

## ABSTRACT

Steven Mark Weber, EXAMINING THE RELIABILITY OF MIDDLE SCHOOL PROGRESS INDICATORS AND THEIR POTENTIAL FOR SUPPORTING THE GOAL OF COLLEGE AND CAREER READINESS (Under the direction of Dr. Harold Holloman, Jr.). Department of Educational Leadership, March 2016.

College and career readiness is the new goal for American students. College and career readiness is a process that begins prior to high school. As school districts implement programs and strategies for supporting college and career readiness, it will be important to analyze which students are off-track. In order to determine *readiness*, educators will need a set of indicators to monitor. This research study examined the reliability of middle school progress indicators and their potential impact on supporting high school readiness, along with college and career readiness.

For the purpose of this study, the following definition of College and Career Readiness was used.

In North Carolina, students are considered career and college ready when they have the knowledge and academic preparation needed to enroll and succeed, without the need for remediation, in introductory college credit-bearing courses in English Language Arts and Mathematics within an associate or baccalaureate degree program. These same attributes and levels of achievement are needed for entry into and success in postsecondary workforce education, the military or directly into a job that offers gainful employment and career advancement.

(North Carolina State Board of Education, 2015).

Research in the area of college and career readiness is limited, because the goal of the traditional American high school was to sort and select some students for college and the rest for careers or the workforce. This study provides middle school principals with insight regarding

the use of progress indicators that could support decision-making and identification of students who are off-track for high school readiness. Policymakers can utilize current findings to refine or develop new policies regarding college and career readiness and the use of indicators at the middle school level. Parents and students could also benefit from the information presented in this research, if there are middle school progress indicators that could illuminate whether or not each student is on-track for success in high school. This study analyzed multiple indicators that could assist educators as they support each student in becoming *high school ready*.



EXAMINING THE RELIABILITY OF MIDDLE SCHOOL PROGRESS INDICATORS AND  
THEIR POTENTIAL FOR SUPPORTING THE GOAL OF COLLEGE AND CAREER  
READINESS

A Dissertation

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The Faculty of the Department of Educational Leadership

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Doctor of Education in Educational Leadership

by

Steven Mark Weber

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READINESS

by

Steven Mark Weber

APPROVED BY:

DIRECTOR OF DISSERTATION: \_\_\_\_\_  
Harold Holloman, Jr., PhD

COMMITTEE MEMBER: \_\_\_\_\_  
Allen Guidry, PhD

COMMITTEE MEMBER: \_\_\_\_\_  
Marjorie Ringler, EdD

COMMITTEE MEMBER: \_\_\_\_\_  
Tom Williams, EdD

COMMITTEE MEMBER: \_\_\_\_\_  
Qiang Wu, PhD

CHAIR OF THE DEPARTMENT OF EDUCATIONAL LEADERSHIP:

\_\_\_\_\_  
William Rouse, Jr., EdD

DEAN OF THE GRADUATE SCHOOL:

\_\_\_\_\_  
Paul Gemperline, PhD

## **DEDICATION**

I dedicate this dissertation to my parents Roland and Cindy Weber. Thank you for the early foundation you provided and for your prayers and support throughout my life. You have always been there for me and supported me through each stage in life. The lessons you taught me have guided me and I am inspired *to add value to others* based upon the example you set for me. Thank you for always believing in me and encouraging me to follow my dreams.

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## **CHAPTER 1: INTRODUCTION**

### **Problem Framing**

Graduating from high school has become increasingly important and is viewed as a minimum requirement for success in terms of employment, salary, and future career choices (Gwynne, Lesnick, Hart, & Allensworth, 2009). The majority of high school graduates in the United States are not academically prepared for the rigor of postsecondary education or to enter the workforce (American College Test [ACT], 2009; Conley, 2007; Flippo & Caverly, 2009). “Of every 100 students who enter ninth grade in a public high school in North Carolina, only 70 graduate within five years. Only 42 of them enroll in college, and only 19 of them complete a two-year or four-year degree within six years of graduating from high school” (Public Schools of North Carolina, 2008, p. 20). The nation is sending more students to high school than ever before. However, “millions of young people are out of school and grossly ill-equipped to compete in the 21<sup>st</sup> century workforce” (Association for Career and Technical Education, 2006, p. 2). “National leaders and the education policy community have embraced the idea that the education system must establish ‘college and career readiness’ as the goal for all students” (Pinkus, 2009, p. 1). While the goal of the American high school is shifting, educators have yet to determine how to measure if a student is on-track to graduate college and career ready.

In 2008, ACT shared a landmark study on college and career readiness and emphasized, “Today, college readiness also means career readiness” (p. 1).

In North Carolina, students are considered career and college ready when they have the knowledge and academic preparation needed to enroll and succeed, without the need for remediation, in introductory college credit-bearing courses in English Language Arts and Mathematics within an associate or baccalaureate

degree program. These same attributes and levels of achievement are needed for entry into and success in postsecondary workforce education, the military or directly into a job that offers gainful employment and career advancement.

