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THE EFFECT OF A MENTORING INTERVENTION PROGRAM ON ACHIEVEMENT, ATTENDANCE, BEHAVIOR AND MATRICULATION OF AT-RISK HIGH SCHOOL STUDENTS

By
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Abstract

The involvement of community business partners in helping to close the achievement gap for students is a novel idea examined via detailed study of relevant literature and the results of a pilot intervention program. While the achievement gap is a problem for all student groups, the difference tends to be greater for students born into disadvantaged settings such as minority, single parent, poverty level, and government-assisted living situations. A review of literature was conducted to gain a greater understanding of the academic achievement gap, its causes and effects, the region in which the study was conducted, and relevant aspects of a systems approach to mentoring and social learning theory as they may be applied to educational reform. The mentoring intervention under review was one that infused a strategy for adding community business partners to the list of educational stakeholders—a list traditionally considered exclusively representative of teachers, parents, administrators, and students.

A Mid-Atlantic School District found itself struggling to educate an increasingly diverse student body amidst a growing achievement gap, increasing dropout rates, and general dissatisfaction on the part of teachers, parents, and students. The conclusions concerning the struggles of this Mid-Atlantic high school and their origins led to the development of the pilot mentoring intervention program which sought to establish and strengthen connections and collaboration between stakeholder groups to foster student achievement. This research study analyzes the underlying conditions of the organization and the origins of its challenges. It then reviews the pilot mentoring intervention program’s effect on measures of academic achievement and proposes recommendations for full implementation designed to promote the stability and adaptability required to close the
achievement gap and prepare students for matriculation through the acquisition of 21st Century Skills.
Dedication

This study is dedicated to my family, especially my grandfather, Edward Tyler, who embodied the pure essence of being a “Man” and from whom I learned not only the way in which to be one, but also the importance of family. He created a blueprint for caring fatherhood and through his actions articulated love, compassion, and dedication, which kept our family united and vibrant. Although he lacked a high school diploma, he worked for 30 years at the United States Naval Academy and was recognized and honored for his long years of valuable service and attendance at his retirement. He instilled in me an appreciation for the importance of education, encouraging me to read the daily newspaper from an early age and openly discussing the way in which education would provide opportunities for me and my children that had not been open to him. From the vantage point of adulthood, I look back upon his life and recognize what an important role his guidance has played in my own. I owe my critical thinking skills to his early instruction and encouragement. I carry my grandfather’s legacy with me each day and know that although he is no longer with my family physically, his love and wisdom are still guiding our steps. The fundamentals he infused in me have made possible my own long educational journey and my ability to utilize the fruits of it to change the outcomes of future generations.

This paper is also dedicated to my mother, Selena Elston, who never gave up on me, always had my back through our blood, sweat, and tears, and has given unconditional love to my wife, two children, and me. I am thankful to call her “Ma” and admire her patience, nurturing spirit, ability to love other people’s children as if they were her own, and her innate ability to see God in all things. I strive to demonstrate that same ability
and provide love to my world and the families that I interact with, both within and
outside of my professional career. I promise to treat every person with respect and care
for every child as if he or she were my own.

As a child, I observed the powerful impact men of color could make in a
community by investing intentional energy into the lives of those around them by
supporting the goals, dreams, and ambitions of the next generation, the first and most
powerful example of this being my own father. To my father, Ernest Elston, who taught
me the value of work ethic, grit, and toughness, I say “thank you” for all of the hard
lessons taught, for helping me to embrace fear and discomfort and move past them, and
for providing the encouragement to “Never Say Die.” I thank him for the sacrifices he
made, the foundation he laid down that has allowed me to achieve, for all of the coaching
and support, and for giving me the opportunity to play sports.

To my brothers, aunts, uncles, and cousins, I express my appreciation of our
family love and our unity through all the struggles and our ability to strive together and
keep family moving our family forward.

I thank all of my mentors for the time, energy and resources they willingly gave
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To the school district that nurtured me as a student, valued me as a community member and chose me to be an employee, I say thank you. I was truly blessed to have the opportunity to learn, develop and grow in a place that provided me with many of the valuable memories, experiences and lessons that have shaped and informed my life and professional career. It is a place in which I have been able to dream, aspire, achieve and ultimately help to provide a diverse population of students with the resources and support needed for them to dream, recognize their ambitions, and reach for their own goals.

I am thankful for all of the Community Stakeholders that cared enough to challenge me to grow personally and professionally. I give a heartfelt "THANK YOU" to those of you who picked me up on days I struggled and were there to congratulate me when things went well. As a School Community, we worked diligently to infuse the concept of Change into the bloodstream of the School, and the larger community it is a part of, and that is a HUGE accomplishment for ALL of us! Our students developed a
skillset and tools to Identify, Analyze, Plan, Implement and Create Change that can support them as they transition into the real world and in turn become Change Agents for the 21st Century.
Table of Contents

Abstract........................................................................................................................................... iii
Dedication....................................................................................................................................... iv
Acknowledgments........................................................................................................................... vi
Table of Contents .......................................................................................................................... viii
List of Tables .................................................................................................................................. xi
List of Figures ................................................................................................................................ xii
CHAPTER ONE: INTRODUCTION .............................................................................................. 1
Introduction and Background .......................................................................................................... 1
Statement of the Problem................................................................................................................... 5
Purpose of the Study ........................................................................................................................ 9
Mixed Methods: Concurrent ............................................................................................................ 9
Research Question(s) and Hypotheses ........................................................................................... 10
Aim of the Study ............................................................................................................................ 11
Methodology Overview .................................................................................................................. 12
Definition of Relevant Terms .......................................................................................................... 12
Delimitations and Limitations ........................................................................................................ 15
Significance of the Study ............................................................................................................... 16
Summary ........................................................................................................................................ 17
CHAPTER TWO: LITERATURE REVIEW ................................................................................ 21
Introduction .................................................................................................................................... 21
Theme 1 Social Learning Theory and Mentoring ........................................................................ 24
Subtheme A Types of Mentoring Programs .................................................................................. 27
Theme 2 Student Achievement ..................................................................................................... 42
Subtheme A-At-Risk Defined ................................................................. 42
Subtheme B-The Achievement Gap ...................................................... 44
Summary ............................................................................................. 52
CHAPTER THREE: METHODOLOGY .................................................. 55
Introduction ....................................................................................... 55
Research Question(s)/Research Hypotheses ...................................... 56
Research Design ............................................................................... 58
Participants/Data Sources ................................................................. 61
Data Collection Tools ...................................................................... 65
Data Collection Procedures ............................................................. 67
Ethical Considerations ..................................................................... 72
Summary ............................................................................................. 73
CHAPTER FOUR: FINDINGS .............................................................. 75
Introduction ....................................................................................... 75
Presentation of the Findings .............................................................. 77
Quantitative Findings Information .................................................. 79
Qualitative Findings Information ..................................................... 99
Analysis and Synthesis of Findings ................................................ 115
Summary ............................................................................................. 116
CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS .......... 119
Introduction ....................................................................................... 119
Purpose of the Study ......................................................................... 120
Aim of the Study ............................................................................... 120
Proposed Solution ............................................................................ 120
Support for the Solution ................................................................... 124
Factors and Stakeholders Related to the Solution ............................ 125
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation of the Proposed Solution</td>
<td>127</td>
</tr>
<tr>
<td>Implications</td>
<td>128</td>
</tr>
<tr>
<td>Practical Implications</td>
<td>128</td>
</tr>
<tr>
<td>Implications for Future Research</td>
<td>130</td>
</tr>
<tr>
<td>Implications for Leadership Theory and Practice</td>
<td>131</td>
</tr>
<tr>
<td>Summary of the Study</td>
<td>132</td>
</tr>
<tr>
<td>References</td>
<td>134</td>
</tr>
<tr>
<td>Appendices</td>
<td>150</td>
</tr>
</tbody>
</table>
List of Tables

Table 1. Gender Frequency of Study Participants ............................................................... 78
Table 2. Age Frequency of Study Participants ................................................................. 79
Table 3. GPA of Participating/Non-Participating Students .............................................. 81
Table 4. Non-Program participants grade point averages Adjusted ............................... 84
Table 5. Two-Sample T-Test and CI: Grade Point Average, Program ......................... 87
Table 6. Descriptive Statistics: Attendance ...................................................................... 88
Table 7. Descriptive Statistics: Attendance Adjusted ...................................................... 90
Table 8. Mood Median Test: Attendance versus Program .............................................. 90
Table 9. Statistics: Behavior Data ................................................................................. 91
Table 10. Diversity Matrix of Race of Non-Participating/Participating Students .......... 97
Table 11. The Correlation Matrix ................................................................................... 98
## List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Elston’s Theoretical Conceptual Model - Social Learning Theory</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Elston’s Theoretical Conceptual Model – Social Learning and Mentoring</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>Histogram of Program Grade Point Average of Participating Students</td>
<td>81</td>
</tr>
<tr>
<td>4</td>
<td>Histogram of Program Grade Point Average of Non-Participating Students</td>
<td>82</td>
</tr>
<tr>
<td>5</td>
<td>Probability Plot of Program Students’ Grade Point Average Students</td>
<td>82</td>
</tr>
<tr>
<td>6</td>
<td>Probability Plot of Non-Program Students’ Grade Point Average Students</td>
<td>83</td>
</tr>
<tr>
<td>7</td>
<td>Histogram of Non-Program Students’ Grade Point Average Adjusted</td>
<td>84</td>
</tr>
<tr>
<td>8</td>
<td>Probability Plot of Non-Program GPA - Adjusted</td>
<td>85</td>
</tr>
<tr>
<td>9</td>
<td>Main Effects Plot for Grade Point Average</td>
<td>86</td>
</tr>
<tr>
<td>10</td>
<td>Test for Equal Variance for Grade Point Average</td>
<td>87</td>
</tr>
<tr>
<td>11</td>
<td>Histogram of Program Attendance Program Participating Students</td>
<td>89</td>
</tr>
<tr>
<td>12</td>
<td>Histogram of Program Attendance Program Adjusted</td>
<td>89</td>
</tr>
<tr>
<td>13</td>
<td>Main Effects Plot for Attendance</td>
<td>91</td>
</tr>
<tr>
<td>14</td>
<td>Histogram of Behavior Non-Participating Program Students</td>
<td>92</td>
</tr>
<tr>
<td>15</td>
<td>Histogram of Behavior Participating Program Students</td>
<td>93</td>
</tr>
<tr>
<td>16</td>
<td>Main Effects Plot for Behavior</td>
<td>93</td>
</tr>
<tr>
<td>17</td>
<td>Probability Plot of Program Behavior</td>
<td>94</td>
</tr>
<tr>
<td>18</td>
<td>Probability Plot of Non-Program Behavior</td>
<td>94</td>
</tr>
<tr>
<td>19</td>
<td>Dot Plot of Matriculation Non-Participating/Participating Students</td>
<td>95</td>
</tr>
<tr>
<td>20</td>
<td>Histogram of Matriculation Non-Participating/Participating Students</td>
<td>96</td>
</tr>
<tr>
<td>21</td>
<td>Bar Chart of Race Non-Participating and Participating Program Students</td>
<td>97</td>
</tr>
<tr>
<td>22</td>
<td>Recommendations for the CodeName Program Conceptual Framework</td>
<td>128</td>
</tr>
</tbody>
</table>
CHAPTER ONE: INTRODUCTION

Introduction and Background

Historically, disenfranchised students were most at-risk for dropping out of kindergarten (K) through 12th grade schools. In fact, K-12 drop-out rates were often used as a measure of a school’s educational success or failure (Chapman, Galina, & Devenish, 2014). Efforts to close gaps in academic achievement between Black and White students in American schools have been essentially ineffective (Schwartz, 2001). The student achievement gap is broadly defined as the disparity in academic performance between groups of students (National Association for Educational Progress, 2014) and has been widely acknowledged as a critical failing of American schools.

Research has demonstrated that students are more successful when they are actively involved in the learning process and that schools cannot focus solely on student achievement measures for continuous improvement (Schwartz, 2001). One strategy for educating today’s youth, with their almost instantaneous access to information and communication through technology and the subsequent predisposition to the expectation that learning will also be as quick and effortless, is the instructional student-centered approach, as defined by Professional Learning Networks (International Society for Technology in Education, 2018). The student-centered approach encourages students’ active voice and active participation in learning, moving students from passive receivers of information to active participants in their own discovery process (International Society for Technology in Education, 2018). What students learn, how they learn, and how their learning is assessed; are all driven by each individual student’s needs and abilities. While the achievement gap is a problem for all student groups, it tends to be wider for at-risk
students, meaning those students disadvantaged by poverty and those who live in single
parent homes and/or government subsidized housing (National Center for Educational

The school selected for the study typifies this achievement gap. To address the
achievement gap through educational reform, a professional learning community of
educators, community and business leaders banded together to seed a unique program
offering a systematic approach to mentoring in the study high school. The program
combined aspects of the social learning theory and a systematic four-part mentoring
approach:

1. Community-Based
2. School-Based
3. Career-Based
4. Group-Specific

This four-part mentoring created a platform for a cohesive support intervention by
which to transition at-risk students into productive and responsible adults with requisite
skills for success in the workforce and life. The program blended social learning with the
development of meaningful mentoring relationships in conjunction with the appropriate
education. The ultimate goal was to provide a holistic strategy for closing the
achievement gap.

In the quest for an intervention that would unlock the door to productive and
positive futures for those who wanted to fully participate and graduate, the community
looked to mentoring as a solution. “Mentoring programs have achieved extensive public
recognition due to their remarkable success in increasing positive behaviors in youth and
reducing negative behaviors; overall, youth participation in mentoring relationships improved important educational measures such as unexcused absences and better attitudes” (Satchell, Waring, Walters, & Alberta, 2006, p. 40).

Figure 1. Elston’s Theoretical Conceptual Model for the four-part mentoring blended with the Social Learning Theory to support a professional learning community.

The long-standing traditional approach to learning, which focused on memorization and rote learning, dominated American education until the end of the nineteenth century, when the education reform movement imported progressive education techniques from Europe (Beck, 2009). This program’s four-part mentoring framework and model-driven approach were designed to foster critical thinking and problem-solving abilities through identification, analysis, planning, and implementation. The mentoring intervention program incorporated interactive projects and real-life applications in order to encourage and empower students to develop the 21st Century Skills achievement as measured by grade point average, attendance, behavior and matriculation.

In order to gain context, the researcher reviewed an intervention program conducted in New York, which sought to improve disadvantaged urban schools, a complex and multifaceted endeavor that required a comprehensive and integrated set of
community, school, and related social resources (Bryk, Sebring, Allensworth, Luppescu & Easton, 2010). The New York School based program operated as a traditional school until 2001 (Peck, 2010), when the teachers and administrators chose a systems approach model, which is now regarded as the exemplification of success (Woodfin, 2009) and “has won numerous awards such as the High Performing Gap Closing School Award” (Ikpeze, C., 2013, p. 18). This school’s success can be regarded as a clear example of empirical data demonstrating that change can be fostered by communication, collaboration, and culture.

Mentoring has been used as a device for guidance and teaching for centuries. The term mentor first appeared in Homer’s epic poem, *The Odyssey*, in which Odysseus placed his friend, Mentor, in charge of his son and palace when he left for the Trojan War (Davis, 1997). As the word and concept have evolved over the years, mentoring has come to be recognized as an important tool in behavior modification, student support, and performance enhancement (DuBois & Karcher, 2014). Mentoring is defined as an established relationship where one person nurtures another and assists in his or her achievement (Allen & Eby, 2011). In the context of this research on an interventional program, mentoring can be the vehicle for instruction that reaches far beyond the purely academic into the realm of how one thinks, processes information, critically analyses and solves problems. The goal of the study was to determine if a mentoring intervention program improved the grade point average, attendance, behavior and matriculation of at-risk student participants.
Statement of the Problem

Both the existence of the achievement gap and the need for an effective solution to it are borne out by statistics concerning teens in the demographic area that the researcher reviewed. While middle school assessment in this district showed academic achievement in 2015 for students in grades six through eight exceeded averages for the state in which it was located, “low income students in the eighth grade [were] 16.6 points behind in reading, 23.5 points behind in math, and 17.9 points behind in science” [Anonymous, 2015, p. 34]. These at-risk students generally moved toward adulthood with deficits in soft skills, career guidance, and job training necessary to prepare them for higher education. It was hardly surprising that the Department of Education in the state reported the average drop-out rate in 2014, representing those who entered the ninth grade in 2010 but did not graduate in four years, at over 8% (2017) or that a 2015 report indicated that 8% of teens and 14% of young adults in the state were neither in school nor employed [Anonymous, 2015]. These disconnected teens were “failing to acquire post-secondary education in 21st Century Skills employers require[d]” and were at high risk for becoming chronically under-employed or unemployed adults [Anonymous, 2015, p. 33].

Despite National Association for the Advancement of Color People involvement in the 2004 filing of a class action discrimination complaint against the school district of the selected Mid-Atlantic high school, citing disproportionate incidence of Black students’ suspensions, expulsions, and drop-out as well as evidence of the absence of Black presence in advanced placement courses and programs directed at accelerated academic progress, substantial inequity in academic achievement has continued to plague
the selected high school and its school district [Anonymous, 2004]. It is a matter of record that in 2007, Black and White students constituted almost identical percentages of the student population at the selected Mid-Atlantic High School [Anonymous, 2015]. However, the academic performance of those two demographic groups was disturbingly different, with roughly 33% of Black males failing to graduate at the end of the 2006 academic year although approximately 95% of their White counterparts did [Anonymous, 2015]. By 2011, 37% of Black students had a grade point average below 2.0, while only 6% of White students fell into this category. As the number of immigrant students increased, the Hispanic demographic was also found to exhibit poor academic performance, with 33% having grade point averages below 2.0 [Anonymous, 2015].

Despite public outcry and widespread awareness of the need for a solution, by the 2013-2014 academic year, only “50 percent of Black students took at least one Advanced Placement course…as compared to 68 percent of their White counterparts” while “sixteen percent of Black students were suspended…compared to just five percent of their White peers” [Anonymous, 2015, p. 34]. Although offers of merit-based funds for higher education to graduates of the selected high school have doubled since 2007, reaching totals in excess of $6 million, 42% of the student body continues to struggle under the effects of poverty, 92.7% of that number being Black [Anonymous, 2015]. These statistics demonstrate the need for a new approach by which to address student achievement gaps.

The Mid-Atlantic school district established a pilot program entitled CodeName, a districtwide response to education reform intended to act as a bridge between the theory and practice of student engagement by providing a forum for community and business
partnerships that included mentorship, co-curricular exposure to various careers, facilitated internships, job shadowing, and a 21st Century curriculum. The pilot CodeName program’s goal was to support at-risk students where they needed it most.

The pilot CodeName program challenged the participating students from the beginning of their experience in the high school environment through graduation with innovative programs, courses, speakers, field trips, and projects. The pilot CodeName program blended an intense two-year preparatory pathway (grades 9 and 10) which included the Student Leadership Series and the Problem Solving/Critical Thinking/Change Management Exploration I Course with 11th grade Problem Solving/Critical Thinking/Change Management Exploration II Course and 12th grade Personal Industry Project. Upon completing the 9th and 10th-grade prerequisite, students received a Leadership Academy Certificate. Following completion of the 11th and 12th-grade requirements, students received an industry certification from the pilot CodeName program.

In the 9th Grade the pilot CodeName program provided overlays of Problem Solving/Critical Thinking/Change Management in Core Courses (English, Math, Science and Social Studies). The overlays consisted of engaging activities that exposed students to a variety of skills, experiences, and careers, enhancing their understanding of real-world connections to their academic pursuits.

“Overlays are vehicles, placed at significant points in the core course curriculum, with which to make connections between academic content and workforce relevance. Experts in the field, classroom teachers, and curriculum specialists become fully engaged partners to create the overlays. Business,
industry, and community partners determine topics that are currently important in their field which bring relevance to the content, while teachers and curriculum specialists determine how these ideas will be introduced and where they are appropriate in the curriculum. The Business Partners are not curriculum writers, but they are experts in their field. The Teachers are not necessarily field experts, but they are experts in their content and in the best ways to impart that content to students. The purpose is to contextualize the curriculum – give the students the “Why do I need to know this?” opportunities. It is essential to the Overlay Process that we bring both groups together, to combine their collective expertise, so that students see the connection between what they are learning and the wider world of post-secondary education and careers” [Anonymous, 2016].

Workforce links and career exploration were embedded into classroom activities created for each overlay. Participating 10th graders in the program took the year-long Problem Solving/Critical Thinking/Change Management I Course, which linked to co-curricular clubs such as the Leadership Academy, Junior Watershed program, Architect Construction Design Mentoring Club, and the Service Learning Club. Participating 11th graders were enrolled in the year-long Problem Solving/Critical Thinking/Change Management II Course followed by Career Internships, Community College Jumpstart enrollment, and Career Mentorship through the Community Service Learning Club during the senior year.

Given the demographic and cultural forces at work in the subject high school’s locality, the originators of the pilot program felt that it was appropriate and necessary to separate the first two cohorts into male or female exclusive groupings. It was the opinion
of the Mid-Atlantic high school leadership that several important issues to be addressed for the at-risk students would differ based on gender. These initial cohorts were a group of 25 males the first year and a group of 25 females the second year.

The pilot CodeName program, through a partnership of students, educators, and community and business leaders, employed mentoring techniques through the medium of curricular and co-curricular partnership programs, community service activities, and work-based learning opportunities to provide interesting, challenging, and workforce relevant enhancements to typical classroom instruction. This unique opportunity for social learning and the development of meaningful mentoring relationships in conjunction with work and life relevant education provided a solution to closing the achievement gap and served as the key to unlock the door to productive and positive futures for those who fully participated and graduated from the pilot CodeName program.

**Purpose of the Study**

The purpose of this mixed methods study was to compare the differences between achievement, attendance, behavior, and post-secondary matriculation of at-risk students who participated in the CodeName program with those of the students who did not participate in the CodeName program. The goal of the study was to determine if a mentoring intervention program improved the grade point average, attendance, behavior and matriculation of at-risk student participants. At-risk students were defined as those students who were either from minority backgrounds, living in single-parent homes, impoverished, residing in government subsidized housing or possessed one or more of the following: a cumulative grade point average between 1.75 and 2.25, five or more behavior referrals, and/or five or more unexcused absences. Using a mixed methods
approach, the researcher will determine if the program, with its links to vocational education, part-time job placements, and internships with local businesses, helped students improve their grade point average, attendance, behavior and matriculation.

**Research Questions and Hypotheses**

This research will examine the difference between variables associated with student success of those who participated in the CodeName program and those who did not. The following research questions guided this study:

**Research question #1:** Is there a difference in achievement, as measured by grade point average, between at-risk students participating in the CodeName program and those not participating in the program?

**Research question #2:** Is there a difference in school attendance between at-risk students participating in the CodeName program and those not participating in the program?

**Research question #3:** Is there a difference in behavior between at-risk students participating in the CodeName program and those not participating in the program?

**Research question #4:** Is there a difference in post-secondary matriculation between at-risk students participating in the CodeName program and those not participating in the program?

**Hypothesis**

This research will test the null hypotheses that follow, using a MANOVA:

1. $H_0$: There is no difference in achievement, as measured by grade point average, between at-risk students participating in the CodeName program and those not participating in the program.
1. **H 1**: At-Risk students who participate in the CodeName Program have a higher-grade point average.

2. **H 2**: There is no difference in school attendance between at-risk students participating in the CodeName program and those not participating in the program.

2. **H 2**: At-Risk students who participate in the CodeName program have a higher/better attendance.

3. **H 3**: There is no difference in behavior infractions between at-risk students participating in the CodeName program and those not participating in the program.

3. **H 3**: At-Risk students who participate in the CodeName program have better behavior.

