the nation's students for over 100 years (Floyd, 2003). The open door policy of come one come all adopted by the majority of community colleges has provided educational opportunities to a large number of enrolling students with a vast range of educational and academic abilities. There are a number of reasons that community colleges have become attractive alternatives in higher education. Community colleges allow students to save money as tuition rates can be substantially lower than universities; they often offer geographic convenience, as in most states there is a community college within 50 miles of most individuals. Additionally, community colleges accept students with weak academic records who might not be accepted to a university (Townsend, 2007). Other reasons that community colleges are attractive options can be smaller class sizes, flexible schedules, and many offer a large number of their courses online. Community college students also benefit from being taught by instructors whose primary role is to teach and to focus on student learning as opposed to research (Townsend, 2007). Researchers (Hilmer, 1997; Townsend, 2007) even suggest that students who complete community college are more likely to attend a higher quality university than those who go straight to a 4-year university right out of high school. According to Floyd (2003), "Community colleges have transformed American higher education, replacing elitist traditions with commitment to change, where that change makes higher education

accessible to countless thousands who otherwise would be excluded from the benefits of American higher education” (p. 337).

Community colleges operate on an open-door policy, which means that anyone has an opportunity to further their education through the community college avenue. With this policy, community colleges admit students with varying levels of academic ability, with a large number requiring developmental education. Since community colleges accept students with various academic abilities, it becomes a responsibility of the college to provide developmental education for those who are academically underprepared.

In a study conducted by Saxon, Sullivan, Boylan, and Forrest (2005), they state that more than 2.2 million students end up in developmental courses each year, and there is no reason to believe that the number will decline any time soon. “Colleges and universities are simply expanding their enrollments to accommodate the large numbers of those who aspire to postsecondary education” (Saxon et al., 2005, p. 4). Horn, McCoy, Campbell, and Brock (2009) also verify that half of all students who enroll in college require some sort of developmental education. Recent trends in enrollment in community colleges indicate that a large number of students are coming to college underprepared and not ready to complete college-level coursework. According to Complete College America (2012), over 50% of students enrolling in 2-year community or technical colleges have to enroll in developmental coursework. Additionally, beginning college in developmental courses makes a student less likely to graduate within 3 years. If a student is an ethnic minority or of low-income level, the likelihood of not completing a degree

within three years after beginning in developmental education is compounded (Complete College America, 2012).

This large number of students enrolling in developmental education has led to increased research in the field. According to Goudas and Boylan (2012), developmental education has become a topic of considerable debate recently. Political advocacy groups like Complete College America (2012) have even labeled developmental education as the *Bridge to Nowhere* (2012), making the argument that simply enrolling in developmental courses immediately makes it more difficult for students to graduate with a 2 or 4-year degree. They state that developmental education has almost become a road block for college graduation (Complete College America, 2012). However, Shields (2005) argues the benefits of developmental education to both institutions and students:

“Developmental education benefits students, institutions that provide it, and society at large” (p. 45). Shields (2005) states that developmental education actually provides many underprepared students the opportunity to obtain a college degree that otherwise would not be possible. Additionally, developmental education offers the benefit of increasing institutional diversity at the colleges that provide it, as eliminating developmental education would substantially decrease diversity on campus. According to Shields (2005), “When underprepared students can attend the college of their choice and receive the skills they need to succeed, they are rescued from a life of unskilled labor and provided with the opportunity to obtain preparation for a better paying job” (p. 46).

Saxon and Boylan (2001) state that many critics argue that developmental education actually costs taxpayers twice because colleges have to teach students skills that they should have learned in high school. However, Goudas and Boylan (2012)

suggest that some researchers' ideas about the purpose of developmental education are in fact flawed. "When developmental students do not ultimately perform better than nondevelopmental students in all or most of these categories, many researchers conclude that developmental courses do not actually help students" (Goudas & Boylan, 2012, p. 2), as developmental students are expected to perform better than nontraditional students. Although some researchers (Safran & Visher, 2010; Venezia, Bracco, & Nodine, 2010) suggest that many students are inaccurately placed into developmental coursework, the reality is that many students ultimately need extra preparation prior to enrolling in college-level coursework.

Online courses are becoming a common learning platform in higher education (Allen & Seaman, 2015). Community colleges have had the highest growth rate in online education and account for over 54% of online enrollments (Ashby, Sadera, & McNary, 2011). However, community colleges struggle with the question of whether or not to offer developmental courses in an online or hybrid format. The benefits of online education are numerous. According to Wester (2010), key benefits of online courses are affordability, flexibility, and convenience. Along with the benefits of online education also come challenges. Mahoney (2009) stated that even though online classes gave students greater flexibility, students sometimes struggle with the technology needed to be successful in online coursework. According to Burgess (2009), because of the complex needs of developmental students, teaching developmental reading online can be difficult. Along with technological difficulties, retention is an issues in online education. Several researchers (Cochran, Campbell, Baker, & Leeds, 2014; Fetzner, 2010; Hyllegard et al., 2008; Wester, 2010) remark on the high attrition rates that plague online courses. These

issues plague online courses at the college-level, and these issues could be even more prominent in online developmental courses. Stefl-Mabry (1998) suggests that developmental students often lack critical abilities that are necessary for online learning. Community college leaders must examine whether or not online education is the right medium of learning for developmental students.

Background of the Study

As technology advances, colleges and students remain at the forefront of benefactors from these advances. Online education has become a popular alternative to traditional face-to-face instruction, and colleges are working to offer more classes and programs online. “With pressures to increase access to higher education, colleges and universities have focused on increasing the number of online courses and programs offered” (Meyer, 2014, p. 1). According to Savenye (2005), schools are increasingly turning to online technologies to enhance the learning experience, and many of these experiences take the form of fully online courses. Emerson and MacKay (2014) state that the movement to replace traditional pedagogical methods with online learning has accelerated in the last few years. Online education is becoming less of an anomaly and more of the norm. El Mansour, Bassou, and Mupinga (2007) stated that many colleges and universities turn to hybrid and online courses in an attempt to meet the growing demand of nontraditional students. However, even as online classes continue to grow in popularity, the attrition rates are still substantially higher in online courses as opposed to their traditional, face-to-face counterparts (Cochran et al., 2014).

A large number of students enrolling in community colleges each year are being placed into developmental courses. According to Complete College America (2012),

more than 50% of all students enrolling in community colleges are taking at least one developmental course their first semester. In a study conducted by Saxon and colleagues (2005), more than 2.2 million students end up in developmental courses each year, and there is no reason to believe that the number will decline any time soon. According to the scores from college entrance and placement exams, which are used by over 92% of community colleges for placement, many students are coming to college underprepared (Hughes & Scott-Clayton, 2011). These tests are meant to measure aptitude or cognitive abilities in math, reading, and English.

Because of the open door policies of most community colleges, the local 2-year school has now been charged with the task of providing developmental education and developmental courses to students who require it. According to Floyd (2003), community colleges have transformed higher education in the United States by replacing elitist traditions with a commitment to change, with that change making higher education available to thousands of students who would otherwise be left out of the college experience. Developmental services are most commonly offered in math, reading, and English, with the goal of teaching basic math, reading, and writing skills. College administrators hope that students will be able to move beyond those courses and successfully complete collegiate level work, continuing on through graduation. Community colleges are having to thoroughly examine their developmental programs, as higher education is being criticized for its retention and graduation rates (Meyer, 2014), and developmental courses are at the center of this criticism. According to Complete College America (2012), less than 10% of students who enroll in developmental courses

persist on through graduation, and only 23% of students who enroll in developmental courses complete the developmental courses and then the subsequent gateway courses.

With college officials increasing their online course offerings, online developmental courses are becoming commonplace. According to Petrides and Nodine (2005), it is not surprising that colleges would begin increasing student opportunities for developmental courses, given the demands for distance learning and developmental education. The problem with developmental students enrolling in online courses, according to Harrington (2010), is that

“Due to the text-based orientation of the internet, technology-based courses are reading intensive... Further, developmental students do not necessarily possess the writing and grammar skills to differentiate between standard usage and diction used in academic writing and nonstandard, informal writing” (p. 16).

This will be addressed in the following paragraphs that outline the problem, the necessity of the study, and research questions.

Problem Statement

As new advances in technology become commonplace, community college leaders are trying to keep their colleges at pace with these advances. Because of convenience and flexibility, many students are preferring to choose online course options as opposed to the traditional face-to-face counterpart (Aslanian & Clinefelter, 2013; Benbunan-Fich & Hiltz, 2003; Farris, Haskins, & Yemen, 2003; Hittelman, 2001; Mahoney, 2009). Students have very busy lives and the flexibility of online courses allows them to more easily balance their schedules (Jaggars, 2010). Because of this, online classes are quickly becoming the popular option for higher education. Online

education also has influenced and sparked the increase in enrollment from nontraditional students who already have job, family, and community responsibilities. However, a question on whether or not these online course options provide an effective avenue for student success should be addressed. Harrington (2010) suggests that online education might not be a viable alternative for those students who are on the “educational fringe” (p. 13). In other words, online education might not be an effective medium of education for students who are enrolled in developmental classes. Although studies (Jaggars & Xu, 2010; Xu & Jaggars, 2011) exist that focus on the effectiveness of online learning in community colleges, little research exists where the main focus is online developmental students. Therefore, there is a need to research the success and withdrawal rates of developmental students who choose to take their developmental courses in an online format. Specifically, colleges need to determine if a student who enrolls in an online developmental course is more likely to withdraw than a student who enrolls in a face-to-face developmental course. Also, community college leaders need to research whether or not student grades are affected by the medium of learning for a course.

Purpose Statement

The purpose of this quantitative study was to examine the influence that course format had on success rates and withdrawal rates for students enrolled in developmental courses in between online, hybrid, and traditional, face-to-face courses. Archived quantitative data including all developmental courses taken in a 3-year time frame at a community college in Alabama was analyzed. Student success rates were defined in terms of the grades A, B, C, D, and F, with a grade of C or higher being needed to be classified as passing the course. Withdrawal rates were defined as students who either

voluntarily or involuntarily withdrew from the course at any point during the academic semester.

Research Questions

The following research questions guided the present study:

1. What, if any, are the differences in withdrawal rates from developmental math, reading, and English courses at a community college in Alabama over a three-year time period in traditional face-to-face, hybrid, and online courses?
2. What, if any, are the differences in student success rates in developmental math, reading, and English courses at a community college in Alabama over a three-year time period in traditional face-to-face, hybrid, and online courses?

These research questions are of critical importance as online education continues to grow in popularity. Course format or medium of learning could have a great effect on the amount of students that withdraw from a course, or it could also affect the grades that students receive in these courses.

Significance of the Study

With advancements in technology, it is the role of the college to prepare its students for the ever-changing technological world. In an effort to accomplish this goal, many community colleges have begun offering an online section to most of the face-to-face courses that they offer. Developmental courses have not escaped this movement, as many colleges are questioning or already offering many of their developmental courses online. According to Carpenter, Brown, and Hickman (2004), many educators believe

that developmental courses are not successful if they are not offered in a traditional, face-to-face format.

Studies have been conducted (Jaggars & Xu, 2011; Xu & Jaggars, 2010) examining the effects that course format has on student success and persistence rates. The general consensus of the researchers has been that students are more likely to persist and succeed in a traditional, face-to-face course than in an online course. Jaggars and Xu (2011) and Xu and Jaggars, (2010) examined the effects of course format on developmental students within their study as well. However, it was a small part of their study. Jaggars and Xu (2011) found that developmental students who took developmental courses online did not fare as well as those who took the courses face-to-face. There is little literature (Jaggars & Xu, 2011; Smart & Saxon, 2016; Xu & Jaggars, 2010) looking at the role that course format has on developmental students' success and withdrawal rates. The data gathered in this study may offer a glimpse into the effects that course format has on students' persistence rates and success rates in online developmental courses.

Definition of Terms

Developmental education. Developmental education at the community college offers students the opportunity to improve their academic skills in the subjects of math, reading, and English and prepares them for collegiate level coursework.

Course format. Course format was the learning medium in which students take an academic course. Students were enrolled in traditional face-to-face courses, fully online courses, or hybrid courses.

Persistence. For the purpose of this study, persistence was defined as a student continuing through a course all the way to completion. Persistence did not denote passing or failing; only that a student completed the course.

Attrition. Attrition was defined as a student choosing to remove him or herself from a course, or not completing the course.

Withdrawal rates. Withdrawal rates were defined as the number of students that chose not to complete an academic course and either withdrew from the course totally or received an incomplete in the course.

Student success. Student success was defined as a student who was able to complete a course with a final grade of A, B, or C.

Traditional, face-to-face courses. Students enrolled in traditional, face-to-face courses typically attend class a minimum of 3 hours per week in a traditional campus setting with an instructor and a class of students.

Online. Students enrolled in online courses completed all of their coursework online. The course was driven by commercially available online learning platforms. Most meaningful interaction for the course is done online.

Hybrid. Students enrolled in the hybrid course format completed at least half of their work using a commercially available online learning platform. These students met in a face to face setting at least one time through the semester.

Andragogy. Andragogy is the term used to describe adult learning theories and concepts. Specifically, according to Knowles (1980), andragogy is the art and science of helping adults learn. Knowles (1980) used the term to distinguish adult education from childhood learning by highlighting differences in learner characteristics of each group.

Theoretical Framework

In the late 1960s, Malcolm Knowles brought the European idea of andragogy to America (Carpenter-Aeby & Aeby, 2013). In fact, any studies performed by researchers on andragogy have to begin with Knowles, as according to Peterson and Ray (2013), he is often credited with being the father of andragogy; although the term was actually coined by Alexander Kapp in 1833 (Henschke, 2011). In simple terms, andragogy is the term given to adult learning. This term can include a number of concepts such as learning theories and best practices, but any study on how adults learn or college student learning in general should fall under the umbrella term “andragogy.” In studying the differences between online and face-to-face developmental students, an understanding of andragogy is necessary. Specifically, the theoretical framework for this study was derived from the five major assumptions made by Knowles on andragogy. According to Knowles (1985), the following are the five assumptions of andragogy:

- As a person matures, self-concept, or how one views one’s self, moves from that of a dependent one to being a self-directing human being.
- Adults accumulate a rich resource for learning through a growing reservoir of experience.
- The readiness of an adult to learn depends on the developmental tasks of social role.
- Adults are more problem-centered than subject-centered in learning.
- Rather than external factors, adults are motivated to learn by internal factors.

Studying developmental students can be tricky, as these students are technically classified as adults, and desire to be treated as such. However, their present academic abilities assign them more to pedagogical styles of learning, as enrollment into a developmental course shows that the student is not at the present time prepared for college-level coursework.

Limitations and Assumptions

This study was limited in the following ways. It was conducted at a single college located in the Southeast United States. Therefore, the results garnered from the study may not be generalizable across other institutions of higher learning. The study did not take an in-depth look at the instructors for each section of each course. It is possible that some instructors performed at a higher level than other instructors. The study also did not determine if courses were standardized across all instructors and course formats or if each instructor was allowed to build and teach their courses however they saw fit.