(North Carolina State Board of Education, 2015).

Traditionally, high schools prepared most students for a career and a minority of students enrolled in honors or advanced placement courses and prepared for college. “With such high stakes, it is essential that schools prepare all students for the demands of college and career” (Hines, Lemons, & Crews, 2011, p. 2).

### **Purpose of the Study**

The purpose of this study was to add to the current body of research on college and career readiness. The results of this study could support building administrators, guidance counselors, central office staff, and classroom teachers in making informed decisions, which support the goal of high school readiness. While the current national focus is on college and career readiness, middle school educators could begin analyzing the high school readiness of each student. A focus on the middle school years could provide educators and researchers with a greater chance to impact the number of students who graduate college and career ready.

One of the major findings from *The Forgotten Middle* (ACT, 2008) was that “being on target for college and career readiness in grade 8 puts students on a trajectory for success; that is, if students are on target to be ready for college and career as early as grade 8, their chances of being ready for college and career by high school graduation are substantially increased” (as cited by Radunzel & Noble, 2012).

Students, families, college and university admissions officers, and state department of education officials may also benefit from the results of the study. Students and families are often

misled by a system that does not send clear signals (Conley, 2007; Wimberly & Noeth, 2005). Each year, thousands of students enter their senior year of high school believing they are ready for college because they have completed the required courses and passed all of the standardized tests (Conley, 2007). “As critical as they are, large-scale assessments cannot measure everything that high school graduates need to know and be able to do” (Achieve, Inc., 2004, p. 13). College admissions officers need to know if students are prepared for college. Traditional measures have included ACT and SAT scores, grade point average (GPA), and membership in student clubs. Since college and career readiness is a new goal, emphasized by the National Governors Association, the President of the United States, and leading education organizations, state department officials will need a method for measuring if students are on-track, prior to high school graduation.

It will be essential for students to enter high school on grade level, or within one year, in order for all high school students to graduate ready for college and career (Balfanz, 2009). “Students who enter high school two or more years below grade level merit additional attention by researchers” (Gwynne, Lesnick, Hart, & Allensworth, 2009, p. 31). It is as important for educators at the middle school level to monitor high school readiness. Without sufficient preparation in elementary and middle school, students cannot succeed at the high school level in English, mathematics, and reading (Greene & Winters 2005; Westover & Hatton, 2011).

Wimberly and Noeth (2005) indicated that college readiness begins in middle school and educators should use multiple indicators to inform their decisions. The middle grades need to be seen as a “launching pad” as they prepare students for college and careers (Balfanz, 2009). Failing math or English, having low attendance, and poor behavior were determined to be “off-track” indicators for middle school students (Balfanz, 2009). This study investigated

multiple progress indicators in an effort to determine how existing data could be more effectively used to support the goals of high school readiness and college and career readiness.

Possible benefits of utilizing existing middle school level data to indicate college and career readiness include:

- As school districts implement programs and strategies for supporting college and career readiness, it will be important to analyze which students are off-track.
- School districts could use the data to design an Early Warning System which would allow educators to identify students who demonstrate one or more off-track indicators prior to high school.
- A set of progress indicators would provide new data for supporting the goal of college and career readiness. Most school districts currently rely on high stakes testing, class rank, grade point average (GPA), ACT or SAT scores, and the graduation rate.
- Relying on data that comes at the end of a student's K-12 experience ignores the fact that college and career readiness is a result of multiple years of schooling.
- Middle school principals will gain insight regarding the use of progress indicators that could support decision-making and identification of students who are off-track for high school.
- Progress indicators could identify middle school students who are off track and the data could inform strategies for helping students graduate from high school with their cohort.
- Progress indicators could help teachers and administrators identify students who are struggling in school and could signal specific barriers to each student's success.

- Progress indicators could assist educators in supporting all students and in preparing students to graduate college and career ready.
- Policymakers could utilize the findings of the study to refine or develop new policies regarding college and career readiness and the use of progress indicators at the middle level.
- Families will have access to data that provides a better picture of college and career readiness than a traditional report card.
- Students who are identified as off-track for high school graduation have usually been identified in the ninth grade. On-track indicators or an Early Warning System will allow educators to identify students who demonstrate one or more off-track indicators prior to the ninth grade.

“Accurately measuring and diagnosing college readiness is the first step to helping a greater number of students achieve college readiness” (Wiley, Wyatt, & Camara, 2010, p. 14).

Until we transform high schools and the middle schools where a large number of students fall off the path to high school graduation, “the nation will not achieve its goal of graduating all its students from high school prepared for college, career, and civic life” (Balfanz, 2009, p. 13).

