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An Evaluation of the Relationship Between Case Management and Gateway Course Participation and Completion Rates for FTIC Students at a Small, Rural, State College Campus in the Southeastern United States

Roberto Carballoso
Walden University

Walden University

College of Education and Human Sciences

This is to certify that the doctoral study by

Roberto Carballoso

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Kathleen Kingston, Committee Chairperson, Education Faculty
Dr. John Johnson, Committee Member, Education Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
2025

Abstract

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by

Roberto Carballoso

MA, Keiser University, 2011

BS, Embry-Riddle Aeronautical University, 2008

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Walden University

January 2025

Abstract

Many first-time in college (FTIC) students are underprepared for the required courses (i.e., gateway courses) of mathematics and English, resulting in low retention rates across the United States especially for diverse and marginalized students. Many colleges have implemented various support programs for FTIC students; however, limited systematic research exists on the success of these programs. Guided by the student retention integrated model, the purpose of this quantitative, ex post facto study was to assess the efficacy of the Student Learning Center's (SLC) tutoring program on academic outcomes for FTIC students, who were categorized as high-risk due to their initial academic performances. Archival data were used to determine the association between FTIC students' participation in the SLC's tutoring program and their performance in their English (n = 101 students) and math (n = 63 students) gateway courses for 2018 and 2019. Analyses revealed that participation in the SLC's tutoring program was significantly associated with student success in the English gateway course but was not significantly associated with success in the math gateway course. By understanding more about high-risk FTIC students' success and performance in their gateway courses through tutoring processes, the college has research-based information to strengthen implementation of the SLC tutoring program. With the revised implementation processes, the college has the potential to create positive social change in the lives of high-risk FTIC students and their contributions in the broader community.

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Dedication

First and foremost, I dedicate this dissertation to my brother, Hector, who left us much too early; may he rest eternally in peace. I would have loved to share this great accomplishment with him. I know that he would have been proud of me. I would also like to dedicate this dissertation to my parents, Francisco and Xenia, my girlfriend Aida, and friends, who have encouraged me throughout this journey. Additionally, I want to dedicate my dissertation to my three grandchildren, Aydin, Faith, and Grace, and my two sons, Robert and Alexander. I hope that they may find inspiration in this quest.

Acknowledgments

This educational endeavor has undoubtedly been a long and arduous journey. This was a superb expedition of knowledge, teeming with alternating phases of successes and setbacks, moments of joy and relief, and, of course, moments of stress. Some individuals have helped me through this educational labyrinth that has taught me so much; I will be forever grateful for that. Without their help, I might not have been successful in earning this degree. First, I would like to thank my committee chair, Dr. Crystal Lupo, and my second committee members, Dr. Shawn Boone and Dr. James Adams, for their patience, tutelage, and guidance through this educational process; their support was essential to my success. I would also like to thank my friends, Dr. Veronica Richard, and Dr. Thomas Gollery, for their dedication, guidance, advice, and support in my educational voyage. Their support and encouragement were paramount in my success; I will be forever grateful. I would also like to thank Mr. Dave Weber for his support and being there when I needed him. I now see this point in my life not as an ending but as a new beginning. This process has not only given me knowledge but has also helped me grow as a person, and for that, I am sure that my future will be brighter.

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Chapter 1: Introduction to the Study

In the past 10 years, college enrollment has dropped by approximately three million (Marcus, 2022). According to Marcus (2022), a drop of one million in enrollment occurred during the COVID-19 outbreak. All this considered, Marcus argued that low graduation rates are a common phenomenon. For 2-year colleges, these numbers are increasingly problematic, especially for the first time in college student (FTIC) population. These students, according to the National Assessment of Educational Progress (NAEP) (2013), are underprepared for the required courses (also called gateway courses) of mathematics and English with only 23% of high school seniors scoring proficient in math and English related skills. To compound this issue, community and state colleges historically provide education to a diverse student population and those who are academically underprepared for college level work (Nix et al., 2020).

With the reduced enrollment, dismal graduation rates, and the limited skills of FTIC students; many colleges have implemented programs to support FTIC students through the gateway courses (Bloemer et al., 2018; Vick et al., 2015). While the support for FTIC students includes remediation programs primarily through developmental courses and tutoring, researchers show that a lack of systematic research exists on the success of these programs and the efforts to support FTIC students (Smith, 2015). This problem is important given that individuals without a college degree earn less and are more likely to be unemployed and live in poverty (Marcus, 2022). Not having a post-secondary education also places young people at an increased predisposition to suffer from depression, need government assistance, have a higher rate of divorce, and live shorter lives (Marcus, 2022). The purpose of this quantitative ex post facto research is to assess the efficacy of the Student Learning Center's (SLC's) tutoring program on academic outcomes for FTIC students, who have been categorized as high-risk due to their initial academic performances.

Chapter 1 begins with the background of the study, which includes details of the circumstances surrounding the research on FTIC students' preparedness for gateway courses and their retention in 2-year colleges. This section concludes with the gap in research and the significance of addressing this gap. The next section consists of the problem statement including the current research regarding at-risk FTIC students' struggles and lack of knowledge on how support programs address their needs. This information is followed by the purpose statement, research questions, and related hypotheses. I will then present the student retention model as the theoretical framework that aligns with the proposed research and provides the rationale for using this framework. This section is followed by the nature of the research and the key definitions related to the research. The final sections include the assumptions, the scope and delimitations of the study, the limitations and significance of the study, and the summary of the chapter.

Background

For over 5 decades, the concept of how to retain students has been the topic of research. Braxton (2014) contended that 45% of students who enroll in 2-year community and state colleges leave after their first year of college. Researchers (Callahan & Belcheir, 2015; Park et al., 2018; Woods et al., 2019) have discovered that gateway course performance and completion directly affects student retention because success in these courses determines students' future status and eligibility for credit-bearing courses. Callahan and Belcheir (2015) researched the role of entry level math and English course and their relation to persistence after the first year of college. The research showed that when compared to FTIC students who did not pass their courses, students who earned an A or a B were three times more likely to persist.

A continuous growth in the enrollment rates of 2-year and four-year institutions of higher learning has not been associated with corresponding increases in the graduation rates. Gray and Swinton (2017) concluded that strategies implemented to reward student effort may help increase graduation rates. However, after implementing a new grading policy strategy, Gray and Swinton discovered graduation rates were even lower. According to Seery et al. (2021), successful retention efforts do exist that help students persist. These efforts consist of faculty development, learning communities, first-year seminars, making students feel like they are part of the college, and developmental courses.

Despite successful retention efforts, challenges still exist for open access institutions. Mathuews and Pulcini (2017) discovered that performance-based funding is a challenge for institutions that have open access. These authors defined open access institutions, such as community and state colleges, as institutions that have no restriction for enrollment based on ACT or SAT scores. While student opportunities arise with open access institutions, this environment requires students to complete developmental coursework (Mathuews & Pulcini, 2017). These developmental courses, also known as remedial or preparatory courses, add yet another layer to student course completion and retention. With voluntary remediation, students can opt out of registering for developmental courses, including students who are not college ready. This bypassing of remediation for students needing the support leads them to enrolling into the required college level gateway courses underprepared (Education Week, 2015; Miller & Murray, 2005; Woods et al., 2019). Unfortunately, these students are not as successful as students who participate in extra instruction such as developmental courses and tutoring (Scrivener et al., 2018).

Researchers have explored FTIC student retention. Flanders (2017) explored the problem of how to improve retention in FTIC freshman students through successful completion of a gateway course. The study showed that students who were unsuccessful in the gateway course, were 1.72 times less likely to return for another semester. Flanders (2017) suggested that early intervention should be implemented to increase students' chances of success in the gateway course. One way to increase retention could be helping students complete the gateway courses. Arco-Tirado et al. (2019) examined if tutoring would have a positive impact on the performance of first time in college students (FTIC). The results showed a statistically significant difference in favor of the students who took part in the tutoring. Osborne et al. (2019) also explored the impact of tutoring through a student learning center. The researchers discovered that students who visited the student learning center three or more times showed a higher impact than students who only attended once or twice. Likewise, Gabriel-Millette (2016) from the research, planning, and institutional research department of San Bernardino College, published a report on the effectiveness of their academic support center. The data showed that the students who patronized the center had a higher retention rate than those students that did not and were enrolled in the same courses.

Since the onset of the COVID-19 pandemic, college enrollment has dropped by approximately one million compared to three million in the past 10 years (Marcus, 2022).

With low college graduation rates the magnitude of the problem with student retention might not yet be widely understood (Marcus, 2022). Individuals without a college degree earn less and are more expectedly to be unemployed and live in poverty. They are also more predisposed to suffer from depression, need government assistance, have a higher rate of divorce, and live shorter lives (Marcus, 2022).

Over the years, researchers have acknowledged the benefits (e.g., Arco-Tirado et al., 2019; Daniels et al., 2019; Osbourne et al., 2018) and challenges (e.g., Boatman & Long, 2010; Jaggars & Beckerstaff, 2018; Martorell & McFarlin, 2011; Scott-Clayton & Rodriguez, 2012; Thurrott, 2021) of remediation on student retention. Although research has been conducted on retention, research in Florida after the Senate Bill 1720 (in which open access education was required) only two sets of researchers (Nix et al., 2020; Park et al., 2016) have explored unprepared students and retention. Park et al. (2016) showed the benefits of remediation on gateway course success rates. Nix et al. (2020), drawing from faculty, staff, and administrators in ten institutions from the Florida College System, qualitatively explored how Senate Bill 1720 was perceived. Of relevance to this study is that the participants (544 faculty, staff, and administrators) expressed a concern that Senate Bill 1720 emphasized efficiency instead of quality education to ensure cost savings (Nix et al., 2020). This minimal focus in the state of Florida leaves the issue of whether recent remediation efforts in the Florida College System are of benefit to student retention left unknown.

With the decline of college enrollments and college degree completions, society's health itself will be diminished, and significantly less economically productive. It will lead to lower tax revenues, jobs not being filled, and contributions to innovation will be more difficult and lack student voices from disadvantaged or at-risk situations. In addition, expanding the inequities in education accomplishment could further exacerbate the current conflicts over race, socioeconomic status, and the politics of the United States of America (Marcus, 2022).

Problem Statement

The problem that I addressed in this study is that FTIC students are academically unprepared for gateway courses (see Klasik & Strayhorn, 2018; O'Shaughnessy, 2022) and are failing or withdrawing from these courses and leaving the college (see Callahan & Belcheir, 2015; Kwak, 2020; Park et al., 2018; Woods et al., 2019).

Retention at community and state colleges continues to be low (Ellis-O'Quinn, 2002; Windham et al., 2014; Yu, 2015). Researchers have shown that low completion rates in gateway courses (i.e., required general education courses such as English Composition I and Intermediate Algebra) impact student retention (Koch & Pisitilli, 2015; Lewis & Terry, 2016; Shapiro et al., 2014). Students who are not academically prepared, or not college ready, are students who are lacking the foundation needed to be successful in college-level reading, writing, and or mathematics (Miller & Murray, 2005; Park et al., 2018). In English gateway courses, Woods et al. (2019) discovered only 60.3% of underprepared students were successful. Reporting specifically on math gateway courses, Park et al. (2018) revealed that only 23.4% of severely underprepared first-time in college students (FTIC) students passed the course compared to 39.3% for moderately underprepared, and 54.3% for the slightly underprepared.

Students who are not academically prepared, or not college ready, lack the foundation needed to be successful in college-level reading, writing, and or mathematics (Miller & Murray, 2005; Stahl & King, 2018). Many colleges have implemented various programs to support FTIC students through gateway courses (Bloemer, et al., 2018; Vick, et al., 2015). A lack of systematic research exists on the success of these programs and the efforts to support the students (Hanover Research, 2014).

The study site is a small, rural campus of a five-campus, 2-year state college, located in an agricultural area of a Southeastern U.S. state. The campus is also classified as an open access (or open enrollment) campus, meaning no academic restrictions or requirements are in place for enrollment. This open-access classification leads to a higher percentage of underprepared students.

FTIC students at this campus, who are academically unprepared for gateway courses (Algebra I and English Composition I), are failing or withdrawing from these courses and leaving the college. According to the college's Institutional Research and Effectiveness (IRE) Department, the retention rate across the five campuses, as of August 31, 2017, was 33%. Part of this low retention could have been the fact that 69.24% of FTIC failed at least one entry-level test, alluding to their lack of preparedness. To mitigate this issue of lack of preparedness, the study site campus administrators implemented a case management program (a tutoring and student monitoring process) to support underprepared students in the gateway courses.

However, no systematic research has been conducted to determine the relationship between high-risk (i.e., underprepared FTIC) students' participation in the case management program (specifically tutoring participation) and the resulting student performance and completion rates in the required math and English gateway courses. Of all the students who graduate high school today in the United States, about 65% pursue a college degree (milessmarttutoring.com, 2021), and, according to O'Shaughnessy (2022), 44% of those undergraduate students do not complete their college journey. It is no wonder that the number one concern of professors, according to Cowan (2018), is that students are underprepared for college, which places them at risk of failing.

Researchers contend that case management programs have been implemented to target students who are high risk of failing courses and or stopping out before degree completion due to being academically unprepared (Pierce, 2016; The Alliance for Excellence Education, 2011). However, understanding the effectiveness of case management processes in supporting students and increasing their achievement is less well known, especially for 2-year, open-enrollment colleges. Thus, discoveries from this study have the potential to inform other colleges on ways to systematically evaluate their own supports for students who are at risk of failing required English and Mathematics courses.

Purpose of the Study

The purpose of this quantitative ex post facto study is to assess the efficacy of the Student Learning Center's (SLC) tutoring program on academic outcomes for FTIC students who have been categorized as high-risk due to their initial academic performances. By comparing the academic outcomes between students who participated in the program and those who did not, the study aims to determine whether participation in the SLC program increases the likelihood of these high-risk students achieving successful course completion in gateway courses. Furthermore, within the cohort that actively participated in the SLC's tutoring program, this research aims to examine the relationship between the degree of their involvement measured in terms of the frequency of tutoring session, and their respective academic achievements. I defined high-risk FTIC students as those students who were identified through a campus diagnostic test during the first week of the gateway courses (i.e., required Intermediate Algebra and English Composition I) and who were invited to participate in the case management/SLC tutoring program. Successful completion in these courses was defined as students earning a grade of C or better.

I used the archival participation status in the SLC tutoring program as the independent variable, which was binary in nature. For the years 2018 and 2019, this variable signified whether a high-risk FTIC student participated in the SLC tutoring program. Of those high-risk FTIC students who participated in the program, the second independent variable will be the students' level of involvement in the SLC tutoring program. This level of involvement was operationally defined by the exact number of visits the student made to the SLC during the 2018 and 2019 semesters.

The dependent variables in the study included academic performance metrics. For all high-risk FTIC students, the dependent variable was archival data regarding successful/unsuccessful course completion in mathematics and English Gateway courses during the years of 2018 and 2019. Successful course completion were operationally defined as grades ranging from A to C. In contrast, unsuccessful course completion was operationally defined as grades D or F. Of those high-risk FTIC students who participated in the SLC program, the second dependent variable of the study was the actual academic performance in the mathematics and English Gateway courses (i.e., archival data) operationally defined as grades A to F during the years of 2018 and 2019.

Case management is defined as a two-part process of monitoring the students' term progress and course grades and the academic support they received by participating in the SLC tutoring. By understanding the relationship between the FTIC students' participation historical data in the campus SLC tutoring program and their gateway course achievement and completion historical data, the campus leaders will be able to adjust in their support program and contribute to the literature related to systematic research on programs designed to meet underprepared college students' academic needs to succeed in gateway courses.

Research Questions and Hypotheses

To address the topic and research problem of the proposed study, the following research questions will be posed:

Research Question #1

Is there a significant association between the participation status in XYZ State College's tutoring program and successful completion of Mathematics Gateway courses during 2018 and 2019?

Alternative Hypothesis (H_a1): There is a statistically significant association between the participation status in XYZ State College's tutoring program and successful completion in Mathematics Gateway courses during 2018 and 2019 among FTIC high-risk students.

Null Hypothesis (H_01): There is no statistically significant association between the participation status in XYZ State College's tutoring program and successful completion in Mathematics Gateway courses during 2018 and 2019 among FTIC high-risk students.

Research Question #2

Is there a significant association between the participation status in XYZ State College's SLC tutoring program and successful completion of English Gateway courses during 2018 and 2019?

Alternative Hypothesis (H_a2): There is a statistically significant association between the participation status in XYZ State College's tutoring program and successful completion in English Gateway courses during 2018 and 2019 among FTIC high-risk students.

Null Hypothesis (H_02): There is no statistically significant association between the participation status in XYZ State College's tutoring program and successful completion in English Gateway courses during 2018 and 2019 among FTIC high-risk students.

Research Question #3

Is there a positive statistically significant correlation between the level of involvement in XYZ State College's tutoring program among high-risk FTIC students and their academic performance in Mathematics Gateway courses during 2018 and 2019?

Alternative Hypothesis (H_a3): There is a positive statistically significant correlation between the level of involvement in XYZ State College's tutoring program and the subsequent grade in Mathematics Gateway courses during 2018 and 2019 among high-risk FTIC students.

Null Hypothesis (H_03): There is not a positive statistically significant correlation between the level of involvement in XYZ State College's tutoring program and the subsequent grade in Mathematics Gateway courses during 2018 and 2019 among high-risk FTIC students.

Research Question #4

Is there a positive statistically significant correlation between the level of involvement in XYZ State College's tutoring program among high-risk FTIC students and their academic performance in English Gateway courses during 2018 and 2019?

Alternative Hypothesis (H_a4): There is a positive statistically significant correlation between the level of involvement in XYZ State College's tutoring program and the subsequent grade in English Gateway courses during 2018 and 2019 among high-risk FTIC students.

Null Hypothesis (H_04): There is not a positive statistically significant correlation between the level of involvement in XYZ State College's tutoring program and the subsequent grade in English Gateway courses during 2018 and 2019 among high-risk FTIC students.

Theoretical Foundation

My goal in this study was understanding the effect of the SLC tutoring program on high-risk FTIC students' gateway course achievement and completion which is connected to student retention. Therefore, I used the student retention integrated model created by Cabrera, et al. (1993) in this study. Prompted by the recommendations of his 1992 study, which combined Tinto's (1975) and Bean's (1982) models, Cabrera et al. (1993) carried out a study to test the integrated model. Cabrera et al. found that the integration of Tinto's and Bean's models contributed a better comprehension and clarification of the student attrition model. The data showed that environmental factors have a more elaborate role than previously thought. This model also takes into consideration courses, institutional fit and quality, institutional commitments, GPA, and environmental factors such as financial attitudes and encouragement from friends and family. High-risk FTIC students in the required gateway courses could be experiencing some or all these variables as they embark on their post-secondary educational journey, which could explain their academic performance.

