# THE EFFECTS OF ENROLLMENT IN REMEDIAL CLASSES ON STUDENTS' HIGH SCHOOL GRADUATION RATES

by

Amy Paulson Bennett

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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APPROVED BY:

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## ABSTRACT

The purpose of this study is to determine the effects on high school graduation rates of students who are placed in remedial and non-remedial classes while controlling for the students' attendance rates. The importance of this study is to identify indicators which can positively or negatively affect high school graduation rates. The results may provide information to improve the historical low high school graduation rates. It is a quantitative study using a causal comparative design. Archival data will be retrieved from four public high schools in the panhandle of Florida. 00 students will be sampled, with 00 female students and 00 male students. Two of the schools are rural and two are suburban. The data collection retrieved will identify each student's attendance rates, placement in remedial courses or not placed in remedial courses, and whether they graduated from high school in four years or did not, and this is from the student's 9$^{th}$ grade year through their 12$^{th}$ grade year.


*Keywords*: high school graduation rates, at risk students, dropout prevention, attendance rates

## Dedication

This dissertation is dedicated to my Lord and savior, Jesus Christ, my husband Bobby, and my children, Taylor, Brittany, Brooke, and Abigail. Throughout this long and arduous journey you have all diligently supported and prayed for me. To my husband, Bobby I could not have chosen a better partner to travel this doctoral journey with! Completing a doctoral degree together with one another has been a blessing. You have been my rock and my encourager through it all! To my Lord, Jesus Christ, I owe everything I have accomplished to you and I am grateful for your unending grace! **“**Blessed is the man who remains steadfast under trial, for when he has stood the test he will receive the crown of life, which God has promised to those who love him.” James 1:12 (English Standard Version).

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I would first like to acknowledge my Lord and Savior, Jesus Christ, for showing me an unending amount of grace to complete this arduous journey. All good things come from Him and Him alone. My husband, Bobby, has been my greatest encourager through this entire process. As we always reference this scripture when we banter with one another, "As iron sharpens iron, so one person sharpens another" Proverbs 27:17 NIV. Thank you for sharpening me every day. To my four daughters, thank you for being so patient and cheering me on every step of the way. To my father, Dr. Gunnar Paulson, thank you for teaching me through example how important education is by attaining your doctorate. To my mother, Cindy Paulson, a retired educator, thank you for instilling in me the love for education at an early age  I would like to acknowledge my dissertation chair, Dr. Steve Vandegriff, your wise counsel and guidance has been invaluable to me and I will forever be grateful. To my committee member, Dr. Rebecca Lunde, thank you for all your advice and enthusiastic encouragement.

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## List of Abbreviations

American Civil Liberties Union (ACLU)

Curriculum Planning and Learning Management System (CPALMS)

End of Course (EOC)

English Language Arts (ELA)

Florida Department of Education (FLDOE)

Florida Standard Assessment (FSA)

Grade Point Average (GPA)

National Center for Education Statistics (NCES)

No Child Left Behind (NCLB)

# CHAPTER ONE: INTRODUCTION

## Overview

This study is a quantitative study on the effects of attendance rates and enrollment in remedial classes and non-remedial classes on high school students' graduation rates. Chapter One will identify the purpose for this study, the background information to support the need for the study, and the problem with the lack of previous literature on this topic. The significance of the study may increase the high school graduation rates while decreasing attendance issues and utilizing remedial classes.

## Background

Graduating from high school is vital for students to be successful in society today and in their future. Statistics show that 16% of dropouts are unemployed and 32% are living below the poverty line (Messacar & Oreopoulos, 2013). Attaining a high school diploma is necessary for both the student and the society they live in. This phenomenon of high school dropouts creates many negative consequences. Local economies are negatively affected as a result of a student not graduating from high school (Heckman & LaFontaine, 2010; Messacar & Oreopoulos, 2013; Ou, 2008). High school students dropping out of school is a complex and multidimensional problem and many of the predictors are intertwined (Johnson, Simon, & Munn, 2014). Historically, high school graduation in the United States was an accomplishment most students strived to attain. The graduation rates for high school students' trend seemed to improve as the 21st century arrived until 2010 and then it began to decrease again (Murnane, 2013). This trend of decline cannot be attributed to one cause; instead it is a combination of several factors. These factors must be identified and addressed to find a resolution.

An effect of high school dropouts who do not graduate, is a less prepared workforce. (Heckman & LaFontaine, 2010; Millenky, Schwartz, & Rhodes, 2014; Ou, 2008). The businesses receive an unprepared workforce and consequently this creates a negative economy for the country and the local region's economy. The high school graduation rate is an indicator of the American society and the workforce (Heckman & LaFontaine, 2010; Ou, 2008). When a student drops out of high school and does not graduate the consequences are far reaching into a variety of areas of their lives and the student's residing community (Ou, 2008). A high school diploma can be a gateway to better education opportunities, better health, and a greater chance of participating in civic activities (Messacar & Oreopoulos, 2013; Ou, 2008). Typically, high school dropouts have a higher rate of unemployment, more health problems, and are involved in criminal activities (Millenky, 2016). The capacity of students to be productive citizens in a democratic society is limited considerably and can potentially hinder these dropouts from attaining many of their dreams. It is vital for schools to identify predictors which may negatively affect students' ability to graduate from high school and ultimately affect society (Strand & Lovrich, 2014).

The percentage of high school graduates increased in the first seventy years of the 20th century, but it began to decline from the 1970s into the 21st century (Murnane, 2013). While it declined in the United States many third world countries percentages surpassed the United States (Murnane, 2013). In the Organisation for Economic Co-operation and Development which consists of 34 nations, there are only eight countries that have lower high school graduation rates than the United States (Gaertner, DesJardins, & McClarty, 2014). The recent literature identifies that high school graduation rates have improved greatly in the 1970s to the present, but there is a study which refutes this and instead notes it has declined (Heckman & LaFontaine, 2010). As

noted, the graduation rates as being only 67%, while others have it at approximately 75%-78% (Tyler et al., 2009). This is a discrepancy of up to 11 percent. The increased graduation rate includes students through the age of twenty-four as opposed to the traditional age of 18 (Myungkook & Jeounghee, 2014). Several of the studies stating the graduation rates were trending in an upward manner included statistics for students attaining alternative certificates, such as the general education development (GED) as a factor for the increase (Heckman & LaFontaine, 2010; McCallumore & Sparapani, 2010; Ou, 2008). The GED and other factors which are not the traditional graduation criteria for graduating within four years upon entering the students' freshman year, can falsely skew the data by inflating the percentage of graduates (Gaertner, 2014; Heckman & LaFontaine, 2010). The GED is not the equivalent of a traditional four-year high school diploma in which the student graduates on time with the cohort they entered with in their freshman year of high school (Ou, 2008; Zajacova, 2012). Historically, GED students make similar poor life choices as the students who did drop out of school such as: smoking, alcohol addiction, unemployment, not completing college, and involvement in criminal activities (Millenky, 2016; Ou, 2008; Zajacova, 2012). Throughout most of the 20$^{th}$ century the focus for students to attain a high school diploma is what each previous generation expected of the next generation in the United States (Heckman & LaFontaine, 2010; Murnane, 2013). Many of the factory jobs of the previous century and into the 1990s within the United States required low-skilled workers with low education requirements, but this has ceased due to globalization and outsourcing to other countries (Wilkerson & Williams, 2012). Today's labor force requires more technological skills and education (Wilkerson & Williams, 2012). Attaining a high school diploma is the first educational step to participating in the work force of today.

A reason for the decline in graduation rates from the 1990s until now is the rigorous increased graduation requirements (McCallumore & Sparapani, 2010). In an era of accountability with the ushering in of the No Child Left Behind Act (NCLB), schools are required to implement a more rigorous curriculum the high school students must master to graduate; if the schools do not comply, funding may be reduced or removed altogether (Genao, 2015; Heckman & LaFontaine, 2010; Musoleno & White, 2010). Many students view the benefits of working outside of school as more profitable than staying in school and graduating because of the stringent graduation requirements (McNeal, 2010; Murnane, 2013). Many students are already behind in the academic classes of school and do not attempt to learn the skills needed to pass the state standardized tests required to graduate (McCallumore & Sparapani, 2010; McNeal, 2010). This trend to increase academic rigor in schools has placed teachers in the position of teaching for the mastery of the test while removing the teachers' ability to individualize the curriculum to meet each students' needs (Musoleno & White, 2010).

Traditionally, attendance has been an important factor in the success of students in school and ultimately graduating from high school (Genao, 2013; Ou, 2008). Many students choose to work over attending classes; which in turn, creates a propensity towards dropping out of high school. Communities which offer a plethora of low skilled jobs may make the prospect of dropping out of school a viable option (McNeal, 2011). A 25-year study of why high school students drop out revealed that it was a process involving a student's feelings and school, family, and community environments (Kotok, Ikoma, & Bodovski, 2016). The connections created between the students, the teachers, and the school environment helps to deter students from dropping out. These relationships formed provide a sense of belonging for the student. Without these attachments the students are more likely to perceive that their dropping out will not affect

their teachers or peers; they are less likely to reach out for help as a result (Koto et al., 2016). With this feeling of detachment from the school environment these students' attendance decline.

Historically school attendance rates for students have been officially recorded in the United States since 1840 (Stoddard, 2009). Several states have compulsory school attendance laws in effect to help promote continuous attendance. This emphasis the government is placing on mandating compulsory attendance laws for schools, reiterates the necessity of students attending classes regularly. In a study by Bowers (2010) student absenteeism was identified as an at-risk factor for early identification for dropping out of high school and not graduating. Other studies also identify student absenteeism as negatively impacting high school graduation rates (Genao, 2013; Johnson et al., 2014). Students' attendance rates are indicators of whether the students will maintain continuous enrollment in school and graduate from high school (Zaff, Donlan, Gunning, Anderson, McDermott, & Sedaca, 2017). Students who are habitually truant or have difficulty attending class on a regular basis have difficulty with independently completing and turning in missed assignments because they missed the instruction.

Attendance rates and placement in remedial courses can have a negative or positive affect on graduation rates. Students who are presently in classes on a regular basis can improve their grades, but on the contrary when they are absent it can hinder their grades. Many times, this contributes to their inability to score a proficient score of a 3 or higher on the Florida Standards Assessment (FSA). This in turn becomes an early warning signal to the school that this student needs remedial assistance. These students are placed in the remedial classes to obtain the needed skills to master the content in either an English Language Arts or math class. The issue of attendance in these classes again becomes a factor in aiding these students in mastering these skills. An urgency must be communicated to the student of the paramount need to be present in

these remedial classes. When students attend classes on a regular basis the student can gain the knowledge they need to pass the FSA and form a relationship(s) within that classroom setting.

The factor that may potentially affect the graduation rates for students is their participation in remedial classes (Wilkins & Bost, 2016). Whether they are in attendance determines the level of engagement with the learning process; if they are absent from the class the students' level of engagement is low. Students who are habitually absent from school tend to be placed in remedial classes. Absenteeism may be a predicator for placement in the remedial classes. These remedial classes are designed to provide more and explicit practice in the skills the students did not master on an assessment. In order for the student to practice these skills they are lacking they must be in the class. The remedial classes in the high school are designed to reengage these students with the learning process. Creating a culture within these remedial classes of acceptance and success between the teachers and students will foster a sense of confidence for the student which ultimately promotes staying in school and graduating from high school (Genao, 2015). Creating a safe atmosphere in which the student believes someone cares about them fosters an optimal learning environment (Kotok et al., 2016). In a study on remedial reading classes at the high school level the results revealed that reading comprehension improved and the students' scores in other content areas improved (S. Vaughn, Roberts, Wexler, M. Vaughn, Fall, & Schnakenberg, 2015). As a result of providing these students with an environment of acceptance and instruction designed to address their weaknesses, these students have the opportunity to succeed. These students are given the opportunity to learn the skills they are lacking to better prepare them for scoring a proficient or higher on the state standardized tests to graduate.

The theory underpinning the issue is from Bronfenbrenner's theory of human

development. It is called the bioecological theory and it has evolved from its introduction phase of an ecological model in the 1970s to the present, bioecological one (Rosa & Tudge, 2013). Bronfenbrenner's (1979) theory posits that human development occurs as a result of the consistent influences by the environment within the child's life. The child's development is swayed greatly by the child's microsystems of the family and the environment around them (Rosa & Tudge, 2013). The schools must utilize these remedial classes to build a positive rapport with at-risk students. These positive relationships offer support to the at-risk students for not dropping out of school and for improving their school attendance. Fostering positive relationships between the students and their teachers occurs within the microsystem of Bronfenbrenner's theory and this is the most influential layer (Bronfenbrenner & Morris, 1998). All these factors in the process of a student deciding to drop out of high school are simultaneously influencing and being influenced by the other factors (Tregaskis, 2015). The development of the high school student is influenced by one's environment and peers. The remedial classes must use these environments to help promote success through changing the at-risk students' attitude toward the academic content and attending school each day. Bronfenbrenner's (1979) theory explains that the proximal processes, person characteristics, context, and time (PPCT) model helps to explain that these processes are constantly intertwined and synergistically interconnecting with one another (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998; Tudge, Payir, Vargas, Cao, Liang, Li, & O'Brien, 2016).

The bioecological theory by Bronfenbrenner (1979) supports the necessity for requiring students to be present in remedial courses because it helps to create a consistent and supportive environment to learn. The schools can recognize these indicators of poor attendance issues and not scoring a proficient in reading and/or math state assessments as negative influences which

are interwoven together. These factors are affecting one another in a reciprocal manner as explained in the PPCT model of the bioecological theory. These proximal processes can be altered by the schools to create positive reciprocal experiences via remedial classes and improvement in student attendance in school. The schools can address these warning indicators to dropping out of school for the at-risk students and ultimately improve the students' ability to graduate from high school.

## Problem Statement

Forty-two percent to 60% of students entering a community college and 20% of students entering a four-year institution are requiring remedial classes in reading, writing, or math to be able to effectively grasp the material presented (Gaertner, 2014; Genao, 2015; Shaw, 2014). Many students leaving high school are not prepared to enter either a two or four-year higher education institution (HEI). One out of two remedial students in colleges will not be successful and of the 20% of four-year college students required to take a remedial class, 42% of those students will not graduate (Shaw, 2014). These remedial courses do not transfer to the bachelor's degree for credit and many students do not go on to complete the college level requirements for English and math credits (Hern & Snell, 2014). The studies in these varied colleges reveal that the students who have recently left high school are not prepared for the college courses; therefore, the colleges recommend they take remedial courses to help them succeed in future regular college classes. This high percentage of students lacking adequate preparation for college is indicative of the need for communication between the high schools and the colleges to dialogue concerning the need for improved remedial classes at the high school level and curricular alignment between the high schools and colleges (Methvin & Markham, 2015).

Currently, there are more studies available which address the need for remedial classes in the HEIs and the lower levels of school, but very few at the high school level.

There is a gap in the literature that does not address the effectiveness of remedial classes at the high school level. What is being identified is that high school students are not being adequately prepared for post-secondary education but, it does not adequately address whether these classes are improving high school graduation rates or hindering the rates (Boatman, & Long, 2018). Many studies have identified the issues of absenteeism and students displaying a disconnect with the school environment as indicative of students graduating from high school or dropping out of school (Wilkins & Bost, 2016; Kotok et al., 2016). Students are lured into dropping out of school due to their inability to master the academic content in the classes required for graduation; therefore, entering the workforce in low-skilled labor jobs without the opportunity for advancement due to inadequate education levels (Millenky, 2016; Schwartz, & Rhodes, 2014; Heckman & LaFontaine, 2010). Student absenteeism due to going to jobs outside of school and a disconnect with the school environment are all early warning signs that a student is at-risk for dropping out of high school and not receiving a traditional diploma. Enrollment in remedial classes at the high school level facilitate student acquisition of the key skills needed to ultimately graduate. The problem is a need for a more thorough examination of the effects of student enrollment in remedial classes at the high school level to determine whether these students' attendance in these classes are effective or ineffective for improving the traditional graduation rate.

## Purpose Statement

The purpose of this quantitative, causal comparative study is to ascertain the effects of enrollment and attendance in remedial courses and non-remedial classes on high school

graduation rates. The independent variables are pre-determined and cannot be manipulated (Gall, Gall, and Borg, 2007). The dependent variable is student graduation. The independent variable is the enrollment in the remedial classes and attendance in the remedial classes. The independent variable in a causal-comparative research design is the presumed cause and the dependent variable is the presumed effect (Gall et al., 2007). The independent variable for Research Question One is enrollment in remedial courses. Remedial courses are defined as additional English Language Arts and/or math courses the students are required to take when they did not show a proficiency score of three or higher out of five points on the state standardized tests in either of those two subjects (CPALMS, 2013-2017 & Donaldson & Halsey, 2007). The independent variable for Research Question Two is student attendance. Students displaying poor attendance, which is being absent 15 days or more, and enrolled in remedial classes or students not displaying poor attendance enrolled in remedial classes. Student chronic absenteeism reveals a 68% less likely chance they will graduate from high school (Balfanz, Herzog, & Mac Iver, 2007). The dependent variable, student graduation, is defined as a student meeting the required criteria for a standard traditional diploma. The student must attain 24 credits in the following areas: four English/language arts, four math courses, three science courses, three social studies credits, eight elective credits, including one physical education, and one online course, passing the end of course assessments with a 3 rating out of 5 for English/Language Arts in the 10$^{th}$ grade and in Algebra I, while maintaining a 2.0 overall grade point average, and graduating with their cohort they entered with in the ninth grade (Students entering grade nine in the 2014-2015 school year, 2019). The requirements for a standard diploma as noted by the NCLB act of 2001 requires a student to attain a standard high school diploma in their respective state on time with their cohort (Watson & Brown, 2010). This study is attempting to show a causal comparison

between the students' attendance in remedial and non-remedial courses to the students' graduation rates. The sample for this study consists of approximately 00 seniors from four high schools in a southern state.