The role of the middle school is becoming more important in preparing students to graduate college and career ready. According to Williams, Rosin, and Kirst (2011), “What happens in the middle grades matters now more than ever. Success at this level is a prerequisite for entering high school prepared for a college- and career-ready path” (p. 1). Some middle schools have sorted and tracked students by ability, pre-determining the type of courses that students would take in high school. If college and career readiness is the new goal for our nation’s youth, then middle school educators must take new approaches and determine whether or not all students are

prepared for high school. By preventing students from falling through the cracks and ensuring that they receive the appropriate level of attention, instruction, engagement, and support needed to succeed in their classes, educators can give every student the chance to graduate from high school prepared for college, the modern workforce, and life (Pinkus, 2008, p. 1).

In 2010-2011, forty-five states adopted the Common Core State Standards. The new standards represent a set of expectations for student knowledge and skills that high school graduates need to master to succeed in college and careers. Progress indicators are needed to measure which students are on-track to enter the ninth grade *High School Ready*. Standards alone cannot guarantee that students will graduate from high school college and career ready. Progress indicators will illuminate whether or not each student is on-track for success in high school. “The power of early-warning indicators lies in the willingness and capacity of school leaders and educators to transform actionable data into strategic decision making that leads to improved student outcomes” (Pinkus, 2008, p. 7). Waiting to measure college and career readiness until high school may be too late to provide students with the intervention and support that they need.

Preparing students to graduate college and career ready may require a High School Readiness Index, or leading indicators, that determines when students are off-track for high school. Organizing school data in a manner that is easy to understand and allows educators to make timely decisions could empower middle school educators in supporting the goal of college and career readiness for each student. If K-12 educators are asked to prepare students for college and career readiness, then tools need to be identified to support the transition from middle school to high school. The purpose of this study was to add to the current body of research on college

and career readiness, in an effort to enable more students to enter high school, on the path to graduate college and career ready.

### **Significance of the Study**

This research study provided information for schools or districts that are implementing strategies to support the nation's goal of college and career readiness for all students. Middle school principals will gain insight regarding the use of indicators that could support decision-making and identify students who are off-track for high school readiness. Policymakers can utilize current findings to refine or develop new policies regarding college and career readiness and the use of indicators at the middle school level.

Parents and teachers could also benefit from the information presented in this research. Prior to the push for college and career readiness, middle schools and high schools prepared students for college or a career. Families knew if their child passed or failed a course, but they did not know if their child was college and career ready. For many American families, the type of high school courses offered to a student was based on family income, the father's occupation, or the ability the student displayed in junior high school. Marsh and Coddling (1999) wrote, "The fundamental premise of the comprehensive high school, that only a few need to graduate with solid academic accomplishments to their credit, no longer holds" (p. xiii). No comprehensive high school prepares all of its students for a high academic standard or a high vocational skill. "Some do one, some do the other, most do neither well" (Tucker, 1999, p. 27). "The history of American education has been a tale of ambivalent goals and muddled outcomes" (Labaree, 1997, p. 41).

Research in the area of college and career readiness is limited, because the goal of the traditional American high school was to sort and select some students for college and the rest for

careers or the workforce. High school readiness is not measured in most school districts. If a student and his or her family receive timely information about high school readiness, it could support the transition between middle school and high school. The literature review outlines how the basic mission of middle schools should be to ensure that middle grades students are prepared for success in high school (SREB, 2009). This study adds to the current research related to college and career readiness. With a thorough understanding of current research and issues surrounding college and career readiness, teachers, administrators, and parents can support high school readiness.

### **Research Questions**

This research project was designed to answer the following major question:

Can educators use progress indicators in the middle grades to support the goal of College and Career Readiness for all students?

In order to answer the above question, the researcher attempted to answer the following questions throughout the research and data analysis. The research questions were organized into two sections: Middle School Indicators and Middle School and High School Indicators. There are seven research questions listed under the heading Middle School Indicators. There are eight research questions listed under the heading Middle School and High School Indicators. A hypothesis is included under each research question. Following each hypothesis, the researcher described the data points that were analyzed in an attempt to answer each of the research questions. The research questions, hypotheses, and data points are followed by the Overarching Research Hypotheses for this study.

The research questions were selected based on the research conducted in this study in chapter one and chapter two. College and career readiness is not currently measured in most

states. The research questions allowed the researcher to analyze longitudinal student data that is collected by the North Carolina Department of Public Instruction. The data provided a snapshot of a cohort of North Carolina students from sixth grade through high school graduation.

One of the current barriers to measuring college and career readiness is the fact that “most high schools are rated on only two measures: graduation rates and student scores on basic skills tests given in a single year” (Aldeman, 2010, p. 1). This study analyzed longitudinal data collected by the North Carolina Department of Public Instruction, in an attempt to build upon existing research on preparing students to graduate college and career ready. The Methodology Introduction provides an overview of the variables that were analyzed and an introduction to chapter 3.