Cabrera et al.'s (1993) model aligned with this study's research questions because of the model components of courses (i.e., the gateway mathematics and English courses), institutional commitments (i.e., SLC tutoring program) and course completion and performance, which is represented by the students' grades. Chapter 2 includes a more thorough discussion of the model and the connection with the proposed study.

Nature of the Study

In this study, I adopted a quantitative ex post facto research design, an approach that retrospectively assesses pre-existing conditions without the investigator introducing any manipulations. Such a design was ideal for evaluating the overall efficacy of the XYZ State College's SLC tutoring program and examining how student engagement frequency might influence their performance. The overarching objective was to first understand the general effectiveness of the program and then delve deeper into the nuances of attendance frequency and its relation to performance. Quantitative research, as described by Allen (2017), serves to foster knowledge about our social world, and, according to Coghlan and Bryden-Miller (2014), it is prominently used within social sciences to scrutinize various patterns and phenomena numerically that affect individuals.

Statistical Power Analysis for Sample Size

Although sample size conventions for correlation and regression are generally noted to be 50, an a priori sample size estimation will be conducted using the G*Power platform. In research questions one and two, the Chi-Square (x^2) 2 x 2 Test of Association is projected to be used. A sample size of 67 is projected to be adequate to detect a statistically significant finding with a medium effect. For RQ3 and RQ4, I used the Spearman's Rank-order Correlation test. A sample size of 133 was adequate to detect a statistically significant finding with a medium effect.

Variables of the Study

Independent Variables

- Participation Status in the Tutoring Program (RQ1 & RQ2): This is a binary variable signifying whether a high-risk FTIC student took part in the tutoring program during a specified period.
- Level of Involvement in the Tutoring Program (RQ3 & RQ4): This variable is defined by the frequency with which a high-risk FTIC student who participated in the tutoring program visited the SLC in 2018 and 2019.

Dependent Variables

- Successful Completion of Mathematics and English Gateway Courses (RQ1 & RQ2): A binary measure based on the student's assigned grade indicating successful course completion.
- Academic Performance in Gateway Courses (RQ3 & RQ4): A numerical representation of the grades archived for the courses taken by high-risk FTIC students who participated in the tutoring program in the years 2018 and 2019.

Methodology

The research revolves around the tutoring program provided by XYZ State College's Student Learning Center (SLC), which aims to assist high-risk FTIC students, particularly in gateway courses. For the specified semesters, faculty members applied a diagnostic test to assess students' readiness. Students scoring 70% or below were labeled high-risk and invited to participate in the SLC tutoring program. While the program was exclusively tailored for these students, not all chose to participate, leading to two distinct groups: those who participated in the program and those who did not.

To maintain a robust assessment framework, the writing and mathematics departments created tracking folders for every student in the program. These dossiers, organized by courses and student names, contained comprehensive information, from session schedules to the final grades achieved.

Data Collection and Analysis

Data for this study will be sourced from the previously compiled records during the Fall semesters of 2018, Spring semester of 2019, and the accompanying diagnostic tests results. For RQ1 and RQ2, Chi-Square tests of association will be employed to discern if there are statistically significant associations between participation status and successful course completion in Mathematics and English Gateway courses. In contrast, RQ3 and RQ4 will consider only those who participated in the SLC tutoring program and will employ Spearman's correlational analysis to unveil potential relationships between the level of program involvement (frequency of attendance of tutoring sessions) and varying academic performance grades. In conclusion, this study will examine the efficacy of the SLC's tutoring program and its potential impact on high-risk FTIC students' academic achievements.

Definitions

Case Management. Case management is defined as a two-part process of monitoring the students' term progress and course grades and the academic support they received by participating in tutoring.

Gateway Course. In this study, the gateway courses will include *English Composition* (ENC 1101) and *Intermediate Algebra* (MAT 1033C) and are required courses which are the first college-level credit courses in a degree program.

High-risk FTIC Students. High-risk FTIC students will be those students who score a 70% or below on a diagnostic test that assesses student Mathematics and English readiness.

Performance-based Funding. Performance-based funding refers to a tethering that awards funds to state institutions based on student outcomes.

Remediation. Remediation is defined as education meant to help underprepared students succeed in college level courses.

Tutoring. Tutoring in this study will refer to the voluntary participation of students in a tutoring program to help with completion and retention of the gateway courses.

Assumptions

In the context of the described study, several assumptions can be identified.

1. *Archival Data Integrity*: It's assumed that the archival data from XYZ State College is accurate, complete, and has been recorded without significant error.
    - Reason: Without this assumption, it would be challenging to trust any results derived from the analysis. It's the foundation upon which the entire study rests.

2. *Diagnostic Test Validity:* The diagnostic test used to identify high-risk FTIC students is assumed to be valid and reliable.
    - Reason: The definition of "high-risk" students is central to the study's scope. If the diagnostic tool used isn't valid, it could misclassify students and potentially skew results.
3. *Tutoring Program Consistency:* It is assumed that the tutoring provided to students was consistent in terms of quality and methodology across both subjects and tutors.
    - Reason: If there were significant variations in the tutoring program's delivery, then attributing changes in academic outcomes solely to tutoring participation becomes problematic.
4. *Non-participation Factors*: It's assumed that students who did not participate in the tutoring program did so for reasons that won't significantly bias the study's results.
    - Reason: If non-participants had unique characteristics that strongly influence academic success, it could confound the study's findings.
5. *Outcome Measurement:* The grades students received in their courses accurately reflect their understanding and mastery of the course material.

- Reason: Grades are being used as a primary outcome measure. If they don't truly represent student knowledge, then conclusions about the tutoring program's effectiveness could be misguided.

6. *External Factors*: It is assumed that other external factors (like personal issues, financial constraints, health problems) that might affect a student's academic performance remained relatively constant or were similarly distributed among participants and non-participants.
   - Reason: Such external factors can significantly impact academic performance. If they are unevenly distributed among the groups, it can confound the findings, making it difficult to attribute outcomes purely to tutoring.

Scope and Delimitations

The scope of this study centers on understanding the relationship between participation in a tutoring program and academic performance and course completion among FTIC high-risk students. The specific aspects of the research problem addressed include:

1. The association between participation status in the tutoring program and successful completion of Mathematics and English Gateway courses.

2. The correlation between the level of involvement in the tutoring program and academic performance in Mathematics and English Gateway courses.

The focus on these aspects was chosen due to the significance of understanding the potential impact of support systems, such as tutoring programs, on academic outcomes. Given the challenges faced by high-risk FTIC students, determining the efficacy of such programs can be paramount in improving educational strategies and student retention rates at XYZ State College.

The study is delimited to freshmen FTIC students who were identified as high-risk based on a diagnostic test administered at the beginning of their course and who were enrolled in the specified gateway courses, namely, Intermediate Algebra (MAT 1033C) and English Composition I (ENC1101) at a small, rural campus of a five-campus state college, during the years 2018 and 2019.

Exclusions from the study are students not enrolled in the specified gateway courses during the years of 2018 and 2019, those not identified as high-risk and students who withdrew from the college or their specific gateway courses before completing at least one semester. The study will also exclude online classes. The study will not incorporate the possible impact of non-academic factors like confidence, finances, self-motivation, social support, family support, and social integration. These factors could add valuable information, but they are beyond the limits of the study and will be recommended for future research.

Given the delimited population, the findings of this study will be most directly applicable to FTIC high-risk students within similar institutional settings as XYZ State College, especially those in small, rural campuses. While the insights might offer valuable information to other institutions, generalizing the results beyond the studied population should be done with caution. Larger universities, urban campuses, or institutions with significantly different demographics and support structures may experience different outcomes. Further research would be necessary to determine the extent to which these findings can be applied in broader educational contexts.

Limitations

The research is limited in its scope because, while the sample size was adequate, and the data was valid and reliable, the study only took place at the smallest of five campuses of a large state college in the Southeastern United States. The state college has a student population of about 50,000 students and the site of the study only averages around 1,800 students, half of them online. Online students in the gateway courses were not part of the study.

Being a voluntary program further limited the scope of the study as it relates to student participation; furthermore, it was left up to the faculty of the gateway courses as to whether they wanted their students to participate in the study.

Significance

This proposed research provides further knowledge in three ways. First, the results will provide quantitative data concerning the impact of a tutoring program on the success rates of FTIC students enrolled in the gateway courses. Second, the research will help fill the gap in the literature related to the comparison of FTIC students enrolled in gateway courses who receive tutoring to those who do not and their subsequent success in the courses. Third, the research puts forth a methodology that permits for numerous group comparisons with a moderate sample. Furthermore, if tutoring proves to be an effective solution to the problem, college funding will be safeguarded and high-quality tertiary education will be provided for a larger part of the local population, which represents positive social change. Fourth, understanding the relationship between the frequency of attendance at tutoring sessions and its consequent impact on students' grades holds significant implications for educational institutions. This would offer insight into the potential value and efficacy of tutoring programs. If a strong positive correlation is observed, it underscores the importance of regular and consistent attendance in tutoring to bolster academic performance. This could lead institutions to prioritize and allocate more resources towards these programs. Additionally, such information could be vital for students, as it highlights the tangible benefits of actively engaging in supplemental academic support. Lastly, educators and tutors can tailor their strategies, knowing the frequency that yields optimal results, leading to more effective tutoring sessions and overall better student outcomes.

Summary

The background and problem related to FTIC student retention were presented in this chapter. Overall, FTIC students are largely unprepared for the gateway courses (i.e., English and Mathematics). Due to this gap in knowledge, state colleges are implementing courses and programs to support these students. Unfortunately, a lack of systematic research exists in determining the effectiveness of the support programs. Based on this information, the purpose of the proposed study and the supporting research questions and hypothesis were provided. The theoretical framework, student retention integrated model, was described and connected to the proposed study. In the nature of the study section, the researcher provided the requisite information regarding the overall research plan, including the design, variables, instrumentation, data analysis, and statistical power analysis. The chapter concludes with the definitions, assumptions, delimitations, limitations, and significance of the proposed study. In Chapter II, the theoretical framework is expanded upon, and the relevant research is presented and analyzed. Prior to presenting the research, the search strategies are detailed. A historical background is then presented to establish the foundation of the literature reviewed and to establish the context. The main sections of gateway courses, remediation, and performance-based funding are then presented.

Chapter 2: Literature Review

In this chapter, I review the research related to how high-risk student case management in the gateway courses (i.e., English Composition One and Intermediate Algebra) effects completion rates in the gateway courses, retention, and overall community and state college academic achievement. Because course completion and retention rates are a direct indication of the likelihood of a student continuing at an institution and completing his or her degree (Sundquist, 2019), it is important to know as much as possible about the factors influencing students' performance and persistence. Historically, statistical data on completion and retention rates have not been used. Not until the beginning of the 21st century did these data become readily available to the public. With the surfacing of these data, institutions of higher learning started feeling the pressure to compete and outperform their competition. Furthermore, with the introduction of the College Scorecard, the government's source for college performance data, the competition was on to increase completion and retention rates (Sundquist, 2019).

This chapter includes five main sections. The first area includes the description of the literature search strategies. Second, I present the student retention integrated model, which serves as the theoretical foundation for this study and includes a discussion about prior researchers' discoveries resulting in a gap in the use of the student integrated retention model by Cabrera et al. (1993) to explore community or state college students' retention and persistence coupled with their success in the gateway courses and tutoring. The third section includes a historical perspective of high-risk students graduating from high school unprepared for the rigors of college courses and how case management intervention and tutoring supports students' success in gateway courses. This section serves as the foundation of the proposed study. Fourth, I discuss the relevant literature and critique these empirical studies pertaining to tutoring, gateway courses, retention, remediation, performance-based funding, open access, and Florida Senate Bill 1720. The chapter summary concludes the chapter.

Literature Search Strategy

I conducted the search for relevant literature in accordance with the focus on high-risk student case management in gateway courses (i.e., English Composition One and Intermediate Algebra) and its effects on course completion rates, retention, and overall community and state college academic achievement. The search encompassed a relatively large period extending from 1975 to 2022. The sources cited include seminal literature, mainly Tinto's 1975, 1987, and 1999 studies covering dropouts, attrition, and retention, respectively. I also included Cabrera's 1993 seminal study that gave birth to the integrated model of student retention which built upon the seminal groundbreaking research of the work by Tinto (1975, 1999) and Bean's (1982) models.

The main topics searched were FTIC students, high risk groups, case management, course completion, tutoring, and retention. Ancillary topics were researched and added to the study because of their direct and important relation to the main topics. These topics included remediation, performance-based funding, and Florida Senate Bill 1720. Although a magnitude of valid and reliable current sources was not available, I attempted to fill in the gap in current literature with other older, but still relevant studies.

To conduct the literature review, I used the following electronic databases: Walden University library, Thoreau multi-Database Search, Google, Google Scholar, Educational Resource Information Center, ProQuest Dissertation and Theses, ProQuest Central, and the Center for the Study of College Student Retention website (www.cscsr.org). Several scholarly journals and professional associations were also consulted: Inside Higher Ed, Journal of Developmental Education, National Academic Advising Association (NACADA), Collegiateway.org, The Journal of Higher Education, Higher Education Studies, Alliance for Excellence in Education, Studies in Higher Education, New Directions for Institutional Research, Bioscience Education E-Journal, Online Learning, Community College Review, ASHE Higher Education Report, The Journal of Virginia Community Colleges, www.flsenate.gov, www.researchgate, Hanover Research, Salem Press Encyclopedia, Americaprogress.org, Review of Educational Research, Community College Enterprise, Community College Journal of Research and

Practice, International Journal of Continuing Education and Lifelong Learning, and Community Review. The key words used to identify the different topics for this study included: *academic persistence, community colleges, dropout prevention, dropout programs, dropout research, dropouts, school holding power, student attrition, two year colleges, academic achievement, questionnaires, college faculty, intervention, meetings, tutoring, at risk student, program design, program evaluation, academic failure, program effectiveness, statistical analysis, student attitudes, peer tutoring, college freshmen, academic probation, grade point average, academic persistence, higher education, at risk students, program effectiveness, correlation, comparative analysis, demography, student characteristics, gateway courses, course completion,* and *persistence.*

Theoretical Foundation

In this study, I explored the effect of a remediation program on FTIC students' gateway course completion and its subsequent connection to student retention. Although numerous theories on college persistence are available (Spady, 1970), only two of these theories have presented an all-encompassing framework on the reasons for which college students do not persist. These two theoretical frameworks are Tinto's 1975 student integration model and Bean's 1982 study on student attrition (Cabrera et al., 1993). A review of the available literature demonstrates that Tinto's model gave rise to a constant stream of research that encompassed a period just over ten years (Cabrera et al., 1992; Mallette & Cabrera, 1991; Nora, 1987; Nora et al., 1990; Pascarella & Terenzini, 1979; Pascarella, et al., 1986;). Cabrera et al.'s (1993) study legitimized Tinto's 1975 model throughout different types of institutions and diverse student populations. Bean's 1982 model has also been proven to be valid in its explication of student persistence (Bean, 1980; Bers & Smith, 1989; Bean, 1990, Cabrera et al., 1992). Both Tinto's and Bean's theories attempted to explain the same occurrences of student retention and persistence; however, Cabrera et al. (1993) provided verification that there is an overlap between the two models.

The research by Cabrera et al. (1992) sustained the proposed combination of Tinto's (1975) and Bean's (1982) models (Aljohani, 2014). Cabrera et al.'s (1993) combination of these retention models included combining similar components while also including different components (Aljohani, 2014). This combination contributed to the creation of an integrated framework called the student retention integrated model. Then, Cabrera et al. (1993) carried out empirical research to test the new integrated model. Through this work, all the different variables from the two studies used by Cabrera et al. (1993) had been statistically verified. Unverified variables from the two studies were excluded by Cabrera et al. (1993).

The student retention integrated model also encompassed courses, institutional fit and quality, institutional commitments, GPA, and environmental factors such as financial attitudes, encouragement from friends and family, and institutional supports (i.e., tutoring). Institutional fit is defined as fitting in with others at a college (Mattern et al., 2010). Bean (2005) described institutional fit as when members of an institution (such as students at a university) feel as though they belong with the other members (i.e., students and the institution). Cabrera et al.'s (1993) study merged the institutional fit and quality and the courses of Bean's (1982) theoretical model with the institutional commitments and academic integration of Tinto's (1975) theoretical model. Lastly, Cabrera et al.'s (1993) added the encouragement from friends and family and financial attitudes variables from Bean's (1982) model as independent variables. The rationale for this addition was due to the discovery that these variables affected, significantly, institutional commitments, persistence, and academic integration (Aljohani, 2014).

The student retention integrated model was also used in the following studies: (a) Sandler's (1998) career decision-making self-efficacy and an integrated model of student persistence; (b) Sandler's (2000) career decision-making self-efficacy, perceived stress, and an integrated model of student persistence: a structural model of finances, attitudes, behavior, and career development; and (c) Weng et al.'s (2010) study explored modelling information system student retention in Taiwan: extending Tinto and Bean's model with self-efficacy. All three of these studies used Cabrera's 1993 student retention integrated model but added their own constructs. Sandler added two variables in 1998: career decision-making, self-efficacy, and financial difficulties. In 2000, Sandler added three variables, the two used in his 1993 study plus perceived stress. Weng (2010) used Cabrera's study and added self-efficacy. All three studies used self-efficacy as a variable to Cabrera's 1993 research. In addition, all three studies were carried out at private post-secondary institutions and the samples consisted of students in two- and four-year degree programs.

Sandler (1998) added two variables, financial difficulty, and career decision-making self-efficacy to their study. This study came about because of the immensely diverse adult student population in our colleges. The 1998 study analyzed the student persistence and attrition of 937 nontraditional students all 24 years old or older matriculated in two and four-year programs in an urban private research doctoral institution (Sandler, 1998). In addition to the 1998 study, Sandler also published in 2000, again making use of Cabrera et al.'s (1993) student retention integrated model. In the 2000 study, Sandler used Cabrera et al.'s (1993) study with the two added variables from the 1998 study, financial difficulty and career decision-making self-efficacy, and a new variable, perceived stress. This study resembled the 1998 study in sample size and locations.