4. **H 4**: There is no difference in matriculation between at-risk students participating in the CodeName program and those not participating in the program.

4. **H 4**: At-Risk students who participate in The CodeName program have higher rates of matriculation.

**Aim of the Study**

The aim of the study was to determine if a mentoring intervention program improved the grade point average, attendance, behavior and matriculation of at-risk student participants. The CodeName program was intended to be an intervention program. If the research can show that the program is effective, it could be offered as an intervention for student achievement as it relates to grade point average, attendance, behavior, and matriculation of at-risk students in other high schools.
Methodology Overview

This researcher will examine the CodeName program, using MANOVA, to determine if there was a significant difference between participants’ and non-participants’ academic achievement, as measured by grades, school attendance, behavior, and matriculation. Although primarily quantitative in nature, mixed methods were used to determine if participation in the CodeName program led to an improvement in academic achievement, as measured by grade point average (GPA); attendance in school; behavior, as measured by number of infractions; and matriculation, as determined by acceptance into a post-secondary school. Graduates of the CodeName program were surveyed and interviewed regarding the effectiveness and quality of the program delivery and sessions. Furthermore, by interviewing the parents and program Facilitator and gathering feedback to discover the most engaging aspects of the program, the curriculum and activities could be honed to maintain the highest levels of student interest in the future.

Definition of Relevant Terms

For the purposes of this study, the following terms were defined as described:

*Achievement gap:* The frequently observed difference between the educational outcomes of majority White, middle class students and those of at-risk students.

*At-Risk students:* Students who are either from minority backgrounds, live in single-parent homes, impoverished, reside in government subsidized housing or possess a cumulative grade point average below 1.75 to 2.25, five or more behavior referrals, and/or five or more unexcused absences. Any one of these designations will indicate an at-risk student.
Post-Secondary achievement: A student’s matriculation into college or a student’s holding of employment after graduation shall be deemed achievement for the purposes of this study.

CodeName Program: An on-site interventional program for at-risk students which includes a life and employment curriculum, speeches from successful community and business leaders, and systematic mentorship.

Grade point average: The average obtained by dividing the total number of all accumulated final grades earned in courses over time by the number of courses attempted, more commonly called GPA.

Attendance: The average percentage or actual number of days that students are physically present in school during the regular school year.

Behavior: The way in which students act or conduct themselves that conflicts with the student rules, regulations, and code of conduct that results in a suspension, disruption and/or documented removal from the classroom or school building.

Matriculation: the acceptance of a student into a post-secondary school or trade school.

Student/Family Hardship: Unique adverse circumstances including but not limited to those of a financial or medical nature.

Problem Solving/Critical Thinking/Change Management Exploration Course: This course, specific to the CodeName program, fosters student creativity and intellectual curiosity and challenges thinking in an effort to assist the acquisition of the skills needed to influence change in the world as the students become agents of change. Students are provided with many opportunities to observe, learn, and exercise
leadership skills, as well as to recognize and utilize the positive benefits of change, as they acquire the tools to identify, analyze, plan, implement, and create change. The innovative curriculum draws on the resources of the business community’s knowledge and expertise, infusing life-applicable lessons into the classroom by directly involving business and community leaders as speakers and hosts and promoting interactive dialogue between the guest speakers and the students.

*Personal Industry Project:* This project, specific to the CodeName program, assists the students in learning about themselves, their abilities, and their passions. Both platform and interactive activity, the creation of the student personal project allows each student to identify an issue or gap they see in their school, community, or the world, which the student then addresses through a model-driven approach (Identify, Analyze, Plan, Implement and Create Change).

*21st Century Skills:* The skills which are necessary to become and remain competitive in the changeable modern job market. These skills include: critical thinking, social skills, the ability to communicate and collaborate, initiative, leadership, flexibility, productivity, creativity and literacy in the areas of information, media, and technology.

Outside of this study, these terms may have alternative definitions. These definitions may be broader or narrower depending upon the term and its use in literature. Despite this fact, it is important that, in the context of this study, these terms maintain the specific definitions elaborated above. It is the researcher's belief that the term "at-risk" is the appropriate term for the student population affected by the academic achievement gap as measured by grade point average, attendance, behavior and
matriculation, while it is the school district's opinion that the students who participated in
the program should not be labeled "at-risk" and that the program is a program of choice
in the Mid-Atlantic school district rather than an "intervention".

**Delimitations and Limitations and Personal Biases**

This study was delimited by the fact that the students involved in the CodeName
program were from a single school in a certain school district in a specific city in the
United States. This study did not claim to be generalizable to all at-risk students in all
cities across the United States or in the world. Further, its curriculum, set of speakers,
mentors, and model-driven approaches to problem-solving would naturally vary from
school-to-school. Although all students who fit the demographics of being at-risk were
invited to participate in the study and were offered multiple opportunities to do so, those
who ultimately elected to join and remain in the CodeName program were those who
chose to do so. Finally, this research study acknowledged certain personal biases. The
researcher, being a Black male who shared many of the demographic characteristics of
the at-risk research participants, wanted very much to find a way to help a population that
continues to be underserved, as evidenced by data.

**Leader’s Role and Responsibility in Relation to the Problem**

Student achievement, in the researcher’s view is about educational equity and
effectiveness. The purpose of this mixed methods study was to compare the differences
between achievement, attendance, behavior, and post-secondary matriculation of at-risk
students who participated in the CodeName program with those of the students who did
not participate in the CodeName program. The program could lead to Mid-Atlantic
school districts making evidence-based managerial choices when designing intervention
programs for at-risk students. This research identified ways to reduce the achievement
gap, increase student attendance, and improve student behaviors and outcomes in pursuit
of the betterment of education and, through it, society as a whole. Involvement in this
intervention taught students critical thinking, problem solving and work-based skills
which helped to equip them with skills for the lives they would lead as adults. It was and
is the researcher’s philosophy that learning early on that change is inevitable and
acquiring the ability to adjust to change is essential for lifelong achievement. It is the
researcher’s belief that a learning community that encompasses the Jesuit values of caring
for and developing the “whole person” of each learner is a vital component to student
achievement.

**Significance of the Study**

If the findings of this study suggest positive results, educators could potentially
change the system that gets bad results. In this case, that means examining the
intersections of demographics, perception, student learning and school processed data and
utilizing those examinations and findings to make decisions to facilitate the learning
communities. Learning communities empowered in this way could in turn assist school
districts in bringing together the disparate pieces of the school “family” to reach the
collective goal of a fully engaged school community. This pilot CodeName program
positioned the facilitator as an educational leader, agent of change, within the school
building, providing a means to coordinate and direct all of the resources available in this
undertaking to best effect. The role of educational leader was vital in pulling together the
many components required for success, which included:

1. Society and community needs.
2. Constraints and interconnections of the total learning community,

3. The enhancement of teacher-principal relationships that foster a shared expectation for each student’s behavior and development.

4. The fostering of greater connection between school and its surrounding community.

5. The creation of a platform to connect with the business force and impart the skills needed for success in attaining jobs in the 21st Century work environment (Song, Furco, Lopen, & Maruyana, 2017).

The business of schools is to educate students and it is the duty and responsibility of the educators to create, foster, and nurture an environment in which student success is the main focus of the school. The educators must be advocates for learning and growth of not only students, but of instructional staff as well. The engagement of students in the learning process and the enhancement of their experience are critical to the success of this undertaking. The strength and development of the American system of education depends upon educational leadership willing to openly examine, investigate, and redesign to meet the demands of our changing society and the diverse factors that shape it.

Summary

The achievement gap in this Mid-Atlantic region was a well-documented problem. The disparity was wider in poor and minority populations, for which an effective solution had yet to be found. The researcher will examine an intervention to close the achievement gap by utilizing social learning’s theoretical framework, with mentoring as a key component and leadership tool. According to Bandura’s Social Learning Theory, observed learning, which occurs when people interact, directs the
behavior and by extension the thoughts and decisions of the individual (Bandura, 1977). The pilot CodeName program, which formed the basis of this study, employed this phenomenon in the endeavor to change and improve the behavior and ultimately the academic outcomes of at-risk students.

This research will examine a mentoring intervention program that was established in a Mid-Atlantic High school through a systematic approach, linking all components of the educational process in support of the overarching goals of the organization. Analyses of mentoring programs revealed the connections and linkages between the interdependent components within the organizational structure (Anonymous, 2015). At its most basic level, an organization is comprised of many stakeholders, which in this instance included students, parents, teachers, administrators, staff, community and business partners, all with unique perspectives, constraints, and considerations that had to be addressed and reconciled for the system to function efficiently.

As society continues to evolve and change, greater numbers of youth are in need of reliable and caring adult guidance. Increasing stress, financial hardship and families in crisis contribute to the need for a reliable and steady base of support upon which to develop a positive sense of self. Just as students acquire academic knowledge, they must gain social and emotional skills, through teaching and practice (Lambert, 2013). Application of the systems approach to educational reform has been demonstrated to produce positive results (Peck, 2010; Snyder et al., 2014). This organizational leadership philosophy helps examine and strengthen the connections and interactions between the various groups and individuals who are part of and support the education of our youth. Action is required if the significant number of at-risk and disconnected youth are to
acquire post-secondary education and be equipped with the skills needed to obtain employment in the workplace today and the future. The Mid-Atlantic high school chosen for the current study typified the achievement gap with a diverse student population representative of the wide-ranging household demographics present in the school district and county and a significant measurable disparity in academic outcomes between students of different demographic groups.

This study will compare the differences between four measures of academic success, grade point averages, attendance, behavior and post-secondary matriculation, of at-risk students who participated in the CodeName program with those of at-risk students who did not participate. Through a mixed methods approach, the researcher seeks to determine if the program, with its links to work experience and work-relevant training, helps improve grade point average, attendance, behavior and matriculation. The research questions developed to determine if there is a difference between variables associated with student success for the participant and non-participant groups, examined measures of grade point average, attendance, behavior and matriculation. The study aimed to evaluate an evidence-based solution to the achievement gap for at-risk students in the Mid-Atlantic region.

This mixed methods study, primarily quantitative in nature, will examine the CodeName using MANOVA to determine if there was a significant difference between the variables being measured for the participant and non-participant groups of students. Qualitative data was obtained through surveys to enrich the conclusions drawn from the quantitative data and obtain feedback concerning program delivery and perceived effectiveness. The study’s delimitations include the facts that students are drawn from a
single school in a specific city and school district, that curriculum, mentors and specific model-driven problem-solving would vary from school to school, and that, while all students fitting the demographics were invited to participate in the study, participation depended upon the choice of each student so invited.

This study concerns educational equity and effectiveness in achieving it, positioning the Facilitator of the CodeName program as an educational leader and agent of change, coordinating and linking the many components of the system within which the program operated, to create and nurture an environment in which student success was the focus and goal of the school. The vigor and future of the American educational system and the students yet to be educated are equally dependent upon the foundations set and actions taken by the educational leaders of the present.
CHAPTER TWO: LITERATURE REVIEW

Introduction

“Mentoring is a two-way circular dance that provides opportunities for us to experience both giving and receiving each other’s gift without limitation and fears” (Huang & Lynch, 1995, p. 10).

This review of the literature will include historical information on the achievement gap in the study area, a description of the affected population, the unique nature of the intervention program studied and the potential effectiveness of this intervention program to close the achievement gap. It will introduce social learning as the theoretical framework by which this research seeks to identify mentoring as a key component offering the potential to affect positive change in historically underserved and under-achieving at-risk students. It will also include academic findings, timeliness, and relevance of mentoring programs as they relate to primary categories of mentoring employed in the CodeName program. Finally, this research study will review a systems approach to mentoring through a leadership lens to analyze the fundamental issues of sustainable leadership and organization development.

Historical Data

“According to the Annie E. Casey Foundation’s 2015 Kids Count report, 1.3 million (7 percent) of U.S. teens ages 16 to 19 and 4.9 million (16 percent) of young adults ages 18 to 24 are neither in school nor employed” [Anonymous, 2015, p. 36]. In this Mid-Atlantic state, the corresponding figures are 24,000 teens (8 percent) and 77,000 young adults (14 percent) who are not in school or employed. Bleak prospects for these “disconnected youth” include a future characterized by unemployment, poverty, and little hope of positive change. In fact, in the U.S. today, 1.4 million, of these young adults are
already parents, “perpetuating an intergenerational cycle of poverty” [Anonymous, 2015, p. 36]. Closing the achievement gap, saving at-risk students from troubled and unproductive futures, and breaking existing cycles of poverty and disappointment means intervening while these youths are still in school. Many of these young adults lack not only the skills needed for employment; they lack the basic ability to follow the rules and communicate.

The state department of education acknowledged the achievement gap at the study high school in 2006, when it took it over, displacing the school staff. That year, 33% of Black males did not graduate, and over 73% of minority students had less than a 2.0 grade point average. Five years later, that number had scarcely budged, with the graduation rate up only one percent to 68% for Black males. By contrast, at least 95% of White males and 92% of White females graduated. A 2015 community study showed that the roots of the achievement gap in this locality were based in childhood and family circumstances of at-risk children and extend into the economy, community, and educational infrastructure. County statistics collected in 2015 reveal that the issue of the achievement gap appears early, with 43% of minority children entering kindergarten lacking the skills for successful kindergarten participation. By eighth grade, children who receive FARMS (Free and Reduced Meals in Schools) lag in school assessments by as much as 34%. At the high school level, chronic absence, a predictor of drop out, is seen in more than 15% of all students [Anonymous, 2015].

The achievement gap seen in this Mid-Atlantic High School is more easily understood when one observes the sharp divides in wealth and poverty, household demographics, education, and ethnicity found in the area it serves. Median household
income in the county is 64% higher than the national median income [Anonymous 2, 2015]; yet of the approximately 125,000 children residing in the county, more than 8% live in poverty [Anonymous 2, 2015]. Moreover, roughly 15% of all family households in the county are headed by a single female with one fifth of these falling beneath the poverty line [Anonymous 2, 2015]. The erosion of the middle class and widening of the economic gap in the county is mirrored in the wide variance in education level of adult residents, 42% of whom hold at least an associate’s degree as compared to 35% with no more than a high school education and 10% of that number with no high school diploma [Anonymous 2, 2015].

The county’s ethnic and cultural diversity merely complicates an already problematic mix of factors [Anonymous 2, 2015]. The effects of low income, which put young children at increased risk of health, mental, and developmental disorders [Anonymous 2, 2015], in combination with family circumstances and demographics such as single parent households and non-English speaking elders, give rise to disturbing statistics concerning children and their education. The roots of the achievement gap in Mid-Atlantic county reach back into the childhood and family circumstances of each at-risk child and spread across the fronts of economy, community, and educational infrastructure. The Mid-Atlantic High School’s pilot CodeName program offers a four-part approach to mentoring that combines aspects of social learning theory and group mentoring as the platform for a cohesive support program by which to transition at-risk students into productive and responsible adults with the requisite skills for success in the work force and life.
Theme 1 Theoretical Framework Social Learning Theory and Mentoring

The theoretical framework for this study is grounded in Bandura’s Social Learning Theory, which focuses on the connection between people and the social and cultural context of their shared experiences, stressing that observed learning is an information-processing activity that subsequently directs the actions of the individual (Bandura, 1977). The theory posits that mediational processes—thinking about the relationship between behaviors and their consequences prior to imitation of the mentor or model—are necessary for observational learning to occur (McLeod, 2016).

Figure 2. Elston’s Theoretical Conceptual Model for the four-part mentoring blended with the Social Learning Theory including professional learning community with stakeholders.

Guided social learning is both method and goal in mentoring relationships. A substantial body of research as well as anecdotal evidence exists to support its ability to play a beneficial role in the overall development of youth. Rhodes (2002, 2005) points to three interconnected and indisputably positive results of the mentoring process when directed at young people: “(1) by enhancing youth’s social relationships and emotional
well-being, (2) by improving their cognitive skills through instruction and conversation, and (3) by promoting positive identity development through serving as role models and advocates” (Rhodes, Spencer, Keller, Liang, & Noam, 2006, p. 694). Freud (1914) hypothesized that unconscious assimilation occurs when people identify characteristics of desirable behavior in others (Rhodes, et al., 2006). “As they identify with their mentors, youths may find that their early internalizations begin to change, causing shifts in their sense of identity and social roles” (Rhodes, et al., 2006, p. 695). Thus, mentors, both as examples to be emulated and sources of support and counsel, may positively influence the development of a young person’s sense of self and what they may aspire to and achieve (Rhodes, et al., 2006).

Given the conclusion that mentoring possesses the ability to shift self-perception of the mentee in directions that are beneficial in the short-term and long-term, it is unsurprising that research supports the assertion that low self-esteem in youth is linked to a host of negatives, from the effects on physical and mental states to those that affect success in life and work (Trzesniewski, Donnellan, Moffitt, Robins, Poulton, & Caspi, 2006). Harter (1990) posits that relationships, especially those which are supportive and nurturing, are critical components in the development of self-esteem while psychology points to the connection between the development of self-esteem and the existence of close supportive and caring relationships in early life (Kohut, 1977). “Longitudinal research on natural mentoring relationships indicates that adolescents who report having an important non-parental adult in their lives tend to report greater psychological well-being, including self-esteem and life satisfaction (DuBois & Silverthorn, 2005)” (Schwartz, Lowe, & Rhodes, 2012, p. 18). Schwartz, Lowe, and Rhodes (2012) assert
that this strengthened sense of self-worth, especially in terms of academic ability, exerts a positive effect on cognitive development as well as the development of the mentee’s sense of self. Corollary benefits would presumably occur in relationships with parents and peers, which would in turn, magnify and extend the positive effects in other spheres of life. As evidenced by extant research and in the words of Sarah Schwartz, “Close and enduring relationships may have a unique capacity to influence youth self-esteem” (Schwartz, Lowe, & Rhodes, 2012, p. 18). Thus, self-esteem, a critical component in successful modeling, particularly for at-risk youth, must be fostered through the trust and security of a strong mentor-mentee bond, as the individual must value his or her own opinions sufficiently to act on them (Bandura, 1977).

Etymologically, mentor has come to mean teacher, coach, counselor, and builder of relationships based on trust. As the word and concept have evolved over the years, mentoring has become an important tool in behavior modification, student support, and performance enhancement (DuBois & Karcher, 2014). In interventional program areas, such as student support activities and parent communication, mentoring has the potential to optimize positive student outcomes (Smith, 2013). Specifically, there is evidence of improved discipline, attendance, student engagement, and attitude linked to the implementation of School-Based Mentoring (DuBois, & Karcher, 2014).

**Literature about Social Learning Theory and Mentoring Field**

To address the achievement gap through education reform, a professional learning community of educators and community and business leaders banded together to seed a unique program offering a systematic approach to mentoring in the study high school. The program combined aspects of social learning theory and group mentoring as the
platform for a cohesive support program by which to transition at-risk students into productive and responsible adults with requisite skills for success in the workforce and life. By blending social learning with the development of meaningful mentoring relationships in conjunction with the appropriate education and community resources, the program sought to provide a uniquely effective solution to closing the achievement gap. “The idea is that focusing on student's individual needs in four areas—academics, health, family, and social-emotional well-being—and matching them with the right kinds of assistance and intervention programs, will lead to more successful citizens in the long run” (Superville, 2018, p. 1). “Weaving a seamless and tailored web of services for children and families inside and outside of school has been the central tenet of endeavors blending social learning with education” (Superville, 2018, p.3). A survey conducted in 2010 in the community of this Mid-Atlantic High School indicated that this CodeName program could be the key to unlocking to the skills to increased student success as measured by matriculation to post-secondary experiences for those who fully participate and graduate. This intervention program was delivered through a four-part mentoring framework (In-School, Community, Career and Group Mentoring) infused with interactive projects and real-life applications to challenge students to develop the skills they needed through a model-driven approach of Identify, Analyze, Plan, Implement, and Create Change.

Sub-Theme A-Type of Mentoring Programs

Mentoring can be informal or formal, one-on-one, and group-based, community-based, or school-based. In this literature review, four formal programs are analyzed:
community-based programs, school-based programs, career mentoring, and group-specific programs.

**Community-Based Mentoring Programs**

Community-based mentoring grew from the need for reliable interventions aimed at helping at-risk youth develop skills and improve self-esteem. “The focus of community-based mentoring is on improving young people’s interpersonal skills and enhancing their developmental assets, both of which foster greater personal capability and a greater sense of self-worth” (Dubois & Karcher, 2005, p. 8). Community-based programs such as Big Brothers and Big Sisters are more widely recognized than any other types of mentoring programs (Garringer & MacRae, 2007). These programs usually consist of one-to-one mentoring with a volunteer from the community. Community-based programs are based on relationships with mentors as role models, who spend more time interacting with their mentees in non-academic activities and building strong relationships with mentees and their parents (Herrera, Grossman, Kauh, Feldman, and McMaken, 2007). This style of mentoring fosters a sense of safety, allowing mentees to express themselves and receive guidance by engaging in social and community activities (Herrera et al., 2007).

Community-based programs require that the mentor undergo a screening process prior to being matched with a mentee enrolled by a parent or guardian (Jucovy, 2000). Due to extensive screening and training required for volunteers, community-based programs are more expensive than some other types of programs, such as school-based programs (Kolar & McBride, 2011). Current research on the effect of community-based mentoring programs on academic achievement is not conclusive as a result of the
limitations imposed on attempted evaluations. An evaluation of four-year mentoring programs involving 36 mentees at two Mid-Atlantic Big Brothers/Big Sisters organizations found no evidence that mentees benefited from their participation in the programs (DuBois & Karcher, 2013). By contrast, it was shown that students benefited from their participation in Sponsor-a-Scholar (SAS), a program in Philadelphia that encourages at-risk high school students to stay in school. These results, based on longitudinal data from a sample of 434 students from four consecutive graduating classes, revealed that students who benefitted the most were those who had attended poor schools, had low grade point averages, were not motivated, or received only limited family support (Chan et al., 2013; Wheeler, Keller, & Dubois, 2010; Wood & Mayo-Wilson, 2012). Likewise, a study of the 4-H Mentoring Program, Youth and Families with Promise (4-H YFP), involving 38 students in grades 5-8, revealed significant improvements in motivation, self-regulation, gains in academics, and improved attitudes towards teachers and school (MacArthur, Higginbotham, & Ho, 2013). Although lacking a tutoring element, the program was shown to influence school-related awareness (MacArthur et al., 2013).

The success of community-based mentoring programs lies in consistent face time between mentor and mentee, despite the lack of attention to academics. Researchers have found that a close relationship with a mentor that is sustained over time is a key predictor of mentoring success and desired outcomes (Garringer & MacRae, 2007; Herrera, Grossman, Kauh, & McMaken, 2011; Jucovy, 2000). In addition to the mentor-mentee relationship, the focus on life skills and navigating through difficulties has shown increased effectiveness over social outcomes, which may have an ancillary effect on
improved academic outcomes. While not every community-based program demonstrates success, the findings are in line with other theories and research that confirm mentoring programs as much-needed interventions (MacArthur et al., 2013).

**School-Based Mentoring Programs**

One of the fastest growing mentoring sectors in the United States today is school-based mentoring, which emphasizes long-term relationships with role models (Bayer, DuBois, & Grossman, 2015). Organizers of school-based mentoring tend to reach more students than typical community-based programs because teachers, faculty, and staff are in regular contact with large numbers of youth and generally refer students to the program (Garringer & MacRae, 2007; Jucovy, 2000). “Theoretically, school-based programs allow mentors and students to focus on academic-related activities such as homework help, tutoring, and reading (Portwood, Ayers, Kinnison, Waris & Wise, 2005). However, based on prior research findings, programs have been shown to vary widely with regards to the amount of time spent on academics versus social activities (Herrera, Sipe, and McClanahan, 2000; Herrera et al., 2007)” (Rappaport et al., 2009, p. xiii).