Summary of the Remaining Chapters

The literature review examines the history and purpose of community colleges, and their role in providing developmental education services, as well as the increase in online courses being offered at community colleges. Previous studies on the effects that online learning and course format have on student success and withdrawal rates will be analyzed to demonstrate a need for this study. Chapter three details the quantitative study design to be performed, as well as introduces the research site and the participants in the study. Chapter three concludes with an explanation of the methods and instruments used for the study, as well as the data collection and analysis plan. Chapter four provides the

results of the data analysis. Finally, chapter five concludes with suggestions for practice and for future research.

CHAPTER II

LITERATURE REVIEW

The literature review focuses on three areas: developmental education, online education, and online developmental education. It begins with a discussion on the history of developmental education, as well as the purpose of developmental education. It also focuses on descriptive traits and demographics of developmental students. The second part of the literature review focuses on online education. Special attention is paid to the benefits of online education, as well as the issues plaguing it, such as retention, technology, and student success rates. Research on best practices in online education is also addressed. The final part of the literature review focuses specifically on online developmental education. Although there is not much literature currently available on this topic, the few studies that focus on how developmental students perform in online courses are looked at in depth.

Developmental Education

Although developmental education seems like a relatively new phenomenon, colleges and universities have been providing some form of assistance or developmental education since the 1600s. When Harvard College opened its doors in 1630, it had an immediate need for remediation among its students (Boylan & White Jr., 1988). Much of the original purpose of developmental education stemmed from the fact that most textbooks of the time were written in Latin, and in spite of entrance examinations, some students were admitted with insufficient Latin skills, and the college provided tutors to support remediation in this area (Boylan & White, 1988; White, Martirosyan, & Wanjohi, 2009). This practice of providing remediation eventually spread to other colonial

colleges, and would eventually spread to all American colleges. With more and more colleges offering developmental services, the practice of admitting underprepared students continued.

Brier (1984) stated that it was important to establish the presence of underprepared students in American colleges during the 1800s. Harvard president Charles William Eliot in his inaugural address clearly stated that the job of the American college was to supplement the American school, and that whatever elementary programs had failed to give to these students, it was the responsibility of the college to provide (Brier, 1984). In the early to mid-1800s, the idea of the “Jacksonian Democracy”, a movement based on the appreciation of the common man, affected all aspects of life, and specifically opened up educational opportunities to an increasing number of citizens (Boylan & White, 1988). Additionally, colleges in the early 1800s were largely self-sustaining operations, so anyone who could afford to go to college was admitted, regardless of academic abilities (Boylan & White, 1988; Brier, 1988). Brier (1984) goes on to list four reasons that colleges admitted underprepared students in the nineteenth century: (a) colleges needed revenue required to operate, (b) the number of colleges exceeded the number of prepared students, (c) many people in higher education believed in the Jacksonian ideal of providing educational opportunity, and (d) as college curricula changed, so did prerequisite skills. However, as early as 1828, there was a movement to call for the end to the admission of students with defective preparation. This was countered by the growing movement towards educational egalitarianism (Brier, 1984).

The first official recorded developmental education department was a college preparatory department established by the University of Wisconsin in 1849 (Parker,

Barrett, & Bustillos, 2014). This college preparatory model was eventually adopted by many other institutions and by 1889, more than 80% of colleges and universities offered college preparatory programs (Boylan & White, 1988; Brier, 1984; White et al., 2009). Casazza (1998) stated that the preparatory departments were created to meet the needs of students who were not ready for college study.

Since the early stages of higher education in the United States, developmental programs, even though they might not have been called as such, have been a mainstay. Academically underprepared students have not disappeared from American higher education, and developmental education has and will continue to be a mainstay among American colleges and universities (Brier, 1984).

Purpose of Developmental Education

The purpose of developmental education has been to provide students who are academically underprepared for college coursework the chance to gain the baseline knowledge they need to be successful. The practice of educating the academically deficient has had a merry go round of titles being called “developmental,” “underprepared,” “extra assistance,” “preparatory departments,” and more recently “developmental” (Casazza, 2000). Although early developmental programs and practices focused on Latin, early colleges found spelling, writing, geography, and mathematics were the most common areas where students needed to develop skills (Brier, 1984).

Community colleges have been at the forefront of the task to educate lower-level students, as open access to higher education has been a priority of the community college since the 1960s (Gerlaugh, Thompson, Boylan, & Davis, 2007). Colleges and universities have always needed to provide services of one kind or another to students

who have had difficulty with academic work (Boylan & Saxon, 1998). Many students are coming to college academically underprepared. The goal of developmental courses has been to provide an academic bridge from poor secondary preparation to college readiness (Complete College America, 2012).

The Developmental Education Student

According to Complete College America (2012) over 2 million students are provided developmental services every year by American colleges and universities, with the majority of these students being served in community colleges across the country. Complete College America (2012) stated that over 50% of all students enrolling in community colleges every year are taking at least one developmental course. Additionally, 19% of students enrolling in 4-year universities require remediation. Literature on developmental education students has focused on demographics of developmental students, as well as placement policies.

Demographics. According to Saxon et al. (2005), African Americans are the largest minority group of developmental students and are more heavily represented in developmental education than the whole of the college population. Hispanic students represent a strong second (Saxon et al., 2005). In fact, Complete College America (2012) stated that 68% of African American students and 59% of Hispanic students begin their college careers in developmental courses, compared to less than 50% of White students. Of those enrolling developmental courses, 86% of African Americans, 76% of Hispanics, and 75% of Whites who begin in developmental education do not complete it and associated level college courses within two years at community colleges. Complete College America (2012) also stated that if a student is low income, he or she is more

likely to end up in developmental classes, as 65% of low income students begin their educational careers in developmental coursework and barely over 20% of those students complete remediation and associated level college courses within two years at a community college.

According to Hardin (1998), the most common type of student in a developmental course was a student who has made a decision or multiple decisions that have negatively affected his or her academic career and future. Hardin (1998) went on to state there are five points to remember about developmental students: (a) Most likely, their academic decisions were made early in life; (b) their academic inability most often stems from a lack of background, not competence; (c) they often had no control over the decisions that affected their lives—these could have been made by coaches, parents, counselors or others; (d) their past academic experiences have convinced them that they lack academic ability; and (e) they lack the skills to interact in the college classroom, as many of them are first generation college students.

Boylan et al. (1994) stressed that there was no such thing as the typical developmental student. Their ages vary by more than 50 years in some cases. Some are wealthy while others are at or below the poverty level. Some are married with children, and some are single, and fresh out of high school. According to Boylan et al. (1994), an interesting point about developmental education is the diversity of the population that it serves.

Placement. Most colleges place students into developmental courses based on a score derived from standardized placement exams (Hughes & Scott-Clayton, 2011). Some states' individual board or commission for higher education decides which

placement test their state will use while others allow individual institutions to decide. For example, the state of Alabama primarily uses the COMPASS (ACT Inc., 2012) while the state of Texas uses four different exams: the Texas Higher Education Assessment (THEA), the “Quick” THEA (Pearson Education Inc., 2017) the COMPASS (ACT Inc., 2012), or the ASSET (Horn, McCoy, Campbell, & Brock, 2009). These tests are meant to measure aptitude or cognitive abilities in math, reading, and English. Boylan (2004) states that the majority of the 2 million students who enroll in developmental courses are placed there as a result of a score from one cognitive assessment.

Hughes and Scott-Clayton (2011) further analyzed community colleges' use of various types of placement exams, finding 92% of 2-year colleges used placement exam scores for placing entering students in coursework. Two exams dominate the market: the ACCUPLACER (College Board, 2017), used at 62% of 2-year colleges, and the COMPASS (ACT Inc., 2012), used at 46% of 2-year colleges. Additionally, Hughes and Scott-Clayton (2011) discussed the structure of the exams in depth:

The ACCUPLACER suite includes a written essay exam as well as computer-adaptive tests in five areas: sentence skills, reading comprehension, arithmetic, elementary algebra, and college level math...Similarly, the COMPASS offers a writing essay as well as untimed computer-adaptive exams in reading, writing skills, mathematics, and ESL. (p. 9)

Neither test examined by Scott and Clayton (2011) were timed, and both exams normally took students between one and a half to two and a half hours to complete.

The use of high-stakes placement exams by college and university administrators has come under fire recently for their perceived inability in accurately placing students,

and they are a poor indicator of future college success (Hughes & Scott-Clayton, 2011). Several studies (Bradley, 2012; Belfield & Crosta, 2012; Burdman, 2012; Lewin, 2012; Venezia, Bracco, & Nodine, 2010) have asserted the ineffectiveness of placement exams, and had advocated for more holistic and alternative placement methods. With the standardized testing company and developer of the COMPASS Exam, ACT, recently announcing that it will no longer use its flagship placement test due to ineffectiveness, one can only expect the arguments against high-stakes placement exams to increase. According to Fain (2015), ACT stated that customer feedback, empirical evidence, and postsecondary trends led ACT to believe that COMPASS was not contributing as effectively to academic placement as it had in the past. Boylan (2009) points out, these placements fail to take into account a number of other factors that are critical to student success in college-level classes:

As accurate as these instruments may be in assessing cognitive skills, however, they do not measure other factors that are equally important to student success. These factors include such things as attitude toward learning, motivation, autonomy, or willingness to expend effort on academic tasks. (p. 14)

Based on the high number of students being placed into developmental courses because of placement exams, the fact that placement exams do not really predict college success is a problem (Hughes & Scott-Clayton, 2011). Therefore, it is possible and probable that many students being placed into developmental courses are being placed inaccurately, ultimately putting barriers to educational success. Several studies (Belfield & Crosta, 2012; Bradley, 2012; Burdman, 2012; Lewin, 2012; Venezia, Bracco, & Nodine, 2010) suggest using multiple measures as opposed to using only placement exams to determine

students' academic placements. The most commonly suggested method of placement is to use high school transcripts in conjunction with high-stakes placement exam scores. Hughes and Scott-Clayton (2011) agree that the best method for academic placement might be by using placements exams together with high school transcripts.

Online Education

According to Floyd (2003), community colleges have transformed American higher education with a commitment to change and by making higher education accessible to thousands of people who would traditionally be excluded from the continuation of their academic careers. With this commitment to change, community colleges have embraced the online course format. Schmitt (1975) stated that colleges and universities have always sought to develop programs that would serve and attract a wider variety of students, and there is no clear reason why that would ever change. James (2004) stated that the movement towards offering courses online is natural because of the massive gains in technology made in recent years. Community colleges have had the highest growth rate in online education and account for over 54% of online enrollments (Ashby, Sadera, & McNary, 2011). Olatunji (2013) declared that due to the rapid adoption of electronic communication and media, institutions are delivering a substantial number of classes online. With the rate of online learning growing exponentially every year, almost every college and university offers some form of online course (Tidwell, Southard, & Mooney, 2010).

As higher education institutions struggle to meet the growing demand for education from nontraditional students, many are turning to hybrid and online courses (El Mansour, Bassou, & Mupinga, 2007). In addition to the rapid growth of online courses,

enrollment data shows that adult learners have outpaced traditional students (Frantzen, 2014). Additionally, as colleges struggle to fund their operations, many are turning to online courses, as the overhead expense involved is significantly less. According to Nguyen (2015), the physical “brick and mortar” classroom is losing its monopoly as the place of learning, and many researchers and educators are interested in online classes to enhance and improve student learning all while combating a lack or reduction of resources. Johnson, Meling, Andaverdi, Galindo, Madrigal, and Kupczynski (2011) suggested that one answer to the pressure for many colleges to reduce costs has been to offer online courses. Kirtman (2009) stated that in 2000-2001, over 3 million students were enrolled in online courses.

Benefits

The benefits to online education are numerous. According to Wester (2010), key benefits of online courses are affordability, flexibility, and convenience. Several researchers (Hyllegard, Deng, & Hunter, 2008; Jaggars, 2014; Mahoney, 2009; Nguyen, 2015; Romero & Usart, 2014; Wester, 2010) tout the flexibility of online courses as being one of main benefits of online learning for traditional and nontraditional students. The option to sit at home and complete coursework at a time of one’s own choosing is a luxury that many refuse to pass up. James (2004) stated that in one survey of 400 students, 90% of students would recommend online courses to friends.

El Mansour and Mupinga (2007) stated that online learning offered several advantages over traditional face-to-face interaction, specifically because it eliminated the barriers of time and space. Beard, Harper, and Riley (2004) go as far as to call computer

driven instruction a “miracle of 21st century education” (p. 29). Xu and Jaggars (2011) found:

Online learning is an important strategy to improve course access and flexibility. From the student perspective, the convenience of online learning is particularly valuable to adults with multiple responsibilities and highly scheduled lives; thus, online learning can be a boon to workforce development, helping busy adults return to school and complete additional education that otherwise could not fit into their daily routines. From an institutional perspective, online or hybrid modalities allow colleges to offer additional courses or course sections to their students. (p. 20)

Allowing students to complete coursework online opens educational opportunities to people who have busy lives. It allows a mother who works a full-time job and carries her child to soccer practice to still have an opportunity to complete a degree.

Another benefit of online learning is the ability of the teacher to foster online communities of learning through technological mediums. This has allowed online students to receive the same group interaction and small group discussion that the traditional, face-to-face course has offered. With advances in technology and live video streaming software, Farwell (2013) has advocated the use of interactive video discussions among students in online courses. Several studies (Savenye, 2005; Rubin & Fernandes, 2013; Farwell, 2013, Seay, 2006; Meyer, 2014) tout the ability of online courses to create active student engagement through asynchronous discussion boards, audio/video content, and various other forms of instructional media.

Issues in Online Education

For all of the benefits offered by online education, the very learning medium itself can provide a barrier to student success. Technology and retention both are barriers to student success, and are issues which exist within online education. To succeed in online courses students need more than just knowledge of the content.

Technology. One major issue for online students is the struggle to use technology. Mahoney (2009) stated that even though online classes gave students greater flexibility, students sometimes struggle with the technology needed to be successful in online coursework. Content knowledge is not enough to succeed in an online course. Students must also be able to function in an online learning environment (Mahoney, 2009). To be successful in an online course, one must have more than just basic computer knowledge. Rather, competencies in various computer programs and troubleshooting abilities are a must. Floyd (2003) also found that critics of online education argued that low-income, minority, and underrepresented students lack the technological resources to be successful in online courses. Students not only need computer skills with basic programs such as email, creating and editing documents, and being able to communicate via electronic methods, but students also need access to the technology required for these courses. Students must have steady and stable Internet, as well as a computer that is new enough to run online programs inherent within online coursework.

Although online courses are becoming a popular option for students, Jaggars (2014) found that students still often chose to take more “difficult” courses in a face-to-face format, as they felt they needed more guidance. A student interviewed from the Jaggars (2014) study stated “I really wanted to get something out of the class, I’d want a

podium and a live audience” (p. 14). Jaggars (2014) concluded that most students believed that they did not learn course material as well in online courses as they would in a traditional, face-to-face setting. Therefore, the general belief among students is that more can be learned in a face-to-face setting than an online one.