Continuing to build on the prior revisions to the student retention model, Weng et al. (2010) investigated and analyzed an information system model of student retention by revising Cabrera et al.'s (1993) publication of the student retention integrated model. These researchers added self-efficacy as a new construct to the model. Weng's (2010) motivation for this study was to investigate an information system student retention model by merging and modified version of Cabrera et al.'s 1993 integrated student retention model. Weng (2010) gathered data from six private institutions in Taiwan.

Sandler (1998) also used Cabrera et al.'s (1993) student retention integrated model to research attrition and persistence among non-traditional students. Just like Weng et al., Sandler (1998) added two variables, financial difficulty, and career decision-making self-efficacy to their study. In addition to the 1998 study, Sandler also published in 2000, again making use of Cabrera et al.'s (1993) student retention integrated model. In the 2000 study, Sandler used Cabrera et al.'s (1993) model with the two added variables from the 1998 study, financial difficulty and career decision-making self-efficacy, and a new variable, perceived stress.

Success in gateway courses (i.e., English Composition One and Intermediate Algebra) is imperative considering that if the students are not successful, it will impede their current academic progress, which, in turn, affects student retention. Students who experience success have greater probability of persisting. The theoretical framework that was appropriate for this study covers student attrition and includes a direct connection between course completion and retention along with (a) institutional fit, (b) student motivation, and (c) student academic ability. As such, the student retention integrated model (Cabrera et al., 1993) was critical due to its integration of two reliable and valid models (Tinto, 1975; Bean, 1982) and includes student attitudes and behaviors. Prompted by the recommendations of their 1992 study, which combined Tinto's (1975) and Bean's (1982) models, Cabrera et al. (1993) carried out a study to test the integrated model. Cabrera et al. discovered that the integration of Tinto's and Bean's models resulted in a better comprehension and clarification of the student attrition model. These researchers showed that environmental factors have a more elaborate role in persistence than previously thought. The student retention integrated model includes the idea that students' behavioral initiatives are molded by a mechanism through which the students' beliefs shape their attitudes, and those attitudes then affect their behavioral initiatives (Cabrera, et al., 1993).

Underprepared, high-risk students in the required gateway courses could be experiencing some or all the variables in Cabrera et al.'s (1993) study, institutional fit, student motivation, and student academic ability, all which directly relate to completion and retention. As they embark on their post-secondary educational journey. While researchers have used the student integrated retention model (Cabrera et al. (1993) to explore student attrition and persistence using with the added variables of self-efficacy, financial difficulties, career decision-making-self-efficacy, and perceived stress, no researchers have used the student integrated model in a community or state college to explore student retention and persistence in conjunction with success in the gateway courses and tutoring. Gaining information based on this model provided the data needed to fill the gap in literature.

The research questions in this study were used to address the direct involvement of high-risk students in tutoring and their subsequent grades and successful completion of the gateway courses. The research questions were formulated to directly address student course completion which is directly connected to student retention. Therefore, I used the student retention integrated model created by Cabrera et al. (1993) in this study.

Literature Review Related to Key Concepts and Variables

This section includes a historical perspective on FTIC students' college preparedness and their successes and failures in college level courses and the consequences of graduating high school unprepared for the rigors of college courses. Then, the research regarding retention, remediation, performance-based funding, open access, and Florida Senate Bill 1720 will be presented and critiqued.

Historical Perspective

This section includes a presentation of an understanding of the student course completion and retention issue in our colleges and universities, taking into consideration its earlier periods and successive development. This historical perspective will show how all the components of this section are intertwined in the success or failure of a FTIC student.

The research regarding student college readiness has solidified the fact that many students entering college are not college ready in mathematics and English. Klasik and Strayhorn (2018) explained that even though being ready for college is open to different interpretations, almost all the states that have accepted the Common Core State Standards (CCSS) clearly interpret being college ready as students not needing developmental courses. Likewise, Ayebo et al. (2017) reported that while many students are entering college unprepared, proper high school preparation can be a springboard to success in college level courses. Academic preparedness was found to be statistically significant in predicting academic success (Hepworth, et al., 2018).

McNair (2016) argued that post-secondary education leaders and professors have an aspiration to choose students who are college ready for their institutions. They want their students to enroll ready for the rigors and hardships of college level courses. Kerr (2016) states that the ACT scores show that high school graduates are not ready for college. Only 38% of high school seniors made the college-ready mark in at least three of the four subjects of English, Reading, Science, and Math. In 2016 61% of graduates passed the English benchmark, 44% met the benchmark for Reading, and only 41% and 36% met the benchmarks for Math and Science respectively. 34% of graduates did not pass any of the four categories (Kerr, 2016). According to Camera (2016), only 37% of high school graduates are ready for college-level Reading and Math courses. According to the National Assessment of Educational Progress (NAEP), only 24% of high school seniors are at or above the proficient mark for Math, 37% for Reading, 27% for Writing, and 22% for Science. According to the ACT, only 23% of recent high school graduating seniors are college ready (O'Shaughnessy, 2022). Less than one in four graduating seniors was prepared for the rigors of college courses. This, according to O'Shaughnessy (2022), might explain why 44% of undergraduate students stop out of college. Miller and Murray (2005) reported that 53% of all students entering college in the United States were not college ready. This 53% signifies a 33% increase since 1996. While a plethora of colleges and universities experience a significant increase in enrollments, the number also increases of students who are at risk of academic failure (Ramaley, et al., 2002; Miller & Murray, 2005). King (2004) defined the at-risk groups of students as: academically underprepared; those with individual risk factors; those with familial risk factors; and those with social risk factors.

The issue of students entering college unprepared connects to the Alliance for Excellent Education's (2011) announcement that US high schools are not appropriately preparing their students for college-level courses and could be the malefactor for the high failure rates of college degree completion. The organization also disclosed that (a) one-third of students will not graduate from high school, (b) many who graduate are underprepared for college-level work, and (c) 43% of them will not have earned a degree after six years of postsecondary education. More recent studies also back up the 2011 Alliance for Excellent Education report declaring that high schools are not preparing students for college and that most colleges enroll a high number of students who are not college ready (Butrymowicz, 2017; Chen, 2021; Ijaz, 2017; Whitmire, 2018). According to Butymowicks (2017), the Hechinger report, encompassing 44 states, found that more than 500,000 students who were not college ready were enrolled in two and four-year colleges. This number displays a flagrant fracture in the American system of education. A high school diploma, even if recently achieved, no longer guarantees that the graduate is college-ready (Butrymowicz, 2017). Miller and Murray (2005) stated that a college degree is now what a high school diploma used to be a century ago. Rampell (2014) echoes this by stating that employers are progressively demanding a four-year degree for positions that used to require just a high school diploma. Simply put, a bachelor's degree is becoming the new high school diploma.

The requirement of the four-year degree has been a trend since 2014. Many employers require a four-year degree for entry-level positions (Rampell, 2014). An article published by Goble in 2021 mirrors Rampell (2014) by stating that in the past decades, it was commonplace for high school graduates or individuals with a high school diploma to enter the workforce with ease. In the early 20th century, it was common for young men and women not to complete their high school education. In the early 20th century, only about ten percent of students completed high school. Compared to today's 85 to 90 percent graduation rate, it is a significant change. Of those students that graduate high school today, about 65 percent matriculate in college. Many jobs that used to require a bachelor's degree, are now requiring a master's (Goble, 2021). Although college enrollment has increased, according to many meticulous and arduous research, it is evident that the number one concern of instructors, teachers, and professors are the students that are underprepared and not college-ready (Cowan, 2018).

Developmental education (DE), according to Brower, et al. (2021), is a common practice structured to aid underprepared high school graduates entering college in achieving the necessary skills for college-level courses. Almost a decade ago, DE became more prevalent and has affected community and state colleges throughout the nation particularly in California, Florida, North Carolina, Tennessee, Texas, and Virginia (Jaggars & Bickerstaff, 2018). Now, more than ever, these colleges, must spend time and money to deal with this issue of underprepared students. It is up to the colleges now to get those students college ready or jeopardize losing the students to academic failure (Butrymowickz, 2017). The process of helping these students become college ready by putting them in remediation for Math and English is a financial drain on the college, the taxpayers, and the students themselves, costing an estimated seven billion dollars annually (Butrymowickz, 2017). Data collected from over 900 colleges nationwide, both two- and four-year institutions, show that 96% of the institutions matriculated students needing remediation in the 2014-2015 school year and no less than 209 colleges enrolled more that 50% of their incoming students in remedial courses. At least, in the same school year, 569,751 students were taking part in remedial courses nationwide (Butrymowickz, 2017).

Although the high school graduation rate is rising, only about 8% of high school graduates are ready for college level courses (Ijaz, 2017). According to Ijaz (2017), far too many students graduate high school without having a clear idea on how to succeed in college. Almost 50% of all students entering college graduated high school never taking any kind of college readiness course. In the 2015 academic year, high school graduation rates were at least 82% nationwide; however, only a small percentage were ready for college level courses (Ijaz, 2017).

In 2014, Shapiro et al. argued that overall completion rates declined, but the declines were mostly for older or part-time students, students who started in a 2-year public institution, and for those who started a four-year private institution. The comprehensive results of the Shapiro six-year study of college students matriculating for the first time in the fall term of the 2008 academic year (n=2,673,800) show that 41.6% (n=1,112,105) enrolled at a four-year public institution and 36.8 % (n=983,521) at a 2-year public institution. Moreover, 17.4% (n=464,796) matriculated at a four-year private Nonprofit and 4.0 % (n-107,368) at a 4-year private for-profit. Two-year private for-profit and nonprofit both had 0.1% matriculation. 76.7% were 20 years old or younger, 16/6% were older than 24, 6.4% were between 20 and 24 years of age. 0.3% were unaccounted for because of missing birthdates. 39.6% were full-time students, 6.7% part-time, and the majority, 53.7%, had a mixed schedule. 55.2% were female compared to 44.8% males. Longitudinally, 69.7% of all students in the study completed a degree or were still enrolled at the end of the study, 55.1% completed their degree and 14.7 were still enrolled. Shapiro et al. (2014) discovered that full-time students completed at a higher rate (77.2%) than the part-time students (21%) and higher than those with a mixed schedule (43%). After six years, it must be noted that only 10% of the students were still enrolled and a gargantuan 68.5% were no longer enrolled at the end of the study.

Completion rates were higher for females (58.6%) than their male counterparts at 51.6% (Shapiro et al., 2014).

Since 1992, SAT scores kept increasing until 2007 when all sub scores, except for English and Science, increasingly declined. After the peak in 2007, scores continued to drop until 2013 when ACT Inc. incorporated changes to the test to closely mimic the national curriculum. After this change, scores stabilized with the exclusion of Math scores which have been progressively declining since then (Aldric, 2020). In 2014, the ACT scores for English were 20.3, 20.9 for Math, 21.3 for Reading, and 20.8 for Math.

The following year, NASFAA.org (2015) stated that there was a decline in SAT and ACT scores, enormous amounts of high school students in the United States are completing their high school education unprepared for the difficulties of college level studies, according to the two biggest college placement and admissions test in the nation, the ACT, and the SAT. According to ACT Chief Executive Officer Jon Whitmore: "this should be a wake-up call for our nation, we're talking about hundreds of thousands of U.S. high school graduates who won't earn a two or four-year degree because they aren't academically prepared to do so" (NASFAA.org), 2015, p. 1; ACT.org, 2055). The ACT test four subjects, English, Reading, Mathematics, and Science. In the 2015 academic year, 64% of high school graduates passed the English section of the ACT. However, more than 50% of the students scored below the required standard in Reading, Math, and

Science (NASFAA.org; ACT.org, 2015). NASFAA.org (2015) quoted Nick Anderson, a Washington Post higher education reporter, as saying: “Much is expected from the institutions of higher learning when they inherit this problem from the high schools.” ACT, (2015) presented the following statistics regarding the dire state of student preparedness:

- Large # of H.S. graduates are graduating unprepared for college.
- Only 28% of ACT class of 2015 tested graduates were college ready.
- 41.9% of SAT were also not prepared.
- This equates to hundreds of thousands of H.S. graduates that are not likely to earn a college degree.
- Among the four subjects; English, Reading, Math, and Science. Nearly one in three (31%) failed to meet even one benchmark.
- According to ACT research, less than 20% of the students who fail to meet at least one benchmark are likely to earn a degree within 6 years.
- 60% of students who meet at least three of the benchmarks are more likely to earn a degree.

The results of the SAT also disclose comparable gaps in academic achievement between different demographics. Asian students meet the benchmark at 61.3%, white students at 52.8%, Native American students at 32.7%, Hispanic students at 22.7% and

16.1% for African American students (Education Week, 2015). According to Washington Post reporter Nick Anderson, the continuous decrease in SAT scores and the lethargic high school results on the federal tests exhibit a disturbing weakness of the efforts on education reform (ACT, 2015).

The following years after Act, (2015) published its findings, the number of students taking the ACT has been declining. The biggest drop in ACT test takers and scores came in 2021, unquestionably the result of the contentions and confusions caused by the Corona virus pandemic and the schools changing their test standards and policies (Aldric, 2020). In 2016, the score for English was 20.1, 20.6 for Math, 21.3 for Reading, and 20.8 for Science. In 2017, the scores were 20.3, 20.7, 21.4, and 21.0, respectively. Following the same order in 2018, the scores were 20.2, 20.5, 21.3, and 20.8. In 2019 the scores were: 20.1, 20.4, 21.2, and 20.6. In 2020 the scores were 19.9, 20.2, 21.2, and 20.6. And last year, in 2021, the scores were 19.6, 19.9, 20.9, and 20.4.

According to contemporary ACT scores, the concerns shared by many in public academia that the Corona Virus pandemic could have a deleterious effect on college students has been confirmed (Hayse, 2021). However, comparing ACT scores to previous years is an arduous task because some colleges made the ACT test optional and high school juniors were given a choice of whether to take it or not. This had an adverse effect on the sample size (Hayse, 2021). For the institutions that administered the ACT during the pandemic in the Fall term of 2020, it was recognized that the scores were lower than the scores before the pandemic. The scores decreased by 0.88 points in English, in Math the scores decreased by 0.49, 0.64 in Reading, and 0.26 in Science. Score diminutions of this significance can be juxtaposed to percentile rank drops of five points for English, three for Math, two points for Reading, and two points for Science. (Allen, 2021).

High school students' learning and passage to college has been affected by the pandemic. Recent studies show that the disturbance caused by the Corona virus pandemic to K through 12 education has been responsible for students to fall behind academically (Kuhfeld et al., 2020; Renaissance, 2020,2021; Curriculum Associates, 2020; Allen, 2021). According to Han et al. (2017), degree completion and the overall academic success of college students is still a serious concern considering that the dropout rate is up to 45% and the average time to complete a 4-year degree is six years or more. Data show that in 2015 only 59% of students in a 4-year institution graduated within 6 years and over 21% of these students left college during their first year of attendance (Han, et al., 2017). It was found that college students' retention from their first year to the second seemed to be affiliated with their sense of belonging at the institution (Han, et al., 2017). Likewise, Kember, et al. (2001) found that a sense of belonging at the institution can be significantly important in the students' academic success or failure and can be an efficacious way of enhancing the students' academic performance.

As of 2018, according to Cowan (2018):

- Only 59% of students enrolled in a four-year college graduate within 6 years.
- Only 28% of students in community colleges achieve a degree within 3 years.
- For African American students, the 3-year associates-degree rate is 12%.
- 40% of "A" students in high school require at least one developmental course in college.
- The United States has the highest college drop-out rate in the industrialized world.

Cowan (2018) articulates that individual instructors are not able to repair what is wrong with the educational system. However, it is the job of the professors to instruct in an efficacious manner. Professors, according to Cowan (2018), can help by exploring their student's under- preparedness. One way to look is to use prose literacy. Cowan (2018) states that prose literacy has not changed for high school seniors in the United States in the last 25 years. It has remained around the 280s when a score of 302 is considered proficient. In addition, since 2002, the high school graduation rate has increased by 8 percent. Also, since 2002, the college enrollment rate has increased by 30 percent. Because of this, the percentile of students in college with a score of 302 (proficient) in prose literacy dropped from 40 percent to 31 percent in a decade (Cowan, 2018).

Because of Florida Senate Bill 1720, developmental education or remediation became an option for Florida's high school graduates entering college in 2014. They became exempt from remediation, their prior academic preparation notwithstanding (Park et al., 2018). The Park et al. (2018) study explored the enrollment patterns in the first semester for underprepared FTIC students. These students would have been mandated to register for developmental courses prior to the bill being passed. From this research, the researchers discovered that about a third of the underprepared students registered for remediation, while another third registered directly into the Math gateway course of Intermediate Algebra against the advice of the academic advisor, and another third chose not to register for any Math course at all (Park et al., 218). Park et al. (2018) reported that 60% of students entering community colleges are refereed to take Developmental Math. Park et al. (2018) found that severely underprepared FTIC students were the group most likely to register in Developmental Math. These researchers also reported that those students who were underprepared benefitted from participation in developmental education along with the Intermediate Algebra gateway course. Altogether, 34.9% of the underprepared students registered for remediation, 27.7% went straight into the college level gateway course of Intermediate Algebra, and 3.4% took both the Intermediate Algebra and the Developmental Math, and 34/2% chose not to take any Math at all (Park et al., 2018). According to the study, since remediation is an option, 22.1% of slightly underprepared students registered only for the developmental course while 45.2% of the severely underprepared students registered for remediation. Simultaneously, 15.3% of the most severely underprepared students enrolled directly into the college level gateway course of Intermediate Algebra.

Providing the choice for a student to voluntarily register or be referred to take developmental courses would necessitate students to take at least a year of remediation before they are allowed to take college level courses (Bailey et al., 2010). Although remediation may allocate the foundation needed by students who are underprepared, there is augmenting indisputable evidence that earning a 2-year degree or a transfer is highly unattainable for students who participate in remediation, especially in Math (Bailey et al., 2010; Calgano et al., 2007; Fong et al., 2015; Melguizo et al., 2008). It is not incomprehensible, according to Park et al. (2018), that a multitude of students who needed remediation make the decision not to take remediation courses. The main reasons for not choosing to take remediation courses are: (a) that the students would not earn any college credits, (b) that they would have to pay for the courses, (c) that it would slow their academic progression, and (d) that the results of taking the remediation courses are uncertain (Park et al., 2018). What is most concerning is that the students who would benefit from remediation, those who are severely underprepared, choose not to take the course (Park et al., 2018). According to Johnson and Kuennen (2004), students who take part in remediation before registering for a gateway course had better grades and had a greater chance of passing the gateway course. Additional complementary studies show that 48% of students that were successful in two English and one Math college level courses in their first year went on to complete their degree within 6 years. For those students who were not successful in their gateway courses in their first year in college, only 18% went on to receive their degree in the same amount of time (Denley, 2016).