### **Methodology Introduction**

This study begins with a cohort of sixth graders from every public middle school in the state of North Carolina in the 2006-2007 school year, and follows the students through high school graduation in 2012-2013. The study analyzed student data sets that are available to researchers through the North Carolina Education Research Data Center at Duke University. The North Carolina Education Research Data Center at Duke University archives statewide data, collected by the North Carolina Department of Public Instruction. To date the center has received data from the North Carolina Department of Public Instruction on every district, school, teacher, and student in the North Carolina public school system from the mid-1990s to the present. The North Carolina Education Research Data Center at Duke University has created longitudinal student and teacher databases, which allow researchers to follow students and teachers over time and link their records across files.

This study analyzed multiple variables in an attempt to build upon existing research on preparing students to graduate college and career ready. The variables analyzed in the study include:

- Attendance/Absences
- Number of Days of In-School Suspension
- Number of Days of Out-of-School Suspension
- End-of-Grade Reading (EOG) Tests Scores (Grades 6, 7, and 8)
- End-of-Grade Mathematics (EOG) Test Scores (Grades 6, 7, and 8)
- End-of-Course (EOC) Algebra I Test Scores
- End-of-Course (EOC) Biology Test Scores
- End-of-Course (EOC) English I Test Scores
- Anticipated Reading Grade (Grades 6, 7, and 8)
- Anticipated Mathematics Grade (Grades 6, 7, and 8)
- Over Age (For Grade Level)
- Grade Point Average (GPA) – Senior Year Only
- Graduate Survey Data

Prior studies have determined that college and career readiness begins before high school and that educators can use longitudinal data to support student achievement (ACT (2008); Allensworth and Easton (2005); Balfanz (2009); Balfanz and Letgers (2004); Conley (2010); SREB (2011a); West (2009); and Williams, Rosin, and Kirst (2011)). Preparing students to graduate college and career ready may require a High School Readiness Index, or leading indicators, that determines when students are off-track prior to high school. Organizing school data in a manner that is easy to understand and allows educators to make timely decisions could

empower middle school educators in supporting the goal of high school readiness for each student.

This research study examined the reliability of middle school progress indicators and their potential impact on supporting high school readiness, along with college and career readiness. Middle school and high school progress indicators provide longitudinal data about a student's progress.

### **Limitations of the Proposed Research**

Several limitations were present in this research. One limitation is that the North Carolina Education Research Data Center and Duke University could only provide student grades at the end of high school, rather than annually. While grades are a single indicator, they signal when a student is beginning to fall off track in one or more courses. A study conducted at the school district level would provide grades for each course and could identify specific students who need additional support.

Second, the researcher wanted to analyze student participation in extracurricular and co-curricular clubs and activities. Employers seek applicants who are leaders, problem solvers, communicators, team players, and dependable. These skills, sometimes referred to as soft skills, are needed by all high school graduates. The focus on test scores and graduation rates has caused educators and policymakers to overlook the large number of high school graduates who lack soft skills such as teamwork, decision-making, and communication (America's Promise Alliance, 2007, p. 1). As educators and policymakers continue to study the topics of high school readiness and college and career readiness, it will be important to analyze the number of students participating in school clubs. Research in the fields of business and education has indicated that

non-academic factors may be as important as academic factors in determining college and career readiness.

Third, the research around college and career readiness is emerging. David Conley (2010) is one of the leading researchers who has provided definitions and resources for educators to consider as they develop policies and methods of measuring readiness. Several states have yet to define college and career readiness. On January 8, 2015, the North Carolina State Board of Education adopted the following definition of College and Career Readiness:

In North Carolina, students are considered career and college ready when they have the knowledge and academic preparation needed to enroll and succeed, without the need for remediation, in introductory college credit-bearing courses in English Language Arts and Mathematics within an associate or baccalaureate degree program. These same attributes and levels of achievement are needed for entry into and success in postsecondary workforce education, the military or directly into a job that offers gainful employment and career advancement.

(North Carolina State Board of Education, 2015).

As states continue to clarify what it means for a student to become college and career ready, it will become easier for educators and policymakers to develop Early Warning Systems, a high school readiness index, and/or a college and career readiness index.

A fourth limitation of the study was identifying which specific indicators to track. Progress indicators will illuminate whether or not each student is on-track for success in high school. Research related to indicators is emerging, although considerable research has been conducted by ACT (2008); Allensworth & Easton (2005); Balfanz (2009); Bruce, Bridgeland, Fox, & Balfanz (2011); Conley (2009); and Gwynne, Lesnick, Hart, & Allensworth (2009).