Retention. One of the biggest issues associated with the online course format is the relatively high attrition rates prevalent in online courses. Hyllegard, Deng, and Hunter (2008) offered that despite of the convenience and flexibility of online courses, online education has been riddled with unusually high attrition rates. Hyllegard et al (2008) conducted a qualitative study to determine why online students left courses by collecting questionnaires from students. Of the 685 questionnaires that they sent out, 155 were completed. The results of the surveys indicated that most students that left courses did so because either because of a lack of time or personal problems. Others stated that they left because they were not successful in the online course format, and others stated that they had technical difficulties with the course (Hyllegard et al, 2008).

Several researchers (Cochran, Campbell, Baker, & Leeds, 2014; Fetzner, 2013; Hyllegard et al., 2008; Wester, 2010) have remarked on the high attrition rates that plague online courses. Cochran et al (2014) sought to determine what factors influenced a student’s decision to withdraw from a course. The researchers had a sample size of $n = 2,314$ undergraduate students that were enrolled in online courses at a university in the spring of 2010. Cochran et al. (2014) reported that the attrition rates from online courses were several points higher than face-to-face courses, and as the number of students taking online courses continues to rise, retention will remain an issue for colleges and universities. The researchers also found the following: males are more likely to withdraw

than females; students with lower grade point averages are more likely to withdraw; and students who have previously withdrawn from a course are more likely to withdraw from another course.

The use of online courses has been villainized for its high dropout rates and low graduation rates (Wester, 2010). Additionally, Fetzner (2013) reported that retention rates in online classes were between 10 and 20% lower than their face-to-face counterparts, and that many institutions confirm that they have lower rates of student retention in online course and programs.

Atchley, Wingenbach, and Akers (2013) conducted a study at a small public university in the southwest United States. They examined student performance and student retention differences between face-to-face courses and online courses. Using a sample size of $n = 5,778$, the researchers determined that there was a statistically significant difference in course completion among students who enrolled in face-to-face courses and students who enrolled in online courses. Students enrolled in the online courses completed the course at a rate of 93.3%, while students enrolled in the traditional, face-to-face course completed at a rate of 95.6%. Atchley et al. (2013) also examined student retention rates across different course subjects. Interestingly enough, three of the four courses that had the lowest retention rates were college-level math and English courses.

Student success. To succeed in any course format, students need appropriate learning styles and necessary competencies (El Mansour et al., 2007). However, this statement is more relevant for online and hybrid courses than for traditional, face-to-face courses. Emerson and MacKay (2011) stated that empirical studies that have tested the

effects of different course formats suggest the need to carefully examine the effect that particular modes of learning have on learning outcomes. In their study, Emerson and MacKay (2011) found that students' learning outcomes, which were measured by a summative test, were significantly higher in face-to-face, paper-based lessons than in the online courses. Because of these issues, the authors sounded a note of caution to colleges in quickly swapping over to online course formats. Fetzner (2013) offered reasons students provided for non-success in online courses:

1. The student got behind and it was too hard to catch up.
2. He or she had personal problems.
3. He or she could not handle combined study plus work or family responsibilities.
4. He or she did not like the online format.
5. He or she did not like the instructor's teaching style.
6. He or she experienced too many technical difficulties.

Atchley et al. (2013) found a statistically significant difference in student performance between online courses and traditional courses. Online courses had a higher frequency of As, at 34.6%, while 31.1% of the students enrolled in the traditional, face-to-face courses received As. (Atchley et al., 2013). While having the highest number of As, the online courses also had the highest number of Ds and Fs, while the face-to-face course had the highest number of Bs and Cs (Atchley et al, 2013). A ten-year comparison of outcomes in online and face-to-face courses by Tanyel and Griffin (2014) found that the average grade point average for students in face-to-face course sections was higher than those for online sections of the same course.

Larson and Sung (2009) conducted a study at the University of Illinois at Springfield that examined student performance in a business course that was taught across three different learning formats: face-to-face, online, and hybrid. The study had 168 participants with 63 enrolled in the face-to-face course, 22 in the online section, and 83 in the hybrid section. Larson and Sung (2009) found that there was no significant difference in student performance across the varying course formats. Additionally, based on student satisfaction surveys, the hybrid and online courses compare favorably to the traditional, face-to-face course (Larson & Sung, 2009).

Best Practices in Online Education

With so many students enrolling in online courses each year, it is important to find ways to increase the success and retention of these students. Gaytan (2006) stated that the growth of online courses has raised questions about the effectiveness of online instruction. One way to improve online education is to increase interaction. “Online education requires educators to become proficient in engaging students in both synchronous and asynchronous communication, allowing students to become more competent with the technology” (Gayton, 2006, p. 23). Gayton’s (2006) article states that online instructors must maintain constant communication with students, provide sufficient feedback on assignments, tests, and discussions, encourage student to student interaction, and create a learning environment filled with dynamic interaction.

Harrington (2010) argued that it is possible that technology-based courses can leave students feeling frustrated, overwhelmed, and likely to withdraw from a course. Not offering online courses is not the answer. Rather, there are specific measures that colleges should put in place to ensure the success of students enrolled in online courses.

Harrington (2010) advocates the implementation of the following. Schools should create registration restrictions to ensure that students have the technological and academic skills necessary to be successful in online coursework. Colleges should make sure that students have access to the technology required and that they know how to use it. Students should be eased into online instruction, and instructors should monitor online participating, prompting students who are not participating to engage with the community of learners. Additionally, colleges should increase the use of technology in face-to-face courses because this would create less anxiety for students who ultimately enroll in online courses. Finally, colleges should provide effective training to students and instructors that will help them be successful teachers and learners in an online learning format (p. 17).

Farwell (2013) provided ways to keep online classrooms interesting, interactive, and effective. The author provided suggestions to engage with online students, such as grading with audio, engaging discussion board assignments, and connecting with students in a variety of ways. To increase the presence of an instructor, weekly emails should be sent with a video or audio attachment. Doing this creates an interactive classroom that is engaging, and online students have a greater connection with the instructor (Farwell, 2013).

In a 2015 presentation, Smart advocated increasing student participation in discussion boards by going to an all video format. The presenter argued that by moving away from text-based discussion boards into a video format through the use of programs such as Skype, Facetime, or Google Hangouts, students can better create their own learning communities. Smart (2015) said that the traditional text-based discussion board

is not utilized by students for the purpose intended by instructors. The presentation focused on discussion boards from an online English composition class at an Alabama community college in spring 2015. The course required that students, who were paired in groups of four, be required to log on and complete real-time discussions through a video based forum. This allowed for instant feedback and collaboration for the students involved in the discussions, and it only required students to log on for discussion once per week. Smart (2015) found that while no more students participated in the discussions than in the past, the students who did participate reported gaining much more out of the video calls, and they achieved higher academically.

Developmental Education Online

With so many colleges moving towards online education, developmental classes have not escaped the technological age. College and university administrators debate on whether or not to offer developmental courses online, or if taking developmental students out of the classroom sets them up for failure. These administrators question whether or not developmental students possess the skills required to succeed in online coursework.

Online Developmental Education Students

Students who take developmental courses online most likely do so for the same reasons that any student takes courses online. According to several studies (Hyllegard, Deng, & Hunter, 2008; Jaggars, 2014; Mahoney, 2009; Nguyen, 2015; Romero & Usart, 2014, Wester, 2010), affordability, flexibility, and convenience are the top reasons for taking courses online. However, Petrides and Nodine (2005) suggested that not all developmental education students are prepared for online courses, and that there was a need for studies that can assess student motivation, interest, and willingness in terms of

online developmental coursework. Harrington (2010) acknowledged online courses hold a lot of potential for students, but that

...students already on the educational fringe might not possess the access to technology, computer skills, good reading abilities, and overall academic skills such as good study skills, organization abilities, and abilities to meet deadlines and follow instructions, needed to complete self-directed work online while simultaneously learning course content. (p. 13)

Harrington (2010) also listed poor reading and academic skills as some of the major problems facing students enrolled in online courses. Harrington's (2010) description of the problems facing online education specifically describes a known fact about developmental students. Developmental students have poor academic and reading skills, as evidenced by the fact that they are enrolled in developmental coursework. Petrides and Nodine (2005) stated that conventional wisdom maintains that underprepared students are least likely to benefit from online coursework. However, the number of online developmental courses continue to grow. There are a number of reasons why developmental students may not be successful in online classroom settings. Harrington (2010) suggest developmental students do not necessarily possess the writing and grammar skills used in academic and informal writing to be successful in blogs, discussions, emails, chatrooms, and online postings. These challenges are exacerbated by the text-rich setting of online courses.

Success Rates of Online Developmental Students

Research on the success rates of online developmental education has been limited to a few major studies (Ashby, Sadera, & McNary, 2011; Smart & Saxon, 2016). Ashby

et al. (2011) examined the differences in student success in developmental math courses, differentiated by the course learning formats of online, hybrid, and face-to-face. The authors defined student success as students who completed the course with a grade of 70% (generally, a C) or higher. The study included 167 students from a Mid-Atlantic community college who had either passed a previous developmental math course or had been placed into the course based on scores from a placement test. Ashby et al. (2011) found that the different learning environments were equally effective. However, distance-based and hybrid students performed worse than traditional students, when not taking student attrition into account. When considering only students who completed the course, face-to-face students performed worse than hybrid and online (Ashby et al., 2011). The study by Ashby et al. (2011) shows that students who persist in their online courses genuinely do as well as the face-to-face students, but that number becomes skewed when including the larger number of students who drop out or do not complete the coursework.

Jaggars and Xu (2010) performed a study on online learning in the Virginia Community College system. Although online developmental education is examined in the study, the primary focus is on general online learning of community college students. The authors sample size included 24,000 students who were enrolled across all 23 of Virginia's community colleges. However, because developmental students were not the main point of the study, 24,000 developmental students were not examined. This sample size included all students enrolled in online and traditional courses at Virginia's community colleges. The study included the success and retention rates of "underprepared" students who were placed into developmental coursework through the

use of state mandated placement exams. The authors focused on course completion rate, which they determined as students who completed the course with a grade of D or better. Jaggars and Xu (2010) found students completed the online and hybrid courses at a lower rate than students who took the course in a face-to-face, traditional format. This shows that the negative effect of online education was much stronger among developmental students. One of the more shocking findings of Jaggars and Xu's study was that students who took developmental courses online were less likely to ever move on to college-level math and English courses. Therefore, even though students might have been completing their developmental courses online, they were not moving on to the college-level courses for which the developmental courses had prepared them.

Xu and Jaggars (2011) replicated their study with Washington State Community and Technological school system. Once again, the primary focus of the study was on online student completion rates, but developmental students were also examined. The primary analysis was performed on 51,017 students who were enrolled in one of Washington State's 34 community or technical colleges during the fall term of 2004, and these students were tracked through spring of 2009. As with the Jaggars and Xu (2010) study, all of the students examined were not developmental students. Course completion rates were lower for developmental students who took online courses. Although only a very small portion of developmental courses were offered online and even less through hybrid formats, the completion rates for online courses were less in online and hybrid courses.

Smart and Saxon (2016) conducted a study at an Alabama community college which focused only on students enrolling in a developmental English class. Their study

focused on the effect that course format had on student success rates and student withdrawal rates across traditional and online course formats. Because of the low number of students enrolled in the hybrid course format, Smart and Saxon (2016) grouped online and hybrid students together. While examining a small number of students ($n = 379$), they found that students who took the course online or hybrid were much more likely to make a D or F in the course than students who took the course in the traditional, face-to-face format. In fact, even though there were three times the amount of students in the face-to-face course, there was still a larger number of students completing the course with a grade of D or F in the online course. For students enrolled in the traditional face-to-face course, the mean grade point average was 2.58 ($SD = 1.26$). Of all the students who enrolled in the traditional, face-to-face course ($n = 285$), 27% received As, 32% received Bs, 26% received Cs, 2% received Ds, and 13% received Fs. For students enrolled in the online/hybrid section of the course ($n = 94$), 1% of the students received an A, 12% received an B, 32% received Cs, 5% received Ds, and 50% received Fs. Smart and Saxon (2016) examined withdrawal and success rates; although, the study was conducted on only one developmental course that the college offered.

Harrington (2010) examined the limitations of hybrid developmental writing courses. Harrington cited a lack of community, poor reading skills, and poor study skills as contributing factors to low success rates of hybrid students. In fact, although educators desire to provide online and hybrid courses for the flexibility for students, there is little evidence that suggests that hybrid and online learning can be beneficial for students, and in fact, could prove harmful (Harrington, 2010, p. 15). Harrington (2010) even suggested that the best solution for all developmental students might be to keep them in face-to-face

courses. Because of the challenges faced by developmental students in online courses, the possibility exists that technology-based courses can leave students feeling overwhelmed and frustrated, and unfortunately, might make them more likely to withdraw.

Withdrawal Rates of Online Developmental Students

Though there is more literature on withdrawal and retention rates of online developmental students than on student success rates, there is still a lack of literature on the topic. Zavarella and Ignash (2009) examined the effect that instructional delivery method has on retention rates in developmental math courses. The study was conducted on a large, urban, multi-campus community college in Florida, but with a relatively small sample size. Zavarella and Ignash (2009) focused on withdrawal rates from developmental math courses across the course formats of face-to-face, hybrid, and online. With a sample size of 192 students, 69 enrolled in the face-to-face course, 67 students enrolled in the hybrid format, and 56 enrolled in the online format. They found that students enrolled in the hybrid or online format had a significantly higher withdrawal rate than the face-to-face, lecture based format. Specifically, students who enrolled in the online and hybrid course were twice as likely to withdraw as students in the face-to-face course, as the 42% of the students enrolled in the hybrid course withdrew and 39% of the students enrolled in the online course withdrew, compared to only 20% of the students who withdrew from the face-to-face course.

Ashby et al. (2011) focused on student success rates; however, they stated that retention rates could not be ignored. Although students academically performed around the same level across various course learning formats, when attrition was taken into

account by examining only students that completed developmental courses, it skewed the results to the point where it showed a significant difference in the success rates between online and traditional, face-to-face students. Using the sample size of $n = 167$, it was determined that the traditional, face-to-face course had a 93% completion rate, the hybrid and online courses had a 70% and 76% completion rate, respectively.

The previously cited study by Jaggars and Xu (2010) examined online education in Virginia. The primary focus was on all online students, but developmental students were also included. While not discussing differentiated data, Jaggars and Xu (2010) found that students enrolled in online and hybrid courses were retained at just as high a rate as students who completed the face-to-face course, regardless if the student was enrolled in developmental course work or not. However, this retention number did not take into account students who withdrew prior to the completion of the course.