Because of the number of students that stagnate for numerous semesters taking developmental courses that, most of the time, hinder their academic progress, some states have begun to rework their policies on remediation. (Bailey & Jaggars, 2016). The state of Florida did this in 2013 when it made developmental education optional. Before the implementation of Senate Bill 1720 in 2013, Florida clearly needed a change in developmental education. At that time, the number of students that completed their required remediation regiment was low and the number of students needing remediation that went on to complete their college degree was even lower. The Florida Senate Bill's developmental education reform made remediation optional, required that developmental courses be taught in only one of the following delivery methods: corequisite, contextualized, modularized, and compressed. In addition, the Bill also demanded institutional plans for implementation (Mullin, 2018).

Since its inception, the pass rates for students in remediation increased from 52 percent in 2014 to 59 percent in 2017 in Math. In English, in went from 70 percent to 73 percent in the same period. For the same period, the number of students participating in remediation decreased from 110,374 to 86, 227. With remediation being optional, it can be assumed that these students enrolled directly into the college level gateway courses in English and Math. This statement can be backed by the increase in enrollment in the gateway courses from 314,115 to 355, 394 for the period of 2014 to 2017. Considering the increase in enrollment in the gateway courses, the success rates were negligible with the course completion rates staying about the same (Mullin, 2018).

Not being college ready is a concern for many of the high school graduates who enter college for the first time. Nearly 60% of all students entering public community colleges in the United States register for at least one remedial course (NCES, 2013). Remediation is the main process for colleges to help their incoming students that are not college ready; however, only 20% of all students who participate in remediation go on to register for the following college level course within two years of entering college (Complete College America, 2016). During the last ten years, because of the sizable number of students partaking of remediation and the cost, $154 million a year in the state of Florida alone, remediation has come under careful and meticulous observation (Underhill, 2013). Additionally, research substantiates that the enormous cost of remediation might not improve the students' chances to succeed (Bettinger & Long, 2009; Boatman & Long, 2010; Calcagno & Long, 2008; Lesik, 2008; Martorell & McFarlin, 2011; Moss & Yeaton, 2006; Scott-Clayton & Rodriguez, 2015).

Success in college has been attributed to high school coursework and GPA. GPA has been linked to students being college ready and subsequently being successful in college level courses (Belfield & Crosta, 2012; Bridgeman et al., 2008; Hoffman & Lowitzki, 2005; Morrison, 2020). To illustrate, data show that high school GPA has a robust connection with high college GPA in the first and second year of college and with third college year retention (Morrison, 2020). Contributory to this, GPA is also linked to success in the college level gateway courses (Scott-Clayton, 2012).

Not being ready for college courses is still a concern, not only for students entering college, but for the institutions as well (NCES, 2013). The only solution available to these students is remediation, but taking part of developmental courses is still not a guarantee that the student will be successful (Complete College America, 2016). Success in college has been directly linked to academic success in high school courses (Belfield & Crosta, 2012; Bridgeman et al., 2008; Hoffman & Lowitzki, 2005; Morrison, 2020). What is still unknown is what will be the remedy for success when underprepared students enter college. What it is known is that students that are successful in the Gateway courses persist at a higher rate than those who do not (Bertrand et al, 2021).

Gateway Courses

Gateway courses offer the foundation upon which the necessary knowledge is acquired that will enable students to be successful in future classes (Bertrand et al., 2021). Gateway courses are designed to prepare FTIC students for success (Kwak, 2020). Gateway courses carry negative or positive ramifications for students, as failure in these courses will stop the student from progressing in their educational journey (Kwak, 2020). For this study, I focus on English Composition One, and Intermediate Algebra gateway courses. These two general education courses are prerequisites for other courses and are also part of degree programs.

Gateway courses are courses with high enrollment and, unfortunately, a high ineffectual rate of students who earn a D, F, an incomplete or withdraw from the class. In their 2018 study, Bloomer et al. acknowledged the effect and significance of student preparedness on student attrition. According to Koch and Pistilli (2015), gateway courses with a high D, F, and withdrawal rate are a direct result of student attrition. Bertrand et al. (2021) found that the main reason for low student achievement in the gateway courses was the lack of prerequisite subject knowledge. According to Koch (2017), the high failure rates in the gateway courses has remained constant. Gateway courses, also known as “Killer Courses,” are “courses in which students face the greatest risk of poor performance or outright failure” (p. 11).

Students who complete their gateway courses in their first semester in college were more likely to register for the second semester. Because of the low success rate in gateway courses, Bloomer et al. (2015) conveyed that identifying and refining these gateway courses was a growing trend in institutions of higher learning.

Retention

Ever since the inception of formal education, retention continues to be a major concern, not only in the United States, but worldwide. Being aware of the student academic experience and having the wherewithal to prognosticate student success and retention endures as one of the main topics of discussion among higher education professionals (Boyd et al., 2022). Universities worldwide continue to struggle with student retention (Al Hassani & Wilkins, 2022). Recent data from the Tertiary Education Quality and Standards Agency (TEQSA) show that that there is an international augmented passion in student attrition and a passion for what leaders of higher education institutions can do to retain their at-risk students (Shcheglova et al., 2020). This passion to address student retention makes sense given Aljohani's (2016) claim that student retention affects institutions' reputation and financial stability. For these reasons, Aljohani called for different strategies that are based on scientific research to successfully deal with the issue of low retention rates.

According to the Alliance for Excellent Education (2011), one third of students will not graduate from high school and many who graduate are underprepared for the rigors of college level courses. High schools in the United States are not suitably preparing students for college and could possibly be the culprit of the high college degree completion failure rates. Furthermore, researchers have determined that one in three students entering college require remediation (Alliance for Excellent Education, 2011). Hesser and Gthat being unprepared for college can have an adverse effect on the success of the student and have a negative impact on student retention.

According to Foshee (2016), colleges in the United States are in a predicament; thousands of high school graduates are functioning below college level. Unfortunately, efforts to increase completion and retention rates have not been successful and have not changed in the last 20 years. In 1999, 68.3% of all students who registered for college in the Fall term returned in the fall of 2000 (ACT 2000). Fifteen years later, the return rate was .3% lower at 68%, virtually unchanged (ACT 2015).

Many students who enter community colleges across the United States are considered underprepared for college level courses and are referred to developmental courses before proceeding to the college level gateway courses in Math and English (Scrivener et al., 2018). Data show that these students struggle in the developmental courses. To help them, the City University of New York (CUNY) developed and initiated a program to provide intense instruction in English, writing, and Math. The program also included tutoring in these subjects. The research showed that the students that participated in the extra instruction and tutoring made substantially more progress than the students who did not participate (Scrivener et al., 2018).

Remediation

Remedial education or developmental education, as it is also called in this study, is education meant to help students catch up. Students in remediation have fallen below the benchmark for college readiness. College students that need remediation are those who do not have the foundation needed coming out of high school to be successful in college-level courses (Drew, 2022).

Nearly two thirds of all students that matriculate in community and state colleges are identified as not being college ready. For students that enroll in four-year colleges, more than one third are not ready for college. These underprepared students lack the basic Math and language skills necessary to successfully tackle the rigors of college level courses and are referred to take developmental courses. Lamentably, most of the students that are referred to remedial education never complete (Jaggars & Beckerstaff, 2018).

A 2015 study by Orange and Hodges of students who matriculated in one or more developmental courses showed that self-regulating demeanors and the education of the parents are significant intervening determinants between the students' high school preparation and the necessity for remediation in college. This study is relevant given researchers have determined that academic preparation supports successful college completion (Kodama et al., 2016). In 2018, Er indicated that faculty from 48 states viewed first year students' ability was poor and that students needed remediation. According to Westrick and Mattern (2018), virtually two-thirds of students matriculating in community colleges and one third of those going to a four-year school lack the basic aptitude in English, writing, and Math needed for college level courses. These students, then, require placement in remedial courses before they can register for the gateway courses.

Increasingly, students who are underprepared for college are matriculating in colleges and universities across the United States. An estimated 42% of students graduating from high school in the United States are entering colleges and universities underprepared and will require remediation (Gebauer, 2019). According to Jimenez et al. (2016), 40% to 60% of FTIC students will require remediation in English, Math, or both. Only 38% of high school seniors are at or above college level reading and 27% are at or above the level for writing (Snyder et al., 2016). However, research indicates that conventional remediation efforts can exacerbate the insecurity that is frequently endured by at-risk students (Gebauer, 2019).

For many FTIC students, their freshman year comes with a displeasing disbelief; having graduated from high school notwithstanding, they find out that they must take developmental courses in English, Math, or both. Unfortunately, a high number of these students never graduate (Kane et al., 2020). Each year about two million high school graduates register for developmental education upon entering college. Recent data show that less than half of these students will go on to finish the gateway courses and less than one-third go on to earn a college degree (Turk, 2019).

Developmental Courses

Developmental, or remedial courses, are courses that are below college level. These courses were intended to help underprepared high school graduates entering college obtain the necessary knowledge to be successful in the gateway courses (Hu, et al., 2016). Developmental courses have come under close examination and criticized because of the large number of underprepared students that had to register for them, the high cost, and the low success rates (Hu et al., 2016). These concerns are not exclusive to the state of Florida. Other states across the country are also struggling with the same issues (Parker et al., 2014).

After Florida Senate Bill 1720 was implemented, the percentage of FTIC students registering for developmental courses declined. These results most likely caused by the bill which allows for voluntary remediation and makes placement tests optional (Hu et al, 2016). Of course, as the enrollment in developmental education courses declined after the bill's implementation, enrollment in gateway courses increased as students opted to bypass developmental courses and go straight into the college level courses (Hu et al., 2016). Concurrently, the passing rates for the gateway courses declined, probably because students that were underprepared for college level courses chose to register for them even though they needed remediation (Hu et al., 2016).

According to Bailey et al., (2006) only 36% of students attending community colleges in 1995 attained an undergraduate two- or four-year degree after six years. Pain (2016) adds that only 19-29% of students had graduated after eight years of college. The low completion rate problem has continued and most of the students that were in remediation were not graduating (Hodara & Jaggars, 2014). The extreme number of students in need of developmental coursework intensifies the diminutive completion rates of those students in remediation. In 2007, the first year that students in Florida were exempt because of Florida Senate Bill 1720, states across the country were reporting up to 50% of their students in remediation (Strong American Schools, 2008), and Florida reported that 64% of all students entering Florida's colleges and Universities needed remediation (Parke & Scheuch, 2013a). The extreme number of students in need of developmental coursework intensifies the diminutive completion rates of those students in remediation. In 2007, the first year that students in Florida were exempt because of Florida Senate Bill 1720, states across the country were reporting up to 50% of their students in remediation (Strong American Schools, 2008), and Florida reported that 64%

of all students entering Florida's colleges and Universities needed remediation (Parke & Scheuch, 2013a).

To date, there is not a great deal of research that juxtaposes the advantages of developmental education to those students that require it and do it to those students who require it but do not participate (Bailey et al., 2006; Goudas & Boylan, 2013; Ignash, 1997; Zeitlin & Markus, 1996). The lack of research illustrates that voluntary remediation is not successful, indicating that a scarce number of students choose remediation on their own unless it is mandatory. Even when they choose to take the developmental education, they regularly fail the course or withdraw (Maggio, et al., 2005; Zeitlin & Markus, 1996). According to researchers (Boylan & Saxon, n.d.; Roueche & Roueche, 2000), pundits agree that if remediation is going to be successful, it must be mandatory.

Despite the benefits of developmental education, this strategy has been criticized for several reasons: the cost, the lack of evidence of its efficacy, and the increasing number of minority students who are required to enroll in these courses (Park et al., 2018). To contend with these three issues, the Florida legislature passed Senate Bill 1720 in 2013. This bill made developmental education optional in hopes that the removal of the placement requirement would alleviate the gap between Black and Hispanic students and white students. In addition, when compared to White students, African American and Hispanic students pass the developmental courses far less (Fong et al., 2015). This imbalance is even more problematic given Bailey et al.'s (2010) discoveries that of FTIC students, 55% of White students go directly into the gateway courses compared to only 14% of Black students and 19% of Hispanic students (Bailey et al., 2010).

Another reason developmental education has been criticized is that researchers' discoveries about this strategy are conflicting. Some have reported that students who are placed in developmental courses are less likely to take or pass college level English or Mathematics courses such as the gateway courses (Clotfelter et al., 2014; Scott-Clayton & Rodriguez, 2015). Others have determined developmental education supports students who are not college ready attain the foundation needed to be successful in college level courses (Bailey et al., 2016).

With the contradictory research about remediation strategies, specifically with developmental courses, it is even more important to understand more about what strategies support students who are unprepared for college-level work. Furthermore, the disparity between White students and their Black and Hispanic counterparts raises concerns of equity. Given these issues with developmental courses, it is important to explore what is known about remediation strategies beyond developmental courses such as tutoring.

Tutoring

According to Fox (2015), "tutoring has some very deep historical roots" (p.1). History shows that, in ancient times, tutoring was being practiced. For example, Socrates was tutoring Aristotle and subsequently, Aristotle was tutoring Alexander the Great (Fox, 2015). Tutoring finally made its way into western culture in the 19th century (Fox, 2015) and in the United States, the history of tutoring can be traced back to 1828 when, according to O'Hara (2012), Yale College proclaimed that tutoring was an indispensable function of their institution and by the late 1800s, formal tutoring was implemented in colleges (Cross, 1976).

To improve the success of these high-risk college students, student success programs have been implemented in institutions of higher learning all over the world. Of these success programs, tutoring is one of the most used programs to help new FTIC students who are struggling with the rigors of college level courses (Arco-Tirado et al., 2019). In data gathered from a longitudinal study, Arco-Tirado et al. (2019) established the lucrativeness of post-secondary education has been deficient. Drawing from data in different countries around the world, these researchers show that graduation rates are as low as 18% and dropout rates as high as 48%. Knowing these dismal rates, Thurrott (2021) argued that parents want their college-level children to have access to all the support they need to be successful in their classes and in their post-secondary education journey. This support includes tutoring. Unfortunately, even when the benefits of participating in tutoring are understood, many college students choose not to use the services (Thurrott, 2021).

Researchers have shown the many benefits of tutoring and can function as the foundation for students' academic success. To begin, tutoring affords students the chance to converse with an academic tutor and increase their understanding of content, their assignments, and faculty expectations (Thurrott, 2021). Thurrott (2021) confirmed that students who engage in tutoring have a higher GPA, persist in their education, and ultimately succeed in their post-secondary educational journey. Other benefits include but are not limited to: (a) individualized learning experiences, (b) improved attitudes towards learning and school; (c) development of self-paced and self-directed learning; and (d) improved self-esteem and confidence (Oxford Learning, 2022).

In 2016, San Bernardino College published a study by Gariel-Millette that showed students who frequented the tutoring center had a higher retention rate than students who were registered for the same courses but did not use the tutoring center. The benefits of tutoring notwithstanding, it is no secret to educators that, for the most part, students will not seek assistance on their own and will not partake of optional assignments (Daniels et al., 2019). Daniels et al. (2019) revealed that students, especially those in underrepresented populations, are unlikely to accept support because of the stigma attached to it. They believe that it is an indication that they are not meant to be in college.

Researchers have also explored peer tutoring. Berry (2019) reported that engaging in peer tutoring includes improved communication skills and gaining confidence in one's own abilities. Nelson (2022) contended that peer tutoring helps students realize (a) they are not alone in their struggles, (b) they can connect with other students; (c) they can serve as role models for other students; (d) the develop lasting partnerships and social support; and (e) they gain self-responsibility and self-direction.

More and more, community and state colleges are playing a crucial and essential role in remediation with more than 40 percent of FTIC students at 2-year public institutions, are in remediation (Bettinger, 2005). Also, according to Bettinger (2005), many states are considering centralizing all remediation at the 2-year colleges and like Arizona, Florida, Montana, South Carolina, and Virginia, prohibit remediation at the 4-year institutions.

In 2014, a meta-analysis of the efficacity of intelligent tutoring systems on college students' academic learning was conducted by Steenbergen-Hu and Cooper. The analysis symphonized the research of intelligent tutoring systems (ITS). These are Artificial Intelligence systems that provide personalized instruction and feedback to the user. The 2014 study's major find was that ITS had a moderate positive effect on the students' learning and, in fact, ITS proved to be less effective than human tutoring. This finding is backed by Kim (2015) who showed that "peer tutoring is an effective way to support student's academic success and intellectual development" (p. 5). Furthermore, the study found that students' academic success in their first year relates to tutoring. In addition, Kim mentioned that peer tutor involvement helped with student increasing student retention and drop-out rates.

The following year, Jaafar et al. (2016) conducted a study in which they fought for the necessity of giving faculty an instrumental role in the operations of a tutoring center. The study found that remediating students would improve graduation rates; moreover, the study also found that A tutoring center that is assisted by the institution's leaders and supported by members of the faculty is a great beginning for improving student success and academic achievement. Recent studies show that community and state college students who visit the tutoring centers were more academically successful, and had a higher retention rate, than those students who did not participate in tutoring sessions (Osbourne et al., 2019; Pierce, 2019). Furthermore, Allen (2021) presented data confirming that combined partnerships between tutors, faculty, and students helped transform students into better learners.

In 2020, Alegre et al. reported that tutoring is responsible for many academic benefits stemming from preschool to institutions of higher learning. Adding to the literature, an article published in the Community College Review states that as high school students graduate from high school and transition to college, they quickly realize that they are not prepared for the rigors of college level courses and need more academic support. Because of this need, colleges across the nation have tutoring centers to make available additional help in the way of tutoring (Grace, 2021). Juxtaposed to students at four-year institutions, students at community colleges wanted more from their colleges on different services including tutoring, this is according to a report published in 2020 by Ithaka S+R (Dembicki, 2020). These students, according to Dembicki (2020), indicated an increased incertitude about academics and exhibited a yearning for more institutional support including tutoring.

In 2019, Osbourne et al. assessed the impact of academic interventions including tutoring. The study found that students who visited the tutoring center on a regular basis had a significantly higher positive impact than those students who only visited the center once or twice. Students who participate in tutoring have a statistically significant difference in their academic performance when compared to those students who do not participate in tutoring (Arco-Tirado et al., 2019).