There is convincing evidence of improved discipline, attendance, student engagement, and attitude linked to the implementation of school-based mentoring (DuBois, & Karcher, 2014). Students who have benefited the most from in-school mentoring are those at high risk for dropping out of high school (Allen & Eby, 2011; Jekielek, Moore, & Hair et al., 2002). Dubois & Karcher (2014) found that school-based mentoring programs can improve academic performance, attendance, and behavior.

A 2013 study of a school-based mentoring program showed that when at-risk students completed a school year, there was significant improvement in their academic
performance, behavior, and attendance as compared to those at-risk students who had not been mentored (Chan et al., 2013). Due to their popularity, school-based mentoring programs serve hundreds of thousands of vulnerable students (Chan et al., 2013). School-based mentoring programs require very little time on the part of school personnel, as students can be served during the school day. The combination of a vetted pool of mentors, an existing location and framework for meeting and interacting, and a large body of youth from which to choose mentees makes such programs easy for schools to adopt and inexpensive to operate. Since school-based mentoring programs present little fiscal strain, many schools are adopting them as the mentoring program of choice (Jucovy, 2000). Participation in school-based mentoring has been linked to a variety of positive outcomes, including improvements in school work, behavior, and psychosocial adjustment (Cavell & Hughes, 2000; Karcher, 2008; Karcher, Davis, & Powell, 2002; Matzenbacher, 1999; Portwood et al., 2005). Many of the young people who are mentored have better attendance, better attitudes toward school, get in trouble less frequently than those who are not mentored (Jucovy, 2000) and have much better chances of attending college (Jekielek et al., 2002).

School-based mentoring relationships are generally of shorter duration than those of community-based programs (Randolph & Johnson, 2008). Extending school-based mentoring throughout the summer, as well as through the entire four years of high school, would presumably have a beneficial effect on the mentoring relationship and a more powerful impact on the students being mentored (Herrera et al., 2011). In-school mentoring is a vital tool for keeping at-risk students on track and in school. The reduction of risk factors associated with high school dropout is key to reducing the
THE EFFECT OF A MENTORING INTERVENTION PROGRAM

growing number of students who abandon their pursuit of education. The more risk factors students have, the more likely they are to leave school without a diploma (Smith, 2013). Having a caring adult as a mentor for an extended period has been shown to be effective in reducing many of the risk factors (Smith, 2013). Evidence of improved discipline, attendance, and student engagement have been linked to the implementation of school-based mentoring (DuBois, & Karcher, 2014), with positive outcomes extending to improvements in schoolwork, general behavior, and psychosocial adjustment (Cavell & Hughes, 2000; Karcher, 2008; Karcher et al., 2002; Matzenbacher, 1999; Portwood et al., 2005).

**Career Mentoring Program**

Researchers attribute an individual’s success in life to aspects of character such as the ability to persevere and to motivation, which shape one’s response to everyday challenges. These characteristics are not skills or subjects that may be learned from books; however, they can be modeled by mentors who assist in goal setting, leadership skill building, time management improvement, and development of self-confidence. Career mentoring, intended to assist students in the transition from high school to work, is designed to help young people develop the skills needed to enter the workforce or decide on a future career. Many consider career-based mentoring equivalent to apprenticeships and internships. Typically, older students are paired with professionals in their work environment to learn about work in a specific field. The primary objectives of career mentoring are to encourage young people to explore different careers that exist in today’s global market and to provide them with the opportunity to gain hands-on training (Office of Disability Employment Policy, 2015).
Through career mentoring, students who might never have the chance to participate in the world of work are afforded the opportunity to do so, students gain workplace experience and learn and practice skills necessary in the professional world (Office of Disability Employment Policy, 2015). In addition, mentees are provided with coaching to help prepare them for life as adults (Office of Disability Employment Policy, 2015). The value of melding traditional education with career mentoring is gaining recognition. The State’s Career Development Network is just one of the educational initiatives that has been developed as a bridge between the world of the academic pursuits of traditional education and the workplace students will one day be part of. “By encouraging skill building in the areas of critical thinking and problem solving; communication and collaboration; and creativity and innovation, the SCDN framework provides educators with standards and learner objectives that are essential elements for curriculum, instruction and assessment activities” [Anonymous, 2018, p.4].

When career mentoring is used to the greatest effect, students not only gain a real-life perspective regarding work and the roles they may one day assume, they acquire life skills ranging from prioritization and time management to leadership abilities, to improved self-confidence and an understanding of the intricacies of group interaction, collaboration, and conflict management. Career mentoring is designed to give students a glimpse into the future, as well as a chance to explore various career options while preparing them for the academic challenges of a post-secondary education. Moreover, in a study of work-based mentoring programs, mentored youth reported an increase in self-esteem, which researchers have directly linked to cognitive benefits as well as a host of other beneficial effects relating to development and success in life (Ferber, Pittman, &
Marshall, 2002; Schwartz (2002). While career mentoring clearly aids student participants in the transition from high school to work and provides them with the skills needed to enter the workforce or decide on a future career, for at-risk students, it offers an avenue for success in life that they might otherwise never attain (Office of Disability Employment Policy, 2015). Mentors double as role models, serving as both teachers and examples to emulate, while providing guidance leading to personal growth and development of the mentee. Research evidence increasingly points to the bond between mentor and mentee as the linchpin to successful outcomes (Garringer & MacRae, 2007; Herrera et al., 2011; Jucovy, 2000).

In a study of work-based mentoring programs, mentored youth reported an increase in self-esteem, a critical component in social learning and successful modeling of desirable characteristics (Bandura, 1977; Ferber et al., 2002, Pittman, & Marshall, 2002). “Raising students’ awareness of their strengths and positive traits helps set the stage for building skill sets that are transferable as children mature into adolescence and adulthood and subsequently into the 21st Century workplace” (Anonymous, 2018). Ultimately, career mentoring, which generally focuses on older students during high school and is geared toward life skills rather than academics or behavior, may have far greater impacts on the lives of those students who receive it than educators originally recognized (Ferber et al., 2002).

After exploring the life and workplace skills acquired during career mentoring, and the life and work benefits accruing from them, it might seem that there would be no bar to instituting such programs for every school. However, cost is a consideration that must be addressed. Due to the extensive screening and training required for volunteers,
career-mentoring programs are more expensive than school-based programs (Kolar & McBride, 2011). While research bears out that career-mentoring provides skills with which to build a successful life and throws a life-line to at-risk and academically struggling students, the trade-off between cost and benefit is an ongoing conflict in an increasingly complex and fast-paced world.

**Group-Specific Mentoring**

Group-specific mentoring programs bring young people together with adults from specific demographic groups. Such mentoring programs can be site-based in school or community group settings. The mentors and mentees engage in both structured and unstructured academic and social activities. Typically, groups of mentees consist of six or more students who meet with one mentor or a team of mentors (Herrera, Vang, & Gale, 2002; Jent & Niec, 2003; Rhodes, 2005).

The dynamics of the group setting provides group mentoring with several advantages not seen in other mentoring programs. It has been shown to improve mentee’s relationships with parents and teachers by encouraging positive interactions with adults. The communication and shared work within a group of peers in a safe environment also provide opportunities for students to learn how to develop social skills such as negotiation, cooperation, and understanding another’s perspective (Jent & Niec, 2003; Rhodes, 2005). However, students who participated in mentoring groups in which the primary focus was academics were less likely to make a strong bond with their mentors.

One of the greatest advantages of group mentoring is the development of close mentor/mentee relationships supported by peer interaction and input (Jent & Niec, 2003).
Moreover, group mentoring appears to strengthen not only mentor-mentee ties but also the relationship that mentees develop with other adults such as parents and teachers (Jent & Niec, 2003). Group mentoring has also proven helpful for students who find it difficult to build relationships. Research shows that the nature of the mentee groups encourages positive interactions and the development of supportive peer relationships. Working within a group assists in the development of conflict resolution skills as students explore and grow to understand social processes (Jent & Niec, 2003). Studies indicate that mentoring programs can positively impact at-risk and minority students (Irvine, 1989). Group-specific mentoring programs generally consist of six or more students who meet with one mentor, or a team of mentors from specific demographic groups (Herrera et al., 2002; Jent & Niec 2003, 2009; Rhodes, 2005). Such programs have been employed to encourage under-represented groups to pursue college or specific disciplines.

**Literature about Mentoring in Professional Practice**

The purpose of this section is to introduce the reader to mentoring in the professional practice setting. Research has shown that many youths require caring and reliable relationships with adults to steer them through their teenage years. Societal evolution and resultant changes in society have created a need for more mentors. Young people can feel isolated, depressed, lonely, and suffer poor self-esteem and increased anxiety, while at the same time extended families are becoming smaller and overwhelmed (Pew Fact Tank, 2011). Demographic data indicate that single parents often lack family and community support (Benokraitis, 2007). It is through caring relationships with adults that youth are provided a strong base for healthy development.
and a positive sense of self-worth that many families are no longer able to provide.
Because of this, the growth of mentoring programs has been exponential (Center for Evidence Based Learning, 2011; Dubois & Karcher, 2005; Jucovy, 2000). 
Approximately three million young people were involved in school-based and community-based mentoring programs as of 2011.

Mentors not only provide the at-risk students with emotional support, they also inspire young people to be more active in school and teach transferable skills, which can be applicable to school or work (Center for Evidence Based Learning, 2011; Hall, 2003). Additionally, mentoring programs offer positive role models through friendly relationships that instill the soft social skills needed in the world of work (Center for Evidence Based Learning, 2011; Hall, 2003). According to a 2013 survey of “704 employers conducted by The Chronicle of Higher Education and American Public Media’s Marketplace, half of those surveyed revealed that they had trouble finding recent graduates to fill vacancies in their companies; even though applicants had the technical prowess, they lacked the communication, adaptability, decision-making, and problem-solving skills needed to do the job” (Collaborative for Academic, Social, and Emotional Learning, 2018). For students to achieve success in school, career, and life, they must be taught social and emotional skills—just as they learn reading, math, and science—through instruction and through practice (Collaborative for Academic, Social, and Emotional Learning, 2018).

**Leadership Literature: A Systematic Approach to Student Achievement**

The decision to employ the systems approach theory in the model of the CodeName program was based upon the fact that this organizational philosophy is
applicable to mentoring programs that utilize multi-level collaboration. “The systems approach views an organization as a system of interconnected and mutually dependent sub-systems” (Albrecht, 1983, p. 4). In the case of the subject Mid-Atlantic High School, the sub-systems included the students, parents, teachers, administrators, staff, union members, and community/business partners, each of these possessing unique viewpoints, constraints, and considerations requiring recognition and reconciliation for the system to function efficiently. Researchers believe that improving achievement among disadvantaged students in urban schools is a complex and multifaceted endeavor, requiring a comprehensive and integrated set of community, school, and related social programs (Bryk, Sebring, Allensworth, Luppescu, & Easton, 2010). The study of a northeastern urban school that operated as a traditional school until 2001 (Peck, 2010) demonstrates that positive results can be obtained when a systems approach to reform is applied. Since adoption of the new model, the school has been regarded as the exemplification of school reform success (Woodfin, 2009), named as a High Performing Gap Closing School and winning numerous awards (Ikpeze, 2013). Empirical data derived from this school’s success stands as an object lesson in positive change and a predictor of similar success for the CodeName program within the Mid-Atlantic subject school.

A similar systems approach model was used in a low performing middle school in the Mid-Atlantic region that had been targeted for restructuring by its state. The school saw a 20% increase in sixth and seventh grade student achievement on the state assessment, a 77% decline in recorded disciplinary referrals and an overall improvement in school climate based on teacher, staff, student, and parent perception (Synder, Klos,
Grey-Hawkins, 2014). Collaboration can build the knowledge base among teachers in a school or professional network, adding value to the education students receive (Berry, Daughtrey, & Wieder, 2009). The key notion in this definition is that leadership is about learning together and constructing meaning and knowledge collectively and collaboratively (Lambert, 2013). Through the systems approach, collaboration and skill sharing among teachers can be a platform upon which to develop leadership capacity and the associated skills needed to be an agent of educational change within the school’s learning community. Through this collaboration and “transformational leadership approach “leaders get followers to act as they desire by transforming or changing the followers” (Scandura & Schriesheim, p.1588) and by devoting personal resources such as time, and knowledge, and experiences.” (Paek, 2004, p. 371).

The key to improving student opportunities, engagement, and outcomes lies in strengthening the system’s linking processes, thereby resolving conflicts between organizational sub-groups and increasing general stakeholder satisfaction and collaboration. Each mind has its individual scheme reflecting how each young person engages with the world. Teachers mediate that, helping students to construct new meaning for themselves (Lambert, 2013). Teachers, parents, and administrators need to view each other as partners in creating improvement rather than competitors or enemies. Tapping resources of the business community is one of the means by which a successful program creates greater opportunities for work-relevant training and experience, while allowing employers to play a part in the development of future employees.

Those tasked with education reform aimed at addressing the growing achievement gap, increasing dropout rates, general dissatisfaction, and lack of unity on the part of
teachers, parents, and students look to innovative applications of existing methodologies and organizational philosophies to move towards solutions and positive outcomes. One such unique application is that of leadership theory to school-based interventional mentoring programs conducted from a systems approach perspective. The organizational philosophy of the systems approach is applicable to mentoring programs, interconnected learning environments and their multi-level collaborative leadership (OECD, 2006). The interventional mentoring model embodies systems approach theory in practice, seeking to solve systemic issues by honoring all components of the school via linking processes, thus uniting system subsets in support of the overarching goals of the organization: achievement gap narrowing, increased retention, and higher levels of satisfaction on the part of all stakeholders.

In the context of the systems approach, leadership is applied directly via an interventional mentoring program focused on improving students’ lack of workforce skills, development opportunities, and low achievement through interaction of an interdependent system of subsets including students, mentees, educators, community and business leaders, and mentors. Viewed using this approach, the school functions as a unit despite being a complex entity, subject to both internal and external change. Analysis of the system framework represented by the school reveals the formal institutional structure provided by the board of education and the school itself balanced by the informal component made up of community, subsets of which include parents, the Parent Teacher Student Association (PTSA), student government, the teacher's association, and businesses and other political and community groups. “Leadership involves opportunities to bring to the surface and mediate perceptions, values, beliefs, information,
and assumptions through continuing conversations; to enquire about and generate ideas together; to seek, to reflect upon and make sense of work in the light of shared beliefs and new information; and to make decisions and create actions that grow out of these new understandings. Such is the core of leadership that is about learning together” (Lambert, 2013, p.18).

Connections and interactions between informal and formal organizations that comprise the system can enrich it or detract from it. Competing interests and scarce resources that pit the needs for competitive salaries, school infrastructure improvements, technology expenditures, and other funding considerations against each other intensify the lack of cooperation between various subsets of the educational system. The need for responsible decision-making and leadership with a cooperative mindset are essential to the compromise and unity required for resolution. It may at first seem counterintuitive to view leadership as a central component of a structure that relies on collaboration for results; however, leadership plays a very important role in the unique system of a school and the relationships involved in a mentoring partnership.

The role of teacher is naturally equated with the role of leader. “Teacher leadership has been advanced as an essential component of successful school reform and the professionalization of teachers (Lieberman, Saxl & Miles, 2000)” (Greenlee, 2007, p. 45). “The interconnectedness of teaching, learning, and leading is acknowledged by teacher-leaders whose work is based in an understanding that the intellectual, emotional, social, moral, spiritual, and aesthetic dimensions of human beings are inextricably interconnected” (Beattie, 2010, p. 199). Leadership means much more than being at the head of an undertaking. It means first taking personal responsibility for one’s actions and
discharging one’s duties to the best of one’s ability. One key to improving student
opportunities, engagement, and outcome lies in strengthening the system’s linking
processes, thereby resolving conflicts between organizational sub-groups and increasing
general stakeholder satisfaction and collaboration.

Theme 2 Student Achievement

Performance as measured by standardized testing is the most commonly
recognized indicator of student achievement in the field of education (NAEP, 2014).
These testing measures include statewide exams, SAT and ACT scores, and National
Assessment of Educational Progress (NAEP) assessments. While academic achievement
is clearly linked to instruction, it depends upon many other factors including a child’s
family dynamics, circumstances and environment, as well as the quality of schools and
teachers. Thus, researchers study academic proficiency, achievement gaps, graduation
and dropout rates, student and school improvement over time, and students’ success after
high school to gain a better understanding of the processes and inputs that affect students’
academic achievement. Of particular concern and focus are those at-risk individuals or
groups of students who are considered to have a higher probability of failing
academically or dropping out of school (Great Partnership, 2019). While academic
performance concerns and the achievement gap are problems for all student groups, the
gap tends to be greater for students born into disadvantaged settings including minority,
single parent, poverty level, and/or government-assisted living situations.

Subtheme A –At-Risk Defined

“At-risk” students are defined broadly as those failing to achieve basic
proficiency in key subjects or exhibiting behaviors that can lead to failure and/or school
drop-out (U.S. Department of Education, 2017). However, what appears to be an easily understood description is subject to such a wide range of interpretations and conditions that its application frequently requires further clarification, earning a lengthy notation in the Glossary of Education Reform:

When the term at-risk is used in educational contexts without qualification, specific examples, or additional explanation, it may be difficult to determine precisely what “at-risk” is referring to in fact, “at-risk” can encompass so many possible characteristics and conditions that the term, if left undefined, could be rendered effectively meaningless. Yet in certain technical, academic, and policy contexts—such as when federal or state agencies delineate “at-risk categories” to determine which students will receive specialized educational services, for example—the term is usually used in a precise and clearly defined manner...

For the purposes of this study, the term included those who fell into the categories most imperiled by academic underperformance and dropout risk, specifically students associated with one or more of the following: minority backgrounds, single-parent homes, poverty, or government subsidized housing and students exhibiting signs of academic underperformance, dropout risk, or behavior as indicated by any one of the following: a cumulative grade point average between 1.75 and 2.25, five or more behavior referrals, or five or more unexcused absences. Despite the complexity associated with clearly defining the parameters of the term, “the correlation between various at-risk factors and the likelihood of academic failure and/or drop-out has been well-established by numerous studies” (Great Partnership, 2019). Such connections have led to a wave of educational programs and strategies designed to identify student risk factors and provide those students
identified as “at-risk” with the assistance and support necessary to succeed in and complete
school (Great Partnership, 2019).

The Achievement Gap

While any disparity in academic performance between groups of students may be
considered an achievement gap, one gap of paramount concern in American education is
the one that exists between “at-risk” students and their less imperiled peers. A primary
goal in education is and should be to raise achievement and performance among all
student groups, with particular attention given to the goal of reducing, and ideally
eliminating racial, ethnic, and other demographic disparities (Ferguson, Hackman, Hanna
& Ballantine, 2008). At this point in the evolution of the American education system,
there is no disagreement concerning the existence of an achievement gap. Ironically, the
problem lies not in agreement as to its existence and the dire effect it will have on the
future of both the students who are part of it and the country as a whole, but in the lack of
consensus and focus concerning the best methods by which to deal with it and eradicate
it.

Data Concerning At-Risk Students & The Achievement Gap

In 2011, the U.S. Secretary of Education, Arne Duncan addressed the World Bank
Human Development Network Forum concerning human capital. His speech, Improving
Capital in a Competitive World-Education Reform in the United States, contained the
following statement:

Closing the achievement gap and closing the opportunity gap is the civil rights
issue of our generation. One quarter-25 percent-of U.S. high school students drop
out or fail to graduate on time. Almost one million students leave our schools for
the streets each year. That is economically unsustainable and morally unacceptable. (Duncan, 2014, p. 24).

Five years later, despite awareness on the part of educators, politicians, and the public as well as actual efforts to address and reduce the gap, the failure to achieve any substantial success on a broad basis was clear. In 2016 the Education Equality Index, a standard for national measurement of the achievement gap between students of low-income backgrounds and their more advantaged peers, published a key finding that “the statewide achievement gap is massive in three out of four states for which data is available…[and] nearly every major U.S. city is home to a large or massive achievement gap” (Education Equity Index, 2016). Moreover, although the US high school graduation rate reached a record high of 83 percent in the 2014/2015 academic year (U.S. Department of Education, 2016) over half a million students still drop out of high school each year (U.S. Department of Education 2015). While this dropout figure may make headlines, it perhaps obscures the other corollary of at-risk academic outcome: students who remain in school and graduate, but who enter adult life unprepared to obtain or hold employment and earn a living wage.

In 2004 in the same county upon which this study centers, the NAACP filed a suit against the school district claiming that a disproportionate number of Black students were disadvantaged by school practices, supporting their claims with statistics that included the fact that 43% of the Black students in the subject high school were suspended as compared to fewer than 10% of all White students [Anonymous, 2004] (Ferguson, et. al., 2008). Controversy and legal action in the county concerning these and related issues continued into the present, underscoring the severity of the need for immediate effective
action to reduce the achievement gap and the conditions that give rise to it [Anonymous, 2019]. Despite continued focus on ways to improve student performance and growing concern over the persistence of the achievement gap in learning and education attainment, recent data reveals that the graduation rate in the Mid-Atlantic county concerned in this study fell by a half a percentage point in 2017.

In March of 2018, the president of the NAACP in this same Mid-Atlantic county gave a compelling speech concerning the devastating implications of the achievement gap and the inability of educators to eradicate it. Pointing to data from 2014 revealing that “Black children are disciplined, either through referrals, suspensions or expulsions at twice the rate of their population in the school system,” [Anonymous, 2019] he called for change in the culture and leadership affecting the achievement gap in education and transparency in the reporting of and access to statistics that concern it. In 2014 in the Mid-Atlantic county that is the subject of this study, only 21% of all students were Black, yet 44% of those involved in disciplinary actions, including expulsion, were of this demographic group [Anonymous, 2019]. Clearly, the achievement gap along with its causes and precursors are alive and well in the country as well as the county involved in this study.

**Strategies and Effective Approaches**

Research concerning the issue of academic achievement disparity in the US, including its genesis and the demographic and economic factors affecting it, has been ongoing since the mid-1960’s when the Coleman Report, examining the achievement gap and the effect of home, community, and school factors on academic performance, was published in 1966 (Coleman Report, 2019). Yet over the following forty years, schools’
efforts to close the gap in academic achievement between minority and White students proved largely unsuccessful and more recent attention, over the past two decades, has failed to produce an effective and broadly applicable method or formula by which to achieve success (Schwartz, 2001). Placed largely in the hands of public-school systems and the teachers who serve them, the issue has been addressed with a wide array of reformations and strategies, most of which have focused on resources, class size, and “teaching to the test.”

The upsurge in concrete steps to improve minority achievement in schools across the nation met with optimism, as the efforts were knowledge-based and informed by proven strategies and new research pointing to promising innovative approaches (Schwartz, 2001). Federal government programs such as No Child Left Behind (NCLB) and Race to the Top are the most notable attempts at this type of reform. The NCLB Act established the goal of providing every student in the approximately 15,000 public school districts in the United States with an opportunity for educational success (Simpson, 2004). However, even with these nationwide programs, very few gains have been made in closing the achievement gap and some have described NCLB as a misguided administration of policies based on unproven change strategies (McKenzie, 2003).

Strategies to promote achievement and prevent dropout in the at-risk student demographic must address a wide range of student issues and needs. To that end, high schools have implemented varied approaches and programs devised specifically to help at-risk students remain in school and progress toward graduation. The challenge of matching diverse student bodies and targeted student groups within them with appropriate programs providing effective services through the most efficient means, makes the quest to improve
at-risk student achievement a subject of continuing concern, study, and discussion (U.S. Department of Education, 2016).