In the parallel study Xu and Jaggars (2011) completed of the Washington State Community and Technical College system, the primary focus was once again all online students. Interestingly enough, Xu and Jaggars (2011) found that students who took at least one online course in their first fall term were more likely to withdraw from college in the subsequent term than students who took face-to-face courses. This pattern was consistent regardless of developmental status. Additionally, for students who did enroll in the following term, online and hybrid students were more likely to withdraw at the end of one year than face-to-face students. Xu and Jaggars (2011) concluded that regardless of developmental status, many students struggled to complete online coursework, which hindered their academic progress and eventual college completion. Of the larger sample of students examined in the study ($n = 51,017$), there were 28,590 developmental courses

taken by students in Washington State's community colleges. Of the $n = 25,590$, 15% of the students enrolled in the face-to-face course withdrew from the course before completing. Of the students enrolled in the purely online course, 26% withdrew from the course, and 17% withdrew from the hybrid course. The authors determined that there was a statistically significant difference in withdrawal rates among developmental students enrolled in the differing course formats offered by the community college system of Washington State.

Smart and Saxon (2016) studied student withdrawal rates from a developmental English class. Drawing from a sample size of $n = 463$, there 317 students enrolled in the traditional, face-to-face course and 146 students enrolled in the online/hybrid course. Although the face-to-face course had a significantly higher number of students than the online course, the actual number of withdrawals was higher in the online course than in the traditional, face-to-face course. Of the 317 students enrolled in the face-to-face course, 32 withdrew, compared to 52 withdrawals from the online/hybrid course. Specifically, Smart and Saxon (2016) found that students enrolled in the face-to-face course had a 10% chance of withdrawing from the course, compared to a 35% chance of withdrawal for online students. When combining students who either failed the developmental English course or withdrew from it, 71% of all the students who enrolled in the online/hybrid section of the course were unable to move forward to college-level coursework (Smart & Saxon, 2016). According to Smart and Saxon (2016), "regardless for the reasons for the lack of student persistence and success in online developmental courses, there is increasing evidence that this method of course delivery is problematic for underprepared students" (p. 398). Unlike the present study, Smart and Saxon (2016)

combined online and hybrid course formats together, as opposed to treating them as separate course formats.

Best Technology Practices for Developmental Education

Martirosyan, Kennon, Saxon, Edmonson, and Skidmore (2016) examined instructional technology practices in developmental education in Texas. Martirosyan et al. (2016) examined the percentage of faculty that used instructional technology in developmental classrooms, what challenges hindered the use of that technology, and the best practices and tools of technology in developmental classrooms. The researchers administered a survey developed by a group of experienced developmental educators to instructors in developmental education at 2- and 4-year colleges in Texas. Results indicated that 84% of instructors reported using instructional technologies in their developmental classrooms. According to Martirosyan et al. (2016), the best tools used by participants of the study were video tools, computer-based labs, learning platforms, and supplemental websites. Specific programs such as MyMathLab and MyWritingLab were also mentioned by participants of the survey.

Petrides and Nodine (2005) examined online developmental education and provided opportunities for effective practice. The authors stated that “many of the practices that have been found to be important in creating successful developmental education courses also appear to be important in designing effective courses online” (Petrides & Nodine, 2005, p. 45). Best practices as prescribed by Petrides and Nodine (2005) include assessing student readiness. Colleges should implement readiness assessments to determine if students have the technological and study skills necessary to be successful in online developmental courses. The authors also suggest that online

developmental students should be encouraged to make contact with instructors, as well as develop cooperation among other students in the course. Instructors should provide prompt feedback and communicate high expectations to students (Petrides & Nodine, 2005).

In summary, a review of current literature bears a number of assumptions that can be drawn about online developmental education. First, there is a need for more research on the topic, as few studies exist that focus solely on developmental students. There have been general studies on all online students (Jaggars & Xu, 2010), but very few (Smart & Saxon, 2016) that focus specifically how developmental students fare when they take their developmental courses online. Additionally, there are studies on the retention and withdrawal of online students. However, few studies focus on whether or not students who enroll in developmental coursework online are more or less likely to withdraw from their coursework than students who enroll in developmental coursework in a face-to-face, traditional classroom setting. Among the literature there are studies (Smart & Saxon, 2016; Zavarella & Ignash, 2009) that focus on how developmental students who take their coursework online fare in specific subjects such as math or English. However, no literature could be found that took into account how course format affects student success or withdrawal rates among all developmental course subjects. Therefore, the need for further research into this topic is necessary.

CHAPTER III

METHODOLOGY

Introduction

The purpose of this study was to examine the effect that course format has on developmental students' outcomes. Specifically, this study examined whether course format influenced withdrawal rates and success rates in developmental math, reading, and English courses at a community college in Alabama. As online education becomes more prevalent, the need for online developmental classes becomes greater. Therefore, the goal of this study was to determine if there are differences in the withdrawal rates and success rates (students who complete a course with a grade of C or higher) of students enrolled in online or hybrid developmental math, reading, and English courses compared to the withdrawal and success rates of students enrolled in traditional, face-to-face courses.

Research Questions

The following two research questions guided the study:

1. What, if any, are the differences in withdrawal rates from developmental math, reading, and English courses at a community college in Alabama over a three-year time period, according to various course formats?
2. What, if any, are the differences in student success rates in developmental math, reading, and English courses at a community college in Alabama over a three-year time period, according to various course formats?

As community colleges continue to expand their online course offerings into the developmental course sequences, research into how course format affects student success and withdrawal rates is necessary.

Research Design

Although much research has focused on the effect that course format has on learning, few studies (Jaggars & Xu, 2010; Smart & Saxon, 2016; Xu & Jaggars, 2011) have had the primary focus of determining what effects course format has on students enrolled in developmental classes. Archived, quantitative institutional data from a community college in Alabama was used to determine the differences in withdrawal and success rates by course delivery format for students enrolled in developmental math, reading, and English courses over a three-year time period. Data were collected by the chief information officer at the school and shared with the researcher upon approval of the study by the institution's review board. Data were obtained from end-of-the-semester grade reports for the last three years. The period of three years was chosen because of the recency of the data, and in 2013, the college placed a new person as the coordinator of developmental studies in English and reading. The data were disaggregated according to course format.

Quantitative research involves collecting numerical data based on closed-end questions. It is an approach for testing objective theories by examining relationships among variables (Creswell, 2014). Researchers can use quantitative methods to make predictions after analyzing numbered data by using statistical methods. Additionally, quantitative studies use preidentified variables to determine effects and relationships among the variables. A quantitative, quasi-experimental research design was used for

this study as desired outcomes will be reported in a numerical format. Using numerical data to compare relationships among variables in a study is, according to Creswell (2014), the backbone of any quantitative study. Because the dependent variables (student success rates and student withdrawal rates) and the independent variable (course formats) have already been established through institutional data sets, strictly numerical data can be used to examine the relationships among the variables.

The Research Site

The study was conducted at a community college in Alabama. In the fall term of 2014, the college employed 135 instructors, full-time and adjunct included, with a student population of 2,258. The college employed six adjunct developmental instructors, and four full-time math instructors taught at least one developmental course per semester. The ethnicity breakdown of the student population is as follows: 79% of the students are White; 6% are African American; 8% are Hispanic; and 7% are classified as “other” (Asian, American Indian, or unknown). In terms of assistance, 77% of students receive some form of financial aid, whether it be Pell Grant, student loans, or scholarships (ACHE, 2014). The college offered developmental classes in online, hybrid, and traditional course formats across two campuses. In fall 2014, 887 students enrolled as freshmen at the college. Of that number 596 placed into at least one developmental course.

The college offered four developmental courses: one English (ENG 093), one reading (RDG 085), and two math (MTH 091, MTH 098). All four developmental courses are offered in a face-to-face class that meets on campus at set times of the week. All developmental reading and English classes during the fall and spring semesters were

taught by adjunct faculty, while one to two developmental reading and English courses were taught by full-time faculty during the shortened summer sessions. Developmental math classes were taught by both adjunct and full-time faculty. The college currently offers 60% of its classes in the face-to-face format, with the rest being split between the online format and the hybrid format. Every full-time instructor teaches at least one online course per semester. The average class section size was 23 students. Because of increased enrollment in online and developmental courses, the college will continue to offer developmental classes in all course formats.

The college employs a director of online learning, whose role is to support all faculty, full-time and adjunct, in any way that they need for their online classes. The college requires that all faculty participate in a Blackboard online learning seminar each summer before fall classes begin. These seminars can focus on best practices, but most of the time are used to show faculty how to use new tools that have been integrated into the online learning platform used by the college. Additionally, all full-time faculty were recently required to go through “Quality Matters” certification. Quality Matters is a nationally recognized program that seeks to promote and improve the quality of online education and student learning.

Participants

A purposive sampling method included all students who have been enrolled in at least one developmental course at the college over a three-year period from 2012 to 2014, approximately 1,800 students. This included students who took the course in the traditional, hybrid, or fully-online formats, the independent variables for this study. Students were placed into developmental coursework according to ACT and COMPASS

Exam (ACT Inc., 2012) scores. Developmental courses are not optional for students if placement exam scores mandate that developmental courses are needed. Scoring below 70% in reading placed the student into developmental reading; scoring below 65 in English placed the student into developmental English; scoring below a 35 on the pre-algebra section of the COMPASS (ACT Inc., 2012) placed a student into the lowest level of developmental math; scoring above a 36 on the pre-algebra but less than a 27 on the algebra section of the COMPASS (ACT Inc., 2012) placed students into the highest level of developmental math. Students are, however, able to self-select which course delivery method in which they enroll. In the developmental math, reading, and English courses, traditional and online courses are built with the same types of assignments, assessments, and course materials. Although assessments and/or assignments may not be exactly the same across course formats and professors may add their unique teaching styles to each class or assignment, assignments are designed to assess the same skills. Developmental math courses are standardized across all sections and formats in ways of schedule, topics, and assessment types. The developmental reading and English courses were not standardized, but possessed the same course objectives. However, the schedule, necessary readings, and types of assessment were set by each individual instructor.

Description of the Database

As course performance and withdrawal rates were not compared across demographics, no identifying information was attained for the participants. The researcher only had access to a randomly assigned student number, semester in which the developmental course was taken, course delivery format, and final grade. Data were collected and organized by the chief information officer of the college using Strategic

Planning Online (SPOL). The criteria included a time span of three school years (2012-2013, 2013-2014, 2014-2015), and included all students who had taken a developmental course during that time, regardless of course format.

Data Analysis Plan

The purpose of this research was to determine what effect, if any, course format has on student success rates in developmental courses at a community college in Alabama, as well as to determine the effect that course format has on withdrawal rates in developmental courses at that same college. Appropriate analyses examined differences in withdrawal and success rates based on course format. As such, analysis of variance methods was considered and described in greater detail in this section.

Variables

Course format (traditional, hybrid, or online) was the independent, categorical variable for both research questions. Although desired outcomes for the two research questions are different, both questions examined the effect that the independent variable has on the outcomes. There were three types of course formats examined as independent, autonomous methods of course delivery: traditional, hybrid, and online. As such, the independent variable for this study was a categorical variable. The dependent variables for this study were student success rates (passing the class with a grade of C or higher) and student withdrawal rates. As such, student success rates were an ordinal variable, as it deals with rank, and withdrawal rates were classified as an interval variable.

Traditional, face-to-face course format. One classification of the variable of course format was the traditional, face-to-face format. Students enrolled in this course format typically met in a classroom on the college campus for approximately 3 hours per

week, divided over two class meetings for the entire semester (fall, spring, or summer). Students are in a general classroom setting with a maximum of 25 students attending each course section. Per observation, the class was conducted in the traditional lecture format. As there are two developmental math courses, MTH 091 and MTH 098, the college does offer these courses in half semesters, where students actually met 4 days per week for an hour and fifteen minutes. This allowed students to complete the entire developmental math sequence (two courses) in one semester. However, students were not required to take their developmental math courses in the condensed format. The RDG 085 course was only offered in traditional, full length semesters (fall and spring). The ENG 093 course was offered in a half semester that met 4 days a week, and once completed students enrolled in English Composition I for the second mini term; however, this was only during the summer term. During the fall and spring terms, the course was offered two days per week for the duration of the semester. In the traditional format, students took formal assessments in class and completed different supplemental assignments and assessments out of class. All developmental courses offered by the college were offered in a traditional, face-to-face format.

Online format. Another classification of the variable of course format was the online course format. Students enrolled in the entirely online course format never met in a formal classroom. Students seldom met or conversed with the instructor, except through electronic means such as email, chat, discussion forums, or synchronous learning sessions. All assessments and assignments, formal or supplemental, were conducted online through the learning management system Blackboard (Blackboard Inc., 2017). All of the developmental courses were offered in the fully online format except the lowest

level of developmental math. All courses that were taken in the strictly online format were offered as full length semester courses.

Hybrid format. The final classification of the variable of course format was the hybrid course format. Students enrolled in the hybrid course format completed at least half of their work through a commercial online learning management system. Students who enrolled in the hybrid course format met with their instructors at least once per term. Every developmental course offered by the college had at least one section offered in the hybrid course format, and the students could take the course in full length semesters or mini terms.

Analysis of Variables

Following standard data preparation procedures and descriptive statistics, data were analyzed to answer each research question. There were no missing data as all students who have taken developmental courses in the last three years were examined. For research question one, student withdrawal rates from developmental courses were examined in order to determine the effect course format had on whether or not the students completed the course. This portion of the study included all students who voluntarily or involuntarily withdrew from the course. If a student received an incomplete in the course, it was coded as a withdrawal because the student did not in fact complete the course. There were only two possible outcomes in relation to this research question: withdrew or did not withdraw, and the data were coded as 1 and 0 respectively. Therefore, the data were classified as nominal. Because of this, a chi-square test was conducted. Chi-square tests are used to determine whether an observed relationship between two categorical variables is statistically significant (Johnson & Christensen,

2014). In this case, the dependent variable (withdraw or did not withdraw), as well as the independent variable (course format), were both categorical. Therefore, since the purpose of this research question was to determine the relationship between these two categorical variables, a chi-square test was appropriate. The assumption was made that all observations are independent of one another.

For research question two, student grades were examined to see what, if any, effect course format had on the students' success rate in the developmental course or courses. Only students who completed the developmental courses were included for this portion of the study, as students who withdrew from the course did not receive a grade. Successful completion of the course was determined by a passing grade of A, B, or C. Students who finished the course with a grade of D or F were considered as failing, as students receiving these grades were not able to proceed to the college-level courses that the developmental courses are designed to prepare them for. This study included the grades of D and F in the analysis, as previous studies have not.

In all courses, students could have received a grade of A, B, C, D, or F. These data were coded as 4, 3, 2, 1, and 0 respectively. In analyzing these interval data, a one-way ANOVA, or analysis of variance test, was performed. An analysis of variance test is used to compare two or more group means. It is appropriate when the data includes one quantitative dependent variable and one categorical independent variable (Johnson & Christensen, 2014). For research question two, there is one quantitative dependent variable (student grade) and one categorical independent variable (course format); therefore, an analysis of variance (ANOVA) was appropriate for this study.