Performance Based Funding

Performance-based funding, which is used as a ligature to fund state institutions of higher education based on student outcomes (Chan et al., 2022). According to

Cornelius and Cavanaugh (2017), there is an increasing momentum, nationwide, demanding a more predominant accountability and productivity from higher education institutions. In Florida, for example, the State University System (SUS) focuses on degree completion, time to completion, graduation rates, workforce development, completion of degrees in high demand by local employers, and post-graduate income (Cornelius & Cavanaugh, 2017).

For the last 40 years, there has been a movement by world governments to hold public institutions of higher learning more responsible for their educational results with the purpose of improving their performance and to ensure fiscal responsibility of public funds. In 1980 Australia, the United Kingdom, and New Zealand adopted some form of New Public Management (NPM) (Jakobsen et al., 2017). Performance based funding (PBF) was first introduced in the United States by the state of Tennessee in 1979. Subsequently, Florida enacted its own version of PBF in 2013 with Florida Senate Bill 1720 (Ortagus et al., 2020; Florida Senate, 2013). In the United States, 41 states are currently using PBF to hold their colleges and universities accountable by directly tying the institutions' funding to student outcomes.

Funding is tied to graduation rates, credit hours earned, educational completion of underrepresented students, and retention (Rosinger et al., 2020). According to Nix et al. (2020), community and state colleges have, historically, given the opportunity of a college education to a diverse student population especially to those students who are academically underprepared for college level work and require remediation. Nix et al. (2020), also articulates that campus staff, encompassing ten institutions from the Florida College System, were strongly distressed that developmental education reform, by way of Florida Senate Bill 1720, emphasized efficiency over quality in the quest for cost savings. Developmental education, also known as remediation, had been heavily criticized in the last few years. The major criticism being the high cost of the courses compared to the low number of students that succeed in remediation and move on to the gateway courses (Smith, 2015). Statistics show that two thirds of all students entering their first year of college are referred to remediation. Of these, less than one half complete the courses within the first three years of college (Bailey, 2010).

In 2013, the Florida legislature passed Senate Bill 1720 to address the concerns of high cost and completion rates of first time in college (FTIC) students. The bill made placement tests optional, and remediation became voluntary for all students who had graduated from a Florida public high school in 2007 and after (Florida Senate, 2013). Community colleges expedite access due to open access and tuition fees that are two times lower than the public universities (Schudde & Goldrik-Rab, 2015). With open access, incoming students only must provide proof of a high school diploma or the General Education Development (GED) (Provasnik & Planty, 2008). Admission tests such as the American College Testing (ACT) and the Scholastic Aptitude Test (SAT) are not required and are also classified as optional (Division of Florida Colleges, 2014).

In the mid-2000s, the current dialogue on policy and changes spearheading the countrywide agenda on college completion morphed from an intensively focus on economic competitiveness to highlighting accountability, transparency, and affordability in college and universities (Belfield, et al., 2013; Akers & Chingos, 2013). According to Blumenstyk (2013), Akers and Chingos (2013), and Slack (2013), President Barack Obama's visualizations for ratings and responsibility for higher education epitomize this thought change. Likewise, according to the National Conference of State Legislatures (NCSL), 2014, and Nailos and Borden (2014), there have been discussions at the state levels focusing on performance-based funding for public colleges and universities. Furthermore, according to Sander (2014), there is a drive that aims to reward the success of public institutions of higher learning that increase their completion rates. An example of this is the Lumina foundation which has started to financially reward initiatives nationwide for public colleges and universities that improve completions in the communities they serve. Although the outcomes divagate from state to state, the prevailing objective is to boost the number of students graduating from colleges and universities in the United States (Jones, 2013).

Shapiro et al., (2014) reports that the National Student Clearinghouse Research Center attends to the necessity for trustworthy results for student paths by releasing reports on college completion rates annually addressing different student populations at different types of institutions. Referring again to President Barack Obama's vision, it was expected that the federal aid given to students for their college education would be tied to the institutions' performance by holding colleges and universities accountable for the outcomes of their students (Blumenstyk & Thomason, 2014; Keierleber, 2014). Some of the determinants that were being considered for the rating system included college and university access for low-income students, completion and transfer rates, tuition costs and future earnings of students after graduation, and the satisfaction of alumni (Blumenstyk & Thomason, 2014).

Open Access

Community colleges in the United States are proclaimed as the predominant point of entry for traditional and non-traditional students despite their level of college preparedness. Students entering open access institutions face challenges, especially those who are underprepared for college classes (Villicaña, 2017). The 23rd president of Harvard University, James Bryant Conant, is reputed to be the progenitor of the junior college and the equitable undertaking of bringing social justice to the nation's community and state colleges. Conant authored a book in 1948 titled *Education in a Divided World.*

In the book, Conant expressed that it is the country's rudimentary obligation to ensure that all citizens should have access to an education from kindergarten to their second year of college. His hypothesis was that the 2-year college would serve to give workforce degrees to adult learners and to help underprepared students that could not enroll in universities (Adams-Mahaley, 2016).

As a champion for the American Association of Junior Colleges (AACJ), Conant put forth a relatable moral argumentation of the significance of the 2-year college. This led many to believe that his fervor was the catalyst for the junior college campaign as a higher education alternative. It was the association between the AACJ and Mr. Conant that laid the foundation to make open access the exigent mission of the junior college initiative (Adams-Mahaley, 2016).

Although Conant's efforts were noteworthy, he was not successful in achieving equal status for the junior colleges when compared to the universities. Because of this, the junior college developed an appearance of subordination to the universities. Due to the semblance that open access institutions were second best, Conant proffered that 2-year institutions were not inferior, but rather institutions that were student centered that fostered inclusive environments that were righting the battles of ethnic and gender inequalities of their times. In addition, the open access institutions admit students that would otherwise not be able to attend college (Adams-Mahaley, 2016).

Only 21% of all students entering college at all 1,462 community colleges in the country obtain their degree in three years. Among the reasons for the low rate of degree completion is that community colleges have open access admissions and, because of this, admit a multitude of underprepared students that are not ready for college level work (Pratt, 2017). Community and state colleges ae the entryway for many students to a higher education. Community and state colleges, for the most part, achieve this by open access admissions. This policy gives students who are deficient in basic math, reading, and writing skills the opportunity to enroll in college (Gabbard & Mupinga, 2013). Open access gives students the ability to attend college even though they lack the prerequisite knowledge and skills. The policy of open access could be a good explanation as to why 30 to 40% of FTIC students entering community and state colleges require remediation (Jenkins, 2005). Community and state colleges, according to Gabbard and Mupinga (2013), have the utmost issues in retaining academic standards with their open admissions policy.

Florida Senate Bill 1720

For some time now, states have been trying to figure out what best practices they can implement to enhance the academic success rate of underprepared students. Florida's Senate Bill 1720 is one of the most comprehensive initiatives implemented by any state. The Senate Bill stipulated that students who entered a Florida public high school in 2003 or later (i.e., a student who graduated from a Florida public high school in 2007 or later) would now be exempt from developmental education and would have to volunteer for remediation. Within Senate Bill 1720, in-state students who graduated high school prior to 2007, and private high school graduates were still required to take the placement test (Park et al., 2018). This Florida bill allowed all high school graduates who graduated in 2017, or after, from a Florida public school and military personnel to be exempt from remediation or developmental education in college and university courses (Mokher, et al., 2021). The bill defines developmental education as "instruction through which a high school graduate who applies for any college credit program may attain the communication and computation skills necessary to successfully complete college credit instruction" (Florida Senate, 2013, p. 13). This bill impacted the entire Florida college system (FCS), which, at the time of this review, consisted of 28 colleges and universities together comprising a student population of about 455,000 students (Florida Department of Education, 2016).

Before the Florida Senate's Bill 1720 implementation in 2013, Florida college students, not unlike college students across the country, were mandated to take a placement test as a condition to enter the institution. The standard test for Florida is the Postsecondary Educational Readiness Test (PERT). Before Florida Bill 1720, this placement test was used to gage if students were ready to register for college level

English and Math courses. If not ready, according to their test results, the students were advised, and required, to take developmental education. The remediation aimed to ensure that the students who were entering college underprepared for the difficulties of college level courses would obtain the foundation necessary to succeed in those courses (Park et al. 2018).

Since the 2014 origin of Florida Senate Bill 1720, students have been able to enroll directly into gateway courses regardless of academic preparation (FL. STAT. § 1001.66, 2016). According to data retrieved from the American College Testing (ACT) and the alliance for Excellent Education (2013), the data retrieved show that in the 2013-2014 school year, only 18% of students who graduated from a Florida public high school were college ready. Of this percentage, only 14% of Hispanic students and five percent of African American students were college ready according to the ACT. These statistics show that 82% of all Florida high school graduates were unprepared for college level courses.

Despite these assessment reports, the FCS' annual report determined that only 176,286 of 879,948 students (about 20%) registered for developmental courses that year (Pain, 2016). Many students in Florida who, prior to Florida Senate Bill 1720, would have been required to take developmental courses chose not to go into remediation and instead go directly into a college level gateway course (Park et al., 2016). Park et al.

(2016) found that the students who took part in remediation were more likely to be successful in the subsequent gateway course than the students who did not participate in remediation.

One set of researchers, Woods et al. (2019), explored the academic performance of students who were exempt from taking developmental courses because of Florida Senate Bill 1720. Approximately 28% to 30% of students in this study who chose to delay enrollment in the gateway courses were severely underprepared. With regards to the English gateway course, Woods et al. (2019) declared that 46% to 48% of underprepared students chose to go directly into the English gateway course. Woods et al. determined that students who were severely underprepared in Reading were predicted to pass at 60.3%; students who were severely underprepared in writing were predicted to pass at 61.5%; and moderately and slightly underprepared students in Reading and writing were predicted to pass at 67.2% to 67.8%.

While FTIC student enrollment was decreasing due to the Florida Senate Bill 1720, enrollment in the college level gateway courses surged. However, the passing rates in the gateway courses varied. Park et al. (2018) reported a decline in the passing rates. Hu et al., (2016) indicated that even though the passing rate for the gateway courses declined, the net percentage of the inward bound student population registering and passing the gateway courses increased. In the Florida College System between the years of 2014 and 2018, Nix et al., (2020) explored ten institutions, including focus group and interview data from 544 faculty, staff, administrators, and college presidents. These researchers determined that the institution's personnel agreed with the mission of the Florida College System as being a mission of democratic equality. Notwithstanding, they expressed a concern that Senate Bill 1720 emphasized efficiency instead of quality to ensure cost savings (Nix et al., 2020).

In 2013, Senate Bill 1720 was passed by the Florida legislature. This bill made developmental education an option for Florida's FTIC students. With what is known about the success rates of unprepared students and students identified as at risk, it is imperative to understand how voluntary remediation is impacting students' academic performance (Park et al., 2018). This proposed study directly addresses the decline in FTIC students' enrollment in developmental courses due to Florida Senate Bill 1720 and addresses the potential of tutoring remediation to support academically unprepared and at-risk students.

Summary and Conclusions

The success of FTIC high risk students in the English and Math gateway courses has been a continual issue for institutions of higher learning in the United States of America. Related to the low completion rates of this cohort of students in the gateway courses are the retention and persistence issues. When students don't succeed in the gateway courses, it affects the retention rate and ultimately the graduation rates of colleges and universities. A recurring factor when addressing the issue of success in the gateway courses is the fact that many of the FTIC students that enter college each year are not college ready (Klasik & Strayhorn, 2018). These underprepared students are students that need developmental courses which prompts the students to need remediation. Students that are enrolled in developmental courses could increase their chances of success by participating in tutoring.

This review gives clear and ample evidence that, although the problems of gateway courses success, retention, and underprepared students have been explored for a long period of time; more research is necessary before it can be proven that case management of FTIC high risk students' success in the gateway courses is the solution to this ever-present educational problem.

Chapter 3: Research Method

The purpose of this quantitative, ex post facto study was to assess the efficacy of the SLC's tutoring program on academic outcomes for FTIC students who had been categorized as high-risk due to their initial academic performances. To begin this chapter, I present the research design and rationale. Then, I provide the methodology of the study. This section includes a description of the intervention, which encompassed the SLC tutoring program at the research site. Next, the population, sampling, and sampling procedures are detailed and justified. I then give an explanation of the archival data, followed by the operationalization of the variables. Then the processes of and rationalization for the data analysis are discussed. The main sections of threats to validity, ethics, and the chapter summary complete the chapter.

Research Design and Rationale

In this study, I employed a quantitative ex post facto research design. I used a retrospective approach to examine existing conditions without the investigator manipulating variables, making it suited for this research's questions and associated hypotheses. I addressed the overarching question of the program's general effectiveness first, followed by the more detailed exploration of how the frequency of attendance further influences performance.

Research Question #1

Is there a significant association between the participation status in XYZ State College’s tutoring program and successful completion of Mathematics Gateway courses during 2018 and 2019?

H_a1: There is a statistically significant association between the participation status in XYZ State College's tutoring program and successful completion in Mathematics Gateway courses during 2018 and 2019 among FTIC high-risk students.

H_01: There is no statistically significant association between the participation status in XYZ State College's tutoring program and successful completion in Mathematics Gateway courses during 2018 and 2019 among FTIC high-risk students.

Research Question #2

Is there a significant association between the participation status in XYZ State College's SLC tutoring program and successful completion of English Gateway courses during 2018 and 2019?

H_a2: There is a statistically significant association between the participation status in XYZ State College's tutoring program and successful completion in English Gateway courses during 2018 and 2019 among FTIC high-risk students.

H$_0$2: There is no statistically significant association between the participation status in XYZ State College's tutoring program and successful completion in English Gateway courses during 2018 and 2019 among FTIC high-risk students.

Research Question #3

Is there a positive statistically significant correlation between the level of involvement in XYZ State College's tutoring program among high-risk FTIC students and their academic performance in Mathematics Gateway courses during 2018 and 2019?

H$_a$3: There is a positive statistically significant correlation between the level of involvement in XYZ State College's tutoring program and the subsequent grade in Mathematics Gateway courses during 2018 and 2019 among high-risk FTIC students.

H$_0$3: There is not a positive statistically significant correlation between the level of involvement in XYZ State College's tutoring program and the subsequent grade in Mathematics Gateway courses during 2018 and 2019 among high-risk FTIC students.

Research Question #4

Is there a positive statistically significant correlation between the level of involvement in XYZ State College's tutoring program among high-risk FTIC students and their academic performance in English Gateway courses during 2018 and 2019?

H_a4: There is a positive statistically significant correlation between the level of involvement in XYZ State College's tutoring program and the subsequent grade in English Gateway courses during 2018 and 2019 among high-risk FTIC students.

H_04: There is not a positive statistically significant correlation between the level of involvement in XYZ State College's tutoring program and the subsequent grade in English Gateway courses during 2018 and 2019 among high-risk FTIC students.

For RQ1 and RQ2, I used the ex post facto research design to facilitate a comparative analysis, enabling the determination of statistically significant differences in course completion rates between tutoring program participants and non-participants. In RQ3 and RQ4, I used a correlational analysis, elucidating any relationships between the degree of tutoring program involvement and diverse academic performance levels.

According to Allen (2017), quantitative research exists to create knowledge and actualize understanding about the social world. The quantitative research methodology is the predominant framework used by researchers in the social sciences (Coghlan & Bryden-Miller, 2014). In addition, by investigating numeric patterns, researchers use quantitative designs to review and analyze social, psychological, and economic processes through a group of techniques, assumptions, and strategies. This type of research is also used to examine occurrences and phenomena that affect people (Allen, 2017; Coghlan &

Bryden-Miller, 2014), which directly aligned with this study and the variables I investigated.

Independent Variables

Participation status in the tutoring program (RQ1 and RQ2): A binary classification indicating whether a high-risk FTIC student engaged in the tutoring program during the specified period.

Level of involvement in the tutoring program (RQ3 and RQ4): Defined by the frequency of a participating high-risk FTIC student's visits to the Student Learning Center (SLC) during 2018 and 2019.

Dependent Variables

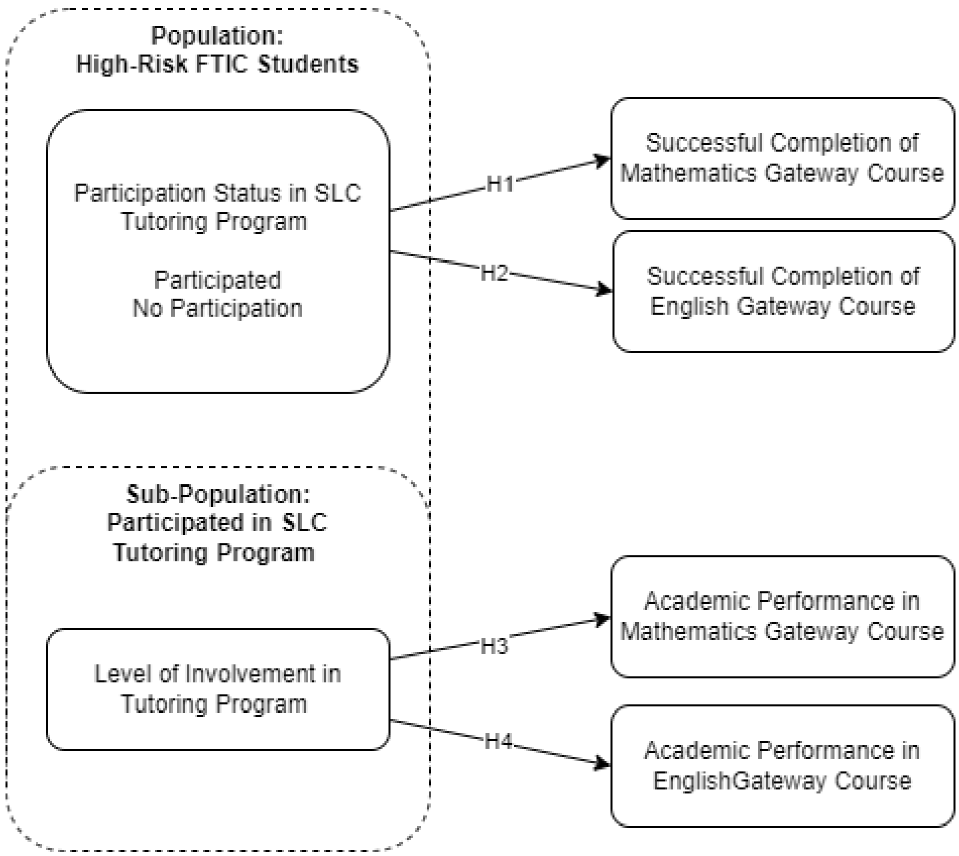
Successful completion of Mathematics and English Gateway courses (RQ1 and RQ2): A binary indication of course completion based on the high-risk FTIC student's assigned grade.