## Significance of the Study

Nearly one in every five American high school students does not graduate (Zaff et al., 2016). There is a lack of research on the issue of a student's participation in remedial classes and whether it can potentially help a student graduate from high school. The studies which have shown remedial classes can give the students the skills they need to pass the required courses to graduate occur mostly in higher education institutions and elementary through the middle grades (Levin & Belfield, 2007; Lin, Guo, & Lin, 2016; Tavakolian & Howell, 2012; Vaughn et al., 2015; Wilkens & Williams, 2015). There is a lack of studies on remedial classes at the high school level. Students are leaving high school and entering colleges without the skills needed to successfully complete the courses. Approximately 8% of students assigned to a remedial class in college graduate (Methvin and Markham, 2015). Remedial classes should provide the tools they need to better navigate through the content. With these skills, the students should be able to pass the classes or any required tests and graduate from high school or college. These classes are designed to target students' weaknesses in the area of reading or math from their performance on the state standardized test and provide intensive instruction to master those skills. As the studies reveal, these high school students are not entering college with the needed skills to even take a regular course; they must first take a remedial course to better prepare them (Gaertner, 2014; Genao, 2015; & Shaw, 2014). Remedial classes at the high school level should be preparing these students to graduate. The significance of this study will be to show if there is relevance in

placing high school students into remedial classes in determining whether it promotes graduation or not.

The indicator of absenteeism also plays an important role in determining whether a student completes high school and graduates. In studies by Roberts, Vaughn, Fall, and Vaughn (2013) and Messacar and Oreopoulos (2013), daily attendance rates were a main focus for addressing the needs of potential drop out students. Students who miss school, miss valuable instructional time and often are not motivated enough to complete and return their missing assignments. They become further and further behind, thus creating a cycle in which they do not understand the material and do not have the skills to teach themselves so, they simply quit trying to catch up with their peers. This creates the potential for the student to drop out of school and not graduate.

Students not graduating create a problem for themselves and for society as a whole. Crime rates are lower and citizens of communities with higher numbers of high school graduates earn more money (Messacar & Oreopoulos, 2013). Addressing this issue of indicators affecting high school graduation is necessary for society. Many times, high school dropouts cost society money to help support them in their lives. As Genao (2015) noted, "Furthermore, high school dropouts are usually higher tax consumers instead of taxpayers, comprise a higher percentage of welfare recipients, utilize public health services at a higher rate, and commit crimes." (p.465). The future of the American society depends on our youth of today and the schools must find a way to understand and combat the low graduation rates from high school.

## Research Questions

**RQ1:** Is there a difference in the graduation rate of students who are enrolled in remedial classes and those who are not enrolled in remedial classes?

**RQ2:** Is there a difference in the graduation rate of students who display poor attendance, which is defined as 15 or more absences, and are enrolled in remedial classes and those who do not display poor attendance enrolled in remedial classes?

## Definitions

1. *Bioecological theory* – In its most recent or mature form stipulates the researchers should study the settings in which the emerging individual spends their times and the relationships with other people around them in the same settings (Rosa & Tudge, 2013).
2. *Drop outs* – Students displaying at-risk behaviors which may lead to adverse achievement levels and consequences such as leaving school before graduating from high school (Bowers, Sprott, & Taff, 2012).
3. *Truant attendance*- Students being absent from school 15 full days within a 90-day calendar period and 5 full absent days from school within a 30-day period (FLDOE, 2018).
4. *Focus program*- The computer programs the school district uses to keep the records of students' data including; grades, grade point averages, attendance, test scores, and the history of the students' test scores.
5. *Remedial classes*- Classes designed to assist students who have not previously shown mastery of the skills needed to achieve expected competencies to score a proficient score of a three or higher on the English language arts and Algebra I state standardized and end of course assessments required to graduate from high school (CPALMS, 2013-2017).
6. *Non-remedial classes*- Core academic classes designed to instruct students for the first time to achieve expected competencies to score a proficient score of a three or higher on

the English language arts and Algebra I state standardized and end of course assessments required to graduate from high school (CPALMS, 2013-2017).

# CHAPTER TWO: LITERATURE REVIEW

## Overview

Chapter two examines the effects of participation in remedial classes and non-remedial classes on truant and non-truant high school students' graduation rates. The reviewed literature is related to the remediation process for both reading and math at the high school, middle school, elementary school, and college levels. The theoretical framework, Bronfenbrenner's bioecological theory is discussed fully and supporting theories and studies are documented. Related literature encompasses the following: (a) societal implications revealing the positives and negatives of attaining a high school diploma, (b) historical implications to attaining a high school diploma to the present, (c) school disengagement/attendance, (d) and remedial classes, the literature explores why students become disengaged with the learning process and in many instances, it is due to poor attendance. Finally, the last section summarizes the literature reviewed and how this study may address the gaps in literature concerning remedial classes and their effects on high school graduation rates.

## Conceptual or Theoretical Framework

Bioecological theory provides a framework for examining how remedial courses at the high school level can potentially influence students' ability to achieve the academic requirements in an ELA and/or mathematics course to graduate. The theory recognizes the value of system interactions related to the students' experiences, connections with these systems, and their involvement with the learning processes through the varied methods within the remedial learning environment. The creator of this theory, a Russian-born psychologist named Bronfenbrenner (1979), ascertained that a child develops because of who they are and their surrounding environment. Bronfenbrenner first created the ecological theory in the 1970s, later expanded it

and renamed it the bioecological theory. In the first phase, the ecological theory, Bronfenbrenner identified only two environments which could potentially affect the development of the child. The first being the upper layer which is the child's immediate surroundings (school, home environment, and the neighborhood) and is the most influential, and the next, the outer layer is the supportive layer which encompasses the physical geography and the social systems (Vélez-Agosto, Soto-Crespo, Vizcarrondo-Oppenheimer, Vega-Molina, & García-Coll, 2017). (see FIGURE 1).

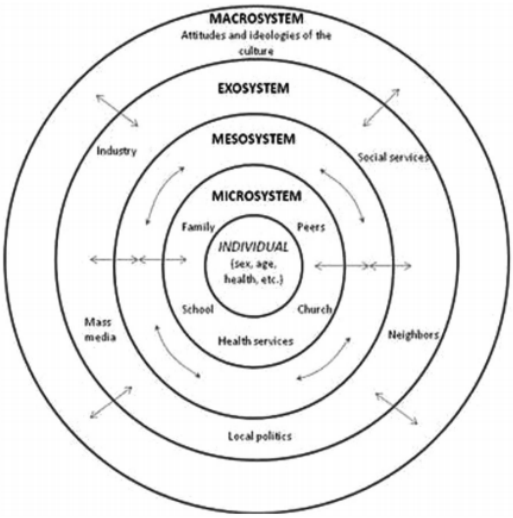


*Figure 1.* From "Bronfenbrenner's Bioecological Theory Revision: Moving Culture from the Macro Into the Micro," by N.M. Velez-Agosto, J.G. Soto-Crespo, M. Vizcarrondo-Oppenheimer, S. Vega-Molina, and C. Garcia Coll, 2017, *Perspectives on Psychological Science, 12(5),* p. 902.Copyright 2017 by SAGE Publications.

Bronfenbrenner's theory explains the influence of the microsystem and the proximal processes. There were no interventions implemented in this study; therefore, these students who experienced the same proximal processes within the same environment proved detrimental to their capabilities to graduate from high school. With the implementation of an intervention, such as remedial courses for these at-risk students for dropping out of high school, may have provided a different outcome for these students. These remedial courses can implement the instruction of

study skills and provide the reciprocity of positive learning experiences, which can positively affect these students' ability to graduate.

Using Bronfenbrenner's bioecological theory may help schools gain a better understanding of why students choose to drop out of high school and not graduate. In a study by Zaff, Donlan, Gunning, Anderson, McDermott, and Sedaca they were attempting to locate factors that help to promote high school graduation (2017). These factors are preventative measures, which need to be addressed and identified early in a student's academic career. The four indicators are motivation, engagement, youth expectations for attainment, and locus of control and within these four factors are other sub factors (Zaff et al., 2017). Remedial classes can potentially provide an environment of engagement for the students and building a positive rapport with their instructors. One sub factor is positive student-teacher relationships. The evidence supports that providing a caring relationship through spending time with a student has positive altering effects on the students' academic outcomes. A study that implemented a positive student-teacher relationship program beginning with students in the 10$^{th}$ grade showed a positive prediction in school enrollment in the 12$^{th}$ grade for these students (Lee & Burkam, 2003). These two studies provide a basis for this study on remedial classes and their effects on high school graduation rates. The relationships formed between the teachers and the students within these remedial classes reveals the positive outcomes for students to stay in school and not drop out. Students need to feel an atmosphere of acceptance and trust with their teachers in order to promote self-confidence in the student's ability to learn academic skills. In Bronfenbrenner's theory, these settings in which remedial classes occur are in the microsystem. The microsystem is the system in which the student has the most experiences and on a constant basis. In Bronfenbrenner's theory, proximal processes are repeated interactions between the individual

and the environment and they can have the most influential impact on the student's development (Vélez-Agosto et al., 2017).

**Earlier Phase - Ecological Theory**

In Bronfenbrenner's (1979) first phase called the ecological theory the emphasis was on the need to study the emerging or developing child in the context of their environments. The original theory, the ecological theory, consisted of four layers. The four environmental stages were, the microsystem, the mesosystem, the exosystem, and the macrosystem (Onwuegbuzie, Collins, & Frels, 2013). Each of these four levels influence in varied means the development of each person. This is the original theory and as it evolved it encompassed more interactions both directly and indirectly. As this theory progressed, Bronfenbrenner added more systems to the theory which included the reciprocity between the developing child, their environments, the interrelatedness between all these contexts and the persons involved on a regular basis (Tudge et al., 2016). Bronfenbrenner (1995) included a proximal process, person characteristics, context, and time (PPCT) model to explain this ever-evolving theoretical study on human development over a time period. As noted in the early theory, in order to demonstrate a change has occurred in the development of the person, it is imperative to establish that a change has been carried over into a developing person's attitudes or perceptions and into their other settings (Bronfenbrenner, 1979). Making sure this change has occurred into the person's attitudes is vital to a high school student attending a remedial class or classes and subsequently following the completion of these classes retaking the standardized test showing proficiency in order to successfully graduate from high school. These students must establish a change in their perceptions of their capabilities to learn and master the academic content and be able to express it in their ability to pass the test in that new setting.

## Bioecological Theory

Bronfenbrenner's revision of the original theory led in turn to the bioecological theory which, expanded the layer model into an elaborate series of interrelated systems of five layers (Vélez-Agosto et al., 2017). These added layers in Bronfenbrenner's later bioecological theory increased the number of proximal processes, therefore influencing the development of the child through many experiences. It integrates a four-element model, containing the collaborative interconnections among proximal processes, person characteristics, context, and time (the PPCT model) (Tudge et al., 2016). This theory claims that researchers should include studying the settings of the developing individuals, the time spent in that setting, the relationships with others in the same settings, the personal characteristics of the individual and the others involved, as well as the historical time and the proximal process (Rosa & Tudge, 2013). All these factors are intertwined with one another and must be studied comprehensively; instead of separately. These systems play an important role in determining the child's future behaviors and actions. Bronfenbrenner's theory of human development has consistently focused on the individual being viewed as influencing and being influenced by the environment (Rosa & Tudge, 2013). The systems that will have the greatest and most powerful influence on the child are the ones directly related to them within the immediate environment, the microsystem (Bouchard & Smith, 2017). This includes the developing students' interactions and experiences at school, but now the time is included as well. The time considers the social and political ideology of the historical time period (Rosa & Tudge, 2013).

## Five Layers of the Bioecological Theory

The bioecological theory of human development now encompasses five layers, as opposed to the fewer number of layers in Bronfenbrenner's previous ecological theory, and each

layer affects the other environments. As noted by Wong (2001), “Bronfenbrenner once remarked that the idea of his nested and interconnected ecological system originated from the traditional Russian doll, which is characterized by the embedding of a series of smaller dolls inside larger ones” (369). These layers are constantly interacting with one another. The five layers consist of the microsystem, mesosystem, exosystem, macrosystem, and finally the addition of the chronosystem (see figure 2).

The microsystem, or the immediate surroundings, include the family, school, peers, instructional strategies, and the classroom settings. The second is the mesosystem, it proposes that other surrounding environments may influence a child’s development and this system consists of interactions between that child’s microsystems. The exosystem does not directly involve the child, but the decisions made can indirectly affect the child. Examples of indirect influences in this layer may be school administrators, social service workers, and parents’ employers. The macrosystem emphasizes the child’s interaction with the philosophies and beliefs of the culture (Vélez-Agosto et al., 2017). This layer provides a blueprint for homogenizing a child’s development instead of diversifying human exposures (Vélez-Agosto et al., 2017). Culture is simply repeated and delivered to the child, with no regard for individuality. Later, Bronfenbrenner added the final element to include time. This element within the chronosystem was referred to as the PPCT (Tudge et al., 2016). This is the chronosystem and it consists of all the life events a child has experienced, including any major life events and environmental events over time (Bronfenbrenner, 1979; Rosa & Tudge, 2013). The developing student should be studied across varied contexts and time on a regular basis (Bronfenbrenner, 1979; Rosa & Tudge, 2013).

In the second layer of the system, the mesosystem, the individual becomes an active participant in a set of interrelations between two or more settings (Bronfenbrenner, 1979). This is an important aspect to the developing person because the initial transition into a new environment can create a positive or negative impact on their perspective of the new information being processed. The plausible development of a new setting within the mesosystem can be beneficial if the new setting is not entered alone, instead when they are accompanied by someone with whom the person is familiar. Then it can potentially aid the person in feeling more secure (Bronfenbrenner, 1979). In the case of high school students, the mesosystem is vital to their choice of coping methods when discovering they will be attending remedial classes in order to graduate. In many instances, struggling students in ELA and/or mathematics classes are placed in these remedial classes without prior notification or explanation. Generally, these remedial students are not afforded the opportunity to have a support network, such as familiar teachers and peer group members to help them bridge that gap of unfamiliarity into the new transitional setting of a remedial class or classes. This interaction may potentially be negative, when the new setting in the mesosystem is not familiar to the student and there is not a supportive link available to help the student build trust such as a familiar teacher or a positive peer group (Bouchard & Smith, 2017). The students may decide to withdraw both socially and academically, and this can create a deficit in their ability to learn strategies and master the subjects necessary for graduating high school. Characteristics of a positive mesosystem are several diverse and rich interactions between the microsystems to create success for the developing student (Bouchard & Smith, 2017).

In Bronfenbrenner's third layer, the exosystem, he explains how the developing child is not an active participant in one or more settings (Onwuegbuzie, 2013). Whether the student is an

active participant or not does not change the fact that they potentially may be affected. These events affect or are affected by what happens in the setting which contains the developing child (Onwuegbuzie, 2013). Direct involvement is not necessary to create an interaction between the developing child and its surroundings. This system shows the relationship between the student, their surroundings, and their academic performance in the classroom setting. For example, the developing student feels inadequate in their needed skills in a subject due to working late every day after school, not receiving the proper amount of rest needed to learn effectively, and this in turn creates a failing grade on an assessment to determine if that student has met the criteria to attend regular courses, and requiring that student to attend remedial courses as a result. This is an example of the exosystem in which the developing student is affected because of their irrelevant experiences in which they have not been directly involved.

In this second nested system of Bronfenbrenner's (1979) social-ecological model, the developing person is enhanced when all people involved are included in joint activities. In this network, all parties are interacting in mutual activities, and eventually the balance of power shifts to the developing person and those looking out for the developing person's well-being (Bronfenbrenner, 1979). In these remedial classes, a gradual shift in the balance of power to the benefit of the remedial students can have a significant, positive effect on their success in improving school attendance, demonstrating mastery on the ELA and/or mathematics required exams, and ultimately graduating from high school.

Bronfenbrenner's ecological and his more recent amended extension, the bioecological theory, are viewed as being beneficial in the educational environment with some degree of supplementation (Drakenberg & Malmgren, 2013). In Bronfenbrenner's fifth layer in the amended bioecological theory, the chronosystem, he proposes that the student's development is

potentially influenced by two events, the timing of an event or an event experienced that is exclusive to that student's generation. These events experienced by a student while developing can positively or negatively affect their achievement. This layer, the chronosystem, is influenced both by reciprocal experiences between the developing student, the teacher, and between the developing student and cultural experiences exclusive to that time period. The negative affect may occur in a high school remedial class when generational cultures may not be understood by the teacher or the student. Teachers' and students' behaviors may not be comprehended in the manner they were intended, when this occurs tension can be the result. The tension whether on the part of the student or teacher creates a hindrance in the success of the mastery of the curricula's content. Understanding that this misinterpretation at this level of Bronfenbrenner's system may be damaging to the developing student's ability to successfully attain the necessary strategies to master the content is key to improving both the remedial classroom settings and the regular classroom settings. Bronfenbrenner maintains that because the child progresses, the collaboration with the environments acquires a complex nature (Härkönen, 2007). The progress of the developing high school student should incorporate their immediate environment as well as the social and cultural norms of the day. This will help to better prepare a conducive classroom learning environment for mastery of the curriculum. This more comprehensive understanding of the developing student and what is considered a positive classroom learning atmosphere may prevent students from having to attend remedial classes. This holistic approach to the development of the student may potentially promote graduating from high school with the skills needed to show mastery of the curriculum's content.

**Social Cognitive Theory**

Much of Bronfenbrenner's theories were based on Vygotsky's sociocultural theory. According to Vélez-Agosto et al., (2017), "Sociocultural theory is based on how culture mediates human experience and transforms human activity" (p.103). Vygotsky's sociocultural theory was created following the 1917 Bolshevik Revolution in Russia, and he tried to align it with the ideology of Marxism, which focused on the tools, history, and labor to explain the learning process, human development, and higher psychological thinking (Vélez-Agosto et al., 2017). Vygotsky's sociocultural theory places culture at the forefront of a child's development, emphasizing that culture is apparent in everyday activities because all forms of human activity are cultural forms of conduct, defined in a specific cultural context, and later embodied by the person (Vélez-Agosto et al., 2017). This is one of the major differences between Bronfenbrenner's bioecological theory and Vygotsky's sociocultural theory, the emphasis on culture within a child's development. While Vygotsky placed culture as the main influence on a person's development, Bronfenbrenner placed it in the macrosystem. The macrosystem is far removed from the individual's microsystem, which is the most influential system. In Vygotsky's theory, every form of human activity is influenced by culture; it is at the core of his beliefs. One major similarity between the two theories is in the idea of reciprocity of the activities occurring in microsystems and the proximal processes (Wong, 2001). Both theorists believe that the environment affects and impacts human development (Wong, 2011). Culture and context are inseparable in Vygotsky's theory, whereas Bronfenbrenner views culture and context as a factor that is not located within the microsystem of the student.