Assumptions of ANOVA and Chi-Square. Using the ANOVA test, the following assumptions were made. Each sample was drawn from a normally distributed population. All populations had homogeneity of variance. All samples were completely independent of one another. Specifically, all grade observations were independent of each other. Within the sample, observations were random and independent of one another. All of these assumptions reflect the assumptions offered by Johnson and Christensen (2014).

The assumptions for chi-square were as follows. The analyzed data were normally distributed. All grade observations were independent of one another, and there was homogeneity of variance within the population. These assumptions are in line with the guidance offered by Johnson and Christensen (2014).

Limitations

The study had the following limitations. First, because the study was based on a small, single institution in rural Alabama, the findings and conclusions may not be reflective or generalized to students at other colleges or universities. Secondly, no course specific content was taken into account when analyzing the data. Therefore, different teaching styles, assessment methods, or learning tools might not have been the same for all students. The research did not look into specific sections or designs of the courses to determine their similarities and/or differences. Additionally, the data analyzed were from a short, three-year time period from 2012-2015, and did not take into account what happened in these courses in the years prior. Finally, some of the developmental courses were standardized across all course formats while others were not.

Clearly, the college offers a wide array of options for developmental students. These options, though supporting student flexibility and choice, offer unique challenges to the present research. For the sake of this study, only the effects of face to face, hybrid, or online course learning mediums, on student success and withdrawal rates were examined.

In summary, the prior chapter outlined plans for conducting the proposed research study. The following chapters provide the results of the study, as well as a discussion on the implications of the results. A one-way Analysis of Variance was used to examine group differences on grades and persistence rates. The limitations of this study are provided and the potential impact of the study are examined. These analyses have the potential to inform practice and andragogy by showing how course format affects students enrolled in developmental education courses. These results also could inform college policy and practice in terms of online developmental education courses, and best practices for these courses.

CHAPTER IV

RESULTS

Introduction

With advancements in modern technology, increasing online course offerings is becoming a priority at many institutions of higher learning. Additionally, as tuition continues to rise, community colleges are becoming an affordable option for many students. These community colleges are attractive to individuals because of their smaller class sizes, flexible schedules, and community colleges offer a great number of their courses online. Community colleges have had the highest growth rate in online education and account for over 54% of online enrollments (Ashby, Sadera, & McNary, 2011). However, because of the differences in academic ability prevalent among community college students, many are forced to take developmental courses before moving into collegiate level coursework.

The purpose of this quantitative study was to determine the effect that course format had on developmental students' outcomes. All developmental courses offered at a community college in Alabama were analyzed. As many students begin their collegiate careers at a community college each year, conducting this study at a community college is beneficial and acceptable. Specifically, the goal of the study was to determine the differences in withdrawal and success rates (students who completed the course with a grade of C or higher) of students enrolled in online or hybrid developmental math, reading, and English courses compared to the withdrawal and success rates of students enrolled in traditional, face-to-face courses.

Research Questions

The following two research questions guided the study:

1. What, if any, are the differences in withdrawal rates from developmental math, reading, and English courses at a community college in Alabama over a three-year time period in traditional face-to-face, hybrid, and online courses?
2. What, if any, are the differences in student success rates in developmental math, reading, and English courses at a community college in Alabama over a three-year time period in traditional face-to-face, hybrid, and online courses?

By drawing upon a sample of students who took developmental courses at an Alabama community college, this study examined the effects of course offering medium on student success outcomes.

Description of the Sample

The study was conducted at a community college in Alabama. The college offers developmental courses in online, hybrid, and traditional course formats across two campuses. A purposive sample was taken from all students who enrolled in at least one developmental class at the college from 2012 to 2014. This sample included all developmental education students ($n = 3,863$) regardless of which course format they were enrolled in: traditional face-to-face ($n = 2,941$), online ($n = 614$), or hybrid ($n = 307$). There were no missing data as all students who have taken developmental courses in the last three years were examined.

Four courses offered by the college were examined: two developmental math courses (MTH 091 and MTH 098), one English course (ENG 093) and one reading course (RDG 085). Students were placed into these courses based off scores from the

placement exams, the ACT or COMPASS (ACT Inc., 2012) exam. Scoring below 70% in reading placed the student into developmental reading; scoring below 65% placed the student into developmental English; scoring below a 35 on the pre-algebra section of the COMPASS Exam placed a student into the lowest level of developmental math (MTH 091); scoring above a 36 on the pre-algebra but less than a 27 on the algebra section of the COMPASS (ACT Inc., 2012) placed students into the highest level of developmental math. Although students are required to take the developmental courses before being allowed to enroll in college level courses, they are not required to register for a specific course format. They are free to choose whether they take the course in the traditional face-to-face, online, or hybrid format.

Results for Research Question One

The focus of research question one was to determine the effect that course format had on withdrawal rates at an Alabama community college. The goal was to determine if a specific course format (face-to-face, online, or hybrid) made a student more or less likely to withdraw from his or her developmental coursework.

Descriptive Statistics for Research Question One

For research question one, student withdrawal rates from developmental courses were examined in order to determine the effect course format had on whether or not students completed the course. This included all students who voluntarily or involuntarily withdrew from the course. For purposes of the study, if a student received an incomplete for the course, it was coded as a withdrawal because the student did not in fact complete the course. There were only two possible outcomes in relation to this research question: withdrew or did not withdraw. These outcomes were coded as 1 and

0 respectively, giving nominal data. As chi-square tests are used to determine the relationship between two categorical variables (Johnson & Christensen, 2014), a chi-square test was conducted. Table 1 provides descriptive statistics for research question one.

Table 1. Descriptive statistics for student withdrawal rates.

		Method of Delivery			Total
		Blended	Face-to-face/Traditional	Online	
Did the student withdraw from the course?	Yes, Withdrew	136	390	101	627
	No, Completed	171	2551	513	3235
Total		307	2941	614	3862

Between 2012 and 2014, 3,862 students enrolled in developmental coursework across all course formats at the community college ($n = 3,862$). There were 627 course withdrawals among all course formats and 3,235 course completions; therefore, approximately 16% of all students who enrolled in the developmental courses either withdrew from the courses or did not complete those courses.

Of the total number of students enrolled in developmental courses, 2,941 enrolled in the traditional face-to-face format. These courses met three hours a week. Of that number, 2,551 completed the course, and 390 students did not complete the course. Among the students who took the course in the traditional, face-to-face format, 87% completed the course, while 13% withdrew from the course. The number of withdrawals from the face-to-face course was less than the average number of withdrawals when including all course formats.

There were 614 students who enrolled in the completely online course format. These students did not meet with their instructors at all during the term in which they

took the course. Of the 614 students, 513 students completed the course, while 101 students did not complete the course. Among the students who took the course in the completely online format, 84% of the students completed the course while 16% did not complete the course. The number of withdrawals from the purely online course was on par with the average number of withdrawals when including all course formats.

There were 307 students who enrolled in the hybrid course format. These students physically met with an instructor during the semester, but completed at least half of their coursework online. Of the 307 students who enrolled in the hybrid format, 171 students completed the course while 136 students withdrew or did not complete the course. Among the students who took the course in the hybrid format, 58% completed the course, while 42% withdrew or did not complete the course. This number is substantially higher than the average number of withdrawals when considering all course formats. Using these values to determine if course format had a statistically significant effect on withdrawal rates, a Pearson Chi-Square test was conducted. Chi-square tests compare the expected and actual distributions across differing categories (Statistical Interpretation, 2016). It was determined that there was a statistically significant ($p < .05$) difference in withdrawal rates based on course format. Table 2 displays the results of the Chi-Square analysis.

Table 2. Results for chi-square for student withdrawal rates.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	196.955 ^a	2	.000
Likelihood Ratio	153.684	2	.000
Linear-by-Linear Association	59.019	1	.000
N of Valid Cases	3862		

Effect sizes reveal differences in data relative to other educational research studies. They can be used to determine the amount of influence that one variable has over another. According to Murphy and Myors (1998), effect size can be looked at as a measurement of the amount of influence an independent variable has on a dependent variable. For research question one, the effect size would show how much of an effect course format had on student withdrawal rates. To determine the effect size for research question one, a Phi and a Craver's V test were conducted, as these two tests can be used to determine effect size when analyzing data using a chi-square test. The correlation coefficient is used to represent the association between two categorical variables. Based on the Phi and the Cramer's V, course format had a .23 effect size on course withdrawal rates. Course format exerted .23 amount of influence on whether or not a person withdrew from a developmental course or not. Based on the Phi and Cramer's V, the effect size of .23 is statistically significant ($p < .05$). According to Murphy and Myors (1998), this can be classified as a small effect size. Table 3 shows the effect size analysis for research question one.

Table 3. Effect size analysis for student withdrawal rates.

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.226	.000
	Cramer's V	.226	.000
N of Valid Cases		3862	

Results for Research Question Two

The focus of research question two was to determine how much influence course format had on student success rates at an Alabama community college. The goal was to determine if the varying course formats (face-to-face, online, or hybrid) influenced the final grades for students enrolled in developmental courses.

Descriptive Statistics for Research Question Two

For research question two, student grades were examined to see what, if any, effect course format had on the students' success rate in the developmental course or courses. For this analysis, only students who completed the course and finished with a grade were analyzed, as students who withdrew from the course did not receive a grade. Successful completion of the course was determined by a passing grade of A, B, or C. Students who finished the course with a grade of D or F were considered as failing because these students were unable to proceed to the college-level courses that the developmental courses were supposed to prepare them for.

Since the data being analyzed were interval data, a one-way ANOVA, or analysis of variance test, was performed. Because the data contained one quantitative dependent variable (student grade) and one categorical independent variable (course format), and we were comparing two group means, an ANOVA test was appropriate (Johnson &

Christensen, 2014). In analyzing the data, the following assumptions were made. The samples were drawn from a normally distributed population. All populations had homogeneity of variance. All samples were independent of each other, as were all grade observations. Additionally, within the sample, all observations were made randomly and independent of each other. To test that the data were normally distributed, a Shapiro-Wilke test and a Kolmogorov-Smirnov test were performed. Based on a $p < .05$, both tests reported a statistically significant result. Therefore, it was confirmed that the data within the study were normally distributed. To test for homogeneity of variance, Levene's Test of Equality was performed and the results verified the assumption that there was equal variance $F(2, 3232) = 5.02, p = .007$. Table 4 shows tests for normality to determine that the data were normally distributed.

Table 4. Tests for normality of data.

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Developmental Course Grade	.213	3236	.000	.867	3236	.000

In all courses, students could have received a grade of A, B, C, D, or F. These data were coded as 4, 3, 2, 1, and 0 respectively. After removing the students who withdrew or did not complete the course, a total of 3,236 students completed the course and finished with a grade. Among all students who completed the course, the average final score was a C ($M = 2.5, SD = 1.29$). Of the 3,236 students who completed the course, 847 finished with an A (26%); 976 finished with a B (30%); 777 finished with a C (24%); 230 finished with a D (7%); and 406 finished the course with an F (13%). Therefore, 20% of everyone who

enrolled in the developmental courses, regardless of course format, failed the course with a grade of D or F, and was unable to proceed into the college level course. Table 5 shows the number of occurrences of each different grade that was possible for all course formats.

Table 5. Grade distribution among all course formats.

Developmental Course Grade					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	F	406	10.5	12.5	12.5
	D	230	6.0	7.1	19.7
	C	777	20.1	24.0	43.7
	B	976	25.3	30.2	73.8
	A	847	21.9	26.2	100.0
	Total	3236	83.8	100.0	
Missing	99	627	16.2		
Total		3863	100.0		

When looking at all developmental course offerings, regardless of course format, the following descriptive statistics were determined. With a sample size of $n = 3,236$, there was a mean grade point average of 2.50 ($SD = 1.29$). With a 95% confidence interval, the lower bound was 2.46 and the upper bound was 2.55. The median grade point average was 3.00, with a variance of 1.67. The distribution had a skewness coefficient of -0.62 with a standard error of .04. The distribution had a kurtosis coefficient of -0.62 with a standard error of .09. Table 6 shows descriptive statistics for research question two.

Table 6. Descriptive statistics for research question two.

Descriptives		Statistic	Std. Error
Developmental Course Grade	Mean	2.50	.023
	95% Confidence Interval for Mean	Lower Bound	2.46
		Upper Bound	2.55
	5% Trimmed Mean	2.56	
	Median	3.00	
	Variance	1.669	
	Std. Deviation	1.292	
	Minimum	0	
	Maximum	4	
	Range	4	
	Interquartile Range	2	
	Skewness	-.615	.043
	Kurtosis	-.615	.086

In the traditional face-to-face course there was a student enrollment of 2,551 with a mean grade point average of 2.61 ($SD = 1.25$). With a 95% confidence interval, the lower bound was 2.56 and the upper was 2.66. The distribution had a skewness coefficient of -0.67 over standard error of .03, and the kurtosis coefficient was -0.46 with a standard error of .03. Of the sample ($n = 2,551$), 737 students received an A (29%); 767 students received a B (30%); 602 students received a C (24%); 194 students received a D (7%); and 251 students received a grade of F (10%). The greatest percentage of grades from the face-to-face course were As and Bs, as almost 60% of all students who enrolled in the traditional course format not only passed the class, but did so with a grade of A or B. The percentage of students who were unable to proceed into the college-level course from the traditional face-to-face developmental course was 17%. Table 7 shows descriptive statistics for each course format individually.

Table 7. Descriptive statistics for grades in various course formats.

Developmental Course Grade						
Method of Delivery	Mean	N	Std. Deviation	Std. Error of Mean	Kurtosis	Skewness
Blended	1.50	171	1.356	.104	-1.125	.271
Face-to-face/Traditional	2.61	2551	1.249	.025	-.459	-.671
Online	2.33	513	1.321	.058	-.744	-.603
Total	2.50	3235	1.292	.023	-.615	-.615

Students who were enrolled in the hybrid course ($n = 171$) met with their instructors during the year, but completed at least half of their work online. The mean grade point average for students enrolled in the hybrid course was 1.50 ($SD = 1.36$). With a 95% confidence interval, the lower bound was 1.30 and the upper bound was 1.69. The distribution had a skewness coefficient of .27 with a standard error of .10, and a kurtosis coefficient of -1.13 with a standard error of .10. From the students who enrolled in developmental courses and completed those courses ($n = 3,236$), 171 students enrolled in the hybrid format. From the students who enrolled in the hybrid format ($n = 171$), 16 students received an A (9%); 22 students received a B (13%); 58 students received a C (34%); 10 students received a D (6%); and 65 students received an F (38%). Therefore, the number of students who enrolled in the hybrid course format developmental courses that were unable to proceed to the college level course was 75 out of 171, or 44%. The greatest number of students who enrolled in this course did not finish with a passing grade. This number was well over double the number of students who failed the traditional face-to-face course.