Increasingly, schools are abandoning passive and reactive approaches to their at-risk populations, such as allowing students to drop out, fall behind or fail courses before any action is taken, in favor of proactive actions, specifically, early identification of risk factors followed by support (Great Partnership, 2019). The driving force behind such reform is the conviction, based on substantial support from research findings, that student failure or success depends upon engagement, which relies upon and is critically linked to the support or lack of support from the learning community. Exposure to caring adults and project-based learning along with the establishment of appropriate educational and career goals mitigate risk factors and improve grades and attendance while reducing behavior issues and expulsions (Great Partnership, 2019).

Research has clearly shown that when teachers actively involve students in the learning cycle, those students are more successful (Ferguson et. al., 2008). Yet, it is a difficult task to effect institutional change. “Today in the United States, producing higher scores on standardized tests of academic skills is the dominant goal of teacher professional development, the primary gauge of teacher productivity, and the almost single-minded focus of educator accountability” (Ferguson, Phillips, Rowley & Friedlander, 2015 p. 1). While it would be unwarranted to suggest that such measures for assessment of performance and academic achievement are inappropriate, it has become increasingly clear that standardized testing provides an incomplete picture of important classroom interactions and the full range of what is being learned in the classroom. School cannot just focus on student achievement measures alone for continuous school improvement because
not all learning outcomes are measurable in this way and the scores do not reflect the development of “agency…the capacity and tendency to take purposeful initiative” (Ferguson et al., 2015).

One approach to the prevention of dropout is to provide students with a high-quality high school experience to deal with key precursors of dropout: low achievement, retention in grade, dislike of school, and related outcomes (Fashola & Slavin, 1997). While graduation is a key objective and goal of educators, it is of equal importance that students emerge from their K-12 experience with the ability to successfully compete in the highly competitive job market and global economy they will enter upon graduation. It is imperative that while still in school they are given exposure and access to opportunities that will provide them with interpersonal and career skills needed to survive in the 21st Century workforce. Recognizing the strong correlation between truancy, dropout, and student engagement, many drop-out prevention programs have a strong link to vocational education, part-time job placements, and internships in local businesses, both to maintain students’ interest in school and to give them an understanding of the value of a diploma in the real world as well as what life after school may be like (Hayward & Tallmadge, 1995). Multi-faceted and systematic intervention programs integrated with community and business partnerships providing mentorship, co-curricular exposure to various careers, internships, job shadowing, and relevant curriculum connecting the classroom and the real world can provide an effective framework to support and sustain students as they progress to graduation.
Improving Performance through a Professional Learning Community

With the key to successfully guiding “at-risk” students through to graduation and, ultimately, gainful employment residing in the ability to instill both motivation and real-world skills along with academic knowledge, the need for a framework of support both within the school and outside of it becomes apparent. Ideally a professional learning community comprises educators, members of the school community, members of the local community and local and business leaders brought together with the goal of providing students with meaningful mentoring relationships in conjunction with appropriate education and community resources. Through this supportive framework students are provided with mentoring relationships to support their social and skill development and with opportunities to explore possible careers, learn career relevant skills, and gain an understanding of the importance and relevance of their education.

The achievement gap is an issue that transcends the classroom. Not only does it stem from many factors outside of school walls, its solution is not to found solely in books and classroom instruction. The transference of positive behaviors, mindsets, and skills through mentoring is well-documented. Appropriate conduct, positive habits, and useful abilities may be cultivated by positive social interactions, especially those that occur within a mentoring relationship. The blending of social learning gained through such relationships with the opportunities to be found within the local community through internships, career experiences, and other skill or knowledge-building activities provide the content and intangible benefits that standardized testing and traditional classroom instruction cannot adequately measure or impart. At its finest a professional learning
community becomes the means by which curiosity is fostered, engagement in promoted, and personal growth is achieved for all participants.

**Professional Learning Community-An Alliance**

Neither schools nor communities exist in isolation from one another. The children who grow up and eventually leave school, with or without a diploma, are ultimately the adults who people the community. Thus, the achievement gap which produces dropouts and under-achieving adults is of concern to both the schools in which the gap forms and the larger world in which the consequences are played out. Stakeholders in the education of American youth are school administrators and teachers, parents and relatives, politicians, businesses and their owners and employees, as well as the students themselves. No one in a society loses when the education of its children becomes a matter of interest and involvement.

Incorporating real-life career experiences, internships, chances to learn about jobs and careers, and a host of other non-traditional interactions and learning opportunities in conjunction with the guidance of caring adult mentors not only assists the students in creating productive and satisfying adult lives, it allows the businesses and leaders who take part to have a hand in shaping the workforce and society of the future. The formation of a professional learning community by its very definition presents opportunities that would not exist otherwise and without which the fate of our youth, especially our at-risk and disadvantaged youth, would never have. It offers the promise of positive change for the children, a sense of civic pride for all involved, and the knowledge that apathy and loss of hope have an antidote.
Summary

The American academic achievement gap in the study area is a well-documented problem for which an effective solution has yet to be found. While disparity in academic performance constitutes a source of serious and broadly acknowledged concern in American education, the specific gap seen in academic achievement between students exhibiting signs of academic underperformance and/or hailing from disadvantaged backgrounds and their less vulnerable classmates carries with it the life and society altering consequences of academic failure and drop out. In the increasingly competitive spheres of academia and employment, the failure to perform while in school equates to failure to succeed in life.

The researcher will examine an intervention that sought to close the achievement gap, providing expansion and intervention of the traditional education format through the introduction of guided work-relevant experiences as a path to graduation and successful post-graduation lives for at-risk students, by creating a network of support and programs to engage, motivate and educate. Central to the intervention program’s methods was utilization of social learning’s theoretical framework, with mentoring as a key component and leadership tool. According to Bandura’s Social Learning Theory, observed learning, which occurs when people interact, directs the behavior, and by extension the thoughts and decisions of the individual (Bandura, 1977). The pilot CodeName program which formed the basis of this study seeks to use this phenomenon to change and improve the behavior, thinking and ultimately the academic outcomes of at-risk students.

Mentoring is a time-tested method of teaching and providing guidance. In modern educational settings, this approach is employed with the goal of improving
discipline, attendance, student engagement and attitude and through them academic performance, graduation statistics, and student prospects and life following high school graduation. In this study the researcher will examine four different formal mentoring programs: community-based, school-based, career and group-specific. While community-based mentoring fostered a sense of safety in its mentees, as seen in studies such as that of MacArthur et al. (2013), which confirms the importance and need for such interventions, data obtained from other research showed that the results of various groups studied was mixed in measurable effectiveness and outcome (DuBois & Karcher, 2013). The pivotal factor in predicting successful mentoring resulting in desired outcomes was the sustained closeness of the mentor-mentee relationship (Garringer & MacRae, 2007; Herrera et al., 2011; Jucovy, 2000). School-based mentoring, which is both affordable and comparatively easy to implement, has produced convincing evidence of improvements linked to student behavior and performance (DuBois & Karcher, 2014).

The large number of youth who may be reached through school-based programs makes their utilization logical, although it should be recognized that effectiveness is improved by continuity through the summer school break as well as throughout all four years of high school. Career mentoring, primarily directed at the acquisition of work and employment related skills, has also been shown to provide other benefits, such as time management and self-confidence, for those who participate (Ferber et al., 2002). In a workplace that has grown increasingly competitive, career mentoring can smooth the transition from school to employment for today’s youth (Office of Disability Employment Policy, 2015). Group-specific mentoring, which brings together youth and adults of the same specific demographic groups, seeks to encourage supportive peer
relationships and strong mentor-mentee bonds and has been shown to produce positive results for at-risk and minority students (Irvine, 1989).

It is undisputed that children and young people benefit from the security and guidance of relationships with caring adults. Lambert (2013), along with a host of other experts on the subject of mentoring, posits that it is equally irrefutable that the acquisition of social and emotional skills must be learned through observation and practice. The utilization of the systems approach to better unite the components of our educational system is assisted by the application of organizational leadership philosophy, in supplying youth with the security, support, continuity, and guidance they need to develop all of the skills, social and academic, needed for success in school, employment, and life.

The researcher will examine a mentoring intervention program in a Mid-Atlantic high school, which utilized a systemic approach, linking all components of the educational process in support of the overarching goals of the organization. Analyses of mentoring programs reveal the connections and linkages between the interdependent components within the organizational structure. At its most basic level, an organization is comprised of many stakeholders including students, parents, teachers, administrators, staff, community and business partners—all with unique perspectives, constraints, and considerations—that must be addressed and reconciled for the system to function efficiently.
CHAPTER THREE: METHODOLOGY

Introduction

The purpose of this mixed methods study was to compare the differences between achievement, attendance, behavior, and post-secondary matriculation of at-risk students who participated in the CodeName program with those of the students who did not participate in the CodeName program. The goal of the study was to determine if a mentoring intervention program improved the grade point average, attendance, behavior and matriculation of at-risk student participants.

At-risk students, by definition from minority and/or impoverished backgrounds and/or demonstrating any of the following: poor academic performance, misbehavior, or chronic school attendance issues, are the students most prone to drop-out. With the student achievement gap recognized as a pervasive problem urgently in need of a solution and drop-out of at-risk students a very real measure of the failure of American education to successfully serve all sectors of the population, effective and practical interventions by which to narrow the achievement gap and engage students who would otherwise mature into unemployed or underemployed adults have been sorely lacking and long overdue ([Anonymous, 2015], Chapman, et al., 2014).

The Mid-Atlantic high school selected for this study is located in a county of significant ethnic, income, and educational diversity, all of which provided the raw materials for a significant student achievement gap [Anonymous, 2015]. Data indicated that percentages of the lowest and highest income households were increasing as middle-class household representation declined [Anonymous, 2015]. It should be noted that, while the residents of this community were and are a diverse group, the preponderance of
inhabitants were either White (61%) or Black (31%) and that academic disparities existed based on race and ethnic background [Anonymous, 2015].

An intervention program, entitled CodeName, was initiated providing four mentorship components, community-based, school-based, career-oriented, and group-specific programs, designed to encourage post-secondary matriculation and to meet the needs to that end of both students and their families. The purpose of this mixed methods study was to compare the differences between achievement, attendance, behavior, and post-secondary matriculation of at-risk students who participated in the CodeName program with those of the at-risk students who did not participate in the CodeName program.

This chapter includes three sections, which relate to the methodology used in this study. The first segment is the framework of the study, which includes the research questions and hypotheses. The second section provides an overview of the data collection instruments that were used in the study, CodeName Program Student Graduate Reflection Survey, Survey Questionnaire for Parents of CodeName Student Graduates, Parent Demographic Data Sheet, Survey Questionnaire for CodeName Program Alumni Students, Teacher/Facilitator/Business Partner Survey Questionnaire, Teacher/Facilitator/Business Partner Survey, Interview Questions for CodeName Program Student Graduates, Interview Questions for CodeName Program Teacher/Facilitator/Business Partner and Interview Questions for Parents of Student Graduates. The study’s design and method of data analysis will be found in the third segment of this chapter. The chapter concludes with a summary.
Research Question(s) and Hypotheses

The following research questions will guide this study:

Research question #1: Is there a difference in achievement, as measured by grade point average, between at-risk students participating in the CodeName Program and those not participating in the program?

Research question #2: Is there a difference in school attendance between at-risk students participating in the CodeName Program and those not participating in the program?

Research question #3: Is there a difference in behavior infractions between at-risk students participating in the CodeName Program and those not participating in the program?

Research question #4: Is there a difference in matriculation between at-risk students participating in the CodeName Program and those not participating in the program?

The research tested the following null hypotheses, using a MANOVA:

1. \( H_01 \): There is no difference in achievement, as measured by grade point average, between at-risk students participating in the CodeName program and those not participating in the program.

1. \( H_1 \): At-risk students who participate in The CodeName program have a higher-grade point average.

2. \( H_02 \): There is no difference in school attendance between at-risk students participating in the CodeName Program and those not participating in the program.
2. **H2**: At-risk students who participate in The CodeName program have higher/better attendance.

3. **H3**: There is no difference in behavior infractions between at-risk students participating in the CodeName Program and those not participating in the program.

3. **H3**: At-risk students who participate in The CodeName program have better behavior.

4. **H4**: There is no difference in matriculation between at-risk students participating in the CodeName program and those not participating in the program.

4. **H4**: At-risk students who participate in The CodeName program have higher rates of matriculation

**Research Design**

This research study was designed to determine if participation in the CodeName program leads to an improvement in academic achievement, as measured by grade point average (GPA); attendance in school; behavior infractions, as measured by number of infractions; and matriculation, as determined by acceptance into post-secondary school or trade school.

(a) A mixed-methods approach, primarily quantitative in nature, was used to determine if participation in the CodeName program leads to an improvement in academic achievement, as measured by grade point average (GPA); attendance in school; behavior, as measured by number of infractions; and matriculation, as determined by acceptance into a post-secondary school or trade school. Graduates of the CodeName program were surveyed and interviewed regarding the effectiveness and quality of the program delivery and sessions. Furthermore, interviews of the parents, program
facilitator and business partners were conducted to gather feedback to discover the most engaging aspects of the program, the curriculum and the activities in order to further refine the program and attain optimal levels of student interest in the future.

(b) The selection of the mixed methods approach is uniquely suitable for this study as it offers both quantitative results by which to measure the study’s degree of success as well as qualitative data concerning the participants’ responses and perceptions. The measures of academic, behavioral, attendance and matriculation success that form the quantitative portion of the data were informed and driven by the perceptions, responses, and cognitive processes of the participants reflected in the qualitative portion of the study’s data.

(c) The following variables were examined:

   (a) The dichotomous independent variable(s) was defined as at-risk students who were enrolled in the program compared to at-risk students who were not in the program meeting one or more of the following criteria: They were from minority backgrounds; they lived in single-parent homes, they were impoverished; they resided in government-subsidized housing, they had a grade point average between 1.75 and 2.25 cumulative; they had five or more behavior referrals; they had five or more unexcused absences; or they had a life hardship as determined by a school official.

   (b) The dependent variables was grade point average (GPA)--the average obtained by dividing the total number of all accumulated final grades earned in courses over time by the number of courses attempted; attendance (actual number of days that students were physically absent from school during the regular school
hours); behavior (the way in which a student acted or conducted himself or herself, sometimes conflicting with the student rules, regulations, and code of conduct that resulted in report of an infraction and may have resulted in a suspension from the school building); and post-secondary achievement (a student’s matriculation into college or trade school after graduation). The researcher selected these variables based on a review of the literature, which indicated that at-risk students lagged behind their non-disadvantaged counterparts in grade point average, attendance, behavior infraction, and post-secondary matriculation (Sparks, 2015).

(d) Grounded in the theory and practice of mentoring conducted through a systems approach, the pilot CodeName program operated within a unique social environment comprised of several layers of interrelated relationships. Mentoring partnerships formed between individuals at the micro social level were part of the larger, academic meso unit of the school, which in turn formed part of the macro social context of the local community, made up of parents, businesses, and other community stakeholders.

(e) The collection of qualitative data concerning the perceptions of the participants provided valuable insight and added dimension to the quantitative measures of grade point average, attendance, behavior infractions and post-secondary matriculation, providing a more complete representation of the mentoring mechanism within the system of class, school, and community. This experiential data may in future be utilized to further refine and develop the pilot CodeName program, which may be used as a model for training and
implementation of such programs on a wider scale. Research shows that many schools have implemented intervention programs employing mentoring techniques, to ease the transition into high school and beyond, in the hope of reducing the onset of at-risk behavior (Rodríguez-Planas, 2014).

Participants/Data Sources

(a) Participants

The Mid-Atlantic high school in which this research was conducted is located in an area experiencing the strains and pressures of its diverse population composition. Across the fronts of culture, race, educational attainment, economics, crime, and privilege the Mid-Atlantic county that houses the subject school exhibits exceptional divergence and contrast. With a school population that is 34% Hispanic, 33% Black, 30% White, and 3% Other and drawing from a region with incomes that range from less than that of the Federal Poverty Level threshold to some of the highest in the nation, the subject school represents a microcosm of the factors and forces that have led to the educational achievement gap on a national scale. Middle class households in the region are on the decline as the number of high and low income households are on the rise. Approximately 30% of the housing in the subject school district are rentals with public housing (10 communities with 1,104 units) and private non-profit housing (8 communities with 1,104 units) are home to a sizeable portion of the area population. The effects of crime, loitering, and lack of amenities on quality of life and their resultant impact on the students of the subject school are currently a source of heightened concern to school administration and community leaders.
(b) Description of identification and Recruitment

A sample population of 50 (9th grade) students, all of whom met one or more of the following defined criteria for selection: they were from minority backgrounds, lived in single-parent homes, were impoverished, resided in government-subsidized housing, had a grade point average between 1.75 and 2.25 cumulative, had five or more behavior referrals; had five or more unexcused absences, or had a life hardship as determined by a school official and/or were invited to participate in the program.

This mentoring intervention program, entitled CodeName Program, encouraged and challenged the student participants, beginning with the transition to high school and followed them through to graduation day, with innovative programs, courses, speakers, field trips and projects. The program blended an intense two-year preparatory pathway (grades 9 and 10), which included the Student Leadership Series and the Problem Solving/Critical Thinking/Change Management I Course, and continued with the Problem Solving/Critical Thinking/Change Management II Course and a Personal Industry Project (grades 11 and 12). Upon completing 9th and 10th grade prerequisites, students received a Leadership Change Agent Certificate. Change Management Pathway students all who completed requirements at the end of four years received an industry certification in Change Management.

A purposive sampling of students was chosen from “at risk” participants, identified as such either by failing grades or risk of non-completion of high school. The number of students who participated in the intervention program (n = 50) was comparable to the number of students not enrolled in the intervention program (n’=50). The two sets of 50 students represent the repeatability aspect of this study.
(c) Permissions to access and recruit

Students who graduated from the program, parents of those students, and teachers/facilitators/business partners from the CodeName program were recruited via Facebook, Instagram and Twitter to participate in a survey and/or interview. Participants were contacted by the researcher and an information letter and bill of rights concerning survey and interview participation was sent to each participant.

The researcher ensured that the submitted protocol provided a complete description of the proposed research containing adequate information regarding participants’ rights and welfare, ascertained that all applicable laws and regulations were followed and insured that, throughout the course of the study, all research personnel involved in the project conformed to the applicable federal regulations and Creighton University IRB policies while conducting the research. The researcher secured all research-related records on file and agreed that the IRB might review these at any time.

To minimize concern on the part of potential study participants and their parents, the researcher practiced full transparency regarding the nature of the study and maintained this transparency throughout all phases of data collection and analysis with information forms and parent/student consent forms. Data concerning each student was indexed to a unique anonymizing identifier to maintain the anonymity of each participant. The privacy and identity of all participants, teachers/facilitators business partners, and parents were protected throughout the course of the study and following its completion. No identifying personal information pertaining to any of the aforementioned groups involved with the CodeName program was released or made available before, during, or after completion of the study. Data concerning grades, behavior, attendance, and post-
secondary plans was maintained using secure school-maintained computer systems. Interview and survey documents were carefully collected and protected. Once surveys were administered and collected, the researcher kept all responses in a locked office in a padlocked desk drawer. The surveys and data will be destroyed after four years.

(d) Study participants

A total of 100 at-risk students participated in this study—50 who participated in the mentoring intervention program by self-selecting after invitations were offered to all at-risk 9th grade students and 50 who did not participate in the intervention program and were chosen randomly from the at-risk demographic of the school population of approximately 1,800 students. The number of students participating in the intervention program (n=50) was compared to the number of students not participating in the intervention program (n’=50). Ages ranged between 17 and 19 (26 students were 17 years old; 71 were 18 years old; and 3 were 19 years old). The population was evenly distributed by gender with 50 females and 50 males under study. Ethnicity of students under study was as follows: 21 White, 64 Black and 15 Hispanic.

(e) Sample size

The sample groups, two sets of 50 students each, was deemed both appropriate and representative of the general student body. With a school population totaling 1,800 students, it can be argued that the population represented by the study sample includes the entire student body, all of whom are affected directly and indirectly by the demographic and other effects of the locality. Sample size must correlate to the requirements of the study: the instruments used, data gathered, and supporting resources and simultaneously meet the requirements for sufficient and normal distribution of results.
(Merriam, 2009). The care taken to offer the opportunity for participation to those who met a carefully considered list of criteria ensured a very high probability that the sample would accurately reflect the at-risk demographic under study, meeting the industry standard confidence level of 95%.

**Data Collection Tools**

Secondary and demographic data concerning all participants, all of which was obtained with permission from the school district, was extracted independently by the Data Clerk in the Mid-Atlantic High School for the CodeName Program from the school database and was inputted into a student log, using a Microsoft Excel spreadsheet for grade point averages, attendance, behavior infractions, and post-secondary matriculation, which was then provided to the researcher.

Qualitative data was collected by the researcher via the CodeName Program Graduate Participant Reflection Surveys, Teacher/Facilitator Interviews, Facilitator/Teacher Surveys Questionnaires, Parent Interviews, and Parent Survey Questionnaires and then utilized to evaluate and analyze the program’s ability to meet the participants’ needs, to pinpoint where program adjustments were indicated or would be beneficial and to provide a complete picture of the program and its results. It should be noted that all participants were informed that their participation was voluntary and their responses were completely confidential. Subjects were informed that they retained the right to withdraw their responses from the study at their discretion at any point and were asked to be completely honest when taking the survey. It should also be noted that the researcher’s contact information was shared with the subjects in order that they might express any questions or concerns during the survey/interview/questionnaire process.
The instruments used in this study were of two types. The first had the purpose of collecting and recording demographic data of all study participants, both the students who did not participate in the CodeName Program and the students who did participate, as well as quantitative data concerning their grade point averages, attendance, behavior infractions, and post-secondary matriculation information. The purpose of the second type was to gather qualitative data from students who participated in the CodeName Program, their parents, and teachers/facilitators/business partners in order to inform and expand understanding of the study’s results. Permission was obtained from Y. Z. Reeves (2012), the author of *Creating and Sustaining a College-Going Culture in a Small, Urban High School*, for use of questions included in *Survey Questionnaire for Parents of CodeName Student Graduates* created by the researcher to be used for this study. Likewise, permission for the use of questions found in *How Do Parents Engage in School-Choice Decisions?* (2016) was obtained from its author, D. N. Valentine. These questions were included in the *Parent Demographic Data Sheet*.

The quantitative data was categorized based on gender, race, age, grade level and matriculation along with grade point average, attendance, and behavior compiled into an Excel spreadsheet. Students were categorized as participating in the CodeName program or not participating in the CodeName program. Subsequent to completion and receipt of the interviews, questionnaires, and surveys, the data was analyzed using the MANOVA statistical method in the Predictive Analytics Minitab 18.0. Data collected in the course of this study was analyzed using both descriptive and inferential statistical analyses.
Data Collection Procedures

Following approval from the Institutional Review Board (IRB), grade point averages, attendance, and behavior infractions of the study participants were compiled and presented to the researcher as previously described. In addition to obtaining this quantitative data, the researcher also gained permission from the school district to access student participants’ descriptive information. After gaining approval, demographics regarding participants’ gender, age, grade level, race, and post-secondary matriculation were collected and entered into the student log. Qualitative data was obtained from participants, Teacher/Facilitator/Business Partners of the program and parents of the graduate students through the use of surveys and interviews as follows.

Graduates of the CodeName program were invited via Facebook, text messages or email to complete the CodeName Program Graduate Participant Reflection Survey (Appendix B/Appendix E) and to be interviewed (Appendix H). The purpose of these surveys and interviews was to gather demographic data about each student as well as information about his or her previously acquired soft-skills, problem-solving abilities and critical thinking in addition to past curricular and co-curricular experiences. Open-ended questions, intended to gather qualitative data about the students’ attitudes toward the CodeName program, were also part of the survey. Through these questions the students were given the opportunity to detail their previous experiences in the CodeName program and their opinion of its effectiveness.