Another major theorist to contributing to the ideas of Bronfenbrenner's bioecological theory is Kurt Lewin, a social psychologist from Germany who eventually emigrated to the

United States. His beliefs were related to the physical comparison and geographical one (Vélez-Agosto et al., 2017). Bronfenbrenner believed the principle of contemporaneity states that all human conduct and development depend solely upon the entire situation at the present time (Lewin, 1943/1997). This principle would seem to delete the effects of an individual's past and future and its effects on their development, instead it was suggesting the researcher view it through the psychological present lens (Wong, 2011). In this theory, the present situation in its totality must be considered as valuable in understanding human development and actions (Wong, 2011). Bronfenbrenner seems to align his theory a little closer to Lewin's beliefs by including the present situation in its entirety when studying how a child's development.

These three social psychologists created a fundamental foundation for researchers to reference when conducting research in the field of education. The framework provided by Vygotsky and Lewin helped to inspire Bronfenbrenner to create his theory. They both provided key elements which helped guide Bronfenbrenner in creating a theory that he considered an on-going theoretical system (Tudge et al., 2016). This is evident in the formulation of his first theory, the ecological theory, and then the second phase, the bioecological theory. He tried to reiterate the need to view a child's development in the context of their surroundings and the constant interchange between the systems. Utilizing these concepts which helped to shape Bronfenbrenner's bioecological theory will help to guide this study on remedial classes and their effects on high school graduation rates. Students' proximal processes need to be studied and addressed in order to create an environment for optimal learning. These students' constant interactions with their environments on a repeated basis in these remedial classes must be conducive to creating an atmosphere for learning. In Bronfenbrenner's layers, the microsystem is the first one, and it is the most influential layer. This layer contains the school, and its

classrooms, for this is where the remedial classes will occur creating a potential for the most effective exposure to the students. This exposure will occur as proximal process; that is systematic occurrences of interaction between person and environment (Tudge et al., 2016).

## Related Literature

Graduating from high school has the potential to create a more successful life for the student as opposed to the consequences of not attaining a diploma (Heckman & LaFontaine, 2010; Long, Conger, & Iatarola, 2012; Messacar & Oreopoulos, 2013). As noted by Wilkens and Williams (2015), "Helping young people graduate from high school is an important endeavor, not just for the individuals whose lives are improved through the attainment of a high school diploma, but for entire communities and society as a whole" (p. 267). Students who become dropouts not only create many hardships for themselves throughout their lives, but for society as well. The communities in which these dropouts decide to live are faced with potentially having to provide public assistance for them; they have more health problems, and a large number of dropouts become involved in criminal activities (Levin & Belfield, 2007; Millenky, 2016; Ou, 2008; Wilkens & Williams, 2015). Consider the cost to incarcerate one person for one year at $51,000 in contrast to the cost to educate one student per year at approximately $12,000 (Thurlow, Sinclair, Johnson, & National Center on Secondary Education and Transition, 2002). It is evident that society should place a great deal of support and emphasis on helping students to graduate, whether that entails providing remediation in the ELA and/or mathematics courses and/or improving their attendance rates. The national high school graduation rate is an important issue as it directly affects the potential collection of postsecondary education candidates and the excellence of the nation's future labor force (Joo & Kim, 2014; Tyler & Lofstrom, 2009). The percentage of high school graduates in the labor force 25 years and older is

higher than the percentage of 25 years and older high school dropouts in the labor force (National Center for Education Statistics, 2013). They are not contributing to the tax base for the economy- instead, they are depleting the economy's funds. When comparing the high school graduate to the dropout, the average high school dropout over the course of their lives costs the economy approximately $260,000 in terms of higher rates of support from Medicaid and Medicare, less tax contributions, higher rates of criminal activity, and receiving welfare (Levin & Belfield, 2007; Ou, 2008 ).This discrepancy not only negatively affects all high school dropouts, but it also creates a higher negative discrepancy in the annual wages of females over males (Tyler & Lofstrom, 2009).

**Societal Implications of High School Graduation Rates**

Producing high school dropouts can also negatively affect the United States competitiveness in the global economy (Joo & Kim, 2014). This labor force which consists of high school dropouts is not prepared to compete globally (Tavakolian & Howell, 2012). These global jobs require higher degrees and/or more technical training to be qualified for these positions (Joo & Kim, 2014; National Center for Education Statistics, 2013; Ou, 2008). Increasingly competitive pressures that come with a global economy makes attaining a high school education even more important in determining personal and national welfare (Tyler et al., 2009).

The economy is ever-changing to a more technological and information industry, thus requiring more education and technical training (Ou, 2008). The students of America need a high school diploma and higher degrees to be competitive in the United States and globally (Joo & Kim, 2016; Tavakolian & Howell, 2012; Thurlow et al., 2002). Growth in both the quantity and the quality of the employment force conventionally has been a major source of United States output

development and given the current trends the quantity and the quality are lacking (Heckman & Masterov, 2007; Ou, 2008). Jobs requiring more types of postsecondary education will grow twice as much as jobs requiring no education in the decade of 2010-2020 (United States Department of Labor, 2012). Enabling high school students to acquire the skills needed to score a proficient or higher on the FSA and EOC is imperative to their future success and society's economic future success (Ou, 2008; Tavakolian & Howell, 2012; Wilkens & Williams, 2015).

**Historical Implications of High School Graduation Rates**

Earning a high school diploma is vital to succeeding today (Levin & Belfield, 2007; Messacar & Oreopoulos, 2013; Ou, 2008; Tavakolian & Howell, 2012). Currently, only 76% of students graduate on time in the United States and the graduation rate is lower in many of the subgroups (Gaertner, 2014). In the first 70 years of the 20th century in the United States the percentage of high school graduates rose from 6% to 80% creating a more lucrative economy, but it began to decline for the following thirty years (Murnane, 2013). The United States has fallen to the ninth lowest country out of 34 in the Organisation for Economic Co-operation and development in the high school graduation rate (Gaertner et al., 2014; Murnane, 2013). In the first half of the 20th century, earning a high school diploma carried more prestige and offered many opportunities to improve a person's life (Murnane, 2013). The dropouts during this time may have been able to work in jobs after high school that did not require a high school diploma and earn an acceptable living wage, but presently more education is needed. Many of these employees worked in factories and were considered low-skilled as the factories did not require much education or training to hire them (Schenimann, 2018). The factory workforces of the United States have greatly been decimated since 1990 and their need for highly skilled factory laborers has replaced the low wage non-skilled factory worker (Wilkerson & Williams, 2012).

Many of the jobs available to the students throughout the 20th century were agriculture-related jobs and did not require any type of formal education (Tavakolian & Howell, 2012; Thurlow et al., 2002). These jobs of the past required little to no education and are being outsourced to foreign countries and migrant laborers, leaving low-skilled workforce unemployed (Schenimann, 2018).

People born after 1950 have not shown much improvement on their educational attainment after half a century (Carneiro & Heckman, 2003). This is evident in all races and ethnic backgrounds. When statistics include the achievement of the GED as meeting the same criteria for graduation as the traditional high school diploma does, then an increase is revealed in the graduation rates and a decrease in the number of high school drop outs (Carneiro & Heckman, 2003; Ou, 2008). This statistic can provide a false positive impression to the public and ultimately be misconstrued as beneficial but, it is deceptive. In many instances, the equivalent GED's criteria is not viewed as being as stringent as the criteria to attain the traditional high school graduation diploma therefore, lessening the value of a traditional diploma (Ou, 2008).

**School Disengagement/Attendance**

In a study conducted to address school disengagement, researchers used the bioecological theory to understand why students are disengaged. This study defines school engagement as one's feelings about school, participation in school, and connection to school and the school community, this includes teachers, peers, and after-school activities (Maynard, Beaver, Vaughn, DeLissi, & Roberts, 2014). The atmosphere produced within the context of a classroom is vital to the success both academically and socially a child can achieve. The atmosphere can encourage school engagement for the child, or it can produce one in which the children withdraw from the learning process and the classroom. It reveals how the relationship between the students, their

teachers, and peers can improve their academic abilities (Maynard et al., 2014). In this study by Maynard (2014), students participated in a remedial course to help them potentially graduate. The need to improve student engagement within the context of remedial classes is revealed as essential to the success of students being able to master the curriculum and ultimately graduate from high school. The bioecological theory provides the framework to better understand the need to provide an atmosphere of student engagement within the remedial classroom setting to encourage the interaction between the developing student and the instructor. This framework explains the impact the constant interactions between one another can have on the remedial students' ability to master the content.

The microsystem, in these cases is the school environment, is the most influential and has the most effect on a child's development (Rosa & Tudge, 2013). Improving the school environment through engagement in the learning process with success can potentially provide the most influence on the students' academic outcomes. The remedial courses are designed to provide an atmosphere in which the student builds a relationship with the teacher, and the instruction is tailored to meet their individual needs. The result of this setting is the student's desire to learn and try to engage in the learning process. The goal of the studies was to use Bronfenbrenner's bioecological theory because it asserts that human development occurs through processes that are progressively more complex reciprocal interactions between an evolving human and the objects, symbols, and persons in its immediate exterior surroundings (Bronfenbrenner & Morris, 1998; Maynard et. al, 2014).

Viewing this study through the lens of Bronfenbrenner's bioecological theory allows the researcher the ability to view the students' proximal processes, which may lead to healthy developments in more than one context, and they are usually in their normal settings (Rosa &

Tudge, 2014). This is vital to this study as the students' remedial courses occur in a familiar setting, at the same school they attend, and the proximal processes will occur over a period. These courses may provide the consistent interactions between the students and this environment, which may potentially lead to healthy developments. These healthy developments may be the skills the students need to master the content to pass the exams and graduate from high school. They may also be the relationships they build with their instructors or the self-confidence they achieve as a result of having successes in that differentiated environment. The bioecological theory has informed the literature on education because it helps educators to have a more comprehensive understanding of child development. A child's development is not wholly dependent upon what is in their genes, but what is affecting them in these systems surrounding them. The environment and the properties of the child in which they are placed should be studied in relation to the processes taking place within and between them and must be analyzed as interdependent (Bronfenbrenner, 1979). This theory emphasizes the ideology that a child's development is not the result of one proximal process, instead several interdependent ones, which can directly or indirectly affect the child. It is an ongoing process that is influencing the child's development.

In the political realm student absenteeism has been a factor in determining the integrity of the public education system (Redmond & Hosp, 2008). Deciding whether public schools are creating the best learning atmosphere for the success of their students can be revealed by student's attendance rates. The Elementary and Secondary Education Act of 1965 and the No Child Left Behind (NCLB) Act of 2001 are federal initiatives which have identified student absenteeism as a factor which can potentially predict whether students will drop out of school (Redmond & Hosp, 2008). Identifying excessive student absenteeism early in a student's

education can have long reaching benefits for the students' future success. This is an early warning sign that some factor may be causing a student to miss school. Chronic absenteeism is one piece to the puzzle of determining if a student will potentially drop out of high school (Bowers et al., 2012, Redmond & Hosp, 2008). The negative effects of student absenteeism do not discriminate between special education and regular education students, instead it affects all students (Redmond & Hosp, 2008; Bowers et al., 2012). In a study using retroactive or archival data revealed that all students, regardless of their socioeconomic status, learning abilities or disabilities, can be negatively affected by missing school (Redmond & Hosp, 2008). This not only reviewed data from the previous thirty years but, was a quantitative study as well. Utilizing the information revealed from this study is relevant to this study because it uses both a quantitative format and retroactive data. Through the use of previous data this study may be able to add a piece to the puzzle of detecting a cause and effect relationship between remedial classes, student absenteeism, and the rate of high school graduation. The results from this study may help to provide educators, schools, administrators, teachers, and parents with the information needed to recognize these relationships as early as possible and implement preventative measures to improve the rate of students who graduate from high school (Redmond & Hosp, 2008). This ultimately benefits the student, schools, and the local communities of these students.

Another longitudinal study to determine why students drop out of school examined sixth graders' through 12$^{th}$ graders' study habits and their levels of aggression in correlation with dropping out of high school and not graduating. This study is significant because the results showed that a student's study techniques correlate to a student's academic success and their ability to graduate (Orpinas, Raczynski, Hsieh, Nahapetyan, & Horne, 2018). These researchers examined these students over a period of seven years. They categorized the students as low

aggression, medium desisting aggression, and high desisting aggression with corresponding study skills of low, medium, and high. The students that never improved their study skills and had the highest amount of aggression had a 50% drop out rate, the highest rate compared to the other groups (Orpinas et al., 2018). When students are given the study tools to help them to better comprehend the subject, they become less aggressive. Implementing these study skills can create a more engaged student and potentially successful student. To better understand the results of this study, one could use the framework of Bronfenbrenner's bioecological theory.

**Remedial Classes**

Students do not need to drop out because they lack the skills to master the ELA and/or mathematics requirements to graduate. Many schools have created supplemental courses and increased instructional time to aid students in achieving the needed skills to pass their required standardized tests. The criteria for these remedial classes consist of having lower numbers of students, providing extra time for practice in intensive reading and/or mathematics instruction, and, have an extended block of instructional time for students two years below their grade level (Florida Standards Assessments, 2018; Shaw, 2014). With the help of the extra instructional time in these remedial classes, students may become more confident in their ability to master the content. Students who are placed in a smaller classroom setting, with more instructional strategies available to them at their individual academic levels can boost their self-confidence. This improvement in their self-confidence as a result of participation in the remedial classes enables them to carry the newly acquired strategies into other academic disciplines and eliminate the new for future remediation (Eno & Heppen, 2014; Shaw, 2014).

Remedial classes are designed to create an environment that will foster a student's self-confidence so they will attempt to learn the skills needed to master the content of a subject.

Students need to have an atmosphere in which they feel safe enough to risk taking a chance and failing when learning to master an academic concept. In this study, the students participate in an ELA and/or mathematics remedial class to help them prepare to pass a state mandated assessment. These classes may or may not be instructed by their previous ELA and/or math teacher, this creates a new interaction between the student, environment, classmates, and teacher. As Bronfenbrenner noted the proximal processes must occur on a regular basis to create a change in their behaviors and attitudes toward the new experience (Bronfenbrenner, 1979). These students need to be engaged with the learning process on a continual basis, and Bronfenbrenner's theory supports the need for student engagement. It emphasizes that human development occurs through processes that are increasingly more complex reciprocal interactions between a developing human and the objects, symbols and persons in its immediate exterior surroundings (Bronfenbrenner & Morris, 1998; Maynard et al., 2014). In the studies reviewed, this reciprocal on-going interaction between the individual and the environment is consistently evident. It is this continuous reciprocity between individual and experiences that helps to create success for the learner. This success can be realized through staying engaged in the learning process, attending school regularly, increased test scores and grade point average (GPA), and graduation from high school (Nomi, 2009; Nomi & Allensworth, 2009; Zaff et al., 2017; Maynard et al., 2014). Identifying these students early as potential drop outs can be a key factor in the prevention of dropping out and not graduating (Orpinas et al., 2018). The recognition of these factors and the actions put in place by schools to prevent students from dropping out of high school can have lasting effects not only on the student's future, but society (Millenky, 2016).

Determining whether participation in an ELA and/or mathematics remedial course at the high school level can positively impact the graduation rate is paramount for the individual high

school student, the high schools, and society. Since the inception of the NCLB Act, the schools are graded according to the criteria of their graduation rates within their school and having low graduation rates can negatively impact these scores creating repercussions for the school (Tavakolian & Howell, 2012). NCLB has also included in its criteria that schools should be progressing toward all students meeting and scoring proficient on the state assessments (Tavakolian & Howell, 2012). The students who do not meet this criterion are endangering the school's grade as well as themselves.

These students' futures are dependent upon their ability to master reading and basic mathematics skills to successfully function later in life and benefit their communities as well (Levin & Belfield, 2007; Tavakolian & Howell, 2012; Wilkens & Williams, 2015). The remedial classes should provide necessary strategies to aid the students in acquiring the skills needed to master these two core academic subjects in order to allow them to graduate from high school (Lin, Guo, & Lin, 2016). A high school diploma can potentially create a successful future or lack thereof for all parties involved. This is an issue which can negatively or positively affect society (Messacar & Oreopoulos, 2013; Tavakolian & Howell, 2012). A high school diploma has far reaching implications other than the immediate effects on the student's life. Remedial classes can be both beneficial and detrimental to schools depending upon their status as denoted by a K-12 school or a post-secondary school. Remedial classes are designed to aid the struggling students to help prepare them to be successful in the regular classes and beyond (Forrest, 2010). When students do not have the ability to succeed and master the curriculum in a regular ELA and/or mathematics class, remediation becomes a viable option for both the student and the schools. Providing remedial classes can become an issue of money for K-12 public schools as they may not have the needed funding for these additional classes. The additional costs in both the K-12

public schools and post-secondary institutions include funding for another certified teacher in each of the units and providing a curriculum to help those struggling learners master those standards and objectives (Hilgoe, Hattingh, & Bernhardt, 2016). Remedial classes must include current practices which are deemed as necessary to help those struggling learners as well as create a program which places the students' needs at the forefront (Forrest, 2010).