These studies provided the foundation for the indicators selected by the researcher. While much of the political rhetoric and emphasis by employers is focused on college and career readiness, few studies have analyzed the role of middle schools in preparing all students for high school readiness. According to Balfanz (2009), the middle grades need to be seen as a “launching pad” as they prepare students for college and careers. This dissertation analyzed indicators that could be used to support high school readiness and the new goal of College *and* Career Readiness. This study analyzed statewide longitudinal data and student data sets that are available to researchers through the North Carolina Education Research Data Center at Duke University. The North Carolina Education Research Data Center at Duke University archives statewide data, collected by the North Carolina Department of Public Instruction.

A fifth limitation of the study was the number of students available in each data set. The number of students included in each graph is represented by n. Each graph reflects a different number of students for a variety of reasons. The reasons include: 1) Students leave a public school and enroll in home school or a private school; 2) Students move outside North Carolina; 3) In middle school, some students accelerate and enroll in high school courses; 4) Students may be enrolled in school but absent for End-of-Grade (EOG) testing; 5) Students drop out of school and 6) Students graduate early. These were the reasons that the data changed from 7<sup>th</sup> grade reading to 7<sup>th</sup> grade math. While this was a limitation of the study, the broad scope of the study provided the researcher with a large database. The limitation would not be as large if a local school district analyzed student data. At the local level, more data may be kept on when students enter and exit the school district.

A sixth limitation of the research was the broad scope. While analyzing statewide data can provide a big picture of student readiness, a zoom lens may be more beneficial. The

researcher used a wide-angle lens to analyze a cohort of students enrolled in North Carolina public schools between the sixth through twelfth grade (2006-2013). The wide-angle lens showed statewide trends and areas where students may fall off track prior to high school. A zoom lens would provide real time data to teachers and administrators and would provide specific feedback related to the efficacy of curriculum, instruction, local assessments, student intervention and support services, and other local programs.

Finally, it would be a misinterpretation of this study if educators and researchers conclude that school districts should place a greater emphasis on English Language Arts and mathematics, in order for students to graduate college and career ready. A limitation of the study was the lack of grades for courses completed in middle school and high school. The student's final high school grade point average was available, but not by course or grade level. The researcher selected middle school test data for English Language Arts and mathematics, because it was available. At the time of the study, North Carolina did not administer end-of-grade tests in science, social studies, arts education, or other courses.

### **Operational Definitions**

*Academic Factors-* The factors that educators have traditionally viewed as important for success in high school and beyond are known as academic factors. These factors include reading, writing, critical thinking, and mathematical skills. High schools measure student success by analyzing grade point average (GPA), standardized test scores, course completion, and class rank. Research in the field of business and education indicated that non-academic factors may be as important as academic factors in determining college and career readiness.

*College and Career Readiness-* In North Carolina, students are considered career and college ready when they have the knowledge and academic preparation needed to enroll and

succeed, without the need for remediation, in introductory college credit-bearing courses in English Language Arts and Mathematics within an associate or baccalaureate degree program. These same attributes and levels of achievement are needed for entry into and success in postsecondary workforce education, the military or directly into a job that offers gainful employment and career advancement (North Carolina State Board of Education, 2015). Workplace readiness demands the same level of knowledge and skills as college readiness (ACTE, 2010; Career Readiness Partner Council, 2012). While not every student plans to attend college after high school, many of the jobs that can support a family require knowledge and skills comparable to those expected of the first-year college student (ACT, 2006). College and career readiness is a shift from preparing some students for college and others for careers to preparing all students for college and the workforce, because the demands of the workforce have changed.

*Comprehensive high school-* A comprehensive high school provides a curriculum and educational opportunity to all students, regardless of their postsecondary plans. The aim is to gather all youth into a single institution that prepares them for different roles, in workplaces, civic life, families, and communities. The Cardinal Principles of Secondary Education (1918) determined “The comprehensive high school, embracing all curriculums in one unified organization, should remain the standard type of secondary school in the United States” (p. 19). The report outlined seven main objectives of secondary education. In 1959, James Bryant Conant characterized the comprehensive high school in the United States as “a great engine of democracy” (p. xi).

*Early Warning System-* An Early Warning System allows educators and stakeholders to see if students are on-track for the next course, high school readiness, and college and career

readiness. Leading indicators provide early warnings about being on track to achieve your strategic goals. “The power of early-warning indicators lies in the willingness and capacity of school leaders and educators to transform actionable data into strategic decision making that leads to improved student outcomes” (Pinkus, 2008, p. 7).

*Graduation Rate-* The graduation rate reflects the percentage of ninth graders who graduated from high school four years later. This percentage is known as the cohort graduation rate and it is used as the Other ‘Academic Indicator’ determining if school districts in North Carolina make Adequate Yearly Progress (AYP) (North Carolina Department of Public Instruction, 2012).