A review of literature concerning community-based, school-based, career-based and group-specific mentoring was utilized in the development of the survey questions. The literature on community-based, school-based, career-based and group-specific
mentoring suggested that participation in the CodeName program would lead to an improvement in academic achievement, as measured by grade point average, school attendance, behavior infractions, and matriculation. Thus, the qualitative data derived from the CodeName Program Graduate Participant Reflection Survey assisted the researcher to understand the ways in which the CodeName program met the participants’ expectations or deviated from them. Correlation between responses derived from the CodeName Program Graduate Participant Reflection Survey and participants’ interviews provided perceptions of how well the CodeName program met their expectations, which can be used as a blueprint to further refine the program in the future. In addition, the qualitative responses of the student participants provided a more robust picture of the quality and effectiveness of the program.

The Teachers/Facilitator/Business Partners of the CodeName program were surveyed via the Teacher/Facilitator Survey (Appendix F/G) concerning their perception of the program goals, the importance of the stated goals, availability of support from the administration, other teachers, and other groups or entities needed to achieve those goals, and any other factors they believe contributed to or detracted from the success of the program. The Teachers/Facilitator/Business Partners were also interviewed via Teacher/Facilitator/Business Partner Interview Questions (Appendix I) concerning the activities used to engage the students and the relevance, practicality, and success of those activities. Information concerning the attendance and behavior of the students was also collected.

To assist the researcher in gaining insight concerning parents’ perceptions of the program’s efficacy in meeting their child’s needs, parents were invited via Facebook and
text messages to participate in interviews via a Parent Survey Questionnaire (Appendix C) and a Parent Interview (Appendix J). The questioning employed led the parents to discuss their child’s areas of improvement and the skills acquired while in the program. In addition, the parent surveys allowed the researcher to gather feedback on the parents’ insights and opinions on the program as a whole.

One dilemma inherent in qualitative data collection and analysis is the impact of the researcher's involvement (Creswell, 2003). As the creator of the qualitative tools used and the gatherer of responses, it is essential that any bias on the researcher’s part be minimized or, ideally, eliminated. To avoid bias in qualitative data analysis the researcher used the inductive coding approach, which is based on inductive reasoning, to reveal the important and recurrent themes. Transcription of interviews was carried out by the researcher using the HyperTRANSCRIBE transcription tool. This facilitated the accurate transfer of the recorded interviews into a text format in Microsoft Word. The benefit of HyperTRANSCRIBE was the complete control over loop and playback it afforded to the researcher. Accuracy of the transcribed interviews was double-checked through simultaneous review of all transcripts and recordings of interviews by the researcher. Following this, interviewees were each provided a copy of their specific interview to review for accuracy and then each signed-off to approve the accuracy of the transcription. Peer debriefing and peer review were conducted once interviewees had confirmed the accuracy of their interview transcripts. Four professional educators, each with greater than 15 years’ experience, read the transcripts and provided their feedback concerning themes from the qualitative data “so that the account will resonate with people other than the researcher” (Creswell, 2003, p. 196).
The MANOVA (multivariate analysis of variance) was used to analyze data that involved more than one dependent variable at a time. MANOVA allowed the researcher to test the four hypotheses questions. Specifically, MANOVA was used to examine the effect of one or both of the aforementioned independent variables on two or more aforementioned dependent variables. For the CodeName Program Analysis, MANOVA sought to provide correlations of the dependent variables and show the effect associated with those variables. After analysis of the correlation, the researcher presented the Pearson product-moment correlation coefficient, also known as r, R, or Pearson’s r. This simple linear regression measured and presented the strength and direction of the linear relationship between two variables. After analysis of covariance of the variables, they were divided by the product of their standard deviations. For example, if the strong hypothesis relationship is determined to be the $H_1$: At-risk students who participate in The CodeName Program have higher grade point average, then that r correlation will be presented in the findings.

**Data Analysis**

The analysis included descriptive statistics for each of the populations’ data sets followed by a distribution fitting analysis. With their descriptive statistics, the mean scores of the administered grade point averages, attendance, behavior infractions and post-secondary matriculation were considered, detailed and summarized. The mean scores were represented by the performance at the end of the 12th grade year.

The researcher used descriptive statistical analysis for each of the eight populations of interest:

- GPA of the intervention student
- GPA of the non-intervention student
- Attendance of the intervention student (number of absences)
- Attendance of the non-intervention student (number of absences)
- Behavioral infractions of the intervention student
- Behavioral infractions of the non-intervention student
- Post-secondary Matriculation of the intervention student
- Post-secondary Matriculation of the non-intervention student

A multivariate analysis of variance (MANOVA) was executed to determine if there was any difference in general grade point average, attendance and behavior infraction between previous study participants attending post-secondary schools who participated in the CodeName Program and previous study participants attending post-secondary schools who did not participate in the CodeName program. A multivariate analysis of variance is a linear statistical technique that allows the research to “test for significant differences between means” (StatSoft, Inc., 2011, p. 22 ANOVA/MANOVA). Employing the MANOVA indicates that there are one or more independent variables and two or more dependent variables in the study. In this study, the independent variable was enrollment in the CodeName program (participants vs. non-participants). The dependent variables in this study were grade point averages, attendance, behavior infraction and post-secondary matriculation.

MANOVA provided a tool allowing one to ascertain that at least one of the dependent variables is statistically influenced by the at least one of the independent variables with a 95% confidence interval. MANOVA does not indicate which of the independent variables is responsible for the difference, just that there is a difference. MANOVA was used to evaluate the statistical significance of any interaction effect that may or may not have existed with the independent variables’ influence on the dependent variables. Given that the two groups of participants contained 50 study subjects, it can be concluded that there was a normal data distribution (StatSoft, Inc., 2011). It was the
intention of the researcher to investigate any statistically significant difference appearing in the data using a T-Test to demonstrate the magnitude and direction of the difference on each comparative data set. As previously mentioned, if MANOVA had shown significant influence, the intention had been to use a Pearson-product moment correlation coefficient to present the strongest relationships.

**Ethical Considerations**

The researcher was aware of possible hesitancy on the part of potential study participants and their parents stemming from concerns relating to confidentiality. To minimize concern, the researcher was fully transparent regarding the nature of the study and maintained this transparency throughout all phases of data collection and analysis. There was no direct contact between the researcher and students in the program that had not graduated nor was there direct contact with any students under 19 years of age. No requested information included students’ names or any other personal information that could be used to identify participants or link them to this study. Data concerning each student was indexed to a unique anonymizing identifier to maintain the anonymity of each participant. Neither the researcher nor anyone with access to the study results knew who the participants were. The privacy and identity of all participants, teachers/facilitators, and parents were protected throughout the course of the study and following its completion. No identifying personal information pertaining to any of the aforementioned groups involved with the CodeName program was released or available before, during, or after completion of the study. Data concerning grades, behavior, attendance, and post-secondary plans was maintained using secure school-maintained computer systems. Interview and survey documents were carefully collected and
protected. Following IRB approval of the application each participant received a bill of rights informing them of their ability to terminate participation, access information concerning the study's benefits and risks as well as the confidentiality guidelines in use. Participants were assured of their anonymity and were never asked to write their names or provide any personal information that would reveal their identity. Once surveys were administered and collected, the researcher kept all responses in a locked office in a padlock desk drawer. The surveys will be destroyed after four years.

**Summary**

In education, today, the student achievement gap is broadly defined as the disparity in academic performance between groups of students and is widely acknowledged as a critical failure in American schools (National Association for Educational Progress, 2014). Research demonstrates that students are more successful when they are actively involved in the learning cycle, and that schools cannot focus solely on student achievement measures for continuous improvement (Schwartz, 2001). The pilot CodeName program, which this study examines, is the result of a district-wide push for education reform.

The CodeName program was intended to act as a bridge between the theory and practice of student engagement. By providing a forum for community and business partnerships that included mentorship, co-curricular exposure to various careers, facilitated internships, job shadowing, and a 21st Century curriculum, pilot CodeName sought to support at-risk students where they needed it most. There is, however, a difference between aiming to accomplish a goal and accomplishing it. Determining
whether CodeName proved successful in improving grade point averages, attendance, behavior, and post-secondary education was the subject of this study.

The research design for this study was a mixed methods approach, incorporating both quantitative data, specifically GPA and measures of attendance, behavior, and matriculation, and qualitative data gathered from surveys and interviews, concerning the expectations, perceptions and experiences of the participants. In total, 100 at-risk students from a school population of 1,800 participated in the study. Fifty participated in the program while an equal number, chosen at random, did not participate in the program. Data was analyzed using the MANOVA statistical method in the Predictive Analytics Software Minitab 18.0. Both descriptive and inferential statistical analyses were completed. Descriptive statistics for each of the populations’ data sets was included followed by a distribution fitting analysis. Determination of any difference in GPA, attendance, behavior, and/or matriculation was made based on MANOVA and Pearson product-moment correlation coefficient was used to show the strongest relationship. Any statistically significant difference was investigated further using student’s T-Test to demonstrate the magnitude and direction of the difference on each of the comparative data sets.

This study was grounded in mentoring practice and research, conducted within a systems approach framework, and implemented utilizing the resources and cooperation of students, school, and the wider local community. It was the intent of the researcher to review a model by which to engage at-risk students and narrow the achievement gap as it relates to academic performance (GPA), attendance, behavior, and post-secondary matriculation.
CHAPTER FOUR: FINDINGS

Introduction

The purpose of this mixed methods study was to compare the differences between achievement, attendance, behavior, and post-secondary matriculation of at-risk students who participated in the CodeName program with those of the students who did not participate in the CodeName program. CodeName is an intervention program that combines aspects of social learning theory with a systematic four-part mentoring approach to learning, involving community and business partners to assist at-risk students with meaningful educational and work-relevant experience and skills for successful post-secondary matriculation.

The researcher addressed the following four research questions and four null hypotheses to direct this research:

Research question #1: Is there a difference in achievement, as measured by grade point average, between at-risk students who participated in the CodeName Program and those who did not participate in the program?

Research question #2: Is there a difference in school attendance between at-risk students who participated in the CodeName Program and those who did not participate in the program?

Research question #3: Is there a difference in behavior between at-risk students who participated in the CodeName Program and those who did not participate in the program?
Research question #4: Is there a difference in matriculation between at-risk students who participated in the CodeName Program and those who did not participate in the program?

The researcher tested and rejected the following null hypotheses, using a MANOVA:

1. $H_0^1$: There was no difference in achievement, as measured by grade point average, between at-risk students who participated in the CodeName program and those who did not participate in the program.

$H_1^1$: At-risk students who participated in the CodeName program had a higher-grade point average.

2. $H_0^2$: There was no difference in school attendance between at-risk students who participated in the CodeName Program and those who did not participate in the program.

$H_2^2$: At-risk students who participated in the CodeName program had a higher rate of attendance.

3. $H_0^3$: There was no difference in behavior infractions between at-risk students who participated in the CodeName Program and those who did not participate in the program.

$H_3^3$: At-risk students who participated in the CodeName program had fewer behavior infractions.

4. $H_0^4$: There was no difference in matriculation between at-risk students who participated in the CodeName program and those who did not participate in the program.

$H_4^4$: At-risk students who participated in the CodeName program had a higher rate of matriculation.
This chapter introduces the results of statistical analyses as well as descriptive and inferential conclusions derived from the following:

- CodeName Program Student Graduate Reflection Survey
- Questionnaire for CodeName Program Alumni Students
- Face-to-Face Interviews with CodeName Program Student Graduates
- Questionnaire for Parents of CodeName Student Graduates
- Parent Demographic Data Sheet
- Face-to-Face Interviews with Parents of CodeName Graduates
- Teacher/Facilitator/Business Partner Questionnaire
- Teacher/Facilitator/Business Partner Survey
- Face-to-Face Interviews for CodeName Program
- Teacher/Facilitator/Business Partners

The researcher used descriptive statistics, which included gender, age, grade level, race, and matriculation at the time of graduation to analyze the sample and test the hypotheses with a Multivariate Analysis of Variance (MANOVA).

**Presentation of the Findings**

**Race**

The researcher took a purposive sampling of at-risk students who participated in the CodeName Program and those who did not participate in the program at a high school in the mid-Atlantic region. Demographic data included race, classified as follows: 1 for Black/non-Hispanic, 2 for Asian, 3 for White/non-Hispanic, 4 for Hispanic, 5 for Native American/Alaskan Native, and 6 for all others. The ethnicity of the 100 study
participants were as follows: 64 Black/non-Hispanic students, 21 White/non-Hispanic students, and 15 Hispanic students.

**Gender**

Table 1 shows the genders of the sample by enrollment status. Of the 100 participants, 50%, were female and 50% were male. Within each independent variable subgroup, gender participation was consistent. It is important to acknowledge that gender may play an important role in the outcome of this investigation.

Table 1

*Gender Frequencies of Students*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequencies (N)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>Male</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100</td>
</tr>
<tr>
<td>Participants</td>
<td>Male</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>50</td>
</tr>
<tr>
<td>Non-Participants</td>
<td>Male</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>50</td>
</tr>
</tbody>
</table>

**Age**

All students studied were between 17 and 19 years of age. Table 2 shows that the age distribution in the samples of participating and non-participating students was similar. Seventy percent of student participants and 78% of non-participants in the CodeName program ranged from 18 to 19. The remaining students were 17 years of age.
Table 2

Age distribution

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequencies (N)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>17</td>
<td>26</td>
</tr>
<tr>
<td>18-19</td>
<td>74</td>
<td>74</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Enrolled</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>18-19</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Not Enrolled</td>
<td>17</td>
<td>11</td>
</tr>
<tr>
<td>18-19</td>
<td>39</td>
<td>78</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

Quantitative Findings Information

The study contained one independent variable, CodeName program participation, and four dependent variables: grade point average, attendance, behavior, and matriculation. Blocking (categorization) variables consisted of age, race, and gender.

Selection and Transition of Analytical Technique – (MANOVA to ANOVA)

Given the nature of the data, the choice of appropriate statistical technique was a result of the construct of the model itself. Although the intention had been to utilize MANOVA for analysis, the design of the single independent variable and four dependent variables, some of which were continuous and some of which were discrete, precluded the use of MANOVA as the analytical tool of analysis, as MANOVA requires continuous dependent variables.

General linear regression modeling—Analysis of Variance (ANOVA) —provided the flexibility to accommodate the various types of both discrete and continuous dependent variables and the Bernoulli independent variable, which was participation or
non-participation in the CodeName program. Regression analysis enabled the identification and characterization of relationships among multiple factors. With ANOVA calculations for multiple regression being nearly identical to the calculations for simple linear regression, specific use of ANOVA for analysis of GPA data and use of linear regression otherwise, provided a logical and cohesive approach to analysis of the quantitative aspects of the data (Fahrmeir, Kneib, & Lang, 2016).

**Grade Point Averages**

Examination of grade point average revealed a higher average for CodeName student participants than the average for students not participating in the program, as shown in Table 3.

Table 3

<table>
<thead>
<tr>
<th>Variable</th>
<th>Program</th>
<th>Total Count</th>
<th>Mean</th>
<th>Standard Error of the Mean</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade Point Average</td>
<td>No</td>
<td>50</td>
<td>2.2406</td>
<td>0.0814</td>
<td>0.5757</td>
<td>2.3062</td>
<td>-0.46</td>
<td>1.52</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>50</td>
<td>3.0061</td>
<td>0.0831</td>
<td>0.5877</td>
<td>2.94330</td>
<td>0.50</td>
<td>-0.01</td>
</tr>
</tbody>
</table>

Analysis was carried out to validate the statistical significance of the difference between participant and non-participant GPA seen in the comparison of Figure 3 and Figure 4.
Figure 3. Histogram of Program Grade Point Average of Participating Students

Figure 4, the histogram of GPA for non-participating students, indicates lack of normality based on the elevated kurtosis value of 1.52, which may not be statistically significant. Normality is about even, “normal” distribution, the bell curve, with more events or data toward the middle of the sample results and fewer as one moves away from the center or mean (Russell, 2019). Kurtosis is a measure of the extent to which outliers make up the data set. The elevated kurtosis in this graph is seen in the presence of a greater number of extreme values than would be seen in a more normally distributed bell curve (Birkett, 2020).
The normality plots for GPA of CodeName students indicates no reason to reject the conclusion that the data are normally distributed. The p-value of 0.517 statistically validates the evidence of normality, as illustrated in Figure 5. When one performs a hypothesis test in statistics, a p-value helps determine the significance of the results. A small p-value (typically ≤ 0.05) indicates strong evidence against the hypothesis being examined and a large p-value (> 0.05) indicates weak evidence against the hypothesis under examination (Mcloud, 2019). Moreover, this assumption of normality permits further analysis using probability plots.
The normality plot for non-participating student GPA provided evidence suggesting rejection of the assumption of normality. A p-value of 0.027 for non-participating student GPA was clearly beneath the threshold of 0.05 or greater for acceptance of normality with 95% confidence; therefore, the assumption of normality was initially rejected. However, by removing outliers, it was possible to investigate these data further and proceed to the modeling section of the analysis.

Review of the shape of the probability plot suggested that the lower value GPA at 0.50 and the higher values at 3.37 and 3.78 appeared to be causing the elevated kurtosis and a divergence from normality, as shown in Figure 6. The adjusted analysis with the 0.50 value removed was the first attempt to normalize the dataset.
The issue of non-normality in the non-participating students’ GPA data shown in Table 4 appeared to resolve with the removal of the 0.50 low score.

Table 4.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Count</th>
<th>Mean</th>
<th>Standard Error Mean</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Program GPA</td>
<td>50</td>
<td>2.2761</td>
<td>0.0748</td>
<td>0.5234</td>
<td>2.3125</td>
<td>-0.04</td>
<td>0.95</td>
</tr>
<tr>
<td>Adjusted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The researcher reviewed the adjusted histogram, Figure 7, to further consider the basis for support or rejection of the assumption of non-normality.

Figure 6. Probability Plot of Non-Program Students’ Grade Point Average

Figure 7. Histogram of Non-Program Students’ Grade Point Average
While the non-participating student GPA Histogram appeared to show evidence of deviation from normality, the removal of the 0.50 GPA data point resulted in a probability plot with a p-value of 0.093 as seen in Figure 8, a greater value than the lower limit for normality confidence of 0.05, indicating that there was no evidence to reject normality of the dataset.

![Probability Plot of Non-Program GPA - Adjusted](image)

*Figure 8. Probability Plot of Non-Program GPA - Adjusted*

The researcher justified removal of the 0.50 data point by its outlier status, as the student to whom it corresponded dropped out of high school after two years because of family obligations and support issues resulting from an unplanned pregnancy. Further, the school in which the CodeName Program was instituted offers educational options to assist pregnant students. The regression model evaluation provided evidence to support the conclusion that this model’s residuals were normally distributed, as illustrated in Figure 9.
This underlying assumption of regression modeling—normal distribution of residuals—was necessary to validate the cause and effect relationship between the independent variable, CodeName program participation, and the dependent variable, grade point average. The comparison of CodeName participation GPA versus non-participation GPA required the use of testing to determine equal or unequal variance in the samples.

Examination of the variances of non-participating students (0.5757 x 0.5757 = 0.3314) and student participants (0.5877 x 0.5877 = 0.3454) showed what appeared to be equal variance. Analysis supported this assumption. Additionally, the F-test statistic and the Leven’s Test both indicated equal variance of GPA in the two samples, allowing use of a pooled standard deviation to evaluate the data deriving from the two samples, as illustrated in Figure 10.
The comparison using the t-test with equal variance indicates there was a statistically significant difference between the GPA of CodeName student participants and students who did not participate in the CodeName Program. The p-value of 0.000 (less than 0.05 for a 95% confidence level) and the t-value of 6.58 (greater than 1.96 for a 95% confidence level) indicated that the GPA of student participants were greater, on average, by 0.766. The 95% confidence level for this difference for the average could be as little as a 0.535 improvement and as much as a 0.996 improvement, as shown in Table 5—representing almost a full point increase in GPA.

### Table 5

<table>
<thead>
<tr>
<th>Program</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error of the Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>50</td>
<td>2.241</td>
<td>0.576</td>
<td>0.081</td>
</tr>
<tr>
<td>Yes</td>
<td>50</td>
<td>3.006</td>
<td>0.588</td>
<td>0.083</td>
</tr>
</tbody>
</table>

Difference = \( \mu (\text{Yes}) - \mu (\text{No}) \)

Estimate for difference: 0.766

95% CI for difference: (0.535, 0.996)

T-Test of difference = 0 (vs not =): T-Value = 6.58  P-Value = 0.000  DF = 98

Both use Pooled Standard Deviation = 0.5818
Based on the evidence, illustrated by Figure 9, the conclusion to be drawn concerning the CodeName program’s effect on grade point average was clear; if a student was in the CodeName program, the program exerted a positive influence resulting in improvement of the student’s grade point average.

**Attendance**

The analysis of attendance for this study compared days of absence between participant and non-participant student groups. Statistical evidence for attendance showed a divergence from normality in both the elevated Skewness and Kurtosis values of the CodeName Participant data, as illustrated in Table 6. With magnitude approaching 3 for Skewness and greater than 3 for the Kurtosis, there was clear evidence that the data for the CodeName Participant students were not normally distributed. By contrast to the concern with normal distribution in the participant attendance data, non-participating student data seen in Table 6 showed a lack of skewness and kurtosis, which the researcher examined further to determine the most appropriate analytical method for assessment of effectiveness of the CodeName program with regard to attendance.

**Table 6**

*Descriptive Statistics: Attendance*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Program</th>
<th>Total Count</th>
<th>Mean</th>
<th>SE Mean</th>
<th>StDev</th>
<th>Median</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>No</td>
<td>50</td>
<td>21.62</td>
<td>2.48</td>
<td>17.54</td>
<td>17.25</td>
<td>1.11</td>
<td>0.35</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>50</td>
<td>11.41</td>
<td>1.30</td>
<td>9.23</td>
<td>10.00</td>
<td>2.83</td>
<td>12.54</td>
</tr>
</tbody>
</table>

It was noteworthy that the attendance data of participating students, illustrated by Figure 11, contained an outlier, student number 26, with a score of 58. This student became pregnant during her participation in the program, which impacted her attendance and resulted in many absent days.
The researcher further analyzed the sample data after omitting data relating to the student who became pregnant during program participation. With the elimination of the one outlier, both samples appeared to be normally distributed, as illustrated by Figure 12. The adjusted histogram also supported a graphical representation of normality.

Further review of non-participating student attendance indicated that the skewness value of 1.11, as shown in Table 7, was of sufficient significance to alter the sample away from normality.
Table 7

Descriptive Statistics: Attendance (Adjusted)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Program</th>
<th>Total Count</th>
<th>Mean</th>
<th>SF Mean</th>
<th>StDev</th>
<th>Median</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>No</td>
<td>50</td>
<td>21.62</td>
<td>2.48</td>
<td>17.54</td>
<td>17.25</td>
<td>1.11</td>
<td>0.35</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>49</td>
<td>10.459</td>
<td>0.912</td>
<td>6.386</td>
<td>10.000</td>
<td>0.75</td>
<td>0.44</td>
</tr>
</tbody>
</table>

The achievement of normal distribution of the non-participating population would have required removal of an excessive number of data points and would have been detrimental to the outcome and statistical validity of the findings; therefore, the researcher continued using nonparametric techniques. Since the data for at least one of the samples did not demonstrate a distribution of normality and, when full data sets were used, both samples appeared to have slight to moderate skewness, 1.11 for participant and 2.83 for non-participant attendance, the median was used as the center of tendency and a Chi-Square comparison, Mood’s Median, illustrated by Table 8, was applied to determine if a difference existed between participant and non-participant attendance.