Students are required to maintain a 2.0 grade point average (GPA) overall to graduate with a standard diploma (Graduation requirements for Florida's statewide Assessments, 2018). Improving the student's self-confidence in the academic areas of ELA and/or mathematics can have an overall positive effect on the grades in their other courses, helping them to achieve the 2.0 GPA needed to graduate. Students are required to pass the ELA and Algebra I portions of the FSA with a certain score to graduate with a standard diploma (Florida Standards of Assessments, 2018). The students are first administered the ELA FSA during their tenth-grade year, the Algebra I EOC can be taken beginning in their eighth-grade middle school, the geometry EOC is taken in high school, and they have up to four opportunities to show mastery and pass (Florida Standards of Assessments, 2018).

The requirements are designated by cohorts, or students who enter ninth grade and graduate in four years with that cohort. A Florida school district was sued in 2008 by the American Civil Liberties Union (ACLU) and has revamped the graduation requirements because their formula to calculate high school graduation rates was skewed for many reasons. Two of the problems were as follows: the state of Florida was omitting the criteria that a student must graduate on time with the cohort they entered high school with in the ninth grade and they included the GED as an equivalent to a standard diploma (Watson & Brown, 2010). These problems are now revised and have been deleted as criteria for a standard high school diploma.

Schools are graded and given a certain amount of points for each student that graduates with their cohort within the four years of entering as a freshman, earning an alternative certificate or graduating in more than four years does not count towards the school grade (Florida's high school cohort 2016-2017 graduation report, 2018). It is vital to the calculation of the school's grade to aid students in graduating in a four-year period from the moment they enter as freshmen. The schools receive points toward their school grade calculation when the students in the bottom quartile show learning gains. These remedial classes consist mainly of the students who have been identified as scoring in the two lowest categories; therefore, they are the students who make up the bottom quartile (Florida Standards of Assessments, 2018). Rating the schools and giving them a letter grade of an A, B, C, D, or an F due to students' graduation rates, GPA, and making learning gains in the academic subjects of ELA and mathematics creates an incentive to the schools to provide help to these students. They utilize these remedial classes to help the students reach the desired scores of proficient and higher on the required tests, meet the GPA requirement of 2.0, and show learning gains in those subjects to graduate.

Struggling learners in schools are evident beginning in the elementary grades and these struggling learners many times continue into high school. This issue of addressing struggling learners' needs in the early grades is a common and encouraged practice especially in reading in the education arena (Foorman & Moats, 2004; Lovett, Lacerenza, Palma, & Fritjers, 2012). Despite the increase in remedial programs and classes being implemented in the lower elementary grades to address these students' academic weaknesses, students are still entering high school with less than one third being classified as proficient readers (National Center for Education Statistics, 2003, 2007). There are many studies revealing the positive impact that addressing struggling learners' weaknesses in reading and math in the early grades creates a

significant improvement in students' scores in school (Foorman & Moats, 2004; Lovett, Lacerenza, Palma, & Fritjers, 2012; North & Ryan, 2018). Struggling learners of math in the elementary grades show a higher degree of engagement and self-motivation than their middle school peers show in math (North & Ryan, 2018). As students begin to move into the middle and high school grades, they notice their struggling peers' weaknesses in the various academic subjects and form social cliques excluding them from participating (North & Ryan, 2018). The question remains as to whether students who attend remedial classes at the high school level will positively respond to the instruction or withdraw due to peer exclusion or embarrassment. Many times, these remedial classes may not be effective because the high school students have become separated from their peers who remain in regular or advanced classes (North & Ryan, 2018). A disconnection has occurred between the struggling students and regular/advanced students due the struggling students' placement and attendance in these remedial classes.

Remedial classes may occur during the regular school hours of the day, but the trend worldwide has been moving towards offering tutoring to struggling students after school (Huang, 2013). This can be a solution for many schools as it is difficult to create these extra classes for students to take remedial/supplementary classes due to a lack of time or money. Many educators have questioned whether these extra after school hours are improving students' test scores; and only students of certain ability levels are experiencing improved performance while the other students' performance is declining (Huang, 2013). When only some students in a classroom receive extra instruction after school while other students do not, there can be a disparity in the quality of the teacher's instruction where they tend to teach to the students who are at the higher level of understanding (Huang, 2013). The students at the lower end of the spectrum begin to fall further behind as a result of the faster paced teacher instruction, creating a snowball effect that

becomes harder to close the gap between the diverse group of learners. The use of after school tutoring to address students' weaknesses in an academic subject can promote improvements in those student's performance. The other students who have not received the extra support and instruction by their teacher after school can potentially become stagnated; therefore, falling behind the after school tutored peers. Many students are seeking to participate in these after school remedial classes due to examination preparation (Bray & Kwok, 2003; Shaw, 2014). These students are aware of the criteria many states require to pass these examinations with a score showing mastery of the content to graduate (Graduation Requirements for Florida's Statewide Assessments, 2018). Some studies conducted throughout the world revealed that higher performing students were more likely to attend after school tutoring than the lower, struggling performing students did; consequently, the higher performing students reaped the benefits at a higher rate of success than the lower performing students (Bray & Kwok, 2003; Huang, 2013). Remedial classes outside of the regular school day hours may not be as effective for the struggling and attendance challenged student as remedial classes occurring during the normal school hours. Some of the reasons such as students who are already having difficulties learning in the regular 7.5 hours of the school day may not have the attention span, cognitive ability, motivation, or extra time to attend extra instruction after school. Many students simply must go to work after school for economic reasons and/or have expended their cognitive abilities during the regular school hours.

The ongoing debate over whether later intervention strategies are effective in improving graduation rates for high school students merits much discussion in the education field. As noted in several studies, early intervention strategies implemented in the elementary grades has proven beneficial (Garces, Duncan, & Currie, 2002; Heckman & Carneiro, 2003). Many practitioners

believe that the implementation of early interventions reveals improvements in the cognitive and non-cognitive abilities of students and their motivation; while interventions implemented later in life do not (Heckman & Carneiro, 2003). In a study in Israel, remediation was provided for high school students to help prepare for their matriculation exams and the results showed a 3.3% rise in the matriculation rate of the school (Lavy & Schlosser, 2005). Contrary to some studies, as to the question of the effectiveness of remedial interventions in secondary schools, the practice can be beneficial to improving test scores and ultimately graduation rates (Lavy & Schlosser, 2005; Wilkins & Bost, 2016; Zaff et al., 2017).

In another study in Chicago, remedial classes were implemented, which consisted of double the time in Algebra 1 and geometry classes to help the struggling ninth and 10$^{th}$ grade students in these math courses. These schools identified the students using their performance on these mathematics tests and GPA. These students were placed in an extended block of time to allow the teachers the time they needed to review and reteach those skills needed to improve their test scores on the Algebra 1 and geometry exams and their class grades. The results showed that the students who scored below the national norm on these tests and participated in these double-dose remedial classes improved their test scores by one-third of a standard deviation and were more likely to receive an A or a B in the math course (Nomi & Allensworth, 2009).

In another study, implementing a double-dose remedial program for ELA in the Chicago schools showed significantly higher reading scores for students after the first year of implementation (Nomi, 2009). These students were identified and placed in the remedial program due to their scores, which revealed they were below the 25$^{th}$ percentile (Nomi, 2009). The improvements made by students who are placed in remedial settings other than the regular classrooms are indicators that changing the student's environment and/or location can be

beneficial (Dai & Huang, 2015). In these studies, the remedial teachers could modify the curriculum to meet the needs of the individual students (Nomi, 2009; Nomi & Allensworth, 2009; Shaw, 2014). This meant the students built a trust between the teacher, themselves, and their peers. The classroom environment became a safe place for them to attempt a concept as many times as needed to master the concept without feeling hesitant due to embarrassment or shame. It is important to facilitate reciprocal interactions, the items and symbols in the immediate environment (microsystem) should promote attention, exploration, manipulation, amplification, and imagination (Bronfenbrenner, 1999). This is significant for my study because it demonstrates the positive benefits from providing that extra instruction in a different classroom setting and at a differentiated pace to meet the students' needs.

The teachers in these studies are promoting reciprocal interactions with the immediate environment of these students' while creating a curriculum which promotes exploration and manipulation. The school environment, which is in Bronfenbrenner's microsystem, the most influential layer, itself is a strong factor of whether at-risk students prosper. When teachers provide support, encouragement and motivation, and are perceived by their students as caring, they usually like school, when the student's attitude changes positively towards school, then improvement may potentially occur (Dai & Huang, 2015; Messacar & Oreopoulos, 2013). Consequently, when students do not like school and do not feel that sense of belonging, they have a higher chance of dropping out of school and not graduating (Messacar & Oreopoulos, 2013). This is significant for my study as the remedial classes they are required to participate in could potentially help them to graduate from high school, setting them on a course of lifetime success.

In the literature, there are few reported studies on the teacher preparation needed and whether they received instruction on how to conduct remedial classes and preventative measures in the secondary schools. Several studies emphasize that identifying the early detection warnings is crucial to preventing students from dropping out (Garces et al., 2002; Heckman & Carneiro, 2003; Orpinas et al., 2018). These studies identify the early warning signs (EWS) to detect potential dropouts, but they are lacking in identifying any training for the remedial teachers (Garces et al., 2002; Heckman & Carneiro, 2003; Orpinas et al., 2018; Zaff et al., 2017). The literature reveals the statistics for students graduating from high school, GPA of the students, and school engagement. The strategies needed to better equip these remedial students to master the content are specific to their methods of learning. This is vital to the efficacy of the data because, as noted in a study in which teacher led remedial groups showed enhanced learning in comparison to the student led remedial group, the teacher can potentially create a positive or negative impact on their students learning (Erinosho, 1990). Whether the curriculum is modified, and reciprocity is occurring in that environment as Bronfenbrenner (1979) notes is important in that layer, if the teacher feels unprepared it may hinder their ability to create a strong rapport with the students. In turn, creating a worse atmosphere for learning to occur than in a regular ELA or mathematics class and this can have negative repercussions. These repercussions may be failure to gain the strategies needed to learn the skills to master the content on the ELA and/or mathematics exams.

In remedial learning students receive instruction in the subject area(s) in which they showed a lack of mastery of the required content. Remedial instruction chiefly enables students who did not achieve the instructional objective or who have learning difficulties to learn it again (Dai & Huang, 2015; Shaw, 2014). As noted in this study by Dai and Huang (2015), remedial

learning is affected not just by the instruction provided to the student but, it includes the location, the time, and the close teacher involvement. In a study to determine if students improved their math scores implementing three different delivery formats revealed that the interaction with the teacher format as opposed to interventions solely instructed by a computer was the most effective and the student's improvement in motivation improved (Dai & Huang, 2015). All three of the formats of intervention, which were computer-based learning, blended learning, and traditional learning, showed a significant improvement in the students' performance scores (Dai & Huang, 2015). Much debate has been devoted to the need and effectiveness of implementing remedial classes early in a child's educational career, such as, at the elementary level, and that it becomes less effective at the high school level (Lavy & Schlosser, 2005). The evidence that implementing a remedial class at the secondary level can show positive outcomes is revealed in a study that implemented remedial classes only to the targeted students needing the intervention (Lavy & Schlosser, 2005). These studies implementing interventions to students at a later stage in their schooling, while utilizing data to show the need for intervention to certain students has shown positive outcomes. The use of data to identify and then providing instruction with the combination of both technology and teacher contact is evident in increasing test scores (Dai & Huang, 2015; Lavy & Schlosser, 2005).

Many students are graduating from high school unprepared to enter college. The percentage of high school graduates are having to participate in remedial courses at the collegiate level to prepare them to be able to participate in the regular required courses (Koch, Slate, & Moore, 2012). The understanding that students who have received a high school diploma are qualified and prepared to function in freshman courses at the university level is a misnomer (Cline, Bissell, Hafner, & Katz, 2007). Many of the students identified as low socioeconomic are

having to complete a year's worth of remedial courses at the collegiate level their first year (Cline, Bissell, Hafner, & Katz, 2007). This is worrisome to both the secondary schools and the higher institutions. The dialogue must begin between the high school level and the collegiate level to better help the high school students be prepared to academically participate successfully at the collegiate level. The remedial courses being required for the high school students as a result of not mastering the content in the regular setting may not be enough for preparing these students to participate at the next collegiate level. These classes are required to help the students pass the content for an exam but, they may not be meeting the demands for the next level. High school remedial courses need to be rigorous enough to prepare these graduates for the next academic level, college and/or a career.

The results from a study on whether participation in a remedial class impacts high school graduation rates positively or negatively can further help schools realize their significance or lack thereof. Through this study of examining the remedial classes, which are in an alternative setting, the teacher can alter the curriculum to meet the students' individual needs, with students on or at one another's same skill level in that subject can further the understanding of what is most beneficial to high school students. It can enhance the students' experiences in high school and better prepare them for the real world. The school environment has a small amount of control over what students bring into school when concerned with culture, their family values and experiences, but they can provide positive experiences within the school that can positively shape these students' academic skills for their future (Orpinas et al., 2018). This study examines both ELA and mathematics remedial classes to determine if they are effective at improving a student's ability to pass the classes and state standardized assessments to graduate from high school. This is vital to helping secondary students graduate, not become frustrated with their lack

of academic performance, and ultimately drop out of school. Many studies focus on elementary and middle school aged students. The data supports the need for early interventions as a preventative measure (Orpinas et al., 2018). There is a very small amount of data in secondary schools concerning preventative measures for promoting graduation.

## Summary

The bioecological theory by Urie Bronfenbrenner provides a theoretical framework in which to examine this study on the effects of participation in remedial courses on high school graduation rates. Bronfenbrenner's theory is marked by two distinct phases, the first one being the ecological phase and the second being the bioecological phase. They are not independent of one another, instead they influence and interact with one another on a consistent basis. The individual is influenced by the environment in a reciprocal manner, and these experiences can positively or negatively affect their choices. In the studies reviewed, this reciprocal on-going interaction between the individual and the environment is consistently evident. It is this continuous reciprocity between individual and experiences, and individuals with other individuals that can potentially help to create success for the learner. Schools can utilize remedial courses to create an atmosphere of acceptance for these struggling students to acquire the skills they need to master the content in the required courses to graduate. The schools must best utilize the allotted time within the school day to better serve the needs of these struggling high school students. Teachers who are prepared to teach remedial courses must be utilized to help these struggling students, not the teachers who are new and may be struggling themselves as instructors. The students who do not graduate from high school with a traditional four-year diploma may be facing many hardships in their lives that could have been avoided.

# CHAPTER THREE: METHODS

## Overview

The purpose of this causal-comparative study was to determine the effects on high school graduation rates of students who are placed in remedial and non-remedial courses and are identified as having attendance issues only in non-remedial courses. Chapter Three will explore the research design, research question, hypothesis, participants and setting, instrumentation, procedures, and data analysis.

## Design

This study will utilize a quantitative, non-experimental, causal-comparative research design to understand the effects of students in remedial or non-remedial classes and students displaying poor attendance in remedial classes and students not displaying poor attendance in remedial classes on high school graduation rates. A causal-comparative design is most appropriate for this study due to the non-experimental nature of the study and the lack of manipulation of the independent variables by this researcher (Gall, Gall, & Borg, 2007). A quantitative study is appropriate for this study due to the collection data in an organized manner. It uses statistical and mathematical procedures to aid in interpreting and shaping the data which addresses remedial class effectiveness and the impact of attendance. It can be defined as research that clarifies occurrences according to numerical data which are analyzed by processes of arithmetically based methods, especially statistics (Yilmaz, 2013). The data being examined is archival data from the previous school year. The data will be objectively examined to develop explanatory universal laws to explain social phenomena using a statistical format (Yilmaz, 2013).

The seniors will be placed into groups according to participation in a remedial class(es) or no participation in remedial class(es) for any of the four years of high school. The next group will be students considered having poor attendance in remedial classes and students in remedial classes not displaying poor attendance. The data will be examined to determine if a causal-comparative effect has occurred between either of the two groups previously listed. It is a type of empirical research into a social phenomenon or problem, testing a theory consisting of variables which are measured with facts and analyzed with statistics to determine if the theory explains or predicts phenomena of interest. The prediction of whether remedial classes significantly affecting or not affecting high school graduation rates, will be examined.

The dependent variable, student graduation, is defined as a student meeting the required criteria for a standard traditional diploma. The student must attain 24 credits in the following areas: four English/language arts, four math courses, three science courses, three social studies credits, eight elective credits, including one physical education, and one online course, passing the end of course assessments with a three rating out of five for English/Language Arts in the $10^{th}$ grade and in Algebra I, while maintaining a 2.0 overall grade point average, and graduating with their cohort they entered with in the ninth grade (Florida's high school cohort 2016-2017 graduation report, 2018). The independent variable for Research Question One is enrollment in remedial classes. Remedial courses are defined as classes the students attend to aid in improving literacy skills and or mathematics skills in students to prepare them to show proficiency on a future criterion, such as an assessment (Boone et al., 2015). In Florida remedial classes are specifically defined as additional English Language Arts and/or math courses the students are required to take when they did not show a proficiency score of three or higher out of five points on the state standardized tests in either of those two subjects. Non-remedial courses are defined

as students who passed the state standardized assessments and do not take extra remedial courses (CPALMS, 2013-2017 & Donaldson & Halsey, 2007). The independent variable for Research Question Two is student attendance. Students displaying poor attendance, being absent 15 or more days annually, enrolled in remedial classes or students not displaying poor attendance, being absent less than 15 days annually, enrolled in remedial classes.

## Research Questions

**RQ1:** Is there a difference in the graduation rate of students who are enrolled in remedial classes and those who are not enrolled in remedial classes?

**RQ2:** Is there a difference in the graduation rate of students who display poor attendance, which is defined as 15 or more absences, and are enrolled in remedial classes and those who do not display poor attendance enrolled in remedial classes?

## Hypotheses

**$H_0$1:** There is no statistically significant difference in the graduation rate of students who were enrolled in remedial classes and those who were not enrolled in remedial classes.

**$H_0$2:** There is no statistically significant difference in the graduation rate of students who display poor attendance, which is defined as 15 or more absences, and are enrolled in remedial classes and those who do not display poor attendance enrolled in remedial classes.