*Hard Skills-* Hard skills include, but are not limited to, content knowledge, the ability to apply content knowledge in one or more settings, and the ability to demonstrate understanding on achievement tests or performance tasks. “Through most of the 20<sup>th</sup> century, college readiness and career readiness were more or less distinct, in part because what we now call career readiness was called job training and took the form of vocational education” (Conley & McGaughy, 2012, p. 28). Students who graduate from high school as college and career ready graduates will need to demonstrate hard skills and soft skills, whether they apply for a two-year or four-year college or university or enter the workforce.

*High School Readiness-* A student who is high school ready is prepared to enter high school equipped to pass the coursework required to earn a high school diploma. To achieve the nation’s goal of graduating all of its high school students ready for college and career, “it will be essential for students to enter high school with at least close-to-grade-level skills and knowledge” (Balfanz, 2009, p. 6). High school readiness is not measured in most school districts. If a student and his or her family have timely information about high school readiness,

it could support the transition between middle school and high school. High school readiness is an important bridge to college and career readiness.

*Indicators-* “An educational indicator is a statistic that tells something about the performance or health of the education system” (Oakes, 1986, p. vii). “A good education indicator system is expected to provide accurate and precise information to illuminate the condition of education and contribute to its improvement” (Shavelson, Richard, McDonnell, & Oakes, 1991).

*Inputs-* Student achievement is obviously a function of inputs (Porter, 1994). Inputs include school programs, curriculum and instruction, the amount of money spent on desired outcomes, student clubs, and other academic and non-academic factors that ultimately impact college and career readiness.

*Junior high school-* The American Junior High School started in the early 1900s. “The Junior High School has been nationally accepted as the solution of many pressing and universal educational problems. Like an educational awakening, it has spread in fifteen years, through all forty-eight states” (Glass, 1927, p. 208). Most junior high schools are comprised of grades 7-9. Many junior high schools are now called middle schools in most states.

*Lagging Indicators-* The idea of using leading and lagging indicators to measure the health of an organization was introduced by Robert Kaplan and David Norton (1993). The premise behind their theory is that lagging indicators will tell you nothing about how the outcomes were achieved, in the absence of leading indicators. Lagging indicators measure what has already taken place. Standardized tests measure what students know at the end of the school year, making the test results lagging indicators. Course completion/course failure, dropout rates, and graduation rates are other examples of lagging indicators.

*Leading Indicators-* Leading indicators provide early warnings about being on track to achieve your strategic goals. In education, leading indicators “provide early signals of progress toward academic achievement – enable education leaders, especially at the central office level in a school district, to make more strategic and less reactive decisions about services and supports to improve student learning” (Foley, Mishook, Thompson, Kubiak, Supovitz, & Rhude-Faust, 2008, p. 1). Examples of leading indicators include literacy scores, student enrollment in advanced courses, attendance rates, discipline data, the number of students repeating a grade level, and the number of students who participate in a club, team or organization.

*Middle school-* William Alexander, Father of the Middle School (1968), defined the middle school as “A school having at least three grades and not more than five grades, and including at least grades six and seven” (p. 1). Most middle schools are comprised of grades 6-8.

*Non-Academic Factors-* Non-academic factors include college and career ready programs, student support services, student attendance, discipline data, student clubs, teams, or organizations. Research in the field of business and education has indicated that non-academic factors may be as important as academic factors in determining college and career readiness.

*No Child Left Behind (NCLB)-* On January 8, 2002, President George W. Bush signed into law the No Child Left Behind (NCLB) Act, which is the most recent reauthorization of the 1965 Elementary and Secondary Education Act. NCLB was designed to ensure that students in every public school achieve important learning goals while being educated in safe classrooms by well-prepared teachers (No Child Left Behind Act, P.L. 107-110, 2002). The No Child Left Behind Act (2002) created an education system which focuses on high stakes testing and provides sanctions for schools and school districts that are consistently low performing in one or

more identified student subgroups (No Child Left Behind Act of 2001, P.L. No. 107-110, 115 Stat. 142).

*Off-track Indicators-* A student is determined to be off-track if he or she demonstrates off-track characteristics or behavior. Balfanz (2009) identified failing math or English, having low attendance, and poor behavior as “off-track” indicators for middle school students. Off-track indicators allow a school or school system to provide additional academic and non-academic support in order to prepare the student for the next level of learning. Multiple off-track indicators provide educators with time to intervene before the student fails a course, enters high school unprepared, or decides to drop out of school.

*On-Track Indicators-* Allensworth and Easton (2005) introduced the On-track indicator in their research with the Chicago Public Schools. According to their research, if a student demonstrates on-track behavior and progress at the end of the ninth grade year, then the student is on-track for high school graduation. Other on-track indicators have been used in education at the pre-K, elementary, and middle school levels. The On-track indicator developed by Allensworth and Easton focuses on high school graduation. One of the limitations of the On-track indicator is that it measures basic success in high school. The On-track indicator does not predict that all high school graduates are well prepared to pursue their postsecondary goals (Allensworth & Easton, 2005).