Academic performance in Mathematics and English Gateway courses (RQ3 and RQ4): Represented by numerical values derived from the archival grades of courses taken by participating high-risk FTIC students during 2018 and 2019.

While the core of this research revolved around these variables, the study did not explicitly incorporate covariate, mediating, or moderating variables. Instead, the emphasis lay on the direct relationship between tutoring program participation, level of involvement and academic outcomes. Figure 1 is a graphical representation of the study hypotheses.

Figure 1

Framework



Methodology

Intervention: Description of the SLC Tutoring Program

The intervention in this study was the tutoring program offered at XYZ State College's SLC. Recognizing the challenges faced by high-risk FTIC students, especially in gateway courses such as Intermediate Algebra and English Composition I, the college initiated this tutoring program to provide tailored academic support. During the fall semesters of 2018 and 2019 and the spring semester of 2019, an effectiveness study was carried out. The study tracked the progress of a cohort of students previously reported as high-risk FTIC students by their respective professors in their required gateway courses. Faculty members applied a diagnostic test at the beginning of the semester that covered the prerequisites that the students needed to be successful in the courses. Those students who performed at 70% or lower were referred to the SLC where the tutors contacted them and began tutoring those students who volunteered. The tutoring program was exclusively offered to high-risk FTIC students, identified based on the diagnostic test results during the first week of the gateway courses. Not all high-risk FTIC students elected to participate in the program, resulting in two groups of high-risk FTIC students: (a) high-risk FTIC students who participated in the program and (b) high-risk FTIC students who did not participate in the program.

To monitor progress, each lab coordinator in the writing and mathematics departments established individualized tracking folders for every participating student. These folders were organized according to course and student name and included details such as the assigned tutor's name, session dates, session commencement and conclusion times, session topics, evaluations conducted by tutors regarding student mastery, and the final grade attained.

At the end of three semesters, the results for each gateway course were evaluated in a preliminary study, and the data showed an effectiveness factor for the SLC (both English Writing Lab and Math lab). This implied that, when coming to the SLC for tutoring, even the most critical students increased their chances of getting a passing grade (A, B, or C) at the end of the semester.

The target population for this study consisted of the high-risk FTIC students at a campus of XYZ State College who enrolled in gateway courses, specifically Intermediate Algebra (MAT 1033C) and English Composition I (ENC1101), during the years 2018 and 2019. "High-risk" was defined as those students who were identified through a diagnostic test conducted during the initial week of their gateway courses and were subsequently invited to engage in the SLC tutoring program.

Population Size

The exact number of high-risk FTIC students fitting the criteria that were referred to the SLC for tutoring was 274. 163 were referred for Enc1101 and 111 were referred for MAT 1033C. Of the 274 students that were referred, 164 volunteered to participate in tutoring, 101 for ENC1101 and 63 for MAT1033C.

Sampling Procedures

The data set was constructed by the SLC managers at XYZ State College. The original creators employed a convenience sampling approach. All students who were identified as high-risk from the two gateway courses in the specified semesters during 2018 and 2019 were invited to participate in the SLC tutoring program.

By focusing on these specific cohorts of students, the data set provided a comprehensive view of the high-risk FTIC student experience within the specified courses during 2018 and 2019. The convenience sampling method, although not entirely free from potential biases, was deemed practical and suitable by the original data creators, given their objectives and constraints. This study targeted a specific segment of XYZ State College's student population, striving to shed light on the academic trajectories of high-risk FTIC students and the potential impact of structured academic support.

Statistical Power Analysis for Sample Size

Type of Sampling Strategy. For this study, a convenience sampling strategy was employed. I chose this approach because the data set was created based on the availability of high-risk FTIC students at XYZ State College who enrolled in the gateway courses during the years 2018 and 2019.

Data Generation Procedures

Upon the commencement of gateway courses, all enrolled students underwent a diagnostic test during the first week of their academic session. Based on the outcomes of this diagnostic test, students identified as high-risk were subsequently invited to participate in the college’s case management/tutoring program. The SLC Department at XYZ State College collected this data. Students' academic performance, attendance at the tutoring program, and other relevant variables were then documented over the 2-year period.

Inclusion and Exclusion Criteria

Inclusion criteria included:

- Freshmen FTIC students enrolled at a small, rural campus of a five-campus state college.

- Students who were enrolled in the specified gateway courses, Intermediate Algebra (MAT 1033C) and English Composition I ENC 1101), during 2018 and 2019.
- Students who were identified as high-risk based on the diagnostic test administered at the beginning of their course.

Exclusion criteria included:

- Students who were not enrolled in the specific gateway courses during the mentioned years.
- Those who were not identified as high-risk.
- Students who withdrew from the college or their specific gateway courses before completing at least one semester.
- Students who did not choose to participate in tutoring.

Archival Data

Recruitment, Participation, and Data Collection Procedures

The data for this study were sourced from the archives of XYZ State College, which maintained a detailed record of student academic performance and their involvement in various campus programs.

Recruitment. High-risk FTIC students were identified based on their diagnostic test results during the first week of their gateway courses. These students were then approached by SLC tutors and informed about the tutoring program at the Student Learning Center (SLC). They were provided with details about the potential benefits of the program and how it could support their academic journey.

Data Collection. Over the course of 2018 and 2019, the college systematically recorded details of each student's visits to the SLC. This included the date, duration, and focus of each session. Furthermore, the academic performance of these students in their respective gateway courses was also logged, including their grades and any feedback from their tutors or professors.

Procedure for Gaining Access to the Data Set. To access the archival data, a formal request was be submitted to the Office of the SLC at XYZ State College. This request outlined the nature of the study, its objectives, and the specific data points that are required, including information to be collected from the case management of high-risk FTIC students for the gateway courses of ENC1101 (English composition 1) and MAT1033C (Intermediate Algebra). Additionally, the request emphasized the study's commitment to ethical considerations, as advised by Creswell (2018), and its dedication to maintaining the anonymity and confidentiality of the students' personal information.

Permissions for Accessing the Data. Upon review of the request, the Office of the SLC consulted with the college authorities, ensuring that the data sharing complied with any relevant institutional guidelines. Once the permissions were granted, the data was acquired in a de-identified format, safeguarding the privacy and confidentiality of the students. Specific measures were taken to ensure any data that could personally identify a student, such as names, student IDs, or contact details, was either anonymized or omitted.

Furthermore, the reliability and validity of the study was prioritized in every step of the process as data was gathered. The deidentified data was sourced directly from the institution's records, devoid of any external interference. To maintain consistency and accuracy, the data retrieval was overseen by staff members of the Student Learning Center.

Operationalization of Variables

To establish a clear foundation for the data analysis, each variable in the study was operationalized as follows.

Participation status in the tutoring program is a binary variable that indicates whether or not a high-risk FTIC student participated in the tutoring program during 2018 and 2019. A coding of '1' signified participation, whereas a '0' indicated no participation.

The level of involvement in the tutoring program was operationally defined as the number of visits made by the high-risk FTIC participating students to the Student Learning Center (SLC) during 2018 and 2019. The numeric value represented the frequency of engagement with the tutoring program, providing a tangible measure of the student's level of involvement.

Successful completion of Mathematics and English Gateway courses was operationally defined as a binary variable that encodes course completion status. If a high-risk FTIC student achieved a grade between A and C, they were classified as "1", denoting successful completion. Grades of D or F were encoded as "0", indicating the course was not successfully completed.

Academic performance in Mathematics and English Gateway courses for participating high-risk FTIC students was operationalized by coding archival letter grades for the Mathematics Gateway course (MAT 1033C) during 2018 and 2019 as follows; A = 5; B = 4; C = 3; D = 2; F = 1.

Table 1 provides a comprehensive outline of the study variables used per research question, their operationalized definitions, and their data types.

Table 1

Correlation Summary Table: Case Management and English Grades

RQ	Variable	Operational Definition	Data Type
1 and 2	Participation status in tutoring program	Participation in the tutoring program during 2018 and 2019 (Yes = 1/ No = 0)	Binary

RQ	Variable	Operational Definition	Data Type
3 and 4	Level of involvement in tutoring program	Number of visits to the Student Learning Center (SLC) of participating students during 2018 and 2019	Count
1	Successful completion of Mathematics Gateway courses	Course completion status for Mathematics Gateway course during 2018 and 2019. Grades of A - C are coded as "1" (successfully completed), and grades of D & F are coded as "0" (not successfully completed)	Binary
2	Successful completion of English Gateway courses	Course completion status for English Gateway course during 2018 and 2019. Grades of A - C are coded as "1" (successfully completed), and grades of D & F are coded as "0" (not successfully completed)	Binary

RQ	Variable	Operational Definition	Data Type
3	Academic performance in Mathematics Gateway courses	Archival final grades for Mathematics Gateway course (MAT 1033C) of participating students during 2018 and 2019, transformed from letter grades to numerical values (A = 5; B = 4; C = 3; D = 2; F = 1)	Ordinal
4	Academic performance in English Gateway courses	Archival final grades for English Gateway course (ENC 1101) of participating students during 2018 and 2019, transformed from letter grades to numerical values (A = 5; B = 4; C = 3; D = 2; F = 1)	Ordinal

Data Analysis

Data cleaning and preparation was conducted using IBM SPSS software. Firstly, the data was recoded as stipulated in the Operationalization of Variables section (Table 1). Thereafter, the dataset was examined for potential errors, inconsistencies, outliers, and missing data. Descriptive statistics were computed to gain insights into the dataset, including frequencies and percentages for categorical variables and measures of central tendency and dispersion for the continuous variable.

For research questions one and two, investigating the associations between participation status in the tutoring program and successful completion in Mathematics and English Gateway courses, the Chi-Square tests of the association was employed. This statistical test examined the association between two binary variables and is appropriate to determine if participation in the tutoring program was significantly associated with successful course completion. The statistical significance of the test was assessed using a significance level threshold of $\alpha = 0.05$, and Cramer's V was reported as the effect size to indicate the strength of the association.

For research questions three and four, which explore the correlations between the level of involvement in the tutoring program and academic performance in Mathematics and English Gateway courses, the data was first trimmed to include only high-risk students who participated in the tutoring program. Subsequently, Spearman's rank-order correlation was utilized. This non-parametric test is suitable when at least one of the measures is ordinal. It helped determine if higher involvement in the tutoring program was correlated with better grades. The statistical significance of the correlations was assessed using a significance level set at a threshold of $\alpha = 0.05$.

The choice of Spearman's rank-order correlation and the Chi-Square test aligned with the nature of the variables involved in the analysis. These statistical techniques were appropriate for studying correlations and associations between variables without manipulating any variables or establishing causality. The results obtained from these tests provided valuable insights into the potential impact of the tutoring program on academic performance and course completion among FTIC high-risk students.

By employing these statistical techniques, XYZ State College gained a comprehensive understanding of the relationships between tutoring program involvement, academic performance, and course completion. These findings informed decision-making and helped enhance tutoring programs to better support FTIC high-risk students in achieving academic success.

Threats to Validity

The degree to which a cause-and-effect link found in a study cannot be explained by other factors is known as internal validity. To put it in layman's terms, can you properly infer a causal relationship between your treatment and the outcome of an experiment? (Bhandari, 2022).

Threats to validity and reliability cannot be eliminated, but they can be minimized. To determine a study's technical dependability, internal validity is essential (Drew et al., 2008; Martin et al., 2011) and the study's own validity (Drost, 2011). This was a single group study with a non-experimental de facto group and a control group. The quantitative ex post facto design was not altered during the course of the study and although the number of visits per student to the SLC for tutoring varied, once the participants volunteered, there was not any attrition. Therefore, no significant threats to internal validity existed.

The results' generalizability is ensured by external validity (Drew et al., 2008; Martin et al., 2011). Confounding, methods, and selection biases were not components of this study and did not affect external validity. Due to the difficulty of generalizing the results to a larger population, external validity was threatened by the convenience type of sampling (Drew et al., 2008). Although the sample was representative of the student population at the campus of study during the years 2018 and 2019, four other larger campuses were not part of the study. The participants were representative of the high-risk FTIC student population at the campus of the study during the years 2018 and 2019. A method for addressing a study's external validity is to select a population that represents the general population being studied (Bernard, 2013). Bernard (2013) also mentioned that conducting a longitudinal study and increasing the sample size are additional ways to increase the study's external validity. The software program G* power was used to calculate the sample size. Since this was not a longitudinal study, the type of research design that poses a threat to external validity continued.

How well a test assesses the idea it was intended to assess is known as its construct validity. Construct validity is essential to proving a method's general validity. A pilot study serves as a study's test run. The success or failure of the pilot study would determine if the study should be taken college wide. A small sample is conducted to assess the feasibility, reliability, and validity of the measure. This enables the researcher to determine whether the measure needs to be adjusted or revised in order to ensure that the construct is tested accurately (Bhandari, 2022). Since this study was the first of its kind and it was effectuated at only one of five campuses. It can be considered a pilot study. In this study, operationalization was not poor, there were no experimenter expectancies, and there was no subject bias; therefore, there were no threats to construct validity.

Ethical Procedures

Informed consent was the major ethical consideration in this study. By agreeing to participate in tutoring, the students were aware that the results and their grades would be used. In addition, the data that was used in this study was college property readily available to staff and faculty; it was basic report data and was de-identified. The college's Institutional Research and Effectiveness (IRE) department periodically publishes this information, and participation in the SLC Effectiveness Study was voluntary. At any time during the tutoring program, participants had the liberty not to participate. At no time was their participation mandatory. Even though no research involving human subjects was conducted, the researcher treated ethical issues very seriously. First, a formal application was sent to the IRB department at the college of the study to confirm their agreement that the study did not qualify as human subject research and to acquire approval for the study as needed. Second, detailed communication in the request ensured that students in the study would not be personally traceable to other parties. The college’s IRB department decided the study did not need IRB approval. This decision was based on the college's IRB and IRE review of the study. It was determined that the study was exempt from IRB approval because the study was considered educational within the definition that it was a commonly accepted project for the college and was considered part of the college’s normal educational practices. It was also determined that the study was part of the improvement of the Student Learning Center and had the potential to benefit the college’s strategic plan for 2023 (Appendix A). The clearance provided by the site of the study’s IRB was provided as part of the subsequent IRB submission for approval to Walden University. The IRB approval to Walden University was also approved (Appendix B).

Summary

The research plan was presented and detailed in this chapter. The purpose of this quantitative ex post facto study was to assess the efficacy of the Student Learning Center’s (SLC) tutoring program on academic outcomes for FTIC students who had been categorized as high-risk due to their initial academic performances. The study's ex post facto research design methodological decisions were presented with justifications, showing alignment with the research questions and the plan. Threats to validity and ethical procedures were detailed and in accordance with the suggestions offered by Creswell (2018). In the following chapter, the findings related to each research question will be presented.

Chapter 4: Results

In this study, I evaluated the relationship between high-risk students' participation in case management and subsequent academic performance and proficiency rates in the required mathematics and English Gateway courses. A quantitative and non-experimental research design was used to address the study's topic. Four research questions and hypotheses were formally stated to address the study's purpose. Descriptive, inferential, and associative statistical techniques assessed the study's foundational analyses and research questions. I used the 28th version of IBM's Statistical Package for the Social Sciences (SPSS) for analysis in this study.

In this chapter, I give an overview and discuss the setting and data collection, including the protocols and authorizations for data access and data analysis. I also discuss the fidelity of the intervention and the evidence of trustworthiness. Finally, I discuss the reliability of the data and explain how the results relate to the research questions. This includes the descriptive statistical findings, and the findings based on the research questions and hypotheses.

Setting

Serving residents of a rural agricultural area in the Southeastern United States, the site of the study opened in 1972. The permanent facility was built in 1977 and occupied in January 1978. The site is a small-sized state college campus located in the

Southeastern region of the United States with a student population of about 1,500 with about half of them online. With the support and guidance of local educational, community and civic leaders, XYZ College has expanded general education, occupational training, student services, and community outreach to meet the diverse educational needs of the area.

The study location is the smallest of five campuses that make up XYZ College, and it offers the Associate in Arts degree for transfer to four-year institutions and an Associate in Science degree in Nursing, various career and technical programs, and continuing education courses. High-skill career programs are housed at the Technical Education Center, completed in 2010.

Data Collection

Throughout 2018 and 2019, the institution methodically documented every student's visit to the SLC. This contained the time, date, and subject matter of every session. In addition, a log of these students' grades and any comments from their tutors was kept on their academic success in their individual gateway courses.

Procedure for Data Set Access

To obtain access to the dataset, an official request was made to the Office of the SLC at XYZ State College in order to gain access to the archived data. This request described the study's purpose, goals, and particular data points that must be gathered, such as data from high-risk FTIC students' case management for the ENC1101 (English Composition 1) and MAT1033C (Intermediate Algebra) gateway courses. The request also highlighted the study's adherence to ethical principles, as Creswell (2018) recommended, and its commitment to protecting the privacy and confidentiality of the students' personal data.

Permissions for Data Access

After reviewing the request, the Office of the SLC conferred with the college administration to ensure that the data sharing conformed with any applicable institutional norms. Permission was granted, and the data were obtained in a de-identified format, protecting the students' anonymity and privacy. Special precautions were taken to guarantee that any information that could be used to identify a student personally, such as names, ID numbers, or contact information, was removed or anonymized.

Additionally, when data were obtained, the validity and reliability of the study was given top priority at every stage of the procedure. The deidentified data came directly from the institution's records without outside intervention. The Student Learning Center staff supervised the data retrieval process to ensure uniformity and precision.

Treatment and/or Intervention Fidelity

The reliability, validity, replicability, and scale-up of the outcomes of an intervention research study depend critically on an accurate fidelity assessment and a high degree of fidelity to the intervention (Feely et al., 2017). Likewise, Mowbray et al. (2003) stated that the degree to which an intervention is delivered in accordance with the protocol or program model that was first created can be characterized as fidelity. The importance of fidelity measurement in assessment, treatment efficacy research, and service administration is significant in the trustworthiness of any research. Furthermore, according to Ginsburg et al. (2021), the degree to which an intervention is carried out as intended is known as fidelity, and it offers crucial information about the reasons why an intervention may or may not have produced the desired result. Precise evaluation of fidelity is essential for formulating clear conclusions regarding the efficacy of interventions (internal validity) and for promoting external validity, which involves replication and generalizability. When fidelity is neglected, there is a greater chance that potentially beneficial interventions that were poorly executed would be discarded, or that ineffectual interventions that produced the expected results but were due to causes other than the intervention will be accepted. In this study, the research was conducted as conceived and planned. Adherence to the original research plan allowed the researcher to arrive at reliable and valid results.