## Participants and Setting

The population for the study is high school graduates and non-graduates from the Florida Pan Handle. The sample for the study will be drawn from one school district and consists of students from four high schools who graduated or did not graduate with their peers the previous school year. Archival data will be used to provide academic and attendance statistics that will be examined. The four schools will be diverse and located in a Florida County. The largest school

serves approximately 720 students in grades 9-12 and is located in the county seat. The smallest school is a unit school and provides a continuum of educational services for approximately 630 students in grades K-12. The third rural school serves approximately 359 students in grades 9 - 12. The fourth school is in a beach community in the southern end of the county, it is in a suburban area and serves approximately 570 students in grades 9 -12. The school district is economically diverse, ranging from low socioeconomic status of most of the students in three of the schools to an affluent socioeconomic status in one school in the south end of the county. The sample will be all students that graduated with the 2019 cohort or students who were supposed to graduate with the 2019 cohort but failed to graduate due to missing one or more of the required graduation standards. As well as students that were enrolled in remedial classes at any point between the student's ninth and 12$^{th}$ grade years, students that never enrolled in remedial classes between the students' ninth and 12$^{th}$ grade years who graduated with a traditional diploma and those students who were supposed to graduate with the 2019 cohort but failed to graduate due to missing one or more of the required graduation standards from one Florida County composed of four high schools. This is a non-probability method that relies on data obtained from a student population of who are easily available to participate in the study (Gall et al., 2007). Due the sample being all students, the ethnic composition is 78% white, 11% Hispanic, 6% African American, and 5% two or more races. The sample comes from a rural area which is located in the northern portion and has a low socioeconomic status to an upper income status area in the southern area. The schools in the northern area of the school district qualify for Title 1 funds, while the southern area is more affluent and does not. The data will be retrieved during the 2018-2019 school year. See Table 1.

Table 1
*Summary of School Demographics*

| School | Male | Female | White | African American | Hispanic | Two or More Races | Asian |
|---|---|---|---|---|---|---|---|
| A | 428 | 374 | 707 | 41 | 24 | 22 | 00 |
| B | 370 | 376 | 518 | 91 | 91 | 35 | 00 |
| C | 237 | 231 | 359 | 14 | 51 | 37 | 00 |
| D | 450 | 409 | 689 | 25 | 101 | 29 | 13 |

For this study, the number of participants used was 667 which exceeded the required minimum for a medium effect size with a statistical power of .7 at the .05 alpha level. According to Gall et al. (2007, p. 146), 98 students is the required minimum for a medium effect size with statistical power of .7 at the .05 alpha level. This study exceeds this requirement (Gall et al., 2007). The sample will come from four different high schools in the district. The sample will include all students that graduated and all students that should have graduated with the 2019 cohort. The students in the cohort will be categorically identified into two groups. One group consists of students who will have been enrolled in one or several remedial classes in any grade level from ninth through 12$^{th}$ grades. The second group consists of graduates and not graduates who will have never taken a remedial class or classes in grades nine through 12. The students which graduated with a traditional diploma the previous school year, 2019, are considered high school graduates. A traditional diploma is defined as a student who graduates in four years from the time they enter as a freshman with the same cohort of students (Graduation requirements for Florida's Statewide Assessments, 2018). The remedial math and English Language Arts classes

were instructed in a traditional classroom setting on the respective school campuses. The students were instructed in the basic skills needed to master the standards in Algebra 1. At the conclusion of the remedial class(es), the student must score proficient, which is a 3 or higher on the respective Florida Standards Assessment end of course exams (EOC) in that math course. The remedial reading classes instructed the basic skills needed to pass the Florida Standard Assessment test in the English Language Arts portion with a proficient score of a 3 or higher. All the remedial classes for both reading and math were instructed the entire school year. The student has up to five times during the high school enrollment to retake the tenth grade ELA assessment and the number of opportunities to take the EOC Algebra 1 exam differs due to the year the student takes the exam as it is administered four times per year each subsequent year (Graduation Requirements for Florida's Statewide Assessments, 2018). Students can also meet graduation requirements via comparative scores on the ACT or SAT college entrance exams; ACT reading score of 18, math score of 16 and SAT reading score of 480, math 420, and PSAT math score of 430 (Graduation Requirements for Florida's Statewide Assessments, 2018). The students who do not pass the FSA ELA and/or Algebra 1 with a proficient score of a 3 or higher are placed in a remedial class to help them prepare to pass the exams on the next attempt (Secondary Student Progression, 2018).

In the sample, the group of students not enrolled in remedial classes will consist of 593 participants. There will be a total of 278 females and 315 males who participated in the group. The ethnicity of the study consisted of 41 (AA) African Americans, 461 (W) White, 56 (H) Hispanic, 10 (A) Asian, 25 (T) more than one race. See Table 2.

Table 2
*Summary of Students Not Enrolled in Remedial Classes*

| Sex # (M or F) | Ethnicity (H-Hispanic, W-Caucasian) | Ethnicity Hispanic (AA-African American, A-Asian, Two-two or more races) |
|---|---|---|
| F-278 | W-216 | AA-19 |
| | H-27 | Two-12 |
| | | A-5 |
| M-315 | W-245 | AA-22 |
| | H-30 | Two-13 |
| | | A-5 |

The group of students in the 2019 cohort enrolled in remedial courses will consist of 74 participants. There will be a total of 24 females and 50 males who participated in the group. The ethnicity of the study consisted of 01 (AA) African Americans, 50 (W) White, 12 (H) Hispanic, 01 (A) Asian, 10 (T) two or more races. See Table 3.

Table 3
*Summary of Students Enrolled in Remedial Classes*

| Student # | Sex (M or F) | Ethnicity |
|---|---|---|
| 1 | F | H |
| 2 | M | A |
| 3 | F | W |
| 4 | M | W |
| 5 | M | W |
| 6 | M | W |

| | | |
|---|---|---|
| 7 | M | W |
| 8 | F | W |
| 9 | M | W |
| 10 | M | W |
| 11 | M | W |
| 12 | M | H |
| 13 | M | W |
| 14 | M | W |
| 15 | M | W |
| 16 | M | W |
| 17 | M | T |
| 18 | F | H |
| 19 | F | W |
| 20 | M | H |
| 21 | M | W |
| 22 | F | W |
| 23 | M | AA |
| 24 | W | W |
| 25 | M | T |
| 26 | F | W |
| 27 | M | AA |
| 28 | M | W |
| 29 | M | W |

| | | |
|---|---|---|
| 30 | | W |
| | F | |
| 31 | | W |
| | M | |
| 32 | | W |
| | M | |
| 33 | | H |
| | F | |
| 34 | | W |
| | M | |
| 35 | | W |
| | M | |
| 36 | | W |
| | F | |
| 37 | | W |
| | M | |
| 38 | | W |
| | F | |
| 39 | | W |
| | M | |
| 40 | | W |
| | M | |
| 41 | | H |
| | F | |
| 42 | | W |
| | M | |
| 43 | | T |
| | M | |
| 44 | | T |
| | M | |
| 45 | | W |
| | F | |
| 46 | | W |
| | F | |
| 47 | | W |
| | M | |
| 48 | | W |
| | M | |
| 49 | | T |
| | M | |
| 50 | | W |
| | F | |
| 51 | | T |
| | M | |
| 52 | | W |
| | M | |

| | | |
|---|---|---|
| 53 | | T |
| | F | |
| 54 | | T |
| | F | |
| 55 | | H |
| | F | |
| 56 | | H |
| | M | |
| 57 | | W |
| | F | |
| 58 | | T |
| | M | |
| 59 | | W |
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| 60 | | W |
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| 68 | | H |
| | F | |
| 69 | | W |
| | M | |
| 70 | | W |
| | M | |
| 71 | | W |
| | M | |
| 72 | | W |
| | F | |
| 73 | | W |
| | M | |
| 74 | | T |
| | M | |

## Instrumentation

The data used for this study is archival data obtained for the state by the schools. The state of Florida requires the schools to maintain accurate records of student's grades, test scores, classes students attend, and attendance in each class at every school. Similar archival data has been used successfully in numerous peer reviewed studies (Caruth & Caruth, 2013; Terry, Heitner, Miller, and Hollis, 2017; Camargo & Navarro, 2010; Fitzgerald et al., 2013). Many peer reviewed studies have successfully chosen a convenience sampling to represent the high schools selected (Boone et al., 2015; Bowers, 2013; Fitzgerald et al., 2013). The sample of high school students will include all students that graduated with their cohort, and those that did not graduate with their cohort. The data will be recorded and stored in a computer database. Each individual district within the state has the autonomy to decide and implement which computer program is best suited to store this information. The computer program used to house this information is not uniform throughout the state but, it is uniform throughout this district. The data for the students who participated in remedial reading and/or math classes will be identified using the Focus computer program which includes information on a student's grades, test scores, classes, and attendance at each school and in each class period. Focus is the name of the computer program this school district implements to organize data on each student. Each district chooses their own computer program to organize and maintain students' records and data. The graduation status for students at the four high schools will be obtained using the same Focus computer program. The gatekeeper for this information will be the school district and the researcher will obtain it from the district office.

The information contained will include each students' classes taken, the grades for each class, daily attendance for each class period, and the type of diploma a student received upon

graduation. The researcher will be able to disaggregate the data to determine the remedial class or classes each student has been enrolled in for grades nine through 12. The attendance for each student enrolled in a remedial class and the graduation rate for the students. The graduation rate is whether the student graduated with a traditional diploma or did not graduate. A traditional diploma is defined as a student meeting the requirements for the state of Florida (Students entering grade nine in the 2014-2015 school year and forward academic advisement flyer-what students and parents need to know, 2019). Any student that does not graduate with the cohort they entered the ninth grade with within a four-year period will be categorized as a non-graduate. For the dependent variable, the research will look at graduation rates. Graduation rates will be obtained from each school on both remedial and non-remedial students. For the independent variables, the researcher will obtain data from each school for the status of individual student's four-year academic enrollment; either in regular education ELA and mathematics classes or remedial classes required for graduation. The next set of independent variables the researcher will obtain data from each school on the attendance status of students that were enrolled in remedial classes.

## Procedures

Institutional Review Board (IRB) approval will be obtained prior to conducting research (see Appendix X for the IRB approval).

The next step will be to obtain permission from the superintendent to use the four high school's data for this study. The researcher will email the superintendent of the school district explaining the purpose and procedures of the study. The researcher will send the consent form via email (see appendix X for the consent form).

The researcher will locate the seniors from the 2017-2018 school year in all four schools located in this county in Florida using the Focus computer program. The researcher will use the Excel's RAND function to assign each student with a number to ensure anonymity. The researcher will identify each student's high school graduation status. Each student will be coded in the Excel program as a 1 if they graduated with a traditional diploma, which is defined as student must attain 24 credits in the following areas: four English/language arts, four math courses, three science courses, three social studies credits, eight elective credits, including one physical education, and one online course, passing the end of course assessments with a 3 rating out of 5 for English/Language Arts in the $10^{th}$ grade and in Algebra I, while maintaining a 2.0 overall grade point average, and graduating with their cohort they entered with in the ninth grade and were not enrolled in a remedial class(es) at any time during grades nine-12. Each student who did graduate with a traditional diploma and was enrolled in remedial class(es) at any time during grades nine-12 will be coded as a 2. Each student that was enrolled in a remedial class(es) at any point from the ninth-grade year through the 12th grade year, displayed attendance issues, and graduated with a traditional diploma was coded as a 3. Each student enrolled in remedial class(es) at any point during grades nine through 12, did not have attendance issues, and graduated will be coded as a 4. Students identified as missing 10 or more days in a 90-day period attending a remedial class will be considered as having attendance issues. This information will be entered into the SPSS statistical program.

## Data Analysis

A chi-square test will be used for this study. According to Gall et al. (2007), "The statistical technique of the chi-square test is a nonparametric statistical test to determine whether research data in the form of frequency counts are distributed differently for different samples" (p.

325). To determine the relationship of the variables, the chi-square test of independence will be used (Laerd, n.d.). There are two assumptions that are required for chi-square. First, is the level which is graduating with cohort of 2019 or failing to graduate with 2019 cohort. Second, is grouping which includes graduation status aligned with remedial class or non-remedial class enrollment (Laerd, n.d.). The first assumption is tenable as the variables are nominal. Students will be identified as graduate or non-graduate, participation in remedial classes or not, and finally identified with attendance issues or no attendance issues in the remedial classes only. The second assumption is tenable due to there being multiple independent groups; (a) graduates that were enrolled in only non-remedial, (b) non-graduates that were enrolled in only non-remedial, (c) graduates that took remedial classes, (d) and non-graduates that took remedial courses. Two chi square tests (tests of independence) will be used to decide if a statistically significant difference existed between the student's enrollment in remedial classes or not and students having poor attendance in remedial classes or not having poor attendance in remedial classes affects the graduation rate. The critical value will be determined using the degrees of freedom and the chi square value, where the level of significance is at $p > .05$. Testing for the chi-square will be run at the 95% confidence level. Cramer's V will be used to determine the effect size (Laerd, n.d.).

# CHAPTER FOUR: FINDINGS

## Overview

This study examined the potential effects of enrollment in remedial courses on high school graduation rates (RQ1) and how attendance among students enrolled in remedial courses, might affect graduation rates (RQ2). Chapter Three described the study's methodology and research design. Chapter Three also identified the setting within which the study took place, described the students whose data were analyzed, and explained the procedures by which those data were obtained. Chapter Three concluded with a description and validation of the statistical methods that were expected to be used in analyzing the data during the planning stages of the research.

Chapter Four reiterates the research questions that were addressed in the study and states the null hypotheses that were associated with each of those research questions. This chapter provides descriptive statistics for the variables that were key to the study's research questions: graduation rates, remedial course enrollment status, and attendance status. The chapter will describe the statistical techniques that were used in the analysis of those variables and will explain the planned statistical analyses were not followed in all instances.

The following results are the statistical analyses. A chi-square analysis and associated statistics (i.e., Cramer's *V* statistic and a 95% confidence interval for the difference between independent proportions) was used in addressing the first research question. This analysis compared the high school graduation rates of students who were enrolled in remedial courses ($n$ = 74) and students who were not enrolled in remedial courses ($n$ = 593). The study's second research question was addressed using Fisher's exact test and associated statistics (i.e., Cramer's

*V* and 95% confidence interval) to compare the graduation rates of remedial students with good attendance records ($n = 63$) and those with poor attendance records ($n = 11$).

## Research Questions

The following two research questions were addressed in this study.

**RQ1:** Is there a difference in the graduation rates of students who are enrolled in remedial classes and those who are not enrolled in remedial classes?

**RQ2:** Is there a difference in the graduation rates of students who display poor attendance, which is defined as 15 or more absences, and are enrolled in remedial classes and those who do not display poor attendance enrolled in remedial classes?

## Null Hypotheses

Null hypotheses associated with the study's research questions were as follows:

**$H_0$1:** There is no statistically significant difference in the graduation rates of students who were enrolled in remedial classes and those who were not enrolled in remedial classes.

**$H_0$2:** There is no statistically significant difference in the graduation rates of students who display poor attendance, which is defined as 15 or more absences, and are enrolled in remedial classes, and those who do not display poor attendance enrolled in remedial classes.

## Descriptive Statistics

Sample descriptive statistics were provided in Chapter Three. Data on graduation rates, remedial enrollment status, and attendance status that are relevant to the study's research questions are summarized in this chapter section. Table 4 shows counts and percentages of students as a function of their remedial enrollment status and graduation status (RQ1) and Figure 2 depicts those data graphically. Table 5 shows counts and percentages of the subgroup of students who were enrolled in remedial courses as a function of their attendance status and

graduation status (RQ2) and Figure 3 depicts those data graphically. Results of statistical analyses of the graduation data pertinent to each of the study's research questions are provided in the following section.

Table 4

*Counts and Percentages of High School Graduates and Non-Graduates as a Function of Remedial Enrollment Status (RQ1; N = 667)*

| | | | Remedial Enrollment Status | | |
|---|---|---|---|---|---|
| | | | No Remedial Classes | Remedial Classes | Total |
| Graduation Status | Did Not Graduate | Count | 11 | 63 | 74 |
| | | Column % | 1.9% | 85.1% | 11.1% |
| | Did Graduate | Count | 582 | 11 | 593 |
| | | Column % | 98.1% | 14.9% | 88.9% |
| Total | | Count | 593 | 74 | 667 |
| | | Column % | 100% | 100% | 100% |

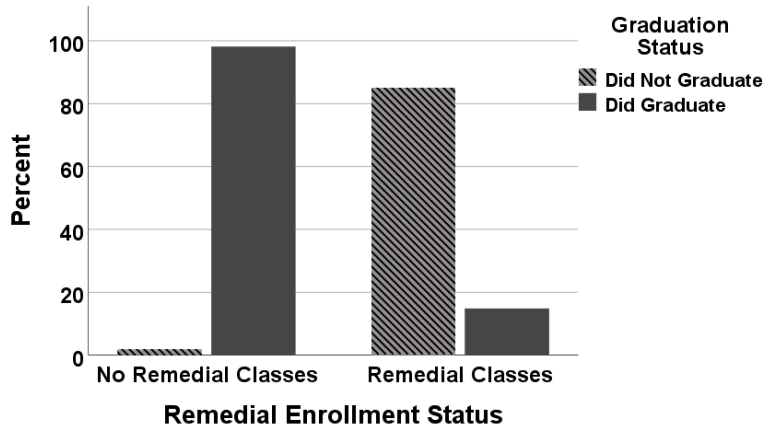


*Figure 2.* Percentages of high school graduates and non-graduates as a function of remedial enrollment status (RQ1; *N* = 667).

Table 5

*Counts and Percentages of High School Graduates and Non-Graduates as a Function of Attendance Status Among Students Enrolled in Remedial Courses (RQ2; N = 74)*

| | | | Attendance Status[1] | | |
|---|---|---|---|---|---|
| | | | Non-Truant | Truant | Total |
| Graduation Status | Did Not Graduate | Count | 54 | 9 | 63 |
| | | Column % | 85.7% | 81.8% | 85.1% |
| | Did Graduate | Count | 9 | 2 | 11 |
| | | Column % | 14.3% | 18.2% | 14.9% |
| Total | | Count | 63 | 11 | 74 |
| | | Column % | 100% | 100% | 100% |

*Note.* [1]Students with good attendance ("non-truants") were those with fewer than 15 recorded absences. Students with poor attendance ("truants") were those with 15 or more recorded absences.