*Outputs-* According to Porter (1991), “a system of school process indicators is needed to provide descriptions of educational opportunity, to monitor reform, and to explain outputs” (p. 13). Examples of outputs include the number of students who graduate and enroll in college, the number of students with an SAT score that will allow students to enroll in a four year college or university, or grade point average. If a system monitors outputs and ignores inputs, it will be

too late to determine if a student is college and career ready. An indicator system should measure inputs and outputs.

*Promoting Power-* “Promoting power compares the number of 12<sup>th</sup> grade students in a school to the number of 9<sup>th</sup> graders three years earlier. It is designed to estimate the proportion of high school students who make it to their senior year. For example, if a school’s promoting power is 80 percent it means that the number of 12<sup>th</sup> graders is 80% of the number of 9<sup>th</sup> graders three years before” (Alliance for Excellent Education, 2009).

*Readiness-* Readiness is determined by multiple indicators. In education, readiness has traditionally been defined by colleges and universities and by the workforce. Recently, the two terms have been combined and college and career readiness has become the goal for K-12 students in the United States. Readiness can be determined by using On-Track Indicators, an Early Warning System, or by measuring academic and non-academic factors during the school year. Educators cannot focus on college and career readiness if they do not know where students stand (Roderick, Nagaoka, & Coca, 2009).

*Remediation-* At the college or university level, remedial courses are taken during the freshmen year. A student who enters college lacking the skills or understanding to enroll in freshmen courses is required to take remedial courses. “Students who are college ready should be able to succeed in entry-level, credit bearing college courses without the need for remediation” (Wiley et al., 2010, p. 3).

*Secondary Education-* Secondary education is defined as grades 6-12. The United States has offered different variations of secondary education, including junior high school, middle school and high school.

*Soft skills*- Soft skills include, but are not limited to, teamwork, decision-making, and communication (America's Promise Alliance, 2007). Employers seek applicants who are problem solvers, communicators, team players, and have perseverance. These skills, sometimes referred to as soft skills, are needed by all high school graduates to ensure that they are college and career ready, regardless of whether they plan to complete an apprenticeship after high school or attend a two-year or four-year college. While employers are seeking students with strong academic skills, they are having trouble finding applicants who can collaborate, create, think outside the box, and communicate.

### **Organization of the Dissertation**

Chapter 1 provided an introduction to this study. The American high school was designed for college bound students at a time when less than 10% of students graduated from high school (National Education Association, 1893; Report, 1905). The goals of the American high school have recently changed from sorting and selecting students for college and the workforce to preparing all students to graduate college and career ready (National Governors Association, 2012). Prior to the push for college and career readiness, middle schools and high schools prepared students for college or a career. While the current national focus is on college and career readiness, middle school educators could begin analyzing the high school readiness of each student. A student who is high school ready is prepared to enter high school equipped to pass the coursework required to earn a high school diploma. High school readiness is an important bridge to college and career readiness. Chapter 1 provided the significance of the study, along with operational definitions that help the reader develop a deeper understanding of the research. A focus on the middle school years could provide educators and researchers with a

greater chance to impact the number of students who graduate from high school, college and career ready.

Chapter 2 synthesized the literature and research and was organized by the following themes that surfaced in the review: (1) college and career readiness; (2) supporting college and career readiness in the middle grades; (3) identifying middle grades students who are off-track for college and career readiness; (4) the push for college and career readiness; (5) workforce readiness; (6) the purpose of high schools: a historical perspective; (7) the American junior high school; (8) the American middle school; (9) uses of indicators in organizational settings; (10) on-track indicators; (11) early warning systems; (12) measuring college readiness at the local level: developing early warning systems; (13) the on-track indicator; (14) middle school off-track indicators; (15) middle school indicators explained; and (16) high school readiness.

Chapter 3 outlined the research questions and research design, including descriptive data about North Carolina public school students between 2006-2013. The study begins with a cohort of sixth graders from across every public middle school in the state of North Carolina in the 2006-2007 school year and follows the group through high school graduation in 2012-2013. This study analyzed multiple progress indicators that could support educators as they prepare students for high school. Chapter 3 introduced the progress indicators that were analyzed.

Chapter 4 provided a presentation and analysis of the data. Each research question was analyzed and graphs highlighted the data from the study. The chapter provided a summary of the research questions and revisited the overarching hypotheses for the study.

Chapter 5 outlined limitations of the study and future recommendations. As a result of the study, a High School Readiness Index was developed by the researcher. A College and

Career Readiness Index was also recommended. Based on the findings, the researcher provided recommendations for future research.