Students who enrolled in the completely online format ($n = 513$) never saw an instructor in a classroom setting, as all of their work was completed in the online format.

The mean grade point average of purely online students was 2.33 ($SD = 1.32$). With a 95% confidence interval, the lower bound was 2.22 and the upper was 2.44. There was a skewness coefficient of -0.60 with a standard error of .06, and a kurtosis coefficient of -0.74 with a standard error of .06. Of the number of students who completed their developmental courses ($n = 3,236$), 513 students took the course in the entirely online format. Of the students who took the course in the entirely online format ($n = 513$), 94 students received an A (18%); 187 students received a B (36%); 116 students received a C (23%); 26 students received a D (5%); and 90 received an F (18%). The greatest number of students who enrolled in the purely online course received Bs and Cs as their final course grade (59%), and were able to move on to the college level course. Of the students who enrolled in the online course ($n = 513$), 23% were unable to move on to the college-level course, which was more failures than the traditional, face-to-face format, but less than the hybrid format. From the data, the greatest numbers of As and Bs came from the traditional face-to-face course. The greatest number of Bs and Cs came from the purely online course format. Finally, the greatest number of Ds and Fs came from the hybrid course format. There was a difference of over one whole grade point average point between the hybrid and the traditional face-to-face course.

In order to determine the amount of influence that course format had over student grades, the effect size of the study had to be calculated. To determine the effect size for an ANOVA based research question, it is appropriate to use Cohen's D . The effect size or amount of influence that course format has on student grades is $d = .040$. According to Cohen (1988), this can be seen as a medium effect size. Based on a value of $p < .001$, the effect size between the independent and the dependent variables for research question

two is statistically significant. Table 8 shows how effect size was calculated for research question two.

Table 8. Effect size for student success rates.

Dependent Variable: Developmental Course Grade						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	215.363 ^a	2	107.682	67.143	.000	.040
Intercept	5052.050	1	5052.050	3150.128	.000	.494
Method	215.363	2	107.682	67.143	.000	.040
Error	5183.353	3232	1.604			
Total	25670.000	3235				
Corrected Total	5398.716	3234				

a. R Squared = .040 (Adjusted R Squared = .039)

Since the data being analyzed was interval data, a one-way ANOVA, or analysis of variance test, was performed. Because the data contained one quantitative dependent variable (student grade) and one categorical independent variable (course format), and we were comparing two group means, an ANOVA test was appropriate (Johnson & Christensen, 2014). In analyzing the data, the following assumptions were made. The samples were drawn from a normally distributed population. All populations have homogeneity of variance. All samples were independent of each other, as were all grade observations. Additionally, within the sample, all observations were made randomly and independent of each other.

Post-hoc tests were conducted to determine the specific effect that the variables had between each other. These tests were run to see if there was a significant difference between two course formats when not including one course format. The first test conducted was a Tukey HSD. Face-to-face was compared explicitly to hybrid, and then explicitly to online. When comparing traditional face-to-face courses against hybrid

courses, there was a mean difference of 1.11 with a standard error of .10. Based on the value of $p < .05$, the Tukey HSD test determined that there was a statistically significant effect on student grades based on course format between the traditional face-to-face course and the hybrid course. In testing the face-to-face course format with the purely online course, there was a mean difference of .28 with a standard error of .06. Based on the value of $p < .05$, the Tukey HSD test determined that there was a statistically significant effect on student grades based on course format between the traditional face-to-face course and the online course. A Scheffe test was also conducted to determine significance between course variables. When comparing the traditional, face-to-face to only the hybrid section, the Scheffe test reported a mean difference of 1.11 with a standard error of .10. With the same parameters as the Tukey HSD, the Scheffe test showed a statistically significant difference between the traditional and the hybrid courses ($p = .0001$). When comparing the traditional face-to-face course format to only the online course format, there was a mean difference of .28 with a standard error of .06. Based on $p < .05$, the Scheffe test determined that there was a statistically significant effect on student grades based on course format between the traditional face-to-face course and the online course. Two more multiple comparisons tests were run: the Bonferroni and the Games-Howell. Both of these tests produced results similar to each other, as well as the Tukey and the Scheffe tests. In comparing the traditional, face-to-face course with only the hybrid course, there was a mean difference of 1.11 with a standard error of .10, and a p value of .00. Therefore, there was a statistically significant difference between the traditional and the hybrid course. In comparing the traditional face-to-face to the purely online course, there was a mean difference of .28 with a

standard error of .06. Based on $p < .05$, the Bonferroni and the Games-Howell tests both show a statistically significant difference between the online and the traditional course format. Each test performed replicated the results of the previous tests. Table 9 displays the results of post-hoc tests that were conducted for research question two.

Table 9. Post-hoc results for research question two.

Dependent Variable: Developmental Course Grade						
	(I) Method of Delivery	(J) Method of Delivery	Mean Difference (I-J)	Std. Error	Sig.	95% ... Lower Bound
Tukey HSD	Blended	Face-to-face/Traditional	-1.11 [*]	.100	.000	-1.34
		Online	-.83 [*]	.112	.000	-1.09
	Face-to-face/Traditional	Blended	1.11 [*]	.100	.000	.87
		Online	.28 [*]	.061	.000	.13
	Online	Blended	.83 [*]	.112	.000	.57
		Face-to-face/Traditional	-.28 [*]	.061	.000	-.42
Scheffé	Blended	Face-to-face/Traditional	-1.11 [*]	.100	.000	-1.35
		Online	-.83 [*]	.112	.000	-1.11
	Face-to-face/Traditional	Blended	1.11 [*]	.100	.000	.86
		Online	.28 [*]	.061	.000	.13
	Online	Blended	.83 [*]	.112	.000	.56
		Face-to-face/Traditional	-.28 [*]	.061	.000	-.43
Bonferroni	Blended	Face-to-face/Traditional	-1.11 [*]	.100	.000	-1.35
		Online	-.83 [*]	.112	.000	-1.10
	Face-to-face/Traditional	Blended	1.11 [*]	.100	.000	.87
		Online	.28 [*]	.061	.000	.13
	Online	Blended	.83 [*]	.112	.000	.56
		Face-to-face/Traditional	-.28 [*]	.061	.000	-.42
Games-Howell	Blended	Face-to-face/Traditional	-1.11 [*]	.107	.000	-1.36
		Online	-.83 [*]	.119	.000	-1.11
	Face-to-face/Traditional	Blended	1.11 [*]	.107	.000	.86
		Online	.28 [*]	.063	.000	.13
	Online	Blended	.83 [*]	.119	.000	.55
		Face-to-face/Traditional	-.28 [*]	.063	.000	-.42

Summary

After an extensive analysis of the data, it can be determined that course format has a statistically significant effect on both student withdrawal rates and student success

rates. Using the chi-square test with a p value of less than .05, the findings of research question one suggests that course format has a .23 effect on student withdrawal rates. After running a one-way ANOVA test, based on a p value of less than .001, the findings of research question two suggest that course format exerts $d = .04$ influence over student success rates. These findings are statistically significant as $p = .0001$. Finally, post-hoc tests were conducted and all results replicated the findings of the one-way ANOVA that shows the statistically significant effect that course format has on grades. These findings are consistent with what was found in Smart and Saxon (2016). These results also indicated the necessity for further analysis into course format and its effects on developmental education students. The following chapter will provide a discussion on this research, complete with how the study's findings are parallel to previous studies. Additionally, the following chapter will provide a summary of the findings and conclusions of the study, the implications from the results, as well as recommendations for practice and recommendations for future research.

CHAPTER V

DISCUSSION

The number of students enrolling in college each year is increasing. According to the National Center for Education Statistics (2016), 20.5 million students were expected to enroll in American colleges and universities for the fall 2016 term. This number has increased 5.2 million since fall 2000 (NCES, 2016). The American Association of Community Colleges (2014) reported that 12.8 million students annually are choosing community colleges to start their educational careers. There are a number of reasons why such a large amount of students are choosing community colleges to begin in higher education. Tuition rates are substantially lower than 4-year universities. A student can normally find community college within 50 miles of his or her home, and these colleges accept students with weak academic records who might not be accepted into a university (Townsend, 2007). According to Floyd (2003), “Community colleges have transformed American higher education, replacing elitist traditions with commitment to change, where that change makes higher education accessible to countless thousands who otherwise would be excluded from the benefits of American higher education” (p. 337).

Every year, community colleges open their doors to a substantial number of academically underprepared students, allowing a wide array of community members the advantages of education. Because colleges admit students who might not be prepared to start collegiate coursework right away, it becomes the responsibility of the college to provide developmental education services for those students who are not academically ready to be successful in higher education. Horn et al. (2009) reported that half of all students who enroll in college now require some form of developmental education. This

statistic indicated that recent trends in enrollment show that a very large number of students are coming to college underprepared and are not ready to complete college-level coursework. Although some studies (Safran & Visher, 2010; Venezia et al., 2010) suggested that many students are inaccurately placed into developmental classes each year, it is a fact that many students ultimately need additional preparation before enrolling in regular, college-level classes.

Floyd (2003) stated that community colleges have transformed American higher education with a commitment to change and by making higher education available to thousands of people who traditionally might be excluded. One way that community colleges have done this has been through their commitment to online education. Ashby, Sadera, and McNary (2011) stated that community colleges have had the highest growth of online education and account for over 54% of online enrollment. As colleges struggle to meet the demand for nontraditional students, many of these higher education institutions are turning to online and hybrid courses (El Mansour, Bassou, & Mupinga, 2007). This commitment to online education has opened the educational door for many students who have families, jobs, and other responsibilities that would normally prevent them from becoming college students. College administrators are also attracted to online courses because of the economic value that they have, as the overhead expense for teaching online courses is lower than the traditional, brick and mortar classroom setting (Frantzen, 2014).

Increasing their online course offerings and improving developmental education services has been a focus of community colleges, as this allows them to serve a greater number of students and increase their enrollments. However, the question becomes in

this situation, should colleges offer online courses to academically underprepared students? Online college courses already suffer higher attrition rates than their traditional, face-to-face counterparts (Cochran et al., 2013). Given the demands for distance learning and developmental education, it is not surprising that colleges are increasing online and hybrid options for developmental courses (Petrides & Nodine, 2005). However, according to Harrington (2010) developmental students often do not possess the reading and study skills that are necessary to be successful in an online course.

The following sections provide an overview of the study, a summary of the findings, and conclusions that can be drawn from the results. The summary of the findings provide a thorough review of the main points of the results. Then the limitations of the study are discussed, followed by the implications of the results of this study. The chapter concludes with recommendations for best practices in online developmental education, as well as recommendations for further research into this topic.

Summary of the Study

This quantitative research study was designed to determine what effect, if any, that course format had on withdrawal rates and student success rates for students who were enrolled in developmental coursework. The traditional face-to-face, hybrid, and purely online course formats were examined in developmental math, reading, and English courses at a community college in Alabama. This study used archived, quantitative institutional to determine the differences in withdrawal rates and success rates by course delivery format for students enrolled in developmental classes. The college involved in the study had a student population of 2,258, and employed 135 instructors, full-time and

adjunct included. In fall 2014, 596 out of 887 enrolling students required at least one developmental course. Data were obtained and examined for all developmental courses offered by the college, which included one reading course, one English course, and two math courses.

Summary of Findings

The focus of the following research questions was withdrawal rates and student success rates in developmental courses. As stated in chapter one, clearly defined research questions are important for quantitative study, as they can help pinpoint issues, discrepancies, and problem areas for institutions of higher learning.

Research Question One

Research question one focused on the differences in withdrawal rates among the varying course formats offered by the college. Specifically, the goal of research question one was to determine if students were more or less likely to withdraw from a developmental course if they were enrolled in the face-to-face course, the online course, or the hybrid course. In other words, does course format directly influence withdrawal rates from developmental courses?

The results indicated that course format has a statistically significant effect on student withdrawal rates from developmental courses. Between 2012 and 2014, 3,862 students enrolled in developmental coursework across all formats at the community college associated with this study. When analyzing all course formats, 16% of all students who enrolled in developmental coursework either withdrew from the courses or did not complete them.

When breaking down withdrawal rates between the differing course formats, it is obvious that course format has an effect on whether or not students complete a developmental course. Only 13% of students who enrolled in the traditional face-to-face course withdrew from or did not complete the course, a number lower than the withdrawal average as a whole. However, when examining students who enrolled in the hybrid course format, it was determined that 42% of students withdrew or did not complete the course, which is a substantially higher number than the traditional course. Students who enrolled in the purely online course format had a withdrawal rate of 16%, which is on par with the withdrawal rate as a whole among developmental coursework. Based on the results of the study, course format has a direct effect on student withdrawal rates from developmental courses. It was found that if a student requires developmental education and decides to enroll in an online or hybrid course, then it is more likely that the student will withdraw from the course, compared to students who enroll in the face-to-face course. This study did not address the design of the courses taught in any of the course formats, so it is possible that the teaching methods employed in these courses may have affected the results.

Research Question Two

Research question two focused on the differences in student success rates across the various course formats. Specifically, the goal of research question two was to determine if course format directly affected student success rates or student grades. The results from the study focused on this research question indicated that course format has a statistically significant effect on student success rates in developmental classes. For this portion of the study, anyone who withdrew from the course was not included in the data,

as they did not complete the course and receive a grade. When removing all of the students who withdrew from the study, 3,236 students completed the course and finished with a grade of A, B, C, D, or F. If a student finished the course with a grade of D or F, then they were considered as failing because they were unable to move into regular, college-level coursework. Of the sample size of 3,236 students, 20% of all students who enrolled in the developmental courses finished with a grade of D or F, and were unable to move out of the developmental education classes.

When analyzing course format, 2,551 students enrolled in the traditional, face-to-face courses. The average grade point average for the course was 2.61. When looking at the number of students who failed the course, 17% of all the students who enrolled in the traditional face-to-face course were unable to move on to the college-level course. This number was less than the average when looking at all course formats. When looking only at students who enrolled in the hybrid course format, there were 171 students who completed the course in the hybrid format. Of that number, 44% of those students finished the course with a D or an F. This number is substantially higher than the average number of failures among all course formats. There were 513 students who completed the purely online course format. Of those that completed the online course, 23% finished with a D or an F, and were unable to move forward into the college level courses. This number was higher than the average number of failures in the traditional face-to-face and all class mediums, but less than the hybrid format.

The present analyses revealed that although the difference in the number of failures between online and traditional is not as great as the difference between traditional and hybrid, it is still a substantial difference. The analysis revealed that course format

had a significant effect on student grades. In fact, not only were their fewer failures in the traditional course format, but the greatest number of students finished the course with an A or a B. When looking at the traditional course format, 60% of all the students who completed the course did so with an A or a B. This was a stark contrast to the hybrid course, where more students (44%) finished the course with a D or an F. In the online course, the greatest percentage (60%) of students finished with a B or a C. Not only were students more likely to fail the online and hybrid courses, students who finished the traditional course were finishing with higher grade point averages.