Table 8

Mood Median Test: Attendance versus Program

\[
\text{Chi-Square} = 8.50 \quad \text{DF} = 1 \quad P = 0.004
\]

<table>
<thead>
<tr>
<th>Program</th>
<th>N&lt;=</th>
<th>N&gt;</th>
<th>Median</th>
<th>Q3-Q1</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>18</td>
<td>32</td>
<td>17.3</td>
<td>22.5</td>
</tr>
<tr>
<td>Yes</td>
<td>32</td>
<td>17</td>
<td>10.0</td>
<td>9.5</td>
</tr>
</tbody>
</table>

Overall median = 11.5

A 95.0% CI for median(No) - median(Yes): (1.0, 12.2)
Statistical evidence based on behavior data revealed a divergence from normality in elevated skewness and kurtosis values, as shown in Table 9.

Table 9

Statistics: Behavior Data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Program Coded</th>
<th>Total Count</th>
<th>Mean</th>
<th>SE Mean</th>
<th>StDev</th>
<th>Median</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior</td>
<td>No</td>
<td>50</td>
<td>1.080</td>
<td>0.337</td>
<td>2.381</td>
<td>0.000</td>
<td>3.16</td>
<td>12.39</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>50</td>
<td>0.2000</td>
<td>0.0857</td>
<td>0.6061</td>
<td>0.0000</td>
<td>3.32</td>
<td>11.13</td>
</tr>
</tbody>
</table>

The data represented in Table 10 and the illustration of data shown in Figures 14 and 15 reveal a magnitude of greater than 3 for both skewness and kurtosis, showing the data were not normally distributed.
Figure 14. Histogram of Non-Program Student Behavior

It should be noted that family situations and pressures, as well as demographic considerations, such as poverty and the need to work while in school, undoubtedly contributed to stress and anxiety on the part of affected students. Some students with heavy family responsibilities, forced to work as family leaders and authority outside of school, may have had trouble in school where they were not accorded the status or consideration their lives reflected outside of school. Many students selected to participate in the program had a history of earlier behavior problems. These students were making drastic changes in their behavior; however, the alterations took place over time and were subject to outside factors, such as neighborhood violence, which increased the difficulty of maintaining good behavior in school. The histograms of the two data sets, Figures 14 and 15, indicate a clear positive skewness and a very peaked (kurtotic) appearance around zero.
Based on clear evidence of non-normally distributed data, it was necessary to move forward with a modeling statistic other than linear regression. The researcher used a chi-square comparison of participant versus non-participant student behavior scores. This was similar to the two-sample t-test for normally distributed data but did not require the data to be normally distributed, as illustrated by Figure 16.

The p-value of 0.000 indicated a statistically significant difference between the behavioral occurrence rate of participants and non-participants, with non-participant
infractions involving 14 out of 50 students. The probability plot of program participants’ behavior is shown in Figure 17.

Figure 17. Probability Plot of Program Behavior

Figure 18 shows the probability plot of non-program participants’ behavior.

Figure 18. Probability Plot of Non-Program Behavior

Scores of non-participants were 0.88 greater than those of participants. Non-participant behavioral scoring at 14 out of 50 showed that 28% of non-participants demonstrated some level of behavior infraction. Conversely, participants scored six out
of 50, a 12% rate of behavior infraction—a 57% reduction from the scores of non-participants. The data suggest that a reduction in behavioral average infraction scoring level would be seen in participating students and that it would not be unusual to see behavior scoring improvement between 0.57 to 1.19 (representing behavior infractions) per participant, as had been illustrated in the main effects for behavior in Figure 13.

**Matriculation**

Both program participation, this study's independent variable, and matriculation, the dependent variable considered here, are discrete and therefore countable, making descriptive statistics, intended to summarize data, entirely unnecessary. Moreover, outcomes were binary, making a simple dot plot, such as Figure 19, enough for understanding and analysis. With a Bernoulli data set reflecting success versus failure to matriculate, the researcher applied a binomial probability calculation to determine the statistical significance of the difference.

![Dot plot of matriculation](image)

*Figure 19. Dot Plot of Matriculation*

A bar chart provided a greater sense of the magnitude of the difference between the participant matriculation rate and the non-participant matriculation rate, as illustrated
by Figure 20. It is visually obvious that there is a statistically significant difference in the number of participants who matriculated, 98%, as compared to the number of non-participants who matriculated, 30%.

**Figure 20.** Histogram of Matriculation of Non-Participating and Participating Program Students

Sixty-eight percent, or 34 out of 50 of those at-risk students who were tracked by the research study but did not participate in the program, have not achieved matriculation, while 98%, or 49 out of 50, of those who did participate have achieved matriculation—the single exception being one student who followed his personal passion into the music industry, making guitars for an iconic industry label that was toured during the pilot program.

**Racial Demographics**

Racial demographics of both participating and non-participating students are shown in Figure 19 and include a majority of Black students; however, the participant group is a more diverse mixture of Black, Hispanic and White students. The non-participant sample shows 50% less racial diversity.
The random sample of non-participating students represented the demographics of the general population of at-risk students. With a preponderance of at-risk students being Black, it would be expected that a greater percentage of CodeName participants would have been Black. Unfortunately, many Black students live in communities that do not support academic endeavors. Active discouragement of academic effort and peer groups who view studious behavior negatively dissuade them from taking advantage of academically-focused opportunities.

Conversely, as shown in Table 10, other racial groups are over-represented in the participant study sample in relation to the school population of at-risk students and do not seem to be affected by the same bias against academic opportunities.

Table 10

| Diversity Matrix of Race of Non-Participating and Participating Program Students |
|---------------------------------|----------------|----------------|----------------|
| Diversity Matrix                | Black | %   | Hispanic | %   | White | %   |
| Program                         | 28    | 56% | 11       | 22% | 11    | 22% |
| Non-Program                     | 40    | 79% | 5        | 10% | 5     | 10% |
Relationship between Dependent/Independent Variables—Support of the Hypotheses

The correlation matrix supports the expectation that participation in the CodeName program, the independent variable, produces improvement in the dependent variables of grade point average, attendance, behavior, and matriculation. The correlation matrix, displayed in Table 11, is a measure of the relationship between any of the dependent and/or independent variables. If the Pearson’s $r$ is greater than 0.5, there is a marginally significant relationship between the variables. If the Pearson’s $r$ is greater than 0.7 there is a significant relationship between the variables. If the $p$-value of the correlation is less than 0.05 then the relationship has a 95% probability of being a correct assumption. It should be noted that there are several weak relationships that are statistically significant. The matrix shows that the dependent variable of matriculation has a significant relationship with the independent variable of CodeName program participation.

Table 11

The Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>Program</th>
<th>Race Coded</th>
<th>Gender Coded</th>
<th>Age</th>
<th>GPA</th>
<th>Attendance</th>
<th>Matriculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race Coded</td>
<td>Pearson's $r$</td>
<td>0.229</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$p$-value</td>
<td>0.023</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender Coded</td>
<td>Pearson's $r$</td>
<td>0.02</td>
<td>-0.013</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$p$-value</td>
<td>0.845</td>
<td>0.898</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Pearson's $r$</td>
<td>0.185</td>
<td>-0.044</td>
<td>0.067</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$p$-value</td>
<td>0.068</td>
<td>0.665</td>
<td>0.51</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPA</td>
<td>Pearson's $r$</td>
<td>0.549</td>
<td>0.194</td>
<td>-0.019</td>
<td>0.095</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$p$-value</td>
<td>0</td>
<td>0.055</td>
<td>0.849</td>
<td>0.355</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attendance</td>
<td>Pearson's $r$</td>
<td>-0.32</td>
<td>-0.091</td>
<td>-0.113</td>
<td>-0.02</td>
<td>-0.453</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$p$-value</td>
<td>0.001</td>
<td>0.373</td>
<td>0.268</td>
<td>0.865</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Behavior</td>
<td>Pearson's $r$</td>
<td>-0.213</td>
<td>-0.124</td>
<td>-0.007</td>
<td>-0.02</td>
<td>-0.254</td>
<td>0.409</td>
</tr>
<tr>
<td></td>
<td>$p$-value</td>
<td>0.035</td>
<td>0.225</td>
<td>0.948</td>
<td>0.87</td>
<td>0.012</td>
<td>0</td>
</tr>
<tr>
<td>Matriculation</td>
<td>Pearson's $r$</td>
<td>0.701</td>
<td>0.16</td>
<td>0.015</td>
<td>0.153</td>
<td>0.534</td>
<td>-0.326</td>
</tr>
<tr>
<td></td>
<td>$p$-value</td>
<td>0</td>
<td>0.116</td>
<td>0.884</td>
<td>0.132</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Racial Effect

The figures relating to racial diversity show the validity of racial effect on academic performance and the need for a program such as CodeName. In addition, the relationship between the pairs of attendance and program and behavior and program in the correlation matrix both show that students in the program had better attendance scores and better behavior scores than their non-participating peers.

Qualitative Findings

The researcher collected qualitative data from student participants, teachers, facilitators, business partners, and parents to enrich and contextualize the quantitative findings, using a combination of surveys, questionnaires, and one-on-one interviews. Graduates of the CodeName program were invited to complete the CodeName Program Graduate Participant Reflection Survey (Appendix B/Appendix E) and to be interviewed (Appendix H) in order to gain a better understanding of the program’s perceived effect as well as those aspects and results that students considered to be most important. Part of the survey consisted of open-ended questions. All 25 of the graduating CodeName cohort completed the Graduate Reflection. Additionally, ten graduates of the program made themselves available for one-on-one discussions and were interviewed using open-ended questions relating to this study’s hypotheses, what they felt they had gained from the program, as well as any perceived failings of the program. The interviewees enriched their responses by personal anecdotes, drawing attention to experiences and opportunities that they considered pivotal to their improvements in grade point average, attendance, behavior, and matriculation.
The Teachers/Facilitator/Business partners of the CodeName program were surveyed via the Teachers/Facilitator/Business Partners Survey (Appendix F/G) as to their perceptions of the CodeName program, availability of support for it, and other factors they believe affected the student outcome of the program. Ten CodeName partners completed surveys. To aid in gaining insight concerning their perceptions of the program’s efficacy, the researcher invited parents to complete a Parent Survey Questionnaire (Appendix C) and participate in a Parent Interview (Appendix J). Ten parents completed surveys and interviews. The parent surveys allowed the researcher to gather feedback on the parents’ views on the program as they discussed their children’s areas of improvement and the skills acquired while in the program.

Interview transcripts and surveys were analyzed and organized according to the following four themes and eleven sub-themes: Social Learning under which fall mentoring, guided preparation and peer support; Personal Growth of student participants which includes development of new perspectives, personal responsibility and sense of ownership of the program; Exposure to Opportunities with its sub-themes of stimulation of interest and information regarding college, career, and resources; and 21st Century Skill development of student participants—divided into three sub-headings: learning skills comprised of critical thinking, creativity, collaboration, and communication; literacy skills directed at information, media and technology; and life skills including flexibility, leadership, initiative, productivity, and social skills. Responses to the themes and subthemes are summarized with specific examples provided as clarity and significance warrant.
Social Learning

Based on the qualitative data gathered from the Graduate Reflection, the graduate interviews, and the Teacher/Staff Survey and the teacher and staff interviews, the importance of the role of mentoring in the pilot CodeName program was unmistakable. It not only promoted the involvement of the students and provided a means by which to transmit valuable support and encouragement, it also served as a conduit for the transmission of social learning and a host of valuable personal qualities and skills.

The benefits of CodeName program mentoring, and the social learning gained from it, were readily apparent in the discussions that took place during graduate interviews. Interviewees recognized and highlighted the beneficial influence of specific instances of their own social learning. GI 7 responded to question 5, which asked what role the CodeName program mentors/staff played in the student’s post-secondary experience, by saying that “the program gave me new perspectives on the places other students were coming from and their thought processes… Mentors helped me see others in a new light. This perspective and realization that the others were not so different from me allowed me to participate more fully in group activities.” Ten of the graduates noted the value of the motivational aspect of the program, with various students pointing to the acquisition of self-esteem, resilience, and a new perspective as valuable outcomes of their participation. Social acceptance and becoming part of a group were noted as pivotal experiences.

Mentoring. Six of the graduates specifically mentioned access to mentors and leadership opportunities as strengths of the CodeName program. Terms and ideas which occurred repeatedly when discussing why the program had been deemed such a success
included “the strength of the mentoring relationships,” according to graduate interviewees GI 1 and 2 when responding to the question concerning what they felt had been the best part of the program. Additional notable comments included “the sincere desire of the teachers to help the students,” per GI 2, and first-hand opportunities to learn “how people do things” (GI 9). It became clear during the course of obtaining and reviewing the students’ responses, that the impressive quantitative results of this study were owed in large part to the motivation and engagement provided by the quality of interpersonal relationships with the adults in the learning community.

There was concurrence in responses from the ten teachers and staff who completed the questionnaires (Appendix G), pointing to mentoring as a positive influence on both students and their own job satisfaction. There was confirmation from all ten individuals that the degree of engagement and inter-connectedness that mentoring encouraged in the students played a significant role in grades and/or academic achievement. There was agreement that the CodeName program made appropriate use of routine and rules, but it was the mentor/mentee relationship that came up time after time as a critical factor in making connection with the students and acting as the catalyst for academic and soft skill acquisition leading to improved GPAs, attendance, behavior, and matriculation.

All four of the teachers/staff who participated in one-on-one interviews after completion of the questionnaire spoke specifically of the personal qualities and skills that had been gained by the students as a direct result of the social learning imparted by CodeName program mentoring. The question, “In what ways did the program affect the students’ grades and academic achievement?” drew similar comments from all of the
respondents. SI 1 spoke at length concerning “increased self-esteem, confidence, and responsibility.” SI 2 discussed changes seen in “awareness of self and of others, and leadership skills”. SI 3 noted “improvement in life choices” on the part of participants. These are just a few examples of the positive effects of participation on the students noted during open-ended response.

**Guided Preparation.** Teachers, staff, and business partners involved in the CodeName program, functioning as mentors, were responsible for encouragement, support, and guidance of student participants. Based on their responses to surveys and interviews, the design of the program, which emphasized the relevance and connection between academics and skills needed for employment, assisted those who served as program mentors to guide students toward academic success and post-secondary matriculation.

Teacher and staff interview comments emphasized “the importance of the program’s successful integration of career and school” (SI 1). It was clear that in the eyes of those directly involved with the participants that the “increased relevance” (SI 3), in tandem with “the program’s innovative and creative instruction” (SI 2), was directly related to an “increase in student engagement” (SI 1) and, therefore, improvement in the measures of academic success that are the subject of this study.

Graduates of the program indicated through surveys and interviews that the guidance they received through the program had played a vital role in their success after high school. When asked in what way the program affected the students’ post-secondary plans and preparation, GI 5 was just one of the program participants who lauded the program for the “preparation for college…and career… [it provided].” Social learning
aided in the acquisition of both hard and soft skills, “the channeling of effort, and the
discovery of new personal capabilities” (GI 4).

Peer Support. The benefits of social learning beyond those of the mentor/mentee
relationship were also seen and noted by the graduates and formed part of many
responses when asked in what way the program had affected their grades and academic
achievement. GI 9, who had trouble completing homework at home, where external
factors interfered with academics, mentioned “peer support… helping each other study”
had been of significant value. Several graduates found that social acceptance and
becoming part of a group were pivotal experiences.

In a society where social sub-sets do not look upon study or academic success as
positive, finding a supportive group to belong to and work with can be a lifesaver for a
student who might otherwise be pulled into violence or other negative behaviors. When
asked what he felt had been the best part of the program, GI 2 spoke at length about the
benefits he had experienced when he became part of his program cohort. Other graduates
expressed this sentiment in various ways when responding to the same question. GI 9
expressed it as the beneficial effect of “exposure to new and different social interactions.”

Personal Growth

The theme of personal growth was recurrent throughout the graduate surveys and
interviews. Personal change was repeatedly listed as a benefit of participation in the
CodeName program. For greater ease of examination, the researcher broke this theme
into three categories: development of new perspectives, personal responsibility, and
ownership of the program. It was evident from the qualitative data, that as the youth
matured during their four years of high school, the program provided a framework that
helped to shape them and, more importantly, helped them to shape and develop themselves.

Development of New Perspectives. As in the case of GI 2, who stressed that “the program… [had given him] …a new perspective and awareness,” CodeName program graduates were very open and forthright about personal changes and growth that participation had brought them. While surveys showed that personal growth through the development of new perspectives had been a common experience for graduates of the program, interviews offered more detailed glimpses into what that meant.

When discussing program effects on in-school behavior, GI’s 7 and 9 both spoke about the way in which the program has exposed them to “a different population of students” (GI 7), allowing them a chance for “exposure to new and different social interactions” (GI 9). GI 7 said that this exposure provided opportunities to understand other ways of thinking and behaving. GI 5, responding to the question concerning the program’s effect on his behavior in school, stated that, “[CodeName] made me a bit more open; allowed me to be a little outside my comfort zone, [which] is something I struggled with.” In fact, he went on to say that as a result of involvement in the program, he “became a change agent in the community [while] in school”, a path that has led him to a “life of being a change agent” and a career which will allow him to better the world’s environment. GI 2, also discussing the program’s effect on in-school behavior, spoke at some length about the way in which the program helped him to “gain a realization of the effect of current actions on future possibilities.” This recognition of future repercussions of present behavior “became a powerful motivating factor that helped [him] to behave well in school and avoid fights and trouble outside of school.” There was widespread
agreement among the graduates as to “…the transformative, game-changing nature of the entire experience” (GI 1) that had promoted personal growth and the development of new perspectives.

**Personal Responsibility.** It was clear from surveys and interviews of CodeName graduates that the program helped to foster a sense of personal responsibility, which in turn helped the students in maintaining good grades, good attendance, and good behavior. GI 2, responding to the question concerning the program’s effect on grades and academic achievement, spoke of how he benefited from “the acquisition of skills such as time management and the growth of a personal sense of responsibility” which he attributed to his participation in the program. He stressed that “handling your own responsibilities and awareness of new ways to self-betterment were two important effects of the program.” GI 7, in answer to the question concerning the program’s effect on post-secondary plans and preparation, spoke specifically of how the program experiences provided her with new abilities, such as public speaking, and an “awareness of leadership and personal empowerment that [she] had not previously experienced.” Survey and interview comments clearly point to a sense of “personal responsibility” (GI 1,2,3,5, 7) as an important component in maintaining good grades, attendance, and behavior, which in turn aided the students in matriculation to higher education.

**Sense of Ownership of the Program.** It became clear over the course of qualitative data collection that the “perception of the program as our program” (GI’s 1 and 2) was a “powerful motivator” (direct quote from GI 1, which was expressed in slightly different words by GI 2), encouraging the students to engage and grow. The question concerning whether or not the students would choose to participate if they could
go back in time elicited very strong responses and emotions concerning the motivation
the program had provided. The perception of “our ownership of the program” (GI 1 and
2) on the part of the participants was an encouragement promoting attendance and good
behavior and led to a level of involvement that placed the program far beyond any normal
high school experience in the opinion of those who graduated from it. When answering,
the questions concerning changes in their behavior and the best part of the program, GI 1
and 7 both spoke of a “sense of empowerment” that spurred them to make the most of
their experiences and look beyond to the futures they might create for themselves.
Moreover, GI 9 spoke of the “extra time at school [in which] to do homework …that [he]
couldn’t do at home.”

**Exposure to opportunities**

It was very clear from the parent and graduate surveys and interviews that
“opportunities provided by the program” (SI 1, GI 1 and 5) were a major asset,
encouraging attendance, engagement, and effort. Responses to questions about the best
part of the program, the effect on post-secondary plans and preparation, and whether or
not the student would again choose to participate if they were able to go back in time all
yielded references to the field trips, college tours, diverse resources, college preparation,
and guest speakers that had broadened the participants’ understanding and helped them to
begin to plan and shape their futures. When asked to assess the program’s effect on post-
secondary plans and preparation it was clearly stated by GI 1 that “the access and
opportunities provided by the program…such as field trips to employer locations,
programs, clubs, and running for an office, were complete game changers.” Each of the
graduates interviewed expressed this sentiment through survey results in various ways.
GI 5 said that “the best part of the CodeName program were the opportunities it gave me.”

**Stimulation of Interest.** When asked his opinion of the CodeName program’s effect on GPA, GI 1 stated that it had had a beneficial effect, which was due in great measure to “the excitement and stimulation encouraged by the program offerings.” Other graduates expressed this sentiment many times whether the question pertained to GPA, attendance, or behavior. GI 2 said that the “interest and excitement generated by the program activities encouraged consistent attendance.” GI 1 averred that “having things to look forward to encouraged attendance.”

A few interviewees who had been adequate or good students prior to participation in the CodeName program expressed the opinion that, although they would have attended school in any case, the opportunities afforded by the program made school a place they wanted to be. GI 7 said that one of the “best parts of the program was being able to see things in person,” –something that just did not happen otherwise in school. GI 7 expressed the opinion that what the program had given her stretched beyond the graded measure of academic achievement, “offering experiences, topics, and exposure” that allowed her to channel her academic abilities.

**Information (College, Career, Resources).** When asked to discuss the program’s effect after graduation, the words of GI 1 summed up the comments of the other graduates who were interviewed, making it clear that “[the intention] to pursue additional education after high school graduation was aided by the way in which students were made aware of the opportunities for further education.” Discussion in the course of student and parent interviews revealed that in addition to the benefits of mentoring and
guidance already discussed, the ready availability of information related to possible careers, general college awareness, and the steps necessary for college choice, application, and financial aid and assistance in accessing and using aid, played an extremely important role in achieving matriculation.

21st Century Skill Development

**Learning Skills:** *Critical Thinking, Creativity, Collaboration, Communication*

Learning skills involve the mental processes necessary for adaptation and improvement.

*Critical thinking.* Finding the solution to problems. When questioned about changes seen in student behavior as a result of program participation, Teacher Interviewee 3 (TI 3) stated that through the “Problem Solving/Critical Thinking/Change Management Exploration curriculum aspect of the program… from the rhetoric used… [to things as simple as] …thinking about their actions [the students were taught] skills to support critical thinking.” TI 5, also discussing effects on behavior, explained that the students were led to examine their own personalities, how “they thought and judged, and the thought processes they used.” This, combined with a diversity of experiences and exposure through field trips, tours, guest speakers and other resources, “broadened understanding, and the knowledge base” (TI 5) from which to draw, supplying the necessary foundation for critical thinking. GI 1, who extolled the social learning provided through the program when asked about the best part of the program, referred to the CodeName opportunities as “game changers” that opened the students’ minds and “made all the difference,” while GI 7 described her exposure to people and concepts outside of her previous experience as pivotal to broadening of her thinking and reasoning processes. GI 2, discussing behavior changes associated with participation, stressed the
value of his acquisition of “new perspective and awareness.” Many of the graduates noted the development of the ability to think in new ways, including the ability to analyze and think critically.

**Creativity.** *Inventive and original thinking, a pathway to adaptation and innovation.* “Transformative” was the word that GI 1 used to sum up his experience in the CodeName program and that word epitomizes the change in thinking and perspective required for true creativity. GI 2 discussed the changes he had undergone in the course of the program and the “opportunities it gave” him for personal growth, similar to the experiences of GI 5, who is using his skill set to create a future career facilitating positive change. GI 7 gained creativity of thought, adapting to an altered view of the world and people, as the CodeName program exposed her to unfamiliar ideas and circumstances.