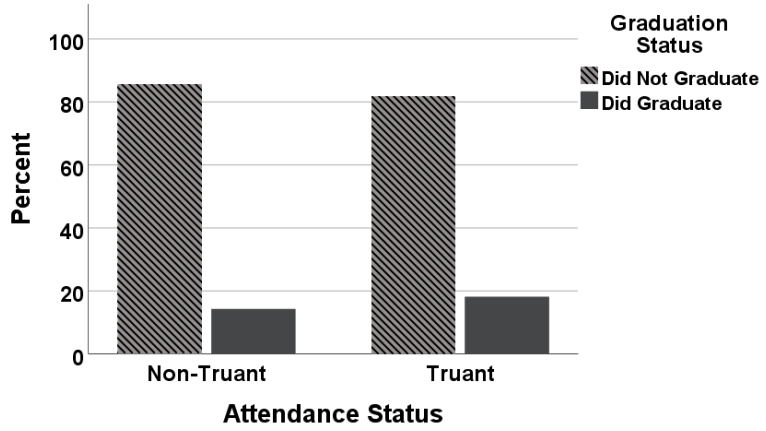


*Figure 3.* Percentages of high school graduates and non-graduates as a function of attendance status among students enrolled in remedial courses (RQ2; *N* = 74).

## Results

A chi-square analysis of the cross-tabulation graduation data shown in Table 4 was used to address RQ1. However, the much smaller sample used in addressing RQ2 resulted in a low expected frequency in one of the four cells of the 2 x 2 cross-tabulation table shown in Table 5. This violated one of the assumptions for the chi-square analysis, as explained below, and

required the use of Fisher's exact test as an alternative to the chi-square test. The following are the results of these analyses.

**Null Hypothesis One**

The study's first null hypothesis was addressed by examining high school graduation data from 667 high school students who either graduated or were supposed to graduate with their 2019 cohort. Those data are summarized in the cross-tabulation table shown in Table 4 and are also depicted in Figure 2. A chi-square analysis was used to compare graduation rates of 593 students in the 2019 cohort who were not enrolled in remedial classes and 74 students in that cohort who were enrolled in remedial classes.

**Statistical assumptions.** The chi-square analysis is based on three assumptions, two of which are associated with the manner in which data are collected, and the third of which is affected by the nature of the data that are collected (Agresti, 2013). First, the chi-square analysis requires that both the independent and dependent variables are categorical (i.e., nominal scale) variables. Both graduation status (did not graduate vs. did graduate) and remedial enrollment status (no remedial classes vs. remedial classes) are categorical variables. The second assumption is the chi-square analysis assumes that observations are independent. In this study, that assumption was satisfied by the fact that the graduation status of one student did not have any impact on the graduation status of the other students. Third, because the outcome of a chi-square analysis is disproportionately affected by cells in the contingency table that show low expected frequencies, it is assumed that no more than 20% of the cells in the cross-tabulation table should indicate expected frequencies less than 5 (Kateri, 2014). In a 2 x 2 table such as those shown as Tables 4 and 5, this assumption prohibits any low expected frequencies. Expected frequencies in a chi-square analysis are the numbers of cases that would be expected to appear in each cell of

the cross-tabulation table if the independent variable (represented by columns) was entirely unrelated to the dependent variable (represented by rows). The chi-square analysis is so vulnerable to violations of this assumption that a single cell with a low expected frequency can completely determine the statistical significance of the obtained value of chi-square, regardless of any data appearing in the other cells of the table (Diekhoff, 1996). In the analysis of graduation rates as a function of remedial enrollment status, expected frequencies were all greater than 5, ranging from 8.2 (enrolled in remedial classes/did not graduate) to 527.2 (not enrolled in remedial classes/did graduate). All assumptions of the chi-square analysis were thus satisfied (Gall et al., 2007).

**Results of the analysis.** The chi-square analysis of the cross-tabulation data shown in Table 4 are shown in Table 6. That analysis indicated that students who were not enrolled in remedial classes ($n$ = 593) were significantly more likely to graduate (98.1% graduation rate) than students who were enrolled in remedial classes ($n$ = 74; 14.9% graduation), $\chi^2(1, N = 667) = 462.60$, $p < .001$. The null hypothesis associated with RQ1, that there is no statistically significant difference in the graduation rates of students who were enrolled in remedial classes and those who were not enrolled in remedial classes, was rejected. Cramer's $V$ statistic, used as a measure of the strength of the effect of remedial enrollment status on graduation rates, indicated a very strong effect, $V = 0.83$ (Kim, 2017). In this sample, the difference in graduation rates of non-remedial students and remedial students (98.1% - 14.9%) was 83.2%, in favor of the non-remedial students. The results of that analysis indicated that there is a 95% certainty that the true population difference between the graduation rates of non-remedial students and remedial students is between 73.26% and 89.62%, in favor of non-remedial students.

Table 6

*Results of the Chi-Square Comparison of Graduation Rates as a Function of Enrollment in Remedial Classes (N=667)*

| Test | Value | *df* | Asymptotic Significance (2-sided) | Cramer's *V* |
|---|---|---|---|---|
| Pearson Chi-Square | 462.60 | 1 | <.001 | 0.83 |
| Continuity Correction | 454.20 | 1 | <.001 | |
| *N* of Valid Cases | 667 | | | |

**Null Hypothesis Two**

The study's second null hypothesis was addressed by looking at high school graduation data from just the 74 students in the 2019 graduation cohort who had been enrolled in remedial courses. This analysis compared the graduation rates of remedial students with poor attendance records ("truants," $n = 11$) and remedial students with better attendance records ("non-truants," $n = 63$). Those data are summarized in the contingency table shown as Table 5 and are depicted in Figure 3.

**Statistical assumptions**. The availability for analysis of only 11 remedial students who graduated successfully caused one of the cells of the contingency table shown as Table 5 (truant/did graduate) to show a low expected frequency ($f_e = 1.6$); other expected frequencies ranged from 9.4 (truant/did not graduate and also non-truant/did graduate) to 53.6 (non-truant/did not graduate). Violation of the assumption of the chi-square test that there should be no expected frequencies less than 5 in a 2 x 2 contingency table necessitated the use of Fisher's exact test which is robust to low expected frequencies (Gall et al., 2007; Kim, 2017).

**Results of the analysis.** The chi-square analysis of the cross-tabulation data shown in Table 5 are shown in Table 7. The overall graduation rate among remedial students was very low, only 14.9%, and showed very little difference as a function of attendance status. Fisher's exact test found no significant difference ($p$ = .664) between the graduation rates of remedial students who were classified as non-truants (n = 63; 14.3% graduation rate) and remedial students who were classified as truants (n = 11; 18.2% graduation rate). The strength of the effect was very weak as measured by Cramer's $V$ = 0.04. It was concluded from this that there was insufficient evidence in this study to support rejection of null hypothesis $H_0$2, which stated: There is no statistically significant difference in the graduation rates of students who display poor attendance, which is defined as 15 or more absences, and are enrolled in remedial classes, and those who do not display poor attendance enrolled in remedial classes. The difference between truant and non-truant graduation rates seen in this sample (18.2% - 14.3%) was 3.9%, slightly favoring truant students. That analysis indicated a 95% certainty that the true population difference in graduation rates between truants and non-truants falls between -12.97% (where non-truants graduate at a higher rate than truants) and 34.14% (where non-truants graduate at a lower rate than truants, as was seen in this sample). The substantial width of this confidence interval is attributable to the relatively small sample size that was available to support the calculations.

Table 7

*Results of the Fisher's Exact Test Comparison of Graduation Rates as a Function of Attendance Among Students Enrolled in Remedial Classes (N=74)*

| Test | Value | *df* | Asymptotic Significance (2-sided) | Exact Significance (2-sided) | Cramer's *V* |
|---|---|---|---|---|---|
| Pearson Chi-Square | 0.11 | 1 | .738 | | 0.04 |
| Continuity Correction | 0.00 | 1 | 1.00 | | |
| Fisher's Exact Test | | | | .664 | |
| *N* of Valid Cases | 74 | | | | |

## Summary

This was a causal-comparative study in which high school graduation rates (the dependent variable) were examined as a function of two non-manipulated independent variables. The independent variable in the first analysis was remedial course enrollment status, with two levels represented by two groups of students: (a) those who were not enrolled in remedial courses during high school, and (b) those who were enrolled in remedial courses. The independent variable in the second analysis was attendance status, with two levels represented by two subgroups of remedial students: (a) non-truants (defined as fewer than 15 recorded absences), and (b) truants (defined as 15 or more recorded absences).

An analysis of the data showed that students not enrolled in remedial courses ($n$ = 593) graduated at a much higher rate (98.1% graduation rate) than students who were enrolled in remedial courses ($n$ = 74; 14.9% graduation rate). This was a strong statistical effect (Cramer's $V$ = 0.83) and was statistically significant, $\chi^2(1, N = 667) = 462.60$, $p < .001$. In the comparison of graduation rates of remedial students with good vs. poor attendance records, Fisher's exact test was used instead of the chi-square statistic in order to mitigate the effects of a small expected

frequency. That analysis found that the high school graduation rates of students enrolled in remedial courses was very low whether students showed good attendance ($n$ = 63; 14.3% graduation rate) or poor attendance ($n$ = 11; 18.2% graduation rate). This was a weak statistical effect (Cramer's $V$ = 0.04) and was not statistically significant, $p$ = .664.

The deceptive name notwithstanding, a *causal*-comparative study does not allow the researcher to draw strong causal conclusions. The causal-comparative research design is a type of non-experimental design because there is no manipulation of the independent variable by the researcher (Gall et al., 2007). Instead, the groups that are compared in causal-comparative studies are preexisting groups. Because the independent variable is not manipulated in a causal-comparative study, those studies do not enable the researcher to draw strong causal conclusions based on differences that are observed between the groups (Johnson, 2000; Johnson & Christensen, 2016). However, a causal relationship that does exist between the independent variable (i.e., grouping variable) and dependent variable will be manifested in a causal-comparative research design by an observed difference between the groups on that dependent variable. With all of this in mind, significant between-group differences that are observed in causal-comparative studies should be interpreted cautiously, without drawing strong causal conclusions, but allowing for the possibility of causality. In the present study, it was found that enrollment in remedial classes was strongly associated with reduced likelihood of a successful high school graduation. The causal route between remedial enrollment and graduation rates was not established. Among remedial students, attendance was not found to be significantly associated, causally or non-causally, with the likelihood of graduation.

Chapter Five will discuss these findings, particularly as they support or contradict other studies and theories. Chapter Five will also consider the implications of the study's findings.

Study limitations that affected the internal and external validity of the study will be discussed, and the chapter will conclude with recommendations for future research.

# CHAPTER FIVE: CONCLUSIONS

## Overview

Chapter Five will discuss the results of the statistical analyses. This chapter will explain the implications these have on the existing body of knowledge on the topic of high school graduation rates of students enrolled in remedial and non-remedial classes and how attendance among students enrolled in remedial classes affected high school graduation rates. Chapter Five will also examine the limitations of this study as well as recommendations for further research.

## Discussion

The purpose of this archival, causal comparative research study was to determine the effects of whether enrollment in remedial classes or non-remedial classes significantly affect high school graduation rates and students displaying poor attendance in remedial classes and students not displaying poor attendance in remedial classes affecting high school graduation rates. The dependent variable, student graduation for both Research Question One and Research Question Two, is defined as a student meeting the required criteria for a standard traditional diploma. The student must reach 24 credits in the following areas: four English/language arts, four math courses, three science courses, three social studies credits, eight elective credits, including one physical education, and one online course, passing the end of course assessments with a three rating out of five for English/Language Arts in the 10$^{th}$ grade and in Algebra I, while maintaining a 2.0 overall grade point average, and graduating with their cohort they entered with in the ninth grade (Florida's high school cohort 2016-2017 graduation report, 2018). The independent variable for Research Question One is enrollment in remedial class(es). Remedial classes are defined as courses the students attend to assist in improving literacy skills and or mathematics skills to prepare them to show aptitude on a future criterion (Boone et al., 2015).

Non-remedial courses are defined as students who passed the state standardized assessments and do not take extra remedial courses (CPALMS, 2013-2017 & Donaldson & Halsey, 2007). For Research Question Two, the independent variable is poor attendance while enrolled in remedial classes.

**Research Question One**

Research Question One asked is there a difference in the students' high school graduation rates who are enrolled in remedial classes and those who are enrolled in non-remedial classes? In this study, of the 593 students who were enrolled in non-remedial classes exhibited a 98.1% graduation rate in comparison to the 74 who were enrolled in remedial classes displayed a graduation rate of 14.9%. The classroom atmosphere sets the stage for the remedial class(es) and how they should be instructed and constructed. In several studies the atmosphere within the classroom and the strong relationships formed can either encourage school engagement for the student, or it can produce one in which they may withdraw from the learning process and negatively affect the students' abilities to stay in school and graduate (Maynard, Beaver, Vaughn, DeLisi, & Roberts, 2014; Rosa & Tudge, 2013). This study supports these findings and reveals that the 74 remedial students' academic abilities did not improve enough to help them complete all the requirements to graduate from high school.

The results from this study suggested that Bronfenbrenner's bioecological theory explained how the interrelated proximal processes between individuals and experiences must occur on a regular and constant basis in order to create a change in the students' behaviors and attitudes toward the new experience and be able to transfer the skills to other areas (Bronfenbrenner, 1979). In prior studies, it was identified that the ongoing reciprocity of experiences occurring in the remedial settings created success for the students in staying engaged

in the learning process, improved test scores, and graduation from high school (Nomi, 2009; Nomi & Allensworth, 2009; Zaff et al., 2017; Maynard et al., 2014). This study's results were contradictory, the 74 remedial students were unable to transfer the remedial strategies to other areas and subjects therefore, the graduation rate was a low 14.9%.

In these previous studies, it revealed implementing remedial classes in the earlier stages such as the elementary age is more effective in improving students' skills in mathematics and ELA than in the middle and high school level and decreasing grades and graduation rates (Foorman & Moats, 2004; Lavy & Schlosser, 2005; Lovett, Lacerenza, Palma, & Fritjers, 2012; North & Ryan, 2018). One reason for this easier acquisition of needed academic skills at an earlier age is due to the absence of peer pressure. This study supports this idea, the 74 students who attended a remedial class(es) for acquisition of the needed academic skill(s) to help them graduate may have been embarrassed because they were being isolated and singled out in front of their peers while decreasing these students' graduation rates. While the 593 non-remedial students showed a 98.1% graduation rate, they were not singled out in front of their peers as being less able to succeed academically.

The results from my study proposed that the bioecological theory when applied to the construction and implementation of remedial classes into a high school's curriculum can help the school administrators in guiding and explaining the most effective setting to improve the graduation rates of their schools (Bouchard & Smith, 2017; Rosa & Tudge, 2013). This theory identifies the value of constant interrelated system interactions related to the students' encounters, connections with these systems, and their engagement with the learning processes through the varied methods within the remedial learning environment. As noted in multiple studies which placed the lowest performing high school students in both Algebra I and/or an

ELA classes remedial classes for an extended period of time, a significant improvement was shown in the students' reading and Algebra I scores significantly (Nomi, 2009; Nomi & Allensworth, 2009). Although this student's findings contradict the results of those studies, it identifies the need to improve the remedial classes' format or delivery of the content to better meet those individual student's needs and help increase the high school graduation rates.

Concerning when remedial instruction is implemented can have an impact on the success or lack thereof in graduating from high school. Schools are viewing after school tutoring as a viable solution due to a lack of money to pay an extra teacher for remedial instruction during the regular school day (Hilgoe, Hattingh, & Bernhardt, 2016). According to these studies, the results are showing a disparity in favor of the students who have higher academic abilities and are attending remedial classes per their choice in comparison with those who are lacking the skills and are required to attend the remedial instruction (Bray & Kwok, 2003; Huang, 2013). After school tutoring may interfere with the student's ability to attend after school extracurricular activities as well as going to work. This may potentially create resentment on the remedial students' part towards the remedial instruction. In this study, the students attending the remedial classes are identified as needing the skills to succeed and potentially graduate from high school, but the time in which they are receiving the instruction is not identified. If these 74 students received most of their remedial instruction outside of the regular school hours, then it is possible that irregular school hours may have adversely affected their ability to meet the requirements to graduate.

**Research Question Two**

The purpose of research question two of this quantitative, causal-comparative study is to determine if there is a significant difference in the graduation rates of students who displayed

poor attendance in the enrolled remedial classes and those who did not display poor attendance enrolled in remedial classes. The study's second research question examined high school graduation data from only the 74 students in the 2019 graduation cohort who had been enrolled in remedial courses. This analysis compared the graduation rates of remedial students with poor attendance records ("truants," $n = 11$) and remedial students with better attendance records ("non-truants," $n = 63$). There was no significant difference found between the graduation rates of remedial students who were classified as non-truants (n = 63; 14.3% graduation rate) and remedial students who were classified as truants (n = 11; 18.2% graduation rate). The difference between truant and non-truant graduation rates seen in this sample (18.2% - 14.3%) was 3.9%, marginally favoring truant students.

As noted in these preceding studies, one factor in determining if a student will potentially drop out of high school is chronic absenteeism (Bowers et al., 2012, Redmond & Hosp, 2008). A study using retroactive or archival data revealed that all students, regardless of their socioeconomic status, learning abilities or disabilities, can be negatively affected by missing school (Redmond & Hosp, 2008). In these studies, an increase in test scores, grade point average, and graduation from high school can be realized through staying engaged in the learning process and attending school regularly (Nomi, 2009; Nomi & Allensworth, 2009; Zaff et al., 2017; Maynard et al., 2014). In all these studies, attending school on a regular basis is noted as a factor that improves the chances of a student staying in school and graduating. This study contradicts this ideology as the students classified as non-truant had only a 14.3% graduation rate compared to the truant students' rate of 18.2%. The students in this study who were absent more often had a higher graduation rate than the remedial students who were present in the classroom on a more consistent basis.