Withdrawals and Failures

Although it is valuable and important to look at both of the research questions separately, combining these questions can give us some intriguing data as well. In examining all of the course formats, there were 3,862 students who enrolled in developmental courses. It is important to look at how many students were unable to move forward into college-level courses either because they withdrew or failed. When looking at only the traditional course format, we can add the number of withdrawals (390) and the number of failures (445) to determine what the ultimate effect of course format had on students enrolled in developmental courses. When combining both withdrawals and grades, 28% of all the students who enrolled in the traditional course were unable to move forward out of the developmental courses. There was a total of 614 students who enrolled in the strictly online course. When adding the total number of withdrawals (101) with the number of failures (116), 35% of all the students who enrolled in the online course were unable to move forward into college-level classes. There was a total of 307 students who enrolled in the hybrid course. When adding the

total number of withdrawals (136) with the total number of failures (75), 69% of all the students who enrolled in the hybrid course format were unable to move forward in their educational careers because they could not progress from the developmental course. When combining the online and the hybrid course formats, 46% of all the students who took the course online or in the hybrid format were unable to progress to college-level coursework. This percentage is almost double the percentage of students who did not progress in the traditional, face-to-face course.

Limitations

Although the results of the study are not generalizable to the entire population of community college students, analysis of the data may suggest a trend among developmental students at similar community college. The first limitation of the study was that the sample was limited to one community college in Alabama, and that population may not be representative of students at other community colleges. Also, the data analyzed were from a three-year time period from 2012-2015, so the study does not take into account what happened prior to these years. Additionally, the study did not look at specific teachers of the developmental courses. It is possible that some teachers performed at higher levels than other teachers. It is also unclear as to whether or not all teachers taught the same content or used similar assessment methods. Finally, the fact that some of the developmental courses were standardized across all course formats while others were not is also a limitation of the study.

Implications

The results of this study offer implications for policy, practice, and further research. After a thorough analysis of the data, it can be stated that course format has a

small effect on student success rates and a medium effect on student withdrawal rates from developmental courses at a community college in Alabama. The results of this study are in line with scholarship offered by Jaggars and Xu (2011), Smart and Saxon (2016), and Xu and Jaggars (2010). All of these studies found that course format had a statistically significant effect on student success rates, as well as withdrawal rates from developmental courses. Similar results to previous literature on the topic were found in this study. Based on the results of the present work, the college should begin looking at why there is such a drastic difference in the withdrawal and success rates from students enrolled in the face-to-face, online, and hybrid course formats.

As students enrolled in the traditional, face-to-face format course consistently had higher success rates and lower withdrawal rates, the college should steer students enrolling in developmental course in that direction. The results of the study suggest that developmental students should not take online courses. Students enrolled in online courses require certain technological and academic skills in order to be successful. The fact that students place into developmental coursework show that many of these students do not have the skills necessary to be successful in an online or hybrid course format. However, because of the greater and increasing dependence on technology, it is very unlikely that schools will stop offering online course to developmental students. Doing this would not only hurt the college economically by doing away with classes and tuition received from these classes, but would also prevent or at least make more difficult for many nontraditional students who work during the day from going back to school and pursuing a college education. Therefore, the likelihood that colleges would disallow students who place into developmental courses the opportunity to take those courses in

hybrid or online formats is very low. Therefore, college administrators should begin incorporating guided orientations and advising sessions for developmental students. Additionally, offering additional guidance in technology, online etiquette, or technology support services might be useful to developmental students who enroll in online or hybrid course formats. As opposed to preventing developmental students from enrolling in online or hybrid courses, college administrators might find it useful to screen prospective students for reading comprehension, math, and technological skills that are necessary for success in an online or hybrid learning environment. Finally, another practice worth considering would be to offer students across all course formats the opportunity to engage in videos rather than text-heavy courses.

The hybrid course format had the lowest student success rates and also the highest withdrawal rates from developmental coursework. The online course format had a lower overall success rates and higher withdrawal rates than the face-to-face course, while having higher success rates and lower withdrawal rates from the hybrid course format. As the college will likely not stop offering developmental coursework in the hybrid or online course format, college administrators should pursue through scholarship and research ideas and ways to improve the hybrid and online developmental course offerings.

Recommendations for Practice

The results of the study indicated that course format has a statistically significant effect on withdrawal rates and student success rates. College administrators should look at the data and use this to inform policy decisions when it comes to placing students into

the different course learning formats for developmental students. The results of the study suggest the following recommendations.

First, because course format has a considerable effect on withdrawal rates and student success rates, colleges may find it useful to screen developmental students before allowing them to enroll in online or hybrid coursework. However, because students are often allowed to self-select into whichever course format they choose, this could prove difficult. College administrators could require students to pass the screening test, and once the screening test is passed, then the students would be allowed to self-select which course format they would prefer. The screening process should determine if developmental students have the technological and reading skills that are necessary to be successful in an online course. Components of this screening would assess the student's ability to read and comprehend basic information, as well as the student's ability to use technology as a learning tool. Skills such as searching for resources, attaching files to emails, opening different types of computer files, and other basic computer skills should become part of an online course readiness assessment. Screening out students that lack basic computer skills might eliminate some of the students who withdraw due to frustration over the technological issues they face. This readiness assessment would be beneficial not only for developmental students, but all students who enroll in online or hybrid course formats.

Whether or not colleges offer readiness assessments for online courses, they should provide mandatory online and hybrid learning orientation seminars for students who place into developmental courses and wish to take them in a format other than the traditional, face-to-face format. By providing students with an overview of the

technological and academic skills they will need to be successful in an online learning format, students can make the best decision for their academic careers, or at least become more comfortable and familiar with the learning medium. Because of the orientation seminars, students entering online and hybrid courses will have some familiarity with online course structures and expectations. As previously mentioned, students may also benefit from having some form of online tutoring for any academic or content related issues that students might have.

Course standardization is another suggestion for practice. Because the study did not take into account differing instructors or their individual courses, standardization across course formats would be useful to the college in identifying the root of the problem for students performing lower or withdrawing from the hybrid and online course formats. If all students are taught the same way, with the same resources, and are assessed in similar manners, college administrators have a better chance at identifying problem areas and finding ways to improve their online and hybrid course offerings. As part of its research, college administrators should also begin tracking and monitoring these developmental students throughout their time at the college once they complete their developmental courses. Hopefully by doing this, colleges might catch early at-risk situations and provide students with the assistance they need to persist through the developmental course or courses.

It is very important that instructors who teach developmental students, whether online, hybrid, or face-to-face, should be familiar with the best practices for teaching these students. Additionally, instructors who teach developmental students online should be up-to-date with best practices for online learning. Instructors could possibly improve

their course offerings by the inclusion of more video based resources and supplemental online learning systems published by textbook companies such as Connect (McGraw-Hill, 2017), MyWritingLab (Pearson Education, 2017), MyMathLab (Pearson Education, 2017), and others. It is the responsibility of the college to provide professional development opportunities for their instructors in order to ensure the success of both the instructor and the student. By offering professional learning opportunities for instructors, they can improve the quality of their online and hybrid developmental courses. With improvement in the online and hybrid course format, it is possible that withdrawal rates may go down, and student grades may go up.

A final recommendation for practice would be for academic advising. As students at the college are able to self-select into any course format they want, they are sometimes unsure about how difficult an online and hybrid learning course can be. Academic advisors should advise developmental students carefully when it comes to taking online and hybrid courses. If the student is not well suited for online learning, then the advisor should encourage the student to pursue other course formats.

Recommendations for Further Research

The findings of this study are not generalizable to all community colleges across the nation. Similar studies to this one should be performed at state and national levels. A larger study would give a more accurate assessment of developmental students who are enrolling in various course formats and may confirm or refine the present study's results. The students who enrolled in the hybrid and online course formats at a community college in Alabama struggled with completion of their developmental coursework; however, this may not be the case at other colleges. A more comprehensive study should

be done to determine the effect that course format has on developmental student withdrawal rates, as well as student success rates.

No content specific material was examined in this study. Therefore, it is unclear how much of the results were skewed by different instructor styles, course set ups, or assessment types. One way to determine how much of an effect specific instructors had on the outcomes would be to standardize courses across all mediums, and then continue the same research for the standardized courses. However, this could also present problems. Before beginning course standardization, it should be determined which teachers had the highest student success rates and the lowest withdrawal rates. Then, the course standardization should be carefully done using the styles and contents of these instructors. If online and hybrid courses results improved, then the college could determine if the correlation between online and hybrid courses and low success and high withdrawal rates was more of an issue with the instructor than the students or the material. Further research into teacher specific teaching tactics and methods would need to be done to determine if different instructors produced different results for the same courses. If after standardization the college sees no improvement in the success and withdrawal rates of its developmental students, then administrators could research better teaching methods or delivery options, but the problem would most likely not be instructor based.

Finally, a more extensive version of this study should be done, but should include other control variables to determine the effects of course learning format on different demographic elements. Demographic variables for the study might include race, gender, socioeconomic status, age, or familial status. The research leaves room to see if men or

women are more successful in online developmental courses, or if one nationality or ethnicity is more successful than another in online or hybrid developmental courses. Understanding whether students from lower socioeconomic classes are more successful in hybrid and online developmental courses could help academic advisors, college administrators, and individual students make the best decision in terms of course format for students requiring developmental courses.

Conclusion

The findings of this study indicated that developmental students who enroll in the strictly online and hybrid course formats are less likely to progress into college-level coursework than their traditional, face-to-face counterparts. However, the limitations of this study should be considered, as several factors, not just course format, could have affected the student withdrawal rates and student success rates at this community college. Since the likelihood of online developmental courses being done away with remains exceptionally low, colleges should begin examining best practices to help their developmental students be successful, so they can progress towards a college degree.

In this study, data were gathered on students who enrolled in developmental courses at a community college in Alabama during the academic school years 2012-2013, 2013-2014, and 2014-2015. These data were used to determine the effect course format had on student success rates and student withdrawal rates at the college. The study began with an introduction to the problem and the research questions that guided the study. Chapter two focused on previous literature in the fields of developmental education, online education, and online developmental education. Chapter three outline the statistical analysis methods that were used in the study. The data were analyzed using a

chi-square test to determine the effect that course format had on student withdrawal rates from developmental courses across course formats, and a one-way ANOVA test was conducted to determine the effect that course format had on student success rates. Chapter four provided the results of those analyses. The results of the study showed that course format indeed had a statistically significant effect on both withdrawal and student success rates. Chapter five provided an analysis of those results, as well as the limitations of the present study. Also, chapter five provided the implications of the study and how these implications should influence practices in online developmental courses as well as ideas for future research into the topic.

As more nontraditional students enroll in college, and more students come to college underprepared, online developmental education will become a focal point for community colleges everywhere. Because of the open-door policy of community colleges regarding academic ability, the responsibility of giving underprepared students the best chance to succeed falls on community colleges. The responsibility of providing accessible and flexible classes that are also not stumbling blocks to prospective students is the charge of the college. Online developmental education will not die, but must evolve and adapt in order to provide the highest quality of education to all students who enroll in America's community colleges.

REFERENCES

- ACT Inc. (2012). COMPASS exam. Retrieved from <http://www.act.org/content/act/en/products-and-services.html>
- Allen, I. E., & Seaman, J. (2015). Grade change: Tracking online education in the United States. *Babson Survey Research Group and Quahog Research Group, LLC*. Retrieved from <http://www.onlinelearningsurvey.com/reports/gradelevel.pdf>
- Ashby, J., Sadera, W. A., & McNary, S. W. (2011). Comparing student success between developmental math courses offered online, blended, and face-to-face. *Journal of Interactive Online Learning, 10*(3), 128-140.
- Aslanian, C. B., & Clinefelter, D. L. (2013). *Online college students 2013: Comprehensive data on demands and preferences*. Louisville, KY: The Learning House, Inc.
- Atchley, W., Wingenbach, G., & Akers, C. (2013). Comparison of course completion and student performance through online and traditional courses. *International Review of Research in Open & Distance Learning, 14*(4), 104-116.
- Beard, L. A., Harper, C., & Riley, G. (2004). Online versus on-campus instruction: Student attitudes and perceptions. *Techtrends: Linking Research and Practice to Improve Learning, 48*(6), 29-31.
- Belfield, C. R., & Crosta, P. M. (2012). *Predicting success in college: The importance of placement tests and high school transcripts* (CCRC Working Paper No. 42). New York, NY: Columbia University, Teachers College, Community College Research Center.
- Benbunan-Fich, R., & Hiltz, S. R. (2003). Mediators of the effectiveness of online

- courses. *IEEE Transactions on Professional Communications*, 46(4), 298-312.
- Blackboard Inc. (2017). Retrieved from <http://www.blackboard.com/>
- Boylan, H. R., & White Jr., W. G. (1988). Educating all the nation's people: The historical roots of developmental education. *Research in Developmental Education* 5(3), 3-7.
- Boylan, H. R., Bonham, B. S., & Bliss, L. B. (1994). Who are the developmental students. *Research in Developmental Education*, 11(2), 1-4.
- Boylan, H. R. (2002). *What works: Research-based best practices in developmental education*. Boone, NC: Continuous Quality Improvement Network with the National Center for Developmental Education Appalachian State University.
- Boylan, H. R. (2004). Accelerating developmental education: The case for collaboration. *Inquiry*, 9(1). Retrieved from <http://www.vccaedu.org/inquiry/inquiry-spring2004/i-91-boylan.html>
- Boylan, H. R. (2009). Targeted intervention for developmental education students. *Journal of Developmental Education*, 32(3), 14-23.
- Boylan, H. R. (2011). Improving success in developmental mathematics: An interview with Paul Nolting. *Journal of Developmental Education*, 34(3), 20-27.
- Bradley, P. (2012). Making the cut: Colleges, state re-examine placement tests. *Community College Week*, 25(2), 6-7.
- Brier, E. (1984). Bridging the academic preparation gap: An historical view. *Journal of Developmental and Remedial Education*, 8(1), 2-5.
- Burdman, P. (2012). *Where to begin? The evolving role of placement exams for students*

starting college. Retrieved from Achieving the Dream website:

http://www.achievingthedream.org/sites/default/files/resources/Where_to_Begin.pdf

- Burgess, M. (2009). Using WebCT as a supplemental tool to enhance critical thinking and engagement among developmental reading students. *Journal of College Reading and Learning, 39*(2), 9.
- Callaway, S. K. (2012). Implications of online learning: Measuring student satisfaction and learning for online and traditional students. *Insights to a Changing World Journal, (2)*, 67-94.
- Carpenter-Aeby, T. C., & Aeby, V. G. (2013). Application of andragogy to instruction in an MSW practice class. *Journal of Instructional Psychology, 40*(1-4), 3-13.
- Carpenter, T. G., Brown, W. L., & Hickman, R. C. (2004). Influences of online delivery on developmental writing outcomes. *Journal of Developmental Education, 28*(1), 14.
- Casazza, M. E. (1998). Who are we and where did we come from. *Journal of Developmental Education, 23*(1), 2-7.
- Cochran, J. D., Campbell, S. M., Baker, H. M., & Leeds, E. M. (2014). The role of student characteristics in predicting retention in online courses. *Research in Higher Education, 55*(1), 27-48.
- Complete College America. (2012). *Remediation: Higher Education's Bridge to Nowhere*. Retrieved from www.completecollegeamerica.org
- Cohen, J. (1988) *Statistical power and analysis for the behavioral sciences (2nd ed.)*, Hillsdale, N.J., Lawrence Erlbaum Associates, Inc.