**Collaboration.** *Cooperating and working with others, which means being willing to sacrifice, adapt, and achieve compromise to obtain the best possible result.* The CodeName program mixed students of different ethnicities, cultures, and demographic groups, giving them the opportunity and constructive environment in which to explore differences and similarities, reconcile them, and function as a supportive group. TI 2 observed that “all these kids coming from different backgrounds and communities [was] eye-opening for them. Putting all these kids in a group…it gets them acclimated with other people’s thinking, their thoughts and opinions and culture and how they are treated.” Over the course of the program, the students “learn how to function as a group, how to work together, and how to adapt.” Graduate interviews supported this opinion. GI 9 reported that peer support had been a very helpful aspect of program participation. GI 5 has already embarked on a mission to foster collaboration and change within his
own community. While all graduates interviewed touched on the way the program had taught them the skill of collaboration, GIs 5, 7, and 9 all spoke directly of the adaptations they had undergone as they listened to, learned from, and interacted with students very different from themselves.

**Communication.** Talking and imparting information, which is key to elimination of confusion. GIs 1 and 2 both spoke of the strength of the mentoring relationship and the importance of the exchanges between the students and all those who guided them through the program. This was borne out in teacher interviews, especially the interview with TI 5, who provided two examples in which communication and positive feedback had turned around the performance and outcomes of underperforming students. In one case, a D average student with a poor attitude toward school had blossomed in an environment where his engagement and communication were encouraged and valued. Having made the connection with his teachers within the program, he responded to the feedback he received and in less than one year was on the honor roll and actively participating and taking the lead in activities. GI 5 was emphatic in stressing the importance of communication and its power to “pass on knowledge, …help in [problem] resolution and [the facilitation of] change.”

**Literacy Skills:** Literacy skills are vital in separating fact and reliable sources from misinformation and untrustworthy sources. They focus on discerning facts, the source of information and the technology involved.

**Information literacy.** Comprehension of facts, figures, statistics, and data and recognition of both truth and fabrication. In discussing strengths of the program, TI 3 spoke of the world and workplace relevance of the program and its project-based
learning. He went on to mention the instruction the students received in the use of cloud resources and the guidance provided to assist them both in “judging reliability of sources,” as well as “analysis of data they had gathered”.

**Media literacy.** Comprehension of information publication methods and dispersion in aid of assessing credibility. TI 2 and 3 both spoke of the importance of using “reliable source material” and the dangers of “misinformation” and “perceived credibility” in the digital age. To assist the students in their understanding of source credibility and publication methods, “students learned communication strategies and how to fact find, using trustworthy reference material” (TI 3). “Guided activities helped the students better understand the dispersion of information through the internet. There was one exercise in which students looked at point of view from the position of receiver and provider that was eye-opening for some of them” (TI 5).

**Technology literacy.** Understanding the devices and machines that power this age of information in aid of adaptation and shaping change. In discussing program strengths, several CodeName teachers mentioned aspects of technology related instruction. “CodeName students were exposed to up-to-date software and technology. They don’t have to be afraid that when they go off to college they won’t be up to the mark with programs or accessing data” (TI 4). Through clubs and other activities such as Ready Program, JR Watershed, and Ace Mentoring, students learned how to use computers and programs, even how to program…for a kid who never had a computer at home, this is powerful stuff” (TI 3). In addition, students examined “how digital footprints are created and got a chance to begin to shape their own…[learning] how the
cloud can provide exposure and make connections that lead to other opportunities and jobs” (TI 3).

**Life Skills:** *Flexibility, Leadership, Initiative, Productivity, Social Life skills are present in one’s personal life and play a part in the workplace.*

**Flexibility.** *The willingness and ability to change as needed means admission that one’s way may not be the best way, that there is more to learn.* Graduates spoke of gaining the ability to adjust and adapt, both actions and thoughts, through participation in the CodeName program. TI 3 described how the program accomplished this as providing “the building blocks with which to approach different scenarios.” Adjustments in behavior such as deciding who to “hang out with or not hang out with outside of school” kept GI 2 out of fights and trouble. He stressed that taking charge of his “own responsibilities and awareness of new ways to self-betterment” had improved him, his academic performance, and his prospects, a sentiment echoed by other graduates, including GI 9. Just as important as having the flexibility to adjust one’s behavior was the ability to adapt to new people and new ways of thinking—a skill referred to by most of the program graduates.

**Leadership.** *The ability to lead, guide, and motivate others to accomplish a goal.* *True leadership encompasses both the ability to understand and honor the decisions of others as well as the ability to make decisions and lead* (Lowney, 2003). Many graduates spoke of the self-esteem they gained from participation and the way in which it provided them with the confidence and empowerment to take on challenges and lead. GI 7 spoke specifically of this, as did GI 1. Every graduate interviewed spoke of having a “sense of ownership” of the program, which GIs 1 and 2 pointed to as an...
exceptionally “powerful motivator”. TI 3 spoke of students who had languished academically in years before their participation in the program but flourished under its influence. He expressed the thought that to gain the skills required to move forward and even lead, an at-risk student “might be merely in need of the right environment.”

**Initiative. The ability to assess, plan, and act on one’s own, often at the cost of personal time.** Diverse activities and exposures provided through the program aided the students in their personal growth, providing them with the ability to take the lead in planning and shaping their own futures and in some cases assisting others to that same end. GIs 1, 2, and 5 noted the transformation from passive receivers of information to individuals ready and willing to use that knowledge and to innovate. Teachers corroborated this view, revealing that they saw significant changes in “the way in which… [the students] …prepared for school” (TI 2) and dealt with assignments after becoming participants in the CodeName program. Acquiring initiative allowed the students to modify habits and behavior that “improved their grades and outcomes” (TI 3). GI 2 specifically noted the development of “time management” skills as well as a greater “sense of personal responsibility.”

**Productivity. The practical outcome of applied creativity, flexibility, leadership, and initiative, the maintaining of efficiency and meeting deadlines.** GI 2 discussed how improvements in time management and a sense of personal responsibility acquired due to the CodeName program had contributed to his productivity and academic success. Several interviewees mentioned that the achievement of greater productivity spurred students to work harder and accomplish more. In describing the effect of the students’ development of 21st Century Skills, TI 3 stated that it “made them want to do more and to
be more.” GI 1 spoke of the motivation provided by the CodeName program and the way that translated to consistent involvement and work on the part of the students.

**Social skills.** The way people interact and the rules which govern those interactions such as etiquette and civic sense. It became readily apparent from the teacher interviews that CodeName student engagement was at a completely different level from that seen in regular, non-program classes. TI 3 stated that “teaching them a skill set and how to apply it to their everyday life, to their community, to the world” made all the difference. “The objective was to teach them how to identify, analyze, plan, implement… we did that… I love the environment” (TI 2). That love of teaching, of sharing, and of mentoring came through loud and clear to the students who unanimously extolled the value of the “strength of the mentoring relationships” (GIs 1 and 2)—the medium through which the norms of good behavior as well as the critical 21st Century Skills were transmitted.

**Analysis and Synthesis of Findings**

As technology evolves and accelerates, educational professionals must keep pace in order to impart 21st Century Skills to their students. These skills, categorized as learning, literacy, and life, and as discussed in Chapter Two, can be taught (Bandura, 1977). Ideally, school curriculum should include 21st Century Skills as early as possible, assuring that all students acquire them. The researcher studied the pilot mentoring intervention program, CodeName, to see if it had been successful in closing the achievement gap through matriculation.

This mixed-methods study resulted in a rejection of all four null hypotheses. Findings support the hypothesis, tested by quantitative analysis, that participation in the
CodeName program results in improved GPA, attendance, behavior, and matriculation. While behavior and, to some extent attendance, are subject to outside influences that affect results, GPA and matriculation were uniformly strong in students who participated during all four years of the program.

Qualitative data provided dimension and context to quantitative analyses. It became clear during the course of obtaining and reviewing responses, particularly those of graduating students, that the anticipated quantitative results of this study were due in large part to the motivation and engagement provided by its qualitative interpersonal aspects—the interconnections created in and through the learning community—as well as the resultant 21st Century Skills acquisition.

**Summary**

Data analysis of this mixed methods study presented the challenge of analyzing four dependent variables, some of which were continuous while others were discrete. The researcher encountered concerns with normality of distribution for some variables and the challenge of identifying connections and implications between qualitative and quantitative data. As analysis of the quantitative data proceeded, the researcher ruled out MANOVA as the preferred analytic tool due to the varied discrete and continuous natures of the dependent variables. The researcher, subsequently, chose general linear regression modeling, which provided the flexibility to accommodate the nature of the dependent variables. The researcher employed ANOVA to analyze GPA data, an analytic tool appropriate to its continuous nature. Although normal distribution of GPA data presented little concern, figures for both attendance and behavior exhibited divergence from normality which required further examination. Exclusion of outliers and use of
additional analytical methods led to the conclusion that these areas provided statistically
significant results concerning the efficacy of the CodeName program. Matriculation data
were much less complicated to analyze and the findings were uniform.

The researcher used qualitative data derived from surveys, questionnaires, and
interviews to further enrich and contextualize conclusions based on the quantitative
analysis. An inductive coding approach was employed to counter bias in tandem with
peer debriefing and peer review. Four themes emerged from evaluation of the qualitative
data: social learning, personal growth of student participants, exposure to opportunities,
and 21st Century Skill development. Within those categories, 11 sub-themes were
identified: mentoring, guided preparation, peer support, personal responsibility,
development of new perspectives, sense of ownership of the program, stimulation of
interest, information, learning skills, literacy skills, and life skills. The critical role
played by the acquisition of 21st Century skills emerged during analysis of the qualitative
data. It became clear during qualitative data review that the benefits of the professional
learning community framework and the social learning provided through mentoring
promoted the change in cognitive processes leading to the development of the 21st
Century Skills previously described. It was the acquisition of these skills which brought
about improvements in grades, attendance, and behavior that contributed to matriculation
success. 21st Century Skills proved to be the key to narrowing the achievement gap for
at-risk participants in the CodeName program, and social learning through mentoring was
requisite for acquisition of those skills.

Results of the quantitative analysis led to rejection of all four null hypotheses.
Participation in the CodeName program does, in fact, produce statistically significant
participant improvement in GPA, attendance, behavior, and matriculation. Qualitative data supported this finding, pointing to 21st Century Skills acquisition transmitted through social learning and mentoring as the key to pilot CodeName program success. The qualitative data from the students in this study show that students valued an interconnected community and school as well as the support and advocacy of the facilitator and recognized the benefit of the social learning theory experience and the excitement stimulated by contextualized learning. Surveys and interviews pointed to students’ recognition of the value of this therapeutic approach to education, which provided unique opportunities for learning, soft-skill acquisition, social/emotional training, and the development of cultural proficiency and conflict resolution skills.
CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter includes a brief description of the purpose of the study, its aim, deficiencies in the program studied, recommendations for its full implementation, and specific assessments that must be addressed. It also includes the leadership implications as they apply to the melding of social learning theory with a four-part approach to mentoring.

Purpose of the Study

The purpose of this mixed methods study was to compare the differences between achievement, attendance, behavior, and post-secondary matriculation of at-risk students who participated in the CodeName program with those of at-risk students who did not participate in the CodeName program.

The following research questions guided this study:

**Research question #1:** Is there a difference in achievement, as measured by grade point average, between at-risk students participating in the CodeName Program and those not participating in the program?

**Research question #2:** Is there a difference in school attendance between at-risk students participating in the CodeName Program and those not participating in the program?

**Research question #3:** Is there a difference in behavior infractions between at-risk students participating in the CodeName Program and those not participating in the program?
Research question #4: Is there a difference in matriculation between at-risk students participating in the CodeName Program and those not participating in the program?

Aim of the Study

The aim of the study was to determine if a mentoring intervention program improved the grade point average, attendance, behavior, and matriculation of at-risk student participants.

Examination of Quantitative Data

Analysis of Variance (ANOVA) and linear regression, both versions of General Linear Modeling, provided the flexibility to analyze the various types of both discrete and continuous dependent variables and the bernoulli independent variable. The study had one binary independent variable, program, and four dependent variables: grade point average, attendance, behavior and matriculation. Examination of skewness and kurtosis, focusing respectively on the distribution of extreme values and the extent to which outliers make up the data set, was carried out to consider the normality of data distribution.

Grade point average revealed a higher average for CodeName student participants than the average for students not participating in the program, with the mean of grade point average of participants being 3.0 as compared to a non-participant mean of 2.2 and a participant median of 2.9 as compared to a non-participant median of 2.3. Statistical analysis of the data was carried out to examine the validity of these findings. The application of Pearson product moment correlation coefficient determined that a strong relationship existed between grade point average and program participation. P-values, a
measure of normality confidence, were calculated in order to determine the significance
of the results. The p-value of 0.000 (less than 0.05 for a 95% confidence level) and the t-
value of 6.58 (greater than 1.96 for a 95% confidence level) indicated that the grade point
average of student participants was greater, on average, by 0.766. The 95% confidence
level for this difference for the average could be as little as a 0.535 improvement and as
much as a 0.996 improvement. Probability plots provided support for normality of the
data while the F-test statistic and Leven’s Test both indicated equal variance of grade
point average in the participant and non-participant data sets. In addition, a comparison
using the t-test with equal variance was applied to the grade point average data. This
comparison confirmed a statistically significant difference between the grade point
average of CodeName student participants and that of students who did not participate in
the CodeName Program. Validation of the cause and effect relationship between the
independent variable, CodeName program participation, and the dependent variable,
grade point average, was achieved using main effects plots. Statistical analysis bears out
that the CodeName program exerted a positive influence resulting in the improvement of
the student participants’ grade point averages.

Attendance data revealed a median of 10.0 days of absence for program
participants and 17.3 days of absence for non-participants. Utilizing the median as the
center of tendency, a Chi-Square comparison, Mood’s Median, was applied which
confirmed that a significant difference existed between participants and non-participant
results. The cause and effect relationship between attendance and program participation
was validated by main effects plots. The attendance of the students who participated in
the CodeName program was better than the attendance of students who did not participate in the program.

Behavior data revealed 28% (14 out of 50) of non-participants demonstrating some level of behavior infraction as compared to 12% (6 out of 50) of program participants. This difference represented a 57% reduction in behavior infractions associated with program participation. Scores of non-participants were 0.88 greater than those of participants. Behavior data were subjected to a chi-square comparison which confirmed a difference between participant and non-participant results. The p-value of 0.000 indicated a statistically significant difference between the behavioral occurrence rate of participants and non-participants while main effects plots validated the cause and effect relationship between behavior and program participation. The data suggest that a reduction in behavioral average infraction scoring level would be seen in participating students and that it would not be unusual to see behavior scoring improvement between 0.57 to 1.19 (representing behavior infractions) per participant.

Matriculation results differed from those of the other three variables in that they were binary. This simplified the statistical study required as this Bernoulli data set (yes/no) reflected success versus failure to matriculate. Ninety-eight percent of CodeName participants, 49 out of 50, matriculated as compared to 30%, 15 out of 50, of non-participants. The application of a binomial probability calculation determined a statistically significant difference in matriculation results based on program participation. Dot plots and histograms were sufficient to reveal the stark difference in matriculation results based on program participation and the improvement in matriculation associated with CodeName participation.
In this study, all four dependent variables, grade point average, attendance, behavior, and matriculation, a statistically significant difference was found between the outcomes of CodeName program student participants and students who did not participate in the CodeName program. Main effects plots validated the cause and effect relationship between the independent variable, CodeName program participation, and the dependent variables, grade point average, attendance, and behavior while binomial probability calculation confirmed the validity of the matriculation findings. CodeName Program participation was shown to produce improvement in all four measures of academic achievement.

**Examination of Qualitative Data**

Responses to surveys and interviews showed that it was through social learning that students acquired and demonstrated vital 21st Century Skills (learning, literacy, and life). These skills were critical to changes in the behaviors and attitudes that led to improvements in academic success, as defined by the measures studied. Based on feedback from study participants, the CodeName program needs adjustments and accountability measures to ensure successful and complete implementation and long-term sustainability.

**Deficiencies in the CodeName Program**

The researcher identified five deficiencies from qualitative information derived from the study of the CodeName pilot program, as follows:

1. The adjustment period for 9th grade participants presented a disconnect in the process of social learning. The establishment of the bonds between students and mentors is essential for social learning to take place. With actual program activities delayed for
weeks or months at the start of 9th grade, there was significant delay for 9th grade participants in the development of bonds with their teachers and mentors, in receiving the support of the CodeName program, and in adjustment to changes in thinking and identity.

2. The absence of organized thematic structure and coordination between curricular and co-curricular experiences, including speakers and field trips, constituted a program weakness and was counterproductive to relating those experiences to classroom learning. The pilot program was effective in addressing relevant issues, but the mistiming of experiences and speakers created confusion and a lack of cohesion.

3. The absence of a specific group to plan the above-mentioned student experiences to correspond to curricular themes and to provide the flexibility to adjust the program when needed was another deficit in the pilot program.

4. Gaps in communication and expectations and a historic lack of trust, especially along racial lines, existed between the students and those who were teaching and mentoring them which were not adequately addressed by the program. There was an absence of training in cultural proficiency for staff, business partners, students, and parents to facilitate understanding of others. Changes in roles and expectation of all participants in the program presented challenges, as reported in survey responses, as students spoke of their difficulties in adjusting to changes in social interaction. For example, a White teacher from the suburbs may not understand the stress and constraints experienced by a poor inner-city Black student who is helping to support his or her family with earnings from a part-time job.
5. A means to address and improve issues related to race, culture, classism, and the dynamics of the community that affect this Mid-Atlantic learning community was needed. The student population has become increasingly diverse, thereby presenting new cultural differences and misunderstandings. Demographic disparity ranging from extreme poverty to extreme wealth is just one example of the issues affecting understanding and communication. Teachers and staff, already overwhelmed with challenges presented by at-risk students, need a resource to turn to for resolution of issues beyond their roles as instructors and mentors.

Proposed Solution: Recommendations for Wider Program Implementation

The researcher examined a pilot mentoring intervention program designed to reduce the educational achievement gap in a Mid-Atlantic high school. This real-life application of social learning’s theoretical framework employed mentoring as a key component and leadership tool. It is the researcher’s conclusion, based on both quantitative analysis, through analysis of variance (ANOVA), and qualitative data, collected from participants and stakeholders through surveys and interviews, that social learning was key to improvements seen in grade point average, attendance, behavior, and matriculation of student participants.

Based on program deficiencies, the researcher proposes the following recommendations for expansion of the CodeName program:

1. Introduction of a six-week summer transition academy between 8th and 9th grade to facilitate student adjustment and the formation of bonds with teachers, business partners, and peer mentors.
2. Creation of a calendar with monthly themes to coordinate field trips and speakers with in-school curriculum. Sequential themes would include government; economic development; cultural arts; education and technology; health and human services; law and public safety; environment; and agriculture.

3. Establishment of a School-Based Team to plan curricular and co-curricular activities relevant to monthly themes; market the program; identify potential speakers and mentors; arrange field trips and internships; and create the flexibility to make adjustments, as needed.

4. Design training for staff, business partners, and students to address roles and expectations. Training should also include acquisition of soft skills, conflict resolution tools and cultural proficiency that takes into account biases of all participants—especially for those with direct student involvement. Mentors would also be trained in the basics of morale building and mentorship. Information and training would be published in newsletters and announcements and would be conducted through workshops, classroom activities, professional development, and project-based learning.

5. Employment of a Cross-Cultural Relations Coordinator to help navigate and communicate issues related to race, culture, classism, and other barriers that may negatively impact achievement.

Methods of Evaluation

Ongoing quantitative and qualitative assessment of student participants in the CodeName Program would ensure its rigor and viability and reveal adjustments that might be needed. Program administrators would conduct quarterly and annual summative evaluations of academic achievement, as defined by the four dependent variables used in
this study: grade point average, attendance, behavioral infractions, and matriculation, with the expectation of improvement across all four measures.

Formative data would be collected on an ongoing basis from teachers, in conjunction with students, in order to monitor student progress, identify misconceptions, struggles, and learning gaps and the best ways to close those gaps, utilizing writing, quizzes, and conversation, as discussed by Trumbull and Lash in 2013 and other means as deemed appropriate (Trumbull and Lash, 2013). Qualitative assessments similar to those that formed part of the current study would provide a means for all shareholders to share concerns, make suggestions, and express their levels of satisfaction.

This combination of quantitative and qualitative review would provide sufficient depth and context to allow for modifications as the program progresses, having been designed with flexibility in mind, per Recommendation 3, and with consideration of future inclusions.

**Support for the Solution**

The researcher learned from qualitative surveys that engagement in the pilot mentoring intervention program and its activities assisted students to gain a sense of hope and empowerment that encouraged the development of aspirations related to matriculation and acquisition of the 21st Century Skills needed to improve academic performance. They also showed that at-risk students came to the program lacking hope, feeling disconnected and misunderstood, and facing challenges from their community that appeared to be insurmountable.

Their willingness to engage in the kind of effort required to develop and achieve were fueled by hope and a sense of belonging. Engagement with mentors facilitated
social learning, which in turn gave rise to changes in thinking and behavior. Through the self-confidence building and constructive feedback necessary for social learning, they begin to develop confidence in their ability to make productive changes and control their own lives “Social, emotional, and academic skills are all essential to success in school, careers, and in life, and they can be effectively learned in the context of trusted ties to caring and competent adults” (Aspen Institute, 2018, p. 7).

The CodeName program is based on the concept that through social learning, individuals may be guided to make changes in their thinking and behavior, as described by Bandura (1967). The researcher chose to evaluate a mentoring intervention program as a means to boost student achievement and address the lack of skills for college and career readiness in one Mid-Atlantic High School. The literature in this study bears out that the 21st Century Skills (learning, literacy, and life skills) discussed in previous chapters are essential to bettering lifelong prospects of children and their abilities, particularly of those individuals who are most vulnerable and at risk. Likewise, research shows that improving schools with diverse populations is a complex and multifaceted endeavor that requires comprehensive intervention with integrated community, school, and related social activities (Bryk, Sebring, Allensworth, Luppescu, & Easton, 2010).

Factors and Stakeholders Related to the Solution

While demographic inequality and factors relating to it play a significant role in the failure to narrow the achievement gap, the chief barriers and obstacles faced by the subject Mid-Atlantic high school are the deeply rooted distrust and division within the local community stemming from the school district’s historic failure to achieve widely effective outreach and inclusion. Studies of the Mid-Atlantic region in which the subject
high school is located bear out that demographic inequality and factors related to it are just some of the hurdles that must be cleared on a path to the desired solution (Anonymous, 2018).

Social learning requires a supportive and inter-connected framework of stakeholders. The Cross-Cultural Relations Coordinator would identify strategies and resources by which to address demographic factors affecting academic achievement and help navigate and communicate issues related to race, culture, classism, and other barriers that may affect learning. The School-Based Team, along with the active leadership of the program Facilitator, would be aimed at promoting the collaborative learning environment and creating structure and organization in methods and practice that would allow for reliable repeatability over time.

Financial and budgetary issues are not a significant concern for implementation. With teachers and staff already in place, adjustments needed to fully implement the program would call for no more than realignment of some courses and simple modifications in teaching and curriculum. Expenditures for activities would continue to be paid for by donations from the local community and business partners. The move to full implementation would allow for the utilization of additional grant funding directed at specific demographic and at-risk groups. Ongoing efforts to promote collaboration and common purpose between all stakeholders would be key to full implementation. Guidelines for monthly meetings, workforce connections, and college readiness partnerships are a few examples of the collaborative efforts that would-be part of the CodeName program’s responsiveness and integration into the school and community.
Implementation of the Proposed Solution

The researcher’s recommendations are woven through the framework illustrated in Figure 23, which shows the structure of the fully implemented CodeName program. The recommended 8th Grade Academy would provide a summer transition program for incoming 9th graders. The School-Based Team would prepare the thematic monthly calendar with coordination of related speakers, activities, and curriculum.