Research question two of this study, revealed that the students with an attendance problem had a higher graduation rate than the students with no attendance issues enrolled in remedial classes. This is in stark contrast with these earlier studies which demonstrate that student absenteeism is an early indicator of students dropping out of high school and not graduating (Bowers et al., 2012, Redmond & Hosp, 2008). Another proponent for identifying chronic absenteeism as an indicator of a student not graduating from high school are the federal initiatives from the No Child Left Behind Act of 2001 and the Elementary and Secondary Act of 1965. This study does not support these previous notions concerning absenteeism being an indicator of students dropping out of high school and not graduating. However, this study reveals that the students who were identified as missing 15 or more days (truant) had a higher graduation rate than the students who were not identified as truant.

## Implications

This research contributes to the existing body of knowledge of high school student's graduation rates. The results of this study identify that this is not just a K-12 school issue, but it has long lasting affects for all parties involved in all aspects of society. High school graduates have the potential of achieving a far more successful life as opposed to the consequences of not attaining a diploma (Heckman & LaFontaine, 2010; Long, Conger, & Iatarola, 2012; Messacar & Oreopoulos, 2013). The communities in which these dropouts reside are faced with potentially having to provide public assistance for them; they have more health problems, and a large number of dropouts become involved in criminal activities (Levin & Belfield, 2007; Millenky, 2016; Ou, 2008; Wilkens & Williams, 2015). This study implements remedial classes for the potential drop outs, but it lacks consistency in the methods and delivery of the instruction. The

results from this study will help K-12 schools create more informed policies concerning the implementation of remedial classes to aid students in graduating from high school.

Using Bronfenbrenner's theory of human development to frame this study, helped to be able to consistently focuses on the individual student being viewed as influencing and being influenced by the environment on a constant basis (Rosa & Tudge, 2013). In this study, the 74 students who were enrolled in the remedial class(es) at some point during the four years of high school had been influenced by the remedial environment. These students may not have had a consistent group of teachers in the varied remedial courses, whereas the regular classes may possess a more comfortable environment, one in which the students are familiar with these regular required class(es) and the teachers are familiar to the students. Students are given information concerning the required class(es) needed to graduate from high school as soon as they arrive as freshmen but may not receive information concerning attendance in remediation class(es) due to their inability to demonstrate a score of proficient on a required assessment for the state. This study defines school engagement as one's feelings about school, participation in school, and connection to school and the school community; this includes teachers, peers, and after-school activities (Maynard, Beaver, Vaughn, DeLissi, & Roberts, 2014). The 74 students of this study were removed from the familiarity of the regular class, placed in an additional class, and offered instruction in the same subject with a different instructor and classmates. This atmosphere is not creating a perpetual one in which familiar reciprocal activities are fostered in the most influential layer, the microsystem (Bronfenbrenner, 1979). The results of this study can help secondary schools review the methods in which their own school's remedial class(es) are delivered and choose the most effective remedial environments needed for their individual school's students to improve the students' graduation rates.

Research shows that many practitioners believe that the implementation of early interventions reveals improvements in the cognitive and non-cognitive abilities of students and their motivation; while interventions implemented later in life do not (Heckman & Carneiro, 2003). In another study in Israel, the results of remedial classes administered to high school students, implementation later in the student's school career, wielded results that were minimal at best (Lavy & Schlosser, 2005). These previous studies and this study show similar results, whereas they do not show a great increase in the older high school remedial students' graduation rates. In this study, the 74 high school age students may not have possessed the motivation to try and attain the necessary skills needed to graduate because they were past the age. When school systems are determining if and when remedial classes are pertinent to their students' needs, they need to utilize this research to guide the decision-making process as to what age will be the most effective.

The data supports the need for early interventions as a preventative measure (Orpinas et al., 2018). There is a very small amount of data in secondary schools concerning preventative measures for promoting graduation. This study will contribute to the lack of existing knowledge concerning implementation of remediation in secondary age students. This study reveals the results of intervention administered to the students only in the secondary school setting. The results of this study demonstrate that the intervention is not effective in improving the high school graduation rates. Much debate has been devoted to the need and effectiveness of implementing remedial classes early in a child's educational career, such as, at the elementary level, and that it becomes less effective at the high school level (Foorman & Moats, 2004; Lavy & Schlosser, 2005; Lovett, Lacerenza, Palma, & Fritjers, 2012). This study supports the body of knowledge that implementation of remedial strategies at earlier ages is more effective than at

later ages as in high school. The lack of research in the secondary ages is problematic, particularly considering the importance of improving the graduation rates for a student as well as society (Levin & Belfield, 2007; Messacar & Oreopoulos, 2013; Ou, 2008; Tavakolian & Howell, 2012). This study adds to the knowledge foundation of the remedial process and offers a launching point for further remedial implementation research in upper grade levels of the K-12 schools.

## Limitations

All the remedial class(es) the students enrolled in this study were enrolled during their high school years. As noted in a study by Lavy and Schlosser (2005), much debate has been devoted to the necessity and effectiveness of employing remedial classes early in a child's educational career, such as, at the elementary level, and that it becomes less successful at the high school level. While this study only examined students participating in remedial class(es) during high school and not during middle or elementary may distort the results. Consequently, the results may not be generalizable to all high school students who graduate. Some students who did graduate but were not listed as enrolled in a remedial class(es) during high school may have enrolled in one in the middle or elementary levels.

As noted in this study by Dai and Huang (2015), remedial learning is affected not just by the instruction provided to the student but, it includes the location, the time, and the close teacher involvement. This is the underlying theme of the bioecological theory which is used as the framework for this study. The theory maintains that the ongoing reciprocal processes between the emerging student and the environment helps to shape their skills and perspectives toward the learning process (Bronfenbrenner, 1979). This study fails to explain and identify the questions of how, when, or where the remedial instruction has taken place for the participants of this study.

As noted, the location, the instruction methods, the time, and the rapport established between teacher and students can potentially have a significant effect on a student's success in mastering the skills needed to help them graduate.

Helping to create the best learning atmosphere for the success of students can be attained by examining a student's attendance rates. In research question two of this study, the graduation rates of the students in remedial class(es) with poor attendance and those in remedial class(es) who do not display poor attendance were examined. In a study using retroactive or archival data, it revealed that all students, regardless of their socioeconomic status, learning abilities or disabilities, can be negatively affected by missing school (Redmond & Hosp, 2008). This study contradicted these findings because the students with a history of being truant had a higher graduation rate than the students who attended the remedial class(es). The lack of identifying the setting of the remedial class(es) and how the instruction was delivered may have distorted the sample for remedial class(es). The atmosphere of the remedial instruction may not have been conducive to helping a student acquire the needed skills to graduate. The remedial students who did attend on a regular basis may have been negatively affected because the atmosphere was an unfavorable one. A more defined remedial class(es) with specificity as to how the instruction was being delivered as well as the amount of time each student received additional instruction needs to be studied.

## Recommendations for Future Research

An area that needs further research is the need to identify the criteria for each varied remedial class(es) instructed. As noted by Dai and Huang (2015), remedial learning is affected not just by the instruction provided to the student but, it includes the location, the time, and the close teacher involvement. The criteria for these remedial classes may not be providing

the same caliber of instruction to the students due to many of the factors previously discussed in this study. The students at each school's amount of instructional time and when the instruction occurred, during regular school hours or after school hours, needs to be examined and compared. The results of the two factors may reveal which instructional time period is most effective in improving graduation rates. These factors are integral at assisting students attain the needed strategies and skills to graduate.

Another area recommended for further research is increasing the number of remedial students who participate in the study. The small sample of 74 students utilized in this study may not have been adequate to derive a reliable conclusion. This small amount may have skewed the results. Including more than one district in the study may have helped in creating a better representation of high school students enrolled in remedial class(es).

Only students who enrolled in remedial class(es) in high school were studied. Some of these students may have enrolled in remedial class(es) in elementary and/or middle school as well. Identifying whether these students enrolled at any point in their K-12 school experience may have potentially positive or negative effects on the outcome of their high school graduation rates and may contribute to the existing body of knowledge of the effectiveness of early interventions. Further research to determine if any of the 593 students who did graduate and did not enroll in remedial class(es) during high school participate in early remediation may aid school administrators in determining effective strategies to help improve high school graduation rates.

In addition, the need to examine how the remedial classes were instructed may potentially assist school administrators in determining which method of delivery is most effective. Remedial classes may be instructed in a traditional format, computer-based format, or a blended format.

Studying the transmission of remedial classes in context of the bioecological theory which posits the student is influenced by reciprocity of interrelated experiences between the teacher and other peers. Producing a culture within these remedial classes of acceptance and a positive rapport between the teachers and students will foster a sense of confidence for the student which ultimately promotes staying in school and graduating from high school (Genao, 2015). This study may have only offered a computer-based program which did not encourage engagement or dialogue between the remedial student, the teacher, and/or their peers. Supplementary research to determine which type of instructional delivery is most effective at improving the high school graduation rate is needed.

## Summary

The high school graduation rate is vital to both the individual student and society as a whole (Genao 2015; Messacar & Oreopoulos, 2013). School districts should be consulting proven effective studies that show how to increase the high school graduation rate for their students. These graduation rates have either positive or negative long-lasting effects on society. One in five students will not graduate (Zaff, Donlan, Gunning, Anderson, McDermott, & Sedaca, 2017). A factor that may foster improved graduation rates is enrollment in remedial classes (Wilkins & Bost, 2016). A factor that has been an early indicator of future dropping out of high school is chronic absenteeism (Redmond & Hosp, 2008). This study examined high school student's enrollment in remedial classes and enrollment in non-remedial classes and poor attendance in these remedial classes in comparison with students who do not display poor attendance in remedial classes. The results of this study indicate that high school remedial classes are not effective at improving graduation rates and poor attendance does not hinder graduation rates. There are very few studies on the implementation of remedial classes at the

high school level and this study will contribute to the lack of existing knowledge. Future education administrators must implement more effective strategies to improve the high school graduation rate and this study will help to guide them in making adequate decisions for their students.

# REFERENCES

Agresti, A. (2013). *Categorical data analysis* (2nd ed.). Hoboken, NJ: Wiley.

Balfanz, R., Herzog, L., & Mac Iver, D. (2007). Preventing Student Disengagement and Keeping Students on the Graduation Path in Urban Middle-Grades Schools: Early Identification and Effective Interventions. *Educational Psychologist*, *42*(4), 223–235. https://doi-org.ezproxy.liberty.edu/10.1080/00461520701621079

Boatman, A., & Long, B. T. (2018). Does remediation work for all students? How the effects of postsecondary remedial and developmental courses vary by level of academic preparation. *Educational Evaluation and Policy Analysis*, *40*(1), 29-58.

Boone, P., Camara, A., Eble, A., Elbourne, D., Fernandes, S., Frost, C., & Silva, A. F. (2015). Remedial after-school support classes offered in rural Gambia (The SCORE trial): study protocol for a cluster randomized controlled trial. *Trials*, *16*574

Boon, H. J., Cottrell, A., King, D., Stevenson, R. B., & Millar, J. (2012). Bronfenbrenner's bioecological theory for modelling community resilience to natural disasters. *Natural Hazards, 60*(2), 381-408. doi: http://dx.doi.org.ezproxy.liberty.edu/10.1007/s11069-011-0021-4

Bouchard, K. L., & Smith, J. D. (2016). Teacher–student relationship quality and children's bullying experiences with peers: Reflecting on the Mesosystem. *The Educational Forum, 81*(1), 108-125. doi:10.1080/00131725.2016.1243182

Bowers, A. J. (2010). Grades and graduation: A longitudinal risk perspective to identify Student dropouts. *Journal of Educational Research*, *103*(3), 191-207.

Bowers, A. J., Sprott, R., & Taff, S. A. (2012). Do we know who will drop out? A review of the predictors of dropping out of high school: Precision, sensitivity, and

specificity. *High School Journal*, *96*(2), 77-100.

Bray, M., & Kwok, P. (2003). Demand for private supplementary tutoring: Conceptual considerations, and socio-economic patterns in Hong Kong. *Economics of Education Review, 22*(6), 611-620. doi:10.1016/s0272-7757(03)00032-3.

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design.* Cambridge, Mass.: Harvard University Press.

Bronfenbrenner, U. (1995). Developmental ecology through space and time: A future perspective. *Examining Lives in Context: Perspectives on the Ecology of Human Development.,* 619-647. doi:10.1037/10176-018

Bronfenbrenner, U., & Morris, P. A. (1998). The ecology of developmental processes. In W. Damon & R. M. Lemer (Eds.), Handbook of child psychology, Volume 1: Theoretical models of human development (5th ed., pp. 993-1028). Hoboken, NJ: John Wiley & Sons.

Bronfenbrenner, U. (1999). Environments in developmental perspective: Theoretical and operational models. In S. L. Friedman & T. D. Wachs (Eds.), Measuring environment across the lifespan: Emerging methods and concepts (pp. 3–28). Washington, DC: American Psychological Association Press.

Camargo, J., & Navarro, J. C. O. (2010). Exploring EFL students' reading comprehension process through their life experiences and the "Sight Word Strategy." *HOW*, *17*(1), 52–72.

Caruth, G. D. 1. G. C. ed., & Caruth, D. L., (2013). Adjunct Faculty: Who are these unsung heroes of academe? *Current Issues in Education*, *16*(3), 1–11.

Cline, Z., Bissell, J., Hafner, A., & Katz, M.-L. (2007, November-December). Closing the college readiness gap: the concept of college readiness puts the focus on preparing

students to succeed at college-level work or in the workforce, rather than just fulfilling eligibility requirements. *Leadership*, *37*(2), 30+. Retrieved from http://link.galegroup.com.ezproxy.liberty.edu/apps/doc/A207349959/AONE?u=vic_liberty&sid=AONE&xid=2366a638

Dai, C., & Huang, D. (2015). Causal complexities to evaluate the effectiveness of remedial instruction. *Journal of Business Research, 68*(4), 894-899.

Diekhoff, G. M. (1996). *Basic statistics for the social and behavioral sciences.* Upper Saddle River, NJ: Prentice Hall.

Donaldson, K., & Halsey, P. (2007). Adolescent Readers' Perceptions of Remedial Reading Classes: A Case Study. *Reading Improvement*, *44*(4), 221–232. Retrieved from http://search.ebscohost.com.ezproxy.liberty.edu/login.aspx?direct=true&db=a9h&AN=31123652&site=ehost-live&scope=site

Drakenberg, M., & Malmgren, T. V. (2013). School principals' perceptions of 'Basic Values'' in the Swedish Compulsory School System in regard to Bronfenbrenner's Ecological Systems Theory. *Citizenship, Social and Economics Education*, *12*(2), 118–128. https://doi.org/10.2304/csee.2013.12.2.118.

Eno, J., Heppen, J., & Society for Research on Educational Effectiveness (SREE). (2014). *Targeting summer credit recovery*. *Society for research on educational effectiveness*. Society for Research on Educational Effectiveness. Retrieved from http://ezproxy.liberty.edu/loginurl=http://search.ebscohost.com/login.aspxdirect=true&db=eric&AN=ED562833&site=ehost-live&scope=site.

Erinosho, S. Y. (1990). The effect of two remediation methods in high school physics classes in Nigeria. *The Journal of Experimental Education, 58*(3), 177. Retrieved from

http://ezproxy.liberty.edu/login?url=https://search-proquest-com.ezproxy.liberty.edu/docview/1299990799?accountid=12085

Fitzgerald, K., Gordon, T., Canty, A., Stitt, R. E., Onwuegbuzie, A. J., & Frels, R. K. (2013). Ethnic differences in completion rates as a function of school size in Texas high schools. *Journal of At-Risk Issues*, *17*(2), 1–10. Retrieved from http://ezproxy.liberty.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1018719&site=ehost-live&scope=sit.

Florida Department of Education. (2015). Attendance and enrollment. Retrieved June 12, 2018 From http://www.fldoe.org/core/fileparse.php/5663/urlt/1415TechV4FSA.pdf.

Florida Department of Education. (2018). CPALMS: Where educators go for bright ideas. Retrieved December 20, 2018, from http://www.cpalms.org/Public/PreviewCourse/Preview/4968.

Florida Department of Education. (2018). CPALMS: Where educators go for bright ideas. Retrieved December 20, 2018, from http://www.cpalms.org/Public/PreviewCourse/Preview/4968.

Florida Department of Education. (2018). 2018–19 Florida Standards Assessments English Language Arts and Mathematics Fact Sheet. Retrieved on November 23, 2018, from http://www.fldoe.org/core/fileparse.php/5663/urlt/FSAELA-MathFS1819.pdf

Florida Department of Education. (2018). Graduation requirements for Florida's statewide Assessments. Retrieved onNovember29,2018, from http://www.lfldoe.org/core/fileparse.php/7764/urlt/GradRequireFSA.pdf

Florida Department of Education. (2018). 2018 School Grades Overview. Retrieved

December 2, 2018, from http://www.fldoe.org/core/fileparse.php/18534/urlt/SchoolGradesOverview18.pdf.

Florida Department of Education. (2018). Secondary student progression: 2017-2018 frequently asked questions. Retrieved December 11, 2018, from http://www.fldoe.org/core/fileparse.php/7764/urit/SSP1718FAQ.pdf

Florida Department of Education. (2019). States entering grade nine in the 2014-2015 school year and forward academic advisement flyer-what students and parents need to know. Retrieved July 9, 2019, from http://www.fldoe.org/core/fileparse.php/7764/urlt/1415forwardflyer.pdf

Foorman, B. R., & Moats, L. C. (2004). Conditions for Sustaining Research-Based Practices in Early Reading Instruction. *Remedial and Special Education*, *25*(1), 51–60. https://doi.org/10.1177/07419325040250010601

Forrest, S. N. (2010). Achieving student-centered success on the high school exit exam: Five components of an effective remediation program. *CATESOL Journal*, *21*(1), 148–161. Retrieved from http://ezproxy.liberty.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1112260&site=ehost-live&scope=site

Gaertner, M., Kim, J., DesJardins, S., & McClarty, K. (2014). Preparing students for college and careers: The causal role of Algebra II. *Research in Higher Education, 55*(2), 143-165. Retrieved from http://www.jstor.org/stable/24571783.

Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational research: An introduction* (8thed.). New York, NY: Allyn & Bacon.

Genao, S. (2013). Utilizing data to combat absenteeism and decrease dropout rates. *Education and Urban Society*, 463-475.

Genao, S. (2015). Utilizing data to combat absenteeism and decrease dropout rates. *Education and Urban Society*, *47*(4), 463-475.

Härkönen, U. (2007). The Bronfenbrenner ecological systems theory of human development. *Scientific Articles of V International Conference PERSON.COLOR.NATURE.MUSIC*, 1-19.

Heckman, J., & Carneiro, P. (2003). Human Capital Policy. Working Paper 9495. *NATIONAL Bureau of Economic Research*. doi:10.3386/w9495.

Heckman, J., & LaFontaine, P. (2010). The American high school graduation rate: Trends and levels. *The Review of Economics and Statistics, 92*(2), 244-262. Retrieved from http://www.jstor.org/stable/27867535.

Heckman, J., & Masterov, D. (2007). The Productivity Argument for Investing in Young Children. doi:10.3386/w13016

Hern, K., & Snell, M. (2014). The California acceleration project: Reforming developmental education to increase student completion of college-level math and English. *New Directions for Community Colleges*, (167), 27–39. Retrieved from http://ezproxy.liberty.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1039111&site=ehost-live&scope=site.

Hilgoe, E., Brinkley, J., Hattingh, J., & Bernhardt, R. (2016). The Effectiveness of the North Carolina Early Mathematics Placement Test in preparing high School students for college-level introductory mathematics courses. *College Student Journal*, *50*(3), 369–377. Retrieved from http://ezproxy.liberty.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=hlh&AN=118727243&site=ehost-live&scope=site.

Holmlund, H., Lindahl, M., & Plug, E. (2011). The causal effect of parents' schooling on children's schooling: A comparison of estimation methods. *Journal of Economic Literature, 49*(3), 615-651. doi: http://dx.doi.org.ezproxy.liberty.edu/10.1257/jel.49.3.615

Huang, M. (2013). After-School Tutoring and the Distribution of Student Performance. *Comparative Education Review, 57*(4), 689-710. doi:10.1086/671346.

Johnson, B. (2000). *It's (beyond) time to drop the terms causal-comparative and correlational research in education*. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA.

Johnson, B., & Christensen, L. (2016). *Educational research: Quantitative, qualitative, and mixed approaches* (4th ed.). Los Angeles, CA: SAGE Publications, Inc.

Johnson, V. L., Simon, P., & Mun, E. (2014). A peer-led high school transition program increases graduation rates among Latino males. *Journal of Educational Research*, *107*(3), 186-196.

Joo, M. and Kim, J. (2016). National high school graduation rate: Are recent birth cohorts taking more time to graduate? *Education and Urban Society*, 126-150.

Juergensen, M. B. (2015). African American educators' ideas and practices for increasing high school graduation rates, 1920-1940. *High School Journal*, *99*(1), 46+. Retrieved from http://link.galegroup.com.ezproxy.liberty.edu/apps/doc/A434413795/AONE?u=vic_liberty&sid=AONE&xid=0dc2f264

Kateri, M. (2014). *Contingency table analysis.* New York: Springer.

Koch, B., Slate, J. R., & Moore, G. (2012). Perceptions of students in developmental classes. *The Community College Enterprise, 18*(2), 62-82. Retrieved from http://ezproxy.liberty.edu/login?url=https://search-proquest-

com.ezproxy.liberty.edu/docview/1287963088?accountid=12085

Kotok, S., Ikoma, S., & Bodovski, K. (2016). School climate and dropping out of school in the era of accountability. *American Journal of Education*, *122*(4), 569–599. https://doi-org.ezproxy.liberty.edu/10.1086/687275.

Lavy, V., & Schlosser, A. (2005). Targeted Remedial Education for Underperforming Teenagers: Costs and Benefits. *Journal of Labor Economics, 23*(4), 839-874.

Laerd Statistics. (n.d.) retrieved from https://statistics.laerd.com/spss-tutorials/chi-square-test-for-association-using-spss-statistics.php

Lee, V. E., & Burkam, D. T. (2003). Dropping out of high school: the role of school organization and structure. *American Educational Research Journal, 40*, 353–393.

Levin, H.M., and Belfield, C.R. (2007). Educational interventions to raise high school graduation rates. In C.R. Belfield and H.M. Levin (Eds.), The Price We Pay: Economic and Social Consequences of Inadequate Education (pp. 177–199). Washington, DC: Brookings Institution Press.

Lewin, K. (1943/1997). Defining the "field at a given time". In G.W. Lewin & D. Cartwright (Eds.). Resolving social conflicts & Field theory in social science, 200–211. Washington, DC: American Psychological Association.

Lin, C., Guo, K., & Lin, Y. (2016). A simple and effective remedial learning system with a fuzzy expert system. *Journal of Computer Assisted Learning, 32*(6), 647-662. doi:10.1111/jcal.12160.

Lovett, M. W., Lacerenza, L., Palma, M. D., & Frijters, J. C. (2012). Evaluating the Efficacy of Remediation for Struggling Readers in High School. *Journal of Learning Disabilities*, *45*(2), 151–169. https://doi.org/10.1177/0022219410371678

Maynard, B. R., Beaver, K. M., Vaughn, M. G., DeLisi, M., & Roberts, G. (2014). Toward a Bioecological Model of school Engagement: A biometric analysis of gene and environmental factors. *Social Work Research*, *38*(3), 164–176.

McCallumore, K. M., & Sparapani, E. F. (2010). The importance of the ninth grade on high

school graduation rates and student success in high school. *Education*, *130*(3), 447–456. Retrieved fromhttp://ezproxy.liberty.edu/loginurl=http://search.ebscohost.com/login.aspx?direct=true&db=pbh&AN=48753404&site=ehost-live&scope=site

McFarland, J., Stark, P., Cui, J., National Center for Education Statistics (ED), & American Institutes for Research (AIR). (2016). *Trends in high school dropout and completion rates in the United States: 2013. Compendium report. NCES 2016-117*. *National Center for Education Statistics*. National Center for Education Statistics. Retrieved from http://ezproxy.liberty.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=ED569943&site=ehost-live&scope=site

McNeal, R. B. (2011). Labor market effects on dropping out of high school: Variation by gender, race, and employment status. *Youth & Society*, *43*(1), 305–332. https://doi.org/10.1177/0044118X10363776.

Messacar, D., & Oreopoulos, P. (2013). Staying in school: A proposal for raising high-school graduation rates. *Issues in Science & Technology*, *29*(2), 55.

Methvin, P., & Markham, P. N. (2015). Turning the page: Addressing the challenge of remediation. *Change: The Magazine of Higher Learning*, *47*(4), 50-56.

Millenky, M. (2016). Connecting high school dropouts to employment and education: An impact study of the National Guard Youth ChalleNGe Program, *5*(1), 1–17.

Millenky, M., Schwartz, S., & Rhodes, J. (2014). Supporting the transition to adulthood among high school Dropouts: An impact study of the National Guard Youth Challenge Program. *Prevention Science*, *15*(4), 448–459. https://doi-org.ezproxy.liberty.edu/10.1007/s11121-013-0388-4.

Murnane, R. J. (2013). U.S. high school graduation rates: Patterns and explanations. *Journal Of Economic Literature*, *51*(2), 370-422. doi:10.1257/jel.51.2.370.

Musoleno, R. R., & White, G. P. (2010). Influences of High-Stakes Testing on Middle School Mission and Practice. *Research in Middle Level Education Online*, *34*(3), 1–10. Retrieved from http://ezproxy.liberty.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=66084886&site=ehost-live&scope=site

Nomi, T. & Allensworth, E. (2009). "Double-dose" algebra as an alternative strategy to remediation: Effects on students' academic outcomes. *Journal of Research on Educational Effectiveness*, 111-148.

Nomi, T. (2015). "Double-dose" English as a strategy for improving adolescent literacy: Total effect and mediated effect through classroom peer ability change. *Social Science Research*, 309-368.

North, E. A., & Ryan, A. M. (2018). The association of peer academic reputations in math and science with achievement beliefs and behaviors during early adolescence. *The Journal of Early Adolescence*, *38*(6), 772–794. https://doi.org/10.1177/0272431617692441

Onwuegbuzie, A. J., Collins, K. M. T., & Frels, R. K. (2013). FOREWORD: Using Bronfenbrenner's ecological systems theory to frame quantitative, qualitative, and mixed research. International Journal of Multiple Research Approaches, 7(1), 2-8. Retrieved from http://ezproxy.liberty.edu/login?url=https://search-proquest-com.ezproxy.liberty.edu/docview/1470898076?accountid=12085

Orpinas P, Raczynski K, Hsieh H-L, Nahapetyan L, Horne A.M. (2018). Longitudinal examination of aggression and study skills from middle to high school: Implications for dropout prevention. *Journal of School Health*, *88*, 246-252

Ou, S.R. (2008). Do GED Recipients differ from graduates and school dropouts?: Findings from an inner-city cohort. *Urban Education*, *43*(1), 83–117. https://doi.org/10.1177/0042085907305187

Redmond, S. M., & Hosp, J. L. (2008). Absenteeism rates in students receiving services for CDs, LDs, and EDs: a macroscopic view of the consequences of disability. Language, Speech, & Hearing Services in Schools, 39, 97+. Retrieved from http://link.galegroup.com.ezproxy.liberty.edu/apps/doc/A172946750/HRCA?u=vic_liberty&sid=`HRCA&xid=6a49d03a

Roberts, G., Vaughn, S., Fall, A., Vaughn, M., & Society for Research on Educational Effectiveness. (2013). Preventing school dropout with secondary students: The implementation of an individualized reading intervention and dropout prevention intervention. Retrieved on June 13, 2018 from https://files.eric.ed.gov/fulltext/ED564085.pdf

Rosa, E. M., & Tudge, J. (2013). Urie Bronfenbrenner's theory of human development: its evolution from ecology to bioecology. *Journal of Family Theory & Review*, *5*(4), 243-258. doi:10.1111/jftr.12022

Schenimann, C. (2018). *Corporate outsourcing to take advantage of cheap labor in developing countries.* Lynchburg, VA: School of Business Liberty University.

Schemo, D. J. (2004, January 18). As testing rises, 9th grade becomes pivotal. *New York Times*, p. 25. Retrieved from http://ezproxy.liberty.edu/loginurl=http://search.ebscohost.com/login.aspx?direct=true&db=f5h&AN=12177174&site=ehost-live&scope=site

Shaw, D. (2014). Rethinking remediation for college students: Using preservice education students in connection with high school AP classes. *New England Reading Association Journal*, *50*(1), 38–43. Retrieved from http://ezproxy.liberty.edu/login?url=

http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=100061152&site=ehost-live&scope=site.

Springer, S., Wilson, T., & Dole, J. (2014). Ready or not: Recognizing and preparing college ready students. *Journal of Adolescent & Adult Literacy, 58*(4), 299-307. Retrieved from http://www.jstor.org/stable/44011163.

Stoddard, C. (2009). Why did education become publicly funded? Evidence from the nineteenth century growth of public primary schooling in the united states. *The Journal of Economic History, 69*(1), 172-201. doi: http://dx.doi.org.ezproxy.liberty.edu/10.1017/S0022050709000370.

Strand, P. S., & Lovrich, N. P. (2014). Graduation outcomes for truant students: An evaluation of a school-based, court-engaged community truancy board with case management. *Children and Youth Services Review, 43*, 138-144. doi: 10.1016/j.childyouth.2014.05.008

Tavakolian, H. R., & Howell, N. (2012). Dropout dilemma and interventions. *Global Education Journal*, (1), 77–81. Retrieved from http://ezproxy.liberty.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=75260821&site=ehost-live&scope=site

Terry, C. B., PhD., Heitner, K. L., PhD., Miller, L. A., PhD., & Hollis, C., EdD. (2017). Predictive relationships between students' evaluation ratings and course satisfaction. *American Journal of Pharmaceutical Education, 81*(3), 7-53A, 53B, 53C, 53D, 53E, 53F, 53G. Retrieved from

Thurlow, M. L., Sinclair, M. F., Johnson, D. R., & National Center on Secondary Education and Transition, M. M. (2002). Students with disabilities who drop out of school:

Implications for policy and practice. Issue brief: Examining current challenges in secondary education and transition. Retrieved from http://ezproxy.liberty.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=ED468582&site=ehost-live&scope=site

Tregaskis, S. (2015). Into the woods. *Human Ecology*, *43*(1), 12.

Tudge, J. H., Payir, A., Merçon-Vargas, E., Cao, H., Liang, Y., Li, J., & O'Brien, L. (2016). Still misused after All these years? A reevaluation of the uses of Bronfenbrenner's Bioecological theory of human development. *Journal of Family Theory & Review*, *8*(4), 427-445. doi:10.1111/jftr.12165

Tudge, J. R., Mokrova, I., Hatfield, B. E., and Karnik, R. (2009). Uses and misuses of Bronfenbrenner's bioecological theory of human development. *Journal of Family Theory & Review*, 198-210.

Tyler, J. H., & Lofstrom, M. (2009). Finishing high school: alternative pathways and dropout recovery. *The Future of Children*, *19*(1), 77–103. Retrieved from http://ezproxy.liberty.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=mnh&AN=21141706&site=ehost-live&scope=site.

U.S. Department of Education, National Center for Education Statistics. (2003). National Assessment of Educational Progress (NAEP) 2003 reading report card. Washington, DC: U.S. Department of Education, Institute of Education Sciences.

U.S. Department of Education, National Center for Education Statistics. (2007). National Assessment of Educational Progress: The nation’s report card, reading 2007. Retrieved from http:// nces.ed.gov/nationsreportcard/pubs/main2007/2007496.asp

U.S. Department of Labor. (2012). Employment projections (News Release, USDL12–0160). Washington, DC: U.S. Department of Labor, Bureau of Labor Statistics.

Vaughn, S., Roberts, G., Wexler, J., Vaughn, M. G., Fall, A., & Schnakenberg, J. B. (2015). High school students with reading comprehension difficulties: Results of a randomized control trial of a two-year reading intervention. *Journal of Learning Disabilities*, *48*(5), 546-558.

Vélez-Agosto, N. M., G., J., Vizcarrondo-Oppenheimer, M., Vega-Molina, S., & Coll, C. G. (2017). Bronfenbrenner's bioecological theory revision: Moving culture from the macro into the micro. *Perspectives on Psychological Science*, *12*(5), 900–910. https:// doi/pdf/10.1177/1745691617704397

Watson, T. & Brown, K. (2010). A public relations nightmare: ACLU class action lawsuit exposes inaccurate and inequitable high school graduation rates. *Journal of School Public Relations,* 342-357.

Wilkins, J., & Bost, L. W. (2016). Dropout Prevention in Middle and High Schools: From research to practice. *Intervention in School and Clinic*, *51*(5), 267–275.

Wilkerson, C. R., & Williams, M. D. (2012). The transformation of manufacturing across Federal Reserve Districts: Success for the Great Plains. *Economic Review (01612387)*, (2), 1. Retrieved from http://ezproxy.liberty.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=f5h&AN=77554461&site=ehost-live&scope=site

Wong, W.C. (2001). Co-constructing the personal space-time totality: Listening to the dialogue of Vygotsky, Lewin, Bronfenbrenner, and Stern. *Journal for the Theory of Social Behaviour*, 360- 375.

Yilmaz, K. (2013). Comparison of Quantitative and Qualitative Research Traditions: Epistemological, theoretical, and methodological differences. *European Journal of*

*Education, 48*(2), 311-325. doi:10.1111/ejed.12014.

Zaff, J., Donlan, A., Gunning, A., Anderson, S., McDermott, E., & Sedaca, M. (2017). Factors that promote high school graduation: A review of the literature. *Educational Psychology Review*, *29*(3), 447-476. doi:10.1007/s10648-016-9363-5

Zajacova, A., Hummer, R. A., & Rogers, R. G. (2012). Education and health among U.S.working-age adults: A detailed portrait across the full educational attainment spectrum. *Biodemography and Social Biology, 58*(1), 40-61. Retrieved from http://ezproxy.liberty.edu/login?url=https://search-proquest-com.ezproxy.liberty.edu/docview/1283770402?accountid=12085.

**APPENDIX A**

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

January 24, 2020

Amy Paulson Bennett
IRB Application 4146: The Effects of Enrollment in Remedial Classes on Students' High School Graduation Rates

Dear Amy Paulson Bennett,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Your study does not classify as human subjects research because it will not involve the collection of identifiable, private information.

Please note that this decision only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued non-human subjects research status. You may report these changes by submitting a new application to the IRB and referencing the above IRB Application number.

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

Sincerely,

[redacted]
*Administrative Chair of Institutional Research*
**Research Ethics Office**

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**APPENDIX B**

November 20, 2019

[redacted]

Dear [redacted]

As a graduate student in the doctoral department/School of Education at Liberty University, I am conducting research to better understand remediation courses effects on high school graduation rates while controlling for the variable of attendance. The title of my research project is THE EFFECTS OF ENROLLMENT IN REMEDIAL CLASSES ON STUDENTS' HIGH SCHOOL GRADUATION RATES and the purpose of my research is to find the effects on high school graduation rates of students who are placed in remedial and non-remedial courses while controlling for the students' attendance rates.

I am writing to request your permission to access and utilize student/staff test data/records.

The data will be used to better inform schools on the potential positive or negative effects participation in remedial courses has on high school students' graduation rates while controlling for attendance.

Thank you for considering my request. Please provide a signed statement on official letterhead indicating your approval. A permission letter document is attached for your convenience.

Sincerely,

Amy Bennett
Ed.D. Candidate Liberty University