Assumptions

It is crucial to think about evaluating the underlying assumptions of the data analysis prior to performing the statistical analyses. Assumptions can be thought of as the prerequisites that must be met in order to do the analysis (Field, 2013). A study's statistical presumptions are dependent on the kind of analysis that the researcher intends to perform. Field's (2013) text on statistical analyses was conducted for this research.

In this study, two tests were conducted. For RQ1 and RQ2, the Chi-Square tests of association were used to investigate the association between the participation status in the tutoring program and the successful finalization in the English and mathematics Gateway courses. For RQ3 and RQ4, the Spearman's Rank-order correlation test was used to explore the correlations between the level of involvement in the tutoring program and the subsequent academic performance in the English and mathematics Gateway courses.

The Chi-Square test of association method of hypothesis testing was used to determine whether there was a statistically significant association between the two categorical variables. I used this test to determine if there was a significant association between two categorical variables. I made four assumptions: (a) both variables were categorical, (b) all observations were independent, (c) the cells in the contingency table were mutually exclusive (an individual could not belong to more than one cell), and (d) expected value of cells needed to be five or greater in at least 80% of the cells (Kassambara, 2019; Ross, 2017; Statology, 2021).

The Spearman's rank-order correlation coefficient, Spearman's correlation for short, was used in this study to determine whether more participation in the tutoring program correlated with better grades. A nonparametric measure, Spearman's rank-order correlation, calculates the direction and strength of any association that might manifest between two variables. Before using Spearman's correlation to analyze data, the researcher must ensure that the data that will be evaluated can be analyzed using Spearman's correlation. To use Spearman's correlation, three assumptions must be met to ensure a valid result. The three assumptions are: (a) the two variables must be measured on an ordinal, ratio, or interval scale, (b) the two variables must represent paired observations, and (c) the two variables have a monotonic relationship (Laerd Statistics, 2018).

Data Analysis

IBM SPSS software was used for the organization and cleansing of the data. The first step in this process was to record the data as postulated in Table X, the operationalization of variables section. Afterward, all data were scrutinized for possible unpredictability, anomalies, mistakes, and missing data. Descriptive statistics were processed to obtain an understanding of the database including the percentages and the frequencies for the categorical variables and for the continuous variable, the dispersion, and the measures of central tendencies.

The Chi-Square test of the association was used to explore the relationships between the participation in tutoring and the subsequent success in the gateway courses of English Composition One and Intermediate Algebra for research questions one and two. The Chi-Square statistical test explores the association between two binary variables. It was applicable in this case to decide if involvement in the tutoring program was significantly associated with course completion. The statistical significance of the test was ascertained using a significance level of $\alpha = 0.05$, and Cramer's V was disclosed as the effect size to demonstrate the actual strength of the association.

RQ3 and RQ4 were used to explore the correlations between the academic performance of the sample in the English and Mathematics gateway courses. The data were first abridged for these questions only to encompass the high-risk students who chose to participate in the tutoring program. Next, the Spearman's rank-order correlation was applied. The Spearman's rank-order test is a non-parametric test useful when at least one of the measures is ordinal. This test was used to decide whether more participation in the tutoring program correlated with better grades in the gateway courses. The statistical significance of the correlations was assessed with a level of significance of $\alpha = 0.05$.

The nature of the variables used in the investigation affiliate thoroughly with the Chi-Square test and the Spearman's rank-order correlation. These statistical methods are suitable for examining associations and correlations between variables without establishing causality or manipulating variables. The results gathered from these tests provided a high-value understanding of the prospective impact of tutoring participation on the course completion and academic performance of FTIC high-risk students. By applying these statistical methodologies, XYZ State College attained an all-inclusive comprehension of the relationships between the level of involvement in the tutoring program, course completion, and academic performance. These outcomes will continue to inform decision-making and help strengthen the college's tutoring programs to help better and support FTIC high-risk students to achieve academic success.

Results

Descriptive Statistical Findings

Foundational analyses were focused on evaluations of missing data and preliminary descriptive statistical findings achieved in the study. The study's missing data were represented as student withdrawal ("W") from mathematics and English Gateway courses. For the mathematics Gateway course, 22.2% (n = 14) of study participants formally withdrew from the courses before receiving a final grade. For English Gateway courses, 0.4% (n = 4) of study participants formally withdrew from the courses before receiving a final grade.

Nearly 80% of study participants (79.6%; n = 39) achieved success in mathematics Gateway courses and English Gateway courses (78.4%; n = 76). Slightly over four in 10 study participants (42.9%; n = 27) engaged in one or two case management visits for mathematics Gateway courses with the remaining 56.1% (n = 36) engaging in more than two case management visits for mathematics Gateway courses.

Nearly half of study participants (46.0%; $n = 46$) engaged in more than two case management visits for English Gateway courses with the remaining 54.0% ($n = 54$) engaged in more than two case management visits for English Gateway courses.

Table 2 contains a summary of the disaggregation of final grades by Gateway course type:

Table 2

Final Grade Comparison by Gateway Course

Final Grade	Mathematics	English
A	14 (28.6%)	21 (21.7%)
B	11 (22.4%)	27 (27.8%)
C	14 (28.6%)	27 (27.8%)
D	3 (6.1%)	9 (9.3%)
F	7 (14.3%)	13 (13.4%)

Findings by Research Question and Hypothesis

Four research questions were formally stated to address the study's purpose. The following represents the findings achieved in the analyses associated within each of the study's four research questions:

Research Question #1

To what degree will XYZ state college high-risk students' participation status in case management associated with successful completion in the Mathematics Gateway courses?

A 2 x 5 Chi Square (x^2) Test of Association was conducted to evaluate the degree of relationship or association between study participant participation in case management and subsequent successful completion of the Mathematics Gateway courses. Study participant participation in case management and successful completion of the Mathematics Gateway courses were represented as binary, categorical variables for use in the statistical modeling used in research question one.

The finding for the association between study participant participation in case management and subsequent successful completion of the mathematics Gateway courses was non-statistically significant ($x^2{}_{(4)} = 6.15$; $p = .19$). The magnitude of effect for the association between study participant participation in case management and subsequent successful completion of the mathematics Gateway courses was medium (Cramer's *V* = .36).

Table 3 contains a summary of findings for the 2 x 5 Chi-square Test of Association used to address association between participation in case management and subsequent successful completion of the Mathematics Gateway courses for study: participants.

Table 3

Summary Table: Chi-Squared Test of Association for Mathematics

	Mathematics Visits				
Math Grades	1 to 2 Visits	More than 2 Visits	χ^2	*df*	*p*
F	2[2.43]	5[4.57]	6.15	4	.19
D	0[1.04]	3[1.96]			
C	8[4.86]	6[9.14]			
B	2[3.82]	9[7.18]			
A	5[4.86]	9[9.14]			

Note. Values formatted as Observed [Expected].

H_a1: There is a statistically significant association between study participants and level of participation in case management and the likelihood of successful completion in the mathematics Gateway courses.

Considering the non-statistically significant finding for the association between study participant participation in case management and subsequent successful completion of the Mathematics Gateway courses, the alternative hypothesis (H_a1) in research question one was rejected.

Research Question #2

To what degree will XYZ state college high-risk students' participation status in case management associated with successful completion in the English Gateway courses?

A 2 x 5 Chi Square (x^2) Test of Association was conducted to evaluate the degree of relationship or association between study participant participation in case management and subsequent successful completion of the English Gateway courses. Study participant participation in case management and successful completion of the English Gateway courses were represented as binary, categorical variables for use in the statistical modeling used in research question two.

The finding for the association between study participant participation in case management and subsequent successful completion of the English Gateway courses was statistically significant ($x^2_{(1)} = 8.18$; $p = .004$). The *Linear-by-Linear* test finding was interpreted for the Chi-Square analysis for its power within ordinal categories that assume equal and ordered intervals (Agresti, 2002). The *Linear-by-Linear Association* test is, moreover, ideally suited to test for trends in a larger-than 2x2 table analyses and ordinal categories. The magnitude of effect for the association between study participant participation in case management and subsequent successful completion of the English Gateway courses was medium (Cramer's $V = .30$).

Table 4 contains a summary of finding for the 2 x 5 Chi-square Test of Association used to address association between participation in case management and subsequent successful completion of the English Gateway courses for study participants:

Table 4

Summary Table: Chi-Squared Test of Association for English

	English Visits				
English Grades	1 or 2 Visits	More than 2 Visits	χ^2	*df*	*p*
F	9[5.76]	4[7.24]	8.68	4	.004**
D	6[3.99]	3[5.01]			
C	13[11.97]	14[15.03]			
B	9[11.97]	18[15.03]			
A	6[9.31]	15[11.69]			

Note. Values formatted as Observed [Expected]. $^{**}p < .01$

H_a2: There is a statistically significant association between study participants and level of participation in case management and the likelihood of successful completion in the English Gateway courses.

Considering the statistically significant finding for the association between study participant participation in case management and subsequent successful completion of the English Gateway courses, the alternative hypothesis (H_a 2) in research question two failed to be rejected.

Research Question #3

To what extent is the level of involvement in XYZ state College's high-risk students' case management associated with the academic performance in Mathematics Gateway courses?

In light of the violation of the assumption of normality in the paradigm's independent variable of involvement in case management (skew value = 4.26; kurtosis = 22.19), coupled with the dependent variable represented at the ordinal level, a Spearman rank correlation (r_s) statistical technique was used to address the mathematical relationship between the variable of case management involvement and the dependent variable of academic performance in the academic area of mathematics. The Spearman rank (r_s) correlation statistical technique describes the monotonic relationship between two variables and is useful for nonnormally distributed continuous data, ordinal data, and is relatively robust to outliers (Shober et al., 2018).

The relationship between study participant engagement in case management and performance in the academic area of mathematics was reflected at a non-statistically significant level (r_s = .10; p = .51). The effect for the relationship between study participant engagement in case management and performance in the academic area of mathematics was considered small (r^2 = .01).

Table 5 contains a summary of finding for the mathematical relationship between study participant engagement in case management and performance in the academic area of Gateway Mathematics:

Table 5

Correlation Summary Table: Case Management and Mathematics Grades

Variable Combination	r_s	95.00% CI	n	p
Case Management: Grades (Mathematics)	.10	[-.08, .46]	63	.51

H_a3: There is a statistically significant relationship between study participants' level of involvement in case management and their subsequent grade in the Mathematics Gateway courses.

Considering the non-statistically significant relationship between study participants'
level of involvement in case management and their subsequent grade in the Mathematics Gateway courses, the alternative hypothesis (H_a 3) in research question three was rejected.

Research Question #4

To what extent is the level of involvement in XYZ state College's high-risk students' case management associated with the academic performance in English Gateway courses?

In light of the violation of the assumption of normality in the paradigm's independent variable (skew value = 3.44; kurtosis = 13.94) of involvement of case management, coupled with the dependent variable represented at the ordinal level, a Spearman rank correlation (r_s) statistical technique was used to address the mathematical relationship between the variable of case management involvement and the dependent variable of academic performance in the academic area of English. A Spearman rank correlation (r_s) describes the monotonic relationship between two variables. is useful for nonnormally distributed continuous data, ordinal data, and is relatively robust to outliers (Schober et al., 2018).

The relationship between study participant engagement in case management and performance in the academic area of English was reflected at a statistically significant level (r_s = .24; p = .02). The effect of the relationship between study participant engagement in case management and performance in the academic area of mathematics was considered medium (r^2 = .06).

Table 6 contains a summary of finding for the mathematical relationship between study participant engagement in case management and performance in the academic area of Gateway English:

Table 6

Correlation Summary Table: Case Management and English Grades

Variable Combination	r_s	95.00% CI	n	p
Case Management: Grades (English)	.24	[.04, .42]	101	.02*

*p < .05

H_a4: There is a statistically significant relationship between study participants' level of involvement in case management and their subsequent grades in the English Gateway courses.

Considering the statistically significant relationship between study participants' level of involvement in case management and their subsequent grade in the English Gateway courses, the alternative hypothesis ($H_a 4$) in research question four failed to be rejected.

Evidence of Trustworthiness

Trustworthiness in research, according to Korstjens and Moser (2018), elicits the inquiry of the trustability of the research findings based of the established expectations. For this study, extreme care was taken in all aspects to ensure prejudice was eliminated and to assess any validity issues (Ravitch & Carl, 2016). According to Bryman and Bell (2005, p. 154), the trustworthiness of quantitative research can be established by the study's internal and external validity, reliability, and objectivity. The internal and external validity and reliability of this study were discussed in chapter three. External validity corresponds to the transferability of the study's results, ensuring that the research results may be transferable to another similar research situation. The transferability of this study was well-thought-out to guarantee that the data acquired could be utilized in a more expansive concept of retention among FTIC high-risk students enrolled in the gateway courses in post-secondary institutions.

Summary

In chapter four, the results of the study were presented. Notwithstanding student withdrawal in the math and English gateway courses, of the 39 students enrolled in

MAT1033C, the mathematics gateway course, 79.6% were successful. Likewise, of the 76 students who were enrolled in ENC 1101, the English gateway course, 78.4% succeeded.

Regarding the research questions, question #1 recorded a non-statistically significant level, and the alternative hypothesis was rejected. Research question #2 indicated a statistically significant level, and the alternative hypothesis was retained. Research question #3, like research question #1, shared a non-statistically significant level, and the alternative hypothesis was also rejected. Research question #4, like research question #2, produced a statistically significant level, and the alternative hypothesis was retained.

In the subsequent chapter, the interpretation of the findings will be discussed along with the limitations of the study, the researcher's recommendations, the implications of the study and the conclusions. In the interpretation of the findings, I will describe how the study's findings confirm, disconfirm, or extend the knowledge by juxtaposing the study's findings with the empirical data from peer-reviewed literature in chapter two. Describing the limitations of the study, I will explore the study's limitations, validity, and reliability that developed from executing this study. Continuing with the recommendations, I will put forth recommendations for further research that are grounded on the strengths and limitations of this study and the literature that was reviewed in chapter two. Finally, I will discuss the implications of the study by describing the potential impact for positive social change.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this study was to excogitate the effectiveness of the voluntary tutoring program on the academic results of FTIC, high-risk students enrolled in the gateway courses of ENC1101, English Composition, and MAT1033C, Intermediate Algebra for the first time. A quantitative ex post facto approach was structured to address the research objective of increasing student success in the gateway courses and increasing retention. My general hypothesis was that increased SLC patronage would positively correlate with higher grades and successful completion of the gateway courses.

The need for this study was showcased in Chapter 1, which included discussion of the conditions encompassing the research on FTIC students' college-level preparedness in community and state colleges. College enrollment has been dropping dramatically, and FTIC students who are entering college are underprepared for the rigors of college-level courses (NAEP, 2013; Nix et al., 2020). According to Klasik and Strayhorn (2018) and O'Shaughnessy (2022), students entering these institutions of higher learning are academically underprepared to undertake the demands of college-level courses. Because open access institutions and voluntary remediation in Florida allow these FTIC students to matriculate in college courses even though their placement test scores indicate that they are not ready, these students are not being successful in their first year in college; therefore, they are withdrawing from their courses, specifically the gateway courses, or leaving college altogether (Callahan & Belcheir, 2015; Kwak, 2020; Park et al., 2018; Woods et al., 2019). My goal in this study was to show that FTIC students who were at high risk of failing the gateway courses would increase their chances of success in those courses by participating in tutoring.

I proved this general hypothesis correct with 79.6% of students who participated in tutoring attained efficacy in the mathematics gateway course (MAT1033C, Intermediate Algebra). For those FTIC, high-risk students enrolled in the English gateway course (ENC1101, English Composition One), 78.4% were effective. Reduced enrolment, dropping graduation rates, and the limited academic skills of students entering college have led many institutions of higher learning to implement programs to support FTIC students in navigating the gateway courses successfully (Bloemer et al., 2018; Vick et al., 2015). Case management pursuits have been implemented to help these underprepared students succeed in their courses and not stop out (Education Week, 2015; Peirce, 2016). Four research questions were used to explore participation in case management and its association with completing the gateway courses. The research questions also addressed the level of involvement in case management and the association with academic performance in the gateway courses.

The research results show that case management and successful completion of the mathematics gateway course are non-statistically significant. However, there was a statistically significant association concerning the English gateway course. The results of the study, regarding case management and the academic performance of FTIC students in the gateway courses, showed that the there was a non-statistically significant association in the math gateway course and a statistically significant association in the English gateway course.

Elli-O'Quinn (2002), Windham et al. (2014), and Yu (2015) all noted how low retention rates have continuously been at community and state colleges. Research has indicated that there is a correlation between low completion rates in gateway courses, which are obligatory general education courses like Intermediate Algebra and English Composition, and low student retention (Koch & Pisitilli, 2015; Lewis & Terry, 2016; Shapiro, 2014). Students who are referred to be not academically prepared or not college ready if they do not have the foundation required to succeed in reading, writing, and or mathematics at the college level (Education Week, 2015; Miller & Murray, 2005; Park et al., 2018). Park et al. (2018) also attested that just 23.4% of severely underprepared FTIC students passed the math gateway course, compared to 39.3% of moderately underprepared students and 54.3% of slightly underprepared students. Given these facts, passing the gateway courses is of vital importance to FTIC students since failure will interfere with their academic progress, which affects student retention. Although further research is needed, this study clearly shows that tutoring helps FTIC students be more successful in the gateway courses than those FTIC students who do not participate in tutoring.

Chapter 2 included a review of the literature covering five distinct sections. Section 1 included details of the search strategies; Section 2 included a presentation of the student retention integrated model, the theoretical foundation on which this study is grounded, and discussed prior studies. In Section 3, I articulated the historical perspective of underprepared students entering college.

These underprepared students, unprepared for college-level courses, were identified as having a high risk of failing in the gateway courses of English composition (ENC101) and Intermediate Algebra (JMAT1033C). In Section 3, I conveyed how case management intervention and support from the tutoring center support the students' success in the courses mentioned above. Section 3 served as the foundation for this study. Finally, in Section 4, the relevant literature was analyzed, and the empirical studies concerning the gateway courses, tutoring, remediation, open access, retention, performance-based funding, and the Florida Senate Bill 1720 were discussed.