The CodeName program would continue to consist of a blend of an intense two-year preparatory pathway in grades 9 and 10, which would include the Student Leadership Series and the Problem Solving/Critical Thinking/Change Management Exploration Courses, with expansion on these topics in grades 11 and 12. Students would be given the opportunity to participate in the Problem Solving/Critical Thinking/Change Management Exploration Course II and a personal industry project.

The Change Management Course would be split into two courses, one with a macro focus by which to address change management’s application to broader issues and one with a micro focus to facilitate concentration on change management as applied to critical thinking and problem solving. This expansion of the core course concept would assist students to gain a better understanding of change management as it applies to self, community, and the world at large.

Upon completing 9th and 10th grade prerequisites, students would receive a leadership change agent certificate. Change agent pathway students completing all requirements would receive an industry certification in change management. Training would be conducted to combat implicit bias and the Cross-Cultural Relations Coordinator would work with students and staff to assure that all issues are addressed. The Business
Advisory Board would serve as the CodeName program steering committee both during implementation and during academic years to advise school-based personnel about the structure of out-of-school activities, student assessment, and program adjustment.

**Figure 23. Recommendations for the CodeName Program Conceptual Framework**

**Implications**

**Practical Implications**

The concept of mentoring first appeared in the works of Homer when Odysseus entrusted the tutoring of his son Telemachus to Mentor (Davis, Little & Thornton, 2014). Whereas social learning was once considered a radical idea, many organizations now aspire to utilize it to promote the behavioral and cognitive processes found most supportive of education and learning. (Wise, 2012). Since 1977 when Bandura first
published the Social Learning Theory, mentoring has gained recognition as a powerful and effective tool by which to cultivate it (Bandura, 1977).

The components of Bandura’s Social Learning Theory, include:

1. The connection between people.
2. The social and cultural context of shared experiences.
3. Observed learning as an information-processing activity that subsequently directs the actions of the individual.

In this study, social learning was essential in filling the gaps created by poverty and disadvantage in a school struggling to educate a diverse student population and, in the case of at-risk children, to change lives and destiny. In brief, the three chief elements of social learning were incorporated and employed within the CodeName program, as follows:

1. The connection between people was fostered throughout the program by the four-part mentoring (In-School, Career, Community and Group-Specific). Each aspect of CodeName, from academic endeavors to career readiness activities involved the participation of an interested, committed, student-focused adult mentor. Moreover, each student participated in at least one co-curricular club or activity, creating additional opportunities for mentor/mentee engagement as well as peer interaction into group learning experiences. Guest speakers brought their expertise and vision of the world of work into the classroom providing the students with unique connections to various community groups and new ways of considering future possibilities.

2. The shared experiences of each year’s cohort of CodeName students provided valuable opportunities for the students to learn the importance of positive peer interaction
and the broadening of perspective within the supportive mentoring framework of the program. Cultural Proficiency Training assisted students in adjusting to the demands and parameters of the program and their preparation for mature and appropriate participation in society. Gender-Specific Training imparted the skills and understanding necessary for healthy social conduct.

3. The active mentoring of the CodeName program provided daily, even hourly, opportunities for observed learning to take place. In addition, workshops targeting study skills, note-taking and test preparation were provided to assist students in developing behaviors and habits supportive of success in school and life. Moreover, students were provided with the opportunity to be successful by employing these and other skills, enabling them to view themselves as intelligent and capable. This cycle of observation, emulation of positive behaviors and resultant success is a powerful motivator in the process of social learning and was a vital component of the CodeName program.

The future of any society, any country, or any culture depends upon its youth and the knowledge and abilities they have acquired and carry forward into adulthood. With greater numbers of students at risk for academic failure and/or drop-out, narrowing the academic achievement gap essential. The study recommendations outline a structure for a nurturing educational environment with its focus on student success. An empowered learning community, willing to examine, test, and re-align in response to ongoing change, ensures the dynamism and relevance of the education it provides and the ability to engage its students.

The CodeName program seeks to position the facilitator as an educational leader—an agent of change—within the school building, providing a means to coordinate
and direct all resources available in this undertaking to best effect. The role of the educational leader is vital in pulling together the many components required for success, which implies:

1. Meeting society and community needs;
2. Addressing and reconciling constraints of the total learning community and establishing and fostering interconnections;
3. Enhancing teacher-principal relationships, creating a more harmonious environment and shared expectations for each student’s behavior and development;
4. Connecting and strengthening school and surrounding community resources
5. Fostering connections to community businesses and other local stakeholders to links students with real-world career knowledge and experience and impart 21st Century Skills needed for matriculation (Song, Furco, Lopen, & Maruyana, 2017).

**Implications for Future Research**

Based on the findings from this study, the researcher suggests that future research be conducted in the following areas:

1. Replication of the pilot CodeName program in other areas of the country to evaluate its effectiveness and/or need for modification in different demographic, social, and cultural settings with data from multiple studies conducted in tandem to provide more robust findings. Research should include the most effective means to connect the program with local communities and focus on ways to break down barriers and inter-connect isolated and exclusionary or excluded demographic groups within those localities.

2. Alignment of interests with a broader range of innovative experiences and
extracurricular activities, moving beyond more traditional fields, such as trade and public service, to experiences in more cutting-edge disciplines and applications such as data analytics in sports or music engineering. For at-risk students, expanded horizons and the formation of connections and skills with which to move toward adult life can transform lives.

3. Examination of the marketing and packaging of the CodeName program and its successors would be an important factor in the ability of such programs to effectively reach, recruit, and retain those students and families who most need them. In the course of this research, it became clear that some parents and families were very concerned about the cohort their children would be part of—both the public perception of their children as part of an intervention program and the label of at-risk, which is traditionally associated with an enrichment/intervention program.

4. Future examination of the specifics of the Hispanic culture and Hispanic community related to countering at-risk behaviors and promoting academics.

Implications for Leadership Theory and Practice

The utilization of social learning is intrinsic to active leadership. It incorporates the best parts of leadership because it melds engagement with modeling and communication. In the context of the CodeName program, social learning is the glue that ultimately unites disparate pieces of the learning community, assisting in the understanding of others’ perspectives and collaboration in the common goal of bettering the delivery of education and what youth take from it. Leadership in the realm of education at its best allows for not only central leadership, but the granting of agency to
others, whether they are teaching and mentoring peers or students testing their own abilities.

Within the CodeName program, the four pillars of leadership -- understanding of self, adaptability, positive and respectful engagement with others, and aspiration to a greater purpose -- are intrinsic to the social learning environment, allowing the program to be directly responsive, nurturing, and geared to the unique needs of the students requiring the most guidance and understanding to succeed (Lowney, 2003). The importance of the many individual components of a school’s learning community and the necessity for cooperation and harmony in their interconnected relationships, according to Badura’s Social Theory (1967), is an integral applied concept in the cascading structure of leadership within the CodeName program. Social learning, which is the key to improving behavior and academic outcome, relies on mentoring leadership to teach through example and guidance.

**Summary of the Study**

Mentoring and the engagement that it can promote are the key to social learning that can turn around at-risk behavior and academic underperformance. There is nothing that ignites the spark of passion for learning like hope and a sense of belonging. Some disadvantaged students never experience these feelings until they become involved in a curriculum that incorporates exposure to real world learning opportunities and community members with a commitment to teaching and mentoring. Offering opportunities for students to experience learning outside the classroom walls and creating direction and a sense of control over their own futures promotes empowerment. This, coupled with community involvement, is the path to closing the achievement gap. It
requires new ways of thinking and approaches, steadfast effort, commitment and the ability to accept and implement change. Breaking away from the way things have always been done can be a challenge for many but making the changes necessary to close the achievement gap and make universal education more than just a slogan is crucial to the lifelong achievement of our children.

Combining the benefits of mentoring with a unique program that draws on the efficacy of social learning and the linkages and collaboration of the systems approach, the fully implemented CodeName program blended academics with career and work relevant experiences. It provided a supportive stakeholder network designed to engage and energize at-risk youth hovering on the fringe of academic underperformance, failure, and drop-out. The commitment of those who engage with the students, as well as their belief in what can be achieved, are requirements for social learning, which is so critical to the CodeName program’s ability to achieve positive results. This and the establishment of trust are central to all mentoring relationships and social learning and must not be taken for granted. All stakeholders, especially those who work directly with at-risk youth, must be dedicated and passionate about the task they undertake on behalf of students. The goal of the fully implemented CodeName program and all those who would work to make it a success is to lead students to the threshold of achievement, to improve the grade point average, attendance, behavior and matriculation of at-risk student participants.

The findings of this study show clearly that the achievement gap can be bridged. However, the ability of at-risk youth to rise above the difficult and complicating factors of their lives continues to be a burden that affects their future trajectory and derails the lives of some. While the full implementation of the CodeName program,
and/or permutations of it offer a means to narrow and close the achievement gap, the search for ways to circumvent the harsh realities of the lives of at-risk youth remains an urgent necessity.
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Appendix A

Bill of Rights for Research Participants

As a participant in a research study, you have the right:

1. To have enough time to decide whether or not to be in the research study, and to make that decision without any pressure from the people who are conducting the research.

2. To refuse to be in the study at all, or to stop participating at any time after you begin the study.

3. To be told what the study is trying to find out, what will happen to you, and what you will be asked to do if you are in the study.

4. To be told about the reasonably foreseeable risks of being in the study.

5. To be told about the possible benefits of being in the study.

6. To be told whether there are any costs associated with being in the study and whether you will be compensated for participating in the study.

7. To be told who will have access to information collected about you and how your confidentiality will be protected.

8. To be told whom to contact with questions about the research, about research-related injury, and about your rights as a research subject.

9. If the study involves treatment or therapy:
   
a. To be told about the other non-research treatment choices you have.

   b. To be told where treatment is available should you have a research-related injury, and who will pay for research-related treatment.
Appendix B

CodeName Program Student Graduate Reflection Survey

1. What were your post-graduation plans?
   A  4-year degree
   B  2-year degree
   C  Trade School
   D  Career/Employment Path

2. If you went to an institution of higher learning, which University/College?

3. What steps in the CodeName program have you completed towards your post-graduate plans (e.g. application completion, financial aid packages, internships, interviews)?

4. Which listed CodeName program workshop have been beneficial to your post-graduate plans? (Check each one or multiple selections)

   Year 1
   __9th Grade Leadership Series

   Year 2
   __Kickoff Breakfast “One on One” with Business Partners
   __CodeName Program College Fair
   __Technology Cybersecurity Workshop
   __Financial Literacy Workshop- Introduction to Banking
   __” Love Yourself” Vision Boards
   __Medical Center “Mock Surgeon” training tour
5. How did the CodeName program assist you with your Post-graduate planning between now and the end of the school year?

_____________________________________________________

6. Are there any workshops or activities that should be added to the CodeName program to assist you with your post-graduate planning?

_____________________________________________________
Appendix C

Survey Questionnaire for Parents of CodeName Student Graduates

1. What support did the CodeName program offer that was helpful in assisting your child with their post-graduate application process?

2. What kind of information provided through the program was most helpful to your child’s achievement and academic progress?

3. What kinds of information and support would have been helpful?

4. How would you characterize relationships with the school staff? How did these relationships affect your child’s preparation for post-secondary experience?

5. What services should the CodeName program have provided for families to support families and students with the post-secondary process and preparation for graduation from high school?

6. Was your child prepared for their post-secondary experience?

7. What school activities, if any, did you participate in? Were these activities helpful?

Permission has been obtained from the author for the use of this survey.

Appendix D

Parent Demographic Data Sheet

The following information is designed to give the researcher background information that will assist with the interpretation of the research data. Your responses are voluntary and will remain completely confidential. Please answer all of the questions to the best of your ability. Thank you for your participation in this research study.

1. Age: __________

2. Gender: M_____ F______

3. Race: __________

4. Education Level: ________________________________ (Grade school, High School, Technical/Trade, 2yr/4yr Degree, Master’s, Doctorate)

5. Employed: Y_______ N_______


7. Number of children: __________

8. Grade Band: Child 1 ________________________________ (PreK, Elementary (K-5), Middle (6-8), High (9-12)

Child 2 ________________________________ (PreK, Elementary (K-5), Middle (6-8), High (9-12)

Child 3 ________________________________ (PreK, Elementary (K-5), Middle (6-8), High (9-12)

Child 4 ________________________________ (PreK, Elementary (K-5), Middle (6-8), High (9-12)

Child 5 ________________________________ (PreK, Elementary (K-5), Middle (6-8), High (9-12)

Permission has been obtained from the author for the use of this survey.
Appendix E

Survey Questionnaire for CodeName Program Alumni Students

1. What did the CodeName program provide that was helpful in the post-secondary application process and useful for the post-secondary experience?

2. Did the “College Talks & Tours” in the CodeName program match your post-secondary experience? What did you experience that you had not anticipate?

3. What did the CodeName program fail to provide that was needed in your post-secondary experience success?

4. What experiences and activities were the most relevant in planning for the post-secondary experience and completing the application process?

5. What role did the CodeName program mentors/staff play in your post-secondary experience?

6. Which skills did teachers reinforce that have been beneficial in your post-secondary experience? Which skills were not reinforced that would have been helpful?

7. How important were relationships with the school staff in post-secondary planning? Have any of those relationships continued?

8. What led to your transferring from a 4-year college to a 2-year college or other hurdle or adjustment?

9. What services, activities and resources the CodeName program would have been helpful for you? What additional services, activities and resources might the CodeName program have offered that would have been helpful for you?

Permission has been obtained from the author for the use of this survey.

Appendix F

Teacher/Facilitator/Business Partner Survey Questionnaire

1. In your judgment does the program make appropriate use of:
   A) fair routines, procedures and rules   Yes or No
   B) opportunities for engagement of students Yes or No

2. Are there any changes to routines/procedures/rules that the teachers believe might be beneficial?

3. Are there changes regarding engagement of students, and the means employed to achieve engagement, that the teachers would like to see?

4. Did the program create a good environment for learning?

5. In your judgment, did the program challenge the students?

6. Was degree of difficulty an issue in any way? (too easy, too hard)

7. What is your opinion concerning the use of feedback and flow of information: Appropriate/Inappropriate; Effective/Ineffective (Select one from each pair)

8. Did the teachers receive sufficient support from the administration?

9. How could administration make the teachers’ jobs easier-- as relates to the program?

10. Was parental cooperation an issue at any point?

11. When considering the students, who took part in the program and the effect upon those students, do the teachers feel that this program made a difference and in what way?

12. What can be improved upon: contact/selection/ follow up/ feedback/program specifics…

13. Discuss any challenges or difficulties you encountered related to the program

14. Discuss what you perceive to be the positive effects/outcomes of this program.
Appendix G

Teacher/Facilitator/Business Partner Survey

Assign a General rating:

1 is Strongly Disagree .......... 1 2 3 4 5 6 7 8 9 10 .......... 10 is Strongly Agree for the following:

After participating in this mentoring program:

I am more satisfied with my job than before/feel a greater sense of accomplishment as a teacher.

Strongly Disagree .......... 1 2 3 4 5 6 7 8 9 10 .......... 10 Strongly Agree

I am less satisfied with my job than before/feel a diminished sense of accomplishment as a teacher.

Strongly Disagree .......... 1 2 3 4 5 6 7 8 9 10 .......... 10 Strongly Agree

I do not believe the students participating in the program benefited from the program.

Strongly Disagree .......... 1 2 3 4 5 6 7 8 9 10 .......... 10 Strongly Agree

I believe the students participating in the program benefited from the program.

Strongly Disagree .......... 1 2 3 4 5 6 7 8 9 10 .......... 10 Strongly Agree

I believe the grades of the students involved in the program improved as a result of their participation.

Strongly Disagree .......... 1 2 3 4 5 6 7 8 9 10 .......... 10 Strongly Agree

I do not believe the grades of the students involved in the program improved as a result of their participation

Strongly Disagree .......... 1 2 3 4 5 6 7 8 9 10 .......... 10 Strongly Agree

I believe the attendance of the students involved in the program improved as a result of their participation

Strongly Disagree .......... 1 2 3 4 5 6 7 8 9 10 .......... 10 Strongly Agree

I do not believe the attendance of the students involved in the program improved as a result of their participation

Strongly Disagree .......... 1 2 3 4 5 6 7 8 9 10 .......... 10 Strongly Agree
I believe the post-secondary plans (and the ability to achieve them) of the students involved in the program improved as a result of their participation.

Strongly Disagree ............ 1 2 3 4 5 6 7 8 9 10 ........... 10 Strongly Agree

I do not believe the post-secondary plans (and the ability to achieve them) of the students involved in the program improved as a result of their participation.

Strongly Disagree ............ 1 2 3 4 5 6 7 8 9 10 ........... 10 Strongly Agree
Appendix H

Interview Questions for CodeName Program Student Graduates

In what way, do you feel the program affected your grades and academic achievement?

In what way, do you feel the program affected your school attendance?

In what way, do you feel the program affected your behavior in school?

In what way, do you feel the program affected your post-secondary plans and preparation?

If you went back in time, would you or would you not choose to participate in the program? Why?

What do you feel was the best part of the program?

What do you feel was the worst part of the program or something you would like to see changed?
Appendix I

Interview Questions for CodeName Program Teacher/Facilitator/Business Partner

In your judgment:

In what ways did the program affect the students’ grades and academic achievement?

In what ways did the program affect the students’ school attendance?

In what ways did the program affect the students’ behavior in school?

In what ways did the program affect the students’ post-secondary plans and preparation?

What do you feel was the best part of the program?

What do you feel was the worst part of the program or something you would like to see changed?

What was your opinion of the support provided by the school administration for this program and your role in it?
Appendix J

**Interview Questions for Parents of Student Graduate**

In what ways did the program affect your child’s grades and academic achievement?

In what ways did the program affect your child’s school attendance?

In what ways did the program affect your child’s behavior in school?

In what ways did the program affect your child’s post-secondary plans and preparation?

What do you feel was the best part of the program?

What do you feel was the worst part of the program or something you would like to see changed?

If you went back in time, would you or would you not choose for your child to participate in the program? Why?
Appendix K

Dear Interview Participant,

You are invited to participate in a research study that seeks to evaluate an evidence-based solution to the achievement gap of at-risk students in a Mid-Atlantic high school. The objective of this study is to determine if a mentoring intervention program on achievement, attendance, behavior, and matriculation of at-risk high school students produces an improvement in these measures of success.

The study is being conducted by Eric Elston, Principal Researcher, under the direction of Dr. Donette Noble in the Creighton University Interdisciplinary Doctorate program. You are invited to participate because you have been either a student of the program, parent and or teacher/facilitator and are age 19 or older.

If you participate in this study, you can expect to provide insight to the potential benefits of students having improved academic achievement as evidenced by higher GPAs, improved attendance, fewer behavioral infractions, and matriculation. The potential benefits to society provided by this study would be the bringing together of the disparate pieces of the school “family” to reach the collective goal of a fully engaged school community. The study aims to design an evidence-based solution to the achievement gap for at-risk students in the Mid-Atlantic region which, if successful, may serve as a model for further refinement and broader implementation. There are no risks are expected by participating in this study.

If you decide to participate in this research study, you will be asked to participate in an interview. Your total time commitment will be approximately 30 minutes.

Any data obtained in connection with this study will remain anonymous. The privacy and identity of all participants, teachers/facilitators, and parents will be protected throughout the research and following its completion. No identifying personal information about any of the groups mentioned above involved with the research will be released or available before, during, or after completion of the study. Data concerning grades, behavior, attendance, and post-secondary plans will be maintained using secure school-maintained computer systems. Interview and survey documents will be carefully collected and protected. Once surveys are administered and managed, the researcher will keep all responses in a locked office in a padlock desk drawer. The surveys will be destroyed after four years.

If you have questions about this study, please contact Eric Elston at 202.409.0745 or elstoneric@hotmail.com. If you have any questions or concerns about research participants’ rights, please contact the Institutional Review Board at 402-280-2126.

Sincerely,

Eric Elston
Appendix L

Dear Survey Participant,

You are invited to participate in a research study that seeks to evaluate an evidence-based solution to the achievement gap of at-risk students in a Mid-Atlantic high school. The objective of this study is to determine if a mentoring intervention program on achievement, attendance, behavior, and matriculation of at-risk high school students produces an improvement in these measures of success.

The study is being conducted by Eric Elston, Principal Researcher, under the direction of Dr. Donette Noble in the Creighton University Interdisciplinary Doctorate program. You are invited to participate because you have been either a student of the program, parent and or teacher/facilitator and are age 19 or older.

If you participate in this study, you can expect to provide insight to the potential benefits of students having improved academic achievement as evidenced by higher GRADE POINT AVERAGES, improved attendance, fewer behavioral infractions, and matriculation. The potential benefits to society provided by this study would be the bringing together of the disparate pieces of the school “family” to reach the collective goal of a fully engaged school community. The study aims to design an evidence-based solution to the achievement gap for at-risk students in the Mid-Atlantic region which, if successful, may serve as a model for further refinement and broader implementation. There are no risks are expected by participating in this study.

If you decide to participate in this research study, you will be asked to participate in a survey. Your total time commitment will be approximately 15 minutes.

Any data obtained in connection with this study will remain anonymous. The privacy and identity of all participants, teachers/facilitators, and parents will be protected throughout the research and following its completion. No identifying personal information about any of the groups mentioned above involved with the research will be released or available before, during, or after completion of the study. Data concerning grades, behavior, attendance, and post-secondary plans will be maintained using secure school-maintained computer systems. Interview and survey documents will be carefully collected and protected. Once surveys are administered and managed, the researcher will keep all responses in a locked office in a padlock desk drawer. The surveys will be destroyed after four years.

If you have questions about this study, please contact Eric Elston at 202.409.0745 or elstoneric@hotmail.com. If you have any questions or concerns about research participants’ rights, please contact the Institutional Review Board at 402-280-2126.

Sincerely,

Eric Elston
### Regression Model ANOVA Calculation

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**Analysis of Variance**

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<th>Source</th>
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<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F-Ratio</th>
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**Residual Error**

- 47.818
- 33.167

**Residual Error** = 47.818

**F-critical** = 2.48

**F-statistic** = 14.661

**p-value** = 0.0001

**Confidence Level** = 95%

**Based on the 95% confidence level and the 1 : 98 degrees of freedom**

**DF = 100 - 1 = 99**

**Residual Error** = 47.818

**THE EFFECT OF A MENTORING INTERVENTION PROGRAM**

### Attachment 1 - Regression Model ANOVA Calculations

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<th>Sum of Squares</th>
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</table>

**Mean Squared Error** = 0.338

**F-critical** = 3.9681130790
Appendix N

Institutional Review Board Approval Letter

DATE: February 7, 2019
TO: Eric Elston
FROM: Creighton University IRB-02 Social Behavioral

SUBMISSION TYPE: New Project
ACTION: DETERMINATION OF EXEMPT STATUS
DECISION DATE: February 7, 2019
REVIEW CATEGORY: Exemption category # 2

Thank you for your submission of New Project materials for this project. The following items were reviewed in this submission:

- Abstract/Summary - I LD 814 EricElston Chapter 3 IRB.docx (UPDATED: 02/4/2019)
- Amendment/Modification - Information Letter for Interview.docx (UPDATED: 02/6/2019)
- Amendment/Modification - Information Letter for Survey.docx (UPDATED: 02/6/2019)
- Creighton - IRB Application Form - Creighton - IRB Application Form (UPDATED: 02/5/2019)

This project has been determined to be exempt from Federal Policy for Protection of Human Subjects as per 45CFR46.101 (b) 2.

All protocol amendments and changes are to be submitted to the IRB and may not be implemented until approved by the IRB. Please use the modification form when submitting changes.

If you have any questions, please contact Kathleen Stibbs at (402) 290-2126 or kathleenstibbs@creighton.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Creighton University IRB-02 Social Behavioral's records.