- College Board. (2017). ACCUPLACER. Retrieved from <https://www.collegeboard.org/contact-us?navId=gf-contact>
- Cragg, C. E., Dunning, J., & Ellis, J. (2008). Teacher and student behaviors in face-to-face and online courses: Dealing with complex concepts. *Journal of Distance Education, 22*(3), 115-128.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed method approaches*. Los Angeles, CA: Sage Publishing.
- El Mansour, B., & Mupinga, D. M. (2007). Students' positive and negative experiences in hybrid and online courses. *College Student Journal, 41*(1), 242-248.
- Emerson, L., & MacKay, B. (2011). A comparison between paper-based and online learning in higher education. *British Journal of Educational Technology, 42*(5), 727-735.
- Fain, P. (2015). Finding a new COMPASS. *Inside HigherEd*. Retrieved from <https://www.insidehighered.com/news/2015/06/18/act-drops-popular-compass-placement-test-acknowledging-its-predictive-limits>
- Farris, P. W., Haskins, M. E., & Yemen, G. (2003). Executive education programs go back to School. *Journal of Management Development, 22*(9/10), 784-802.
- Farwell, K. (2013). Keeping an online class interesting and interactive. *Distance Learning, 10*(3), 27-32.
- Fendler, R. J., Ruff, C., & Shrikhande, M. (2011). Online versus in-class teaching: Learning levels explain student performance. *Journal of Financial Education, 37*(3/4), 45-63.
- Fetzner, M. (2013). What do unsuccessful online students want us to know.

Journal of Asynchronous Learning Networks, 17(1), 13-27.

Floyd, D. L. (2003). Distance learning in community colleges: Leadership challenges for change and development. *Community College of Research and Practice*, 27(4), 337-347.

Frantzen, D. (2014). Is technology a one-size-fits-all solution to improving student performance: A comparison of online, hybrid, and face-to-face courses. *Journal of Public Affairs Education*, 20(4), 565-578.

Gaytan, J. (2006). Distance education versus classroom instruction: A literature review of meta-analysis studies. *Business Education Forum*, 61(2), 53-55.

Gerlaugh, K., Thompson, L., Boylan, H. R., & Davis, H. (2007). National study of developmental education II: Baseline data for community colleges. *Research in Developmental Education*, 20(4), 1-4.

Goudas, A. M. & Boylan, H. R. (2012). Addressing flawed research in developmental education. *Journal of Developmental Education*, 36(1), 2-13.

Hardin, C. J. (1998). Who belongs in college: A second look. In P. L. Dwinell (Ed.), *Developmental education: Preparing successful college students* (pp. 15-24). Columbia, SC: National Resource Center for the First-Year Experience of Students in Transition. University of South Carolina.

Harrington, A. (2010). Adapting to fit the technology: Problems and solutions for technology-based college classes. *Delta Kappa Gamma Bulletin*, 76(3), 12-19.

Harrington, A. (2010). Hybrid developmental writing courses: Limitations and alternatives. *Research & Teaching in Developmental Education*, 26(2), 4-20.

Henschke, J. A. (2011). Considerations regarding the future of andragogy. *Adult*

Learning, 22(1), 34-37.

Hittelman, M. (2001). *Distance education report, august 2001: California community colleges, fiscal years 1995-1996 through 1999-2000*. Sacramento, CA:

California Community Colleges, Office of the Chancellor.

Horn, C., McCoy, Z, Campbell, L, & Brock, C. (2009). Developmental testing and placement in community colleges. *Community College Journal of Research & Practices*, 33(6), 510-526.

Hughes, K. L., & Scott-Clayton, J. (2011). Assessing developmental assessment in community colleges. *Community College Research Center*, 50, 1-33.

Hyllegard, D, Deng, H., & Hunter, C. (2008). Why do students leave online courses? Attrition in community college distance learning courses. *International Journal of Instructional Media*, 35(4), 429-434.

Jaggars, S. S. (2014). Choosing between online and face-to-face courses: Community college voices. *American Journal of Distance Education*, 28(1), 1-28.

Jaggars, S. S. (2011). *Online learning: Does it help low-income and underprepared students?* (CCRC Working Paper No. 26, Assessment of Evidence Series). New York, NY: Community College Research Center, Teachers College, Columbia University.

Jaggars, S. S., & Xu, D. (2010). *Online learning in the Virginia Community College system*. Retrieved from <http://ccrc.tc.columbia.edu/media/k2/attachments/online-learning-virginia.pdf>

James, D. (2004). A need for humor in online courses. *College Teaching*, 52(3), 93-94.

Johnson, R. B., & Christensen, L. (2014). *Educational research: Quantitative,*

- qualitative, and mixed approaches*. Los Angeles, CA: Sage Publishing.
- Johnson, T. E., Meling, V. B, Andaverdi, S., Galindo, A. M., Madrigal, K., & Kupczynski, L. (2011). Faculty perception of online instruction and student learning. *I-Manager's Journal of Educational Technology*, 8(1), 12-19.
- Kirtman, L. (2009). Online versus in-class courses: An examination of differences in Learning outcomes. *Issues in Teacher Education*, 18(2), 103-116.
- Knowles, M. S. (1985). *The adult learner: A neglected specie* (3rd ed.). Houston, TX: Gulf.
- Larson, D. K., & Chung-Hsien, S. (2009). Comparing student performance: Online versus blended versus face-to-face. *Journal of Asynchronous Learning Networks*, 13(1), 31-42.
- Lewin, T. (2012). Colleges misassign many to developmental classes, studies find. *The New York Times*. Retrieved from http://www.nytimes.com/2012/02/29/education/colleges-misassign-many-to-developmental-classes-studies-find.html?_r=0
- Mahoney, S. (2009). Mindset change: influences on student buy-in to online classes. *Quarterly Review of Distance Education*, 10(1), 75–83.
- Martirosyan, N. M., Kennon, J. L., Saxon, D. P., Edmonson, S. L., & Skidmore, S. T. (2017). Instructional practices in developmental education in Texas. *Journal of College Reading and Learning*, 47(1), 3-25.
- McCaslin, M. L., & Scott, K. W. (2012). Metagogy: Teaching, learning and leading for the second tier. *Integral Leadership Review*, 12(4), 1-19.
- McGraw-Hill. (2017). Connect Online Learning. Retrieved from

http://connect.mheducation.com/connect/login/index.htm?&BRANDING_VARIANT_KEY=en_us_default_default&node=connect_app_8_184

- Meyer, K. A. (2014). Student engagement in online learning: What works and why. *ASHE Higher Education Report*, 40(6), 1-14.
- Murphy, K. R., & Myers, B. (1998) *Statistical power analysis—A simple and general model for traditional and modern hypothesis tests*: Mahwah, N.J., Lawrence Erlbaum Associates, Inc.
- Nason, D. S. (2011). Crisis drift: A meta-gogical glue for learning & teaching design. *Design Principles & Practice: An International Journal*, 5(6), 591-615.
- Nguyen, T. (2015). The effectiveness of online learning: Beyond no significant Difference and future horizons. *Merlot Journal of Online Learning and Teaching*, 11(2), 309-319.
- Olatunji, M. O. (2013). Online education: Issues, challenges, and implications. *Khazar Journal of Humanities & Social Sciences*, 16(3), 53-67.
- Parker, T. L., Barrett, M. S., & Bustillos, L. T. (2014). A history of developmental education. *The State of Developmental Education*. 17-31. Palgrave-McMillan, U.S.
- Pearson Education. (2017). MyMathLab. Retrieved from <http://www.pearsonmylabandmastering.com/northamerica/mymathlab/>
- Pearson Education. (2017). MyWritingLab. Retrieved from <http://www.pearsonmylabandmastering.com/northamerica/mywritinglab/>
- Pearson Education. (2017). Texas Higher Education Assessment. Retrieved from <http://www.thea.nesinc.com/>

- Peterson, C. M., & Ray, C. M. (2013). Andragogy and metagogy: The evolution of neologisms. *MPAEA Journal Of Adult Education, 42*(2), 80-85.
- Petrides, L., & Nodine, T. (2005). Online developmental education: Who's ready? *Community College Journal, 76*(2), 42-46.
- Pruett, P. S., & Absher, B. (2015). Factors influencing retention of developmental education students in community colleges. *Delta Kappa Gamma Bulletin, 81*(4), 32-40.
- Qi, Z., & Polianskaia, G. (2007). A comparison of traditional lecture and computer-mediated instruction in developmental mathematics. *Research & Teaching in Developmental Education, 24*(1), 63-82.
- Romero, M., & Usart, M. (2014). The Temporal perspective in higher education learners: Comparisons between online and onsite learning. *European Journal of Open, Distance & E-Learning, 17*(1), 190-209. doi:10.2478/eurodl-2014-0013
- Rubin, B., Fernandes, R. (2013). The effects of technology on the community of inquiry and satisfaction with online courses. *Internet and Higher Education, 17*(1), 48-57.
- Safran, S., & Visher, M. G. (2010). *Case studies of three community colleges: The policy and practice of assessing and placing students in developmental education courses* (Working Paper). New York, NY: National Center for Postsecondary Research and MDRC.
- Savenye, W. C. (2005). Improving online courses: What is interaction and why use it? *Distance Learning, 2*(6), 22-28.
- Saxon, D. P., & Boylan, H. R. (2001). The cost of developmental education in higher

- education. *Journal of Developmental Education*, 25(2), 1-8.
- Saxon, D. P, Sullivan, M. P, Boylan, H. R. & Forrest, F. D. (2005). Developmental Education facts, figures, and resources. *Research in Developmental Education*, 19(4), 1-5.
- Schmitt, K. L. (1975). New options for college study. *Personnel and Guidance Journal*, 53(10), 739-745.
- Scott-Clayton, J. (2012). *Do high-stakes placement exams predict college success?* (CCRC Working Paper No. 41). New York, NY: Columbia University, Teacher's College, Community College Research Center.
- Seay, S. (2006). Strategies for success: Improving the academic performance of low-income adult and first-generation students in online general education courses. *Journal of Continuing Higher Education*, 54(3), 22-35.
- Simms, J., & Knowlton, D. S. (2008). Ideas in practice: Instructional design and delivery for adult learners. *Journal of Developmental Education*, 32(1), 20-30.
- Shields, D. J. (2005). Developmental education: Criticisms, benefits and survival strategies. *Research & Teaching in Developmental Education*, 22(1), 43-51.
- Smart, B. M., & Saxon, D. P. (2016). Online versus traditional classroom instruction: An examination of developmental English courses at an Alabama community college. *Community College Journal of Research and Practice*, 40(5), 394-400.
- Smart, B. M. (2015, November). *Developing digital discussion boards*. Poster presented at Alabama Community College Association Conference, Birmingham, AL.
- Stefl-Mabry, J. (1998). Designing a web-based reading course. *Journal of Adolescent &*

Adult Literacy, 41(7), 556.

- Tanyel, F., & Griffin, J. (2014) Ten-year comparison of outcomes and persistence rates in online versus face-to-face courses. *BQuest*, 1-22.
- Tidwell, M. V., Southard, S., & Mooney, M. (2010). Assessing the role of personality traits in student performance in traditional, hybrid, and online classes. *International Journal of Education Research*, 5(2), 69-84.
- Venezia, A, Bracco, K. R., & Nodine, T. (2010). One-shot deal? *Students' perceptions of assessment and course placement in California's community colleges*. San Francisco, CA: WestEd.
- Wester, H. C. (2010). Addressing high dropout rates in online undergraduate courses. *International Journal of the Humanities*, 8(2), 379-385.
- White, W. G., Martirosyan, N., & Wanjohi, R. (2009). Preparatory programs in nineteenth century Midwest land grant colleges—part I. *Research in Developmental Education*, 23(1), 1-5.
- Xu, D., & Jaggars, S. S. (2011). *Online and hybrid course enrollment and performance in Washington State community and technical colleges* (CCRC Working Paper No. 31). Retrieved from <http://files.eric.ed.gov/fulltext/ED517746.pdf>
- Young, S. S., & Duncan, H. D. (2014). Online and face-to-face teaching: How do student ratings differ?. *Journal of Online Learning & Teaching*, 10(1), 70-79.
- Zavarella, C. A., & Ignash, J. M. (2009). Instructional delivery in developmental mathematics: Impact on retention. *Journal of Developmental Education*, 32(3), 2-13.

VITA

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Education:

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Graduation Date: Projected May 2017

Developmental Education Administration

GPA: 3.8/4.0

Master of Education --The University of West Alabama

Graduation Date: March 2008

Major: Secondary Education, Language Arts

GPA: 3.8/4.0

**Bachelor of Science in Education—The University of Alabama,
Tuscaloosa**

Graduation Date: May 2006

Major: Secondary Education, Language Arts

GPA: 3.5/4.0

Teaching Experience:

Snead State Community College, July 2012 - Present

English/Sociology Instructor

- Taught all levels of English Composition
- Taught courses in American Literature
- Taught introduction to sociology courses
- Served on Distance Learning Committee
- Served on Student Policies Committee
- Coordinator of developmental studies in reading and English
- Created Academic Support Programs for At-Risk Student Athletes
- Spearheaded new integrated reading and writing initiative for developmental students

Waldorf University, April 2016-Present

Adjunct Sociology Instructor

- Taught various sociology courses
- Intro to Sociology/Human Global Societies

DAR Middle School, June 2011-2012

Full-time teacher

- Taught 8th Grade English

- PBS/PST team
- Claysville Junior High School, August 2009-June 2011
- Full-time teacher
- Taught 5th- 8th grade Language Arts
 - Involved in remedial programs
 - Taught all levels of students
- Snead State Community College, January 2009-August 2012
- Part-time Adjunct Instructor
- Taught English 101, 102, and 252
 - Became familiar with WebCT and BlackBoard
- Buckhorn High School, June 2008-June 2009
- Full-time teacher
- Taught at a National Blue Ribbon School
 - Involved in ARI
 - Taught Creative Writing, Literature, and 11th English
- Douglas High School, June 2006-June 2008
- Full-time teacher
- Taught 9th Grade English
 - Taught Basic, Advanced, and Inclusion Students
 - Performed all duties required of a teacher

Publications and Presentations

Smart, B. M., & Saxon, D. P. (2016). Online versus traditional classroom instruction: An examination of developmental English courses at an Alabama community college.

Community College Journal of Research and Practice, 40(5), 394-400.

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Organizations

National Association for Developmental Education

Alabama Association for Developmental Education - President (2016-2017)