Adding to the ever-present problem of high school graduates entering college underprepared is Florida Senate Bill 1720. This bill allows voluntary remediation. Current research has contributed commensurable substantiation that voluntary remediation has had a negative effect on the success of FTIC students enrolled in the gateway courses (Pain, 2016). Open-access institutions add another level to the retention problem in conjunction with voluntary remediation. FTIC students entering open-access institutions face new academic challenges, especially those who are underprepared (Villicaña, 2017).

Community and state colleges have to contend with open access and, in some states like Florida, they have to also address voluntary remediation. These two variables alone ensure that more and more students are matriculating in the college level gateway courses when they are not prepared (Thurrott, 2021). Different programs are being implemented in institutions of higher learning to address this issue (Arco-Tirado et al., 2019). Research demonstrates that there are many benefits associated with tutoring and can be the foundation students need to achieve academic success (Thurrott, 2021). According to Thurrott (2021), students who participate in tutoring persist in their college journey and have higher GPA than those who do not engage in tutoring.

The methods used in this study were delineated in Chapter 3. The research design and rationale were presented in this chapter, along with the methodology. This chapter included a description of the intervention and all its components. The population, sampling, and sampling procedures are also detailed and justified. The archival data were explained along with the variables' operationalization, and the data analysis's rationalization is discussed—a discussion of the ethics and threats to validity concluded the chapter.

I presented the outcomes of the study in Chapter 4. I gave a synopsis and discussed the setting and data collection, encompassing the guidelines and permissions for accessing and analyzing the data. I also covered the fidelity of the intervention and the evidence of trustworthiness. Finally, I addressed the reliability of the data and explained how the results related to the research questions.

Interpretation of the Findings

The results of this study validated the literature review that was used in this study. The student retention integrated model, the theoretical foundation upon which this study was grounded, showed a gap in the literature regarding the use of the retention model in exploring community and state college students' retention and persistence when combined with the success in the gateway courses of English Composition one (ENC1101) and Intermediate Algebra (MAT1033C) and tutoring. The data gathered from this study elucidate the significant relationship between high-risk students enrolled in the gateway courses and their academic performance and proficiency.

The purpose of this study was to appraise tutoring's effectiveness on academic outcomes. The research questions asked if there was a significant association between the participation status of XYZ State College's tutoring program and the successful completion of English and Mathematics Gateway courses during 2018 and 2019. The research questions also asked if there was a positive statistically significant correlation between the level of involvement in XYZ College's tutoring program among high-risk FTIC students and the academic performance in the English and Mathematics Gateway courses during 2018 and 2019.

Null hypotheses one and two proclaimed no statistically significant association between the participation status in XYZ State College's tutoring program and successful completion in the English and Mathematics Gateway courses during 2018 and 2019 among FTIC high-risk students. Null hypotheses three and four claimed there was no positive statistically significant correlation between the level of involvement in XYZ State College's tutoring program and the subsequent grade in English and Mathematics Gateway courses during 2018 and 2019 among high-risk FTIC students. The alternative hypotheses (H_a1, H_a3) were rejected in research questions one and three. In research questions two and four, the alternative hypotheses (H_a2, H_a4) failed to be rejected. Of the 39 students enrolled in the Mathematics course who participated in the tutoring program, 79.6% succeeded. Equivalently, of the 76 students enrolled in the English course who participated in the tutoring program, 78.4% triumphed.

External Validity and Generalizability

The lack of detailed sample characteristics—such as the socioeconomic status, racial or ethnic backgrounds, gender, age, or previous educational experiences of the participants—presents a limitation in understanding of who the intervention effectively supports and under what conditions. Students from different socioeconomic backgrounds or demographic groups may respond differently to tutoring interventions due to various factors, for example, previous educational opportunities, access to resources, and the presence of systemic barriers to academic success. Without this information, it is challenging to determine the tutoring program's effectiveness across a diverse student body. Effective educational interventions often require tailoring to meet the specific needs of diverse student populations. The absence of detailed sample characteristics limits the ability to determine how well the tutoring program addresses the unique challenges faced by students from varied backgrounds.

The study's target population included high-risk FTIC students enrolled in specific gateway courses, identified through a diagnostic test. While this provides a focused understanding of the intervention's impact, the generalizability of these findings to other student populations, including those not considered high-risk or enrolled in different courses, is an important consideration. Diverse student populations may face different sets of challenges that impact their academic performance and response to tutoring interventions.

The unique setting of XYZ State College, including its geographical location, institutional resources, student body composition, and academic culture, can influence the outcomes of the tutoring program. For example, the effectiveness of similar tutoring interventions might vary in urban vs. rural colleges due to differences in student demographics, access to technology, and academic preparedness.

The SLC tutoring program was tailored to the needs of high-risk FTIC students, with features such as individualized tracking folders and sessions focused on prerequisite skills. The degree to which this specific intervention model can be applied to different academic disciplines, tutoring formats, or institutional contexts is a question of external validity. Other institutions may have varying capabilities for implementing such detailed and personalized support structures.

Enhancing Generalizability through Further Research

To address these considerations and enhance the generalizability of the findings, further research could:

- Investigate the effectiveness of similar tutoring programs in institutions with different characteristics (e.g., urban vs. rural, community colleges vs. universities) and report on the factors influencing program success.

- Include a broader range of students, such as those at different academic risk levels, enrolled in a variety of courses, or from diverse demographic backgrounds, to examine the tutoring program's impact across different student groups.
- Assess how modifications to the tutoring program (e.g., online tutoring, group sessions, peer tutoring) affect outcomes in different academic and institutional settings.

Nonsignificant Findings

In this study, I had a main assumption, which was that increased SLC patronage would result in high graduation and high completion rates for FTIC students enrolled in the mathematics and English gateway courses. I used the research questions to address the results of the students' participation in case management and academic performance. The results of the correlation between the students' participation in case management and successful completion of the mathematics gateway course was non-statistically significant ($x^2 (4) = 6.15$: P=19) and the magnitude of effect was medium (Cramer's V=.36). Regarding the interrelationship between case management and academic performance, a non-statistically significant level was also recorded (r_s=.10; p=.51). the effect was reported as small ($r^2 = .01$). these results are the opposite of the outcomes for the English gateway course. In the English gateway course, the association between case management and the successful completion of the course was statistically significant (x^2 (1) = 8.18; p = .004) and the magnitude of effect was medium (Cramer's V = .30). The relationship between case management and academic performance in the English gateway course was reflected at a statistically significant level (r_s = .24; p = .02) and the effect was considered medium (r^2 = .02).

There are several possible reasons as to why participation in case management did not significantly affect the mathematics gateway courses completion and academic performance. According to Acee et al. (2017), developmental math courses have one of the highest failure and withdrawal rates in postsecondary education nationwide. Several different factors could be fomenting the students' hardships in these courses. The results of the Acee et al. (2017) study indicated that the students in these courses perceive a diverse set of academic and non-academic impediments to a successful college journey. Wolpert (2018) stated that even though students graduate from high school, a staggering 60% of these graduates who enter college are not prepared to take college level math and, for that reason, many of them never graduate from college. At any time in a student's journey in school, math related hardships can materialize for a plethora of reasons that could be math specific of for other cognitive challenges, socioeconomic reasons, lack of motivation, and educational factors (Fickman, 2018). College students are struggling more than ever with math and lack the most basic math skills (Richard, 2023). Colleges and universities are blaming the pandemic as one of the reasons math scores have declined (Richard, 2023). The students' perception of a mathematics course is an important factor in their success. One of the reasons for the students' apprehension for mathematics is their lack of comprehension and their self-perception. These two factors can lead a student to have a negative perception of mathematics (Aguilar, 2021).

Limitations of the Study

The scope of the research was limited in various ways. First, the study was conducted at the smallest of five campuses of a large state college. Although the sample size was adequate, four other campuses with larger student populations did not participate. Further adding to the limitations was faculty participation. Faculty participation was voluntary, and the professors chose whether to have their class partake. Participation by the students that their professors recommended was also voluntary, and not all students chose to volunteer for the tutoring program.

Limitations of the Statistical Methods Used

The chi-squared test of association was used to assess the association between tutoring visits and English grades (F, D, C, B, A), treats these categories as nominal rather than ordinal. This approach inherently ignores the ordered structure of academic grades, where each grade reflects not just a different category but also a higher or lower level of academic achievement. Grades possess an ordinal quality because they are ranked in a meaningful sequence from lowest to highest achievement. By treating grades as nominal data, the chi-squared test fails to capitalize on the full informational content of the data. This includes the inherent hierarchy among grades, which could provide deeper insights into the academic impact of tutoring services.

Spearman's correlation cannot capture non-monotonic relationships effectively. Additionally, both tests are descriptive and do not imply causation. The observed associations or correlations do not necessarily mean that participation in the tutoring program causes improved academic performance.

Although the choice of non-parametric tests such as the Chi-Square test of association and Spearman's Rank-order correlation reflects a methodological decision tailored to the nature of the data and the research questions posed, they do have lower statistical power compared to parametric counterparts. While non-parametric tests are advantageous for their minimal assumptions about the distribution of the data and were appropriate given the levels of measurement of the data, there are some limitations. This advantage comes with the trade-off of generally having less statistical power, especially when the sample size is small or when the data actually do meet the assumptions necessary for parametric tests.

Statistical power is the probability that the test will correctly reject a false null hypothesis (i.e., detect an effect when there is one). Lower statistical power implies a higher risk of Type II errors (failing to detect a true effect). In the context of this study, the implication is that there might be a genuine association or correlation between tutoring program participation and academic success that these non-parametric tests may have failed to detect, especially if the effect sizes are small.

Recommendations

In the 1990s published studies unconcealed deficiencies in the educational achievement of the United States when juxtaposed to the education achievements of industrialized nations around the world. This ongoing problem prompts the recommendation for future research that should have at its core programs such as the intervention in this study that focus on individualized interventions and case management in specific courses.

A recommendation would be to do a mixed-method study. Mixed-method research would provide quantitative and qualitative data that could shed light on other factors affecting student retention in the Gateway courses. The theoretical framework, the Student Integrated Retention Model, used in this study would also apply to the mixed method study. This further research would provide other reasons why students might fail in the Gateway courses that could correlate with participation in a tutoring program. The mixed method approach could also contribute to an assessment of the college on the effectiveness of the tutoring program when coupled with other intervention methods.

Other future studies could collect data not only from students but from faculty about the effectiveness of interventions and case management in the gateway courses. this study was intended to use quantitative analysis to ascertain whether the tutoring program and case management produced significant distinction in the academic performance and class completion when compared to the students who did not participate in the tutoring program. This study would have been augmented by qualitative data, including interviews before and after the study with the students and professors to gather information about their perceptions about the program overall and get their input on how the tutoring program might be improved. Future studies could also address the same research questions but compare male students to female students who participated and those who did not participate in the tutoring program.

Based on the study's results, further research is recommended. Future research should include all gateway courses offered collegewide. Having all five campuses participate would significantly increase the sample size, making the data more reliable and valid. One hundred percent faculty participation would further increase the reliability and validity of the research by increasing the original number of students recommended for participation.

The results of this study provided commensurable verification that FTIC high-risk students enrolled in the Gateway courses of English Composition One (ENC 1101) and

Intermediate Algebra (MAT 1033C), who participate in tutoring, will have a higher completion rate than those who do not participate in tutoring. Until the current college practices are changed, and tutoring becomes mandatory for underprepared FTIC students who are at risk of failing the Gateway courses, the college will have to accept high failure rates in the Gateway courses. Empirical data show that mandatory tutoring is beneficial (Wells, 2016), and very few studies show a lack of benefit (Babcock &Thonus, 2012; Bell & Stutts, 1977; Clark, 1985). Therefore, a recommendation is made to have mandatory tutoring for all underprepared FTIC students who matriculate in the Gateway courses and are identified as having a high risk of failing.

Implications

FTIC student retention has been researched for decades. Flanders (2017) specifically researched the problem of how to improve the retention rates of FTIC students through successful completion of the English and Mathematics Gateway courses. That study showed that students who did not pass the gateway courses on their first try were less likely to return the following semester. Flanders (2017) also suggested early intervention to increase the students' chances of success.

Arco-Tirado (2019) conducted a study to see if tutoring would positively impact FTIC students' success in the gateway courses. That study showed a statistically significant difference in the academic success rates of FTIC students who participated in tutoring compared to those who did not. Likewise, the results of this study presented evidence that Student Learning Center patronage has a better chance of success in the gateway courses than those who do not participate in tutoring.

The results of this study could aid community and state colleges in enacting positive social change. By embracing new ideas that promote better student success in the gateway courses and increasing retention and student persistence, these institutions would have more graduates going out into the world and enact positive social change in their communities and within their sphere of influence. The findings of this study present important implications for social change, particularly in the context of higher education and supporting at-risk student populations. Some other potential implications for social change could be retention and graduation for at-risk students, retention and graduation rates, tailored interventions for at-risk students, reimagining academic support models, community engagement and student empowerment, and long-term impact on social mobility. By continuing to prioritize and refine academic support services, the study's findings could inspire systemic changes that foster a more inclusive, and supportive educational environment, promoting social mobility and reducing educational inequalities in the long term. Education can make a person more aware of social inequalities and inequities, prompting a passion for social change that might not have otherwise been there before the educational journey. The implications of student success in the gateway courses are significant in the personal success in achieving their academic goals and in the success of the institutions in helping them achieve their dreams.

The results of this study illustrated a possible requirement for change in addressing the FTIC at risk students' shortcomings in the math and English gateway courses. This resulted in recommendations that may be presented to staff, faculty, and all stakeholders in the success of this cohort of students.

The goal of the recommendations is to enhance the prevalent ways in which institutions of higher learning deal with underprepared FTIC students in the gateway courses. Exhibiting an improvement in the success rates of FTIC students in the gateway courses, as a result of participating in a tutoring program, may persuade stakeholders into considering the possible expansion of the tutoring program making possible the opportunity for increased overall success.

In the community surrounding the site of the study, a predominantly minority and agricultural area, residents love having a college campus in their backyard. The residents of the surrounding communities place reliance on the college campus to educate their youth and to embolden them through their college journey. Since many students are entering college underprepared for college courses, and remediation in the gateway courses is now voluntary in Florida, success in the gateway courses has become a major issue for FTIC students and for the college. Participation in the tutoring program will assist in diminishing this hardship. The success of the case management and tutoring program will facilitate the students' success in the gateway courses. Success in these critical, mandatory courses will have a positive effect, not only on the students and the college, but on the surrounding communities by graduating educated, balanced, and knowledgeable productive members of society.

Presuming that FTIC students will continue to matriculate in college underprepared for college level courses, remediation will be needed. As long as Florida Senate Bill 1720 remains in effect, the students, and all stake holders, will continue to experience the negative effects of voluntary remediation. On a macro level, the success of the case management tutoring program may be able to contribute a prototype for other colleges and universities in the adjacent area and in the state of Florida. According to Bettinger and Long (2005), college remediation is a national problem, so a bigger, national need is apparent. Fundamentally, this study may make available essential information and an attainable solution to this problem nationally.

Since the inception of No Child Left Behind (NCLB) in 2002 and the subsequent Every Student Succeeds Act (ESSA) in 2015, schools are still struggling with making sure that all of the students, their race, calls or socioeconomic background notwithstanding, learn at high levels. As a consequence, school administrators have been trying to figure out a way to make it possible for low performing students to perform at their appropriate grade level.

This study was designed to precipitate higher grades and higher completion rates among FTIC, high risk students enrolled in the math and English gateway courses. This study will present, to all stakeholders, empirical evidence regarding the positive effect of tutoring and case management on the students' academic achievement as manifested by higher test scores, higher GPA, and higher completion rates in future math and English gateway courses. This success will also inspire future educational endeavors and inspire hope, advance skill, and transform lives in a group of underprepared, at-risk student who would, under different circumstances, drop out of college and continue a generational cycle of failure and poverty.

This tutoring program aspired to find answers to help the high number of FTIC students who have deficient skills and are entering college unprepared for college level work. As a result, the success of the tutoring program is of significant value to all stakeholders. Research shows that students who are not successful in the gateway courses will drop out of college. It is of paramount importance that all involved keep looking for different processes that will enable, and encourage, these students to persist. This study also provides more information to the body of research that is committed to the academic success of TTIC, high risk students.

Conclusions

Addressing student retention has been the object of discussion and research for decades. According to Braxton (2014), 45 percent of FTIC students who matriculate in community and state colleges do not return for the second year. The students' performance in the gateway courses has a direct effect on student retention (Callahan & Belcheir, 2015; Park et al., 2018; Woods et al., 2019). The problem contended in this study is that FTIC students are unprepared for the gateway courses (O'Shaughnessy, 2022) and are, therefore, withdrawing, dropping their classes, and leaving college (Kwak, 2020; Woods et al., 2019).

This study provided further knowledge in distinct ways. The study contributed quantitative data regarding the effect of tutoring on the success rates of FTIC students in the gateway courses. The study also helped fill a gap in the literature concerning the juxtaposition of FTIC students enrolled in the gateway courses who volunteered to participate in a tutoring regiment to those who did not choose to participate and their ensuing success or failure in the gateway courses. Finally, the study provided a methodology that allowed for multiple group comparisons.

Tutoring has been comprehensively researched, but its effect on student success in the gateway courses and retention still needs to be addressed. This study did that through the theoretical framework of the Integrated Student Retention Model (Cabrera et al., 1993). This study focused its research on one area of tutoring and its potential impact on the success of FTIC students in the gateway courses that filled a gap in the literature. The study's outcome demonstrated that 79.6% of the FTIC students enrolled in the mathematics gateway courses were successful. For the students enrolled in the English gateway courses, 78.4 were successful.

The implications of this study, although limited, were persuasive enough to recommend that institutions of higher learning should invest more time and resources to implement new initiatives that involve tutoring centers to help FTIC students succeed in the gateway courses of English Composition One (ENC1101) and Intermediate Algebra (MAT1033C). These initiatives will help these underprepared students at risk of failure succeed and therefore, increase the institution's retention rates.

Without question, the problem of high school students entering college unprepared for the difficulties of college-level courses has been and continues to be an issue for post-secondary institutions. Underprepared students entering college, combined with open access, and voluntary remediation further compound the issue. Hopefully, the results of this study, and the recommendations given, will open new doors that will help with gateway course completion and student retention leading to the enactment of positive social change.

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