## **CHAPTER 2: REVIEW OF THE LITERATURE**

While conducting the literature review a variety of search strategies and tools were utilized. The researcher kept a log detailing the various sources and search techniques utilized. Well over 120 searches were conducted and a majority were conducted by utilizing the East Carolina Joyner Library digital database and e-portal system. Most of the research came from the JSTOR database. Research terms included, but were not limited to, American high school, junior high school, middle school, college and career readiness, indicators, No Child Left Behind, workforce readiness, employability skills, soft skills, opportunity gap, and skills gap. The term college and career readiness was a difficult term to research, because it is a new term in education. The research terms provided resources and leads to new articles on college and career readiness, although each article did not specifically use the term college and career readiness.

### **Purpose of Research**

The purpose of this research study was to examine college and career readiness and to determine if middle school progress indicators could be used to identify students who are off-track for high school readiness. The literature review explored the concept of college and career readiness, supporting college and career readiness in the middle grades, on-track and off-track indicators, the push for college and career readiness, the purpose of high schools: A historical perspective, the American junior high school, the American middle school, uses of indicators in non-educational settings, workforce readiness, early warning systems, measuring college readiness at the local level, the On-Track indicator, middle school off-track indicators, and high school readiness.

In the absence of an indicator system, superintendents and educators can only proclaim a goal of college and career readiness. Measuring if a student is college and career ready requires a definition of what that student looks like upon high school graduation and what that student should look like at each grade level.

A major area in the literature review was the research surrounding indicators and the need for schools to identify which students are off-track, prior to high school. While much of the political rhetoric and emphasis by employers is focused on college and career readiness, few studies have analyzed the role of middle schools in preparing all students for high school readiness. A student who is high school ready is prepared to enter high school equipped to pass the coursework required to earn a high school diploma. High school readiness is a prerequisite to college and career readiness.

This literature review revealed that schools across the United States are being asked to prepare all students for college and career readiness by the time a student graduates from high school. The American high school was designed for college bound students, at a time when less than 10% of students graduated from high school. The foundation of the American comprehensive high school was “based on students’ choosing between educational programs that lead to different futures or having the choice made for them by adults” (Conley, 2010, p. 6).

The goal of the American high school has changed from sorting and selecting to preparing all students for postsecondary opportunities (Alliance for Excellent Education, Civic Enterprises, & the Data Quality Campaign, 2011; Conley, 2007; National Governors Association, Council of Chief State School Officers, & Achieve, 2008; SREB, 2010; Wiley et al., 2010). Another area of the literature review included research regarding soft skills. College admissions offices and employers both seek high school graduates with soft skills. However, a

majority of recent high school graduates lack soft skills and this is an area of focus for preparing more college and career ready graduates. The final area of the literature review examined the term high school readiness and the critical role that middle schools could play in supporting the goal of college and career readiness.

### **College and Career Readiness**

“A labor market skills gap accompanies the crisis in high school and college completion. The majority of job openings in the next decade will require at least some postsecondary education” (Bruce, Bridgeland, Fox, & Balfanz, 2011, p. 10). During the past decade, studies have indicated an overwhelming percentage of new jobs that offer a wage sufficient to support a family and provide opportunity for career advancement require some postsecondary education. These studies also revealed that the skill level required to enter college or a work-training program are the same (Achieve, 2004; Achieve, 2005; ACT, 2006; Markow & Pieters, 2011; Partnership for 21<sup>st</sup> Century Skills, Association for Career and Technical Education, & National Association of State Directors of Career Technical Education Consortium, 2010; U.S. Department of Labor, 2008). “Organizations in the United States and around the world are finding themselves ill-equipped to compete in the 21st-century economy. The reason: too many workers lack the right skills to help their employers grow and succeed” (Homer & Griffin, 2006, p. 4).

Our economy is changing and the share of jobs requiring at least some postsecondary education has increased substantially over the last four decades. In 1973, 72% of the nation’s 91 million workers had a high school education or less. By 2007, despite the workforce swelling to 154 million workers, those with a high school education or less had shrunk to 41%. (Bridgeland & Milano, 2012, p. 44)

The nation's workforce has changed from jobs that require skilled workers working in isolation to jobs that require flexible teams and strong communication skills. According to the Association for Career and Technical Education (2006), "America has evolved from an industrial economy to a knowledge economy" (p. 1). "Through most of the 20<sup>th</sup> century, college readiness and career readiness were more or less distinct, in part because what we now call career readiness was called job training and took the form of vocational education" (Conley & McGaughy, 2012, p. 28). The comprehensive high school was "designed to process a great number of students efficiently, selecting and supporting only a few for 'thinking work' while tracking others into a basic-skills curriculum aimed at preparation for the routinized manufacturing jobs of the time" (Darling-Hammond & Friedlaender, 2008, p. 15). "During the early twentieth century when vocational education programs were introduced on a wide scale.....Students needed to make a choice whether to pursue an academic or vocational future" (Conley, 2010, p. 4).

Today, according to Murray (2012), "Many high schools continue to operate on an old premise – that only the best and the brightest will go on to college, with the rest needing a lower dose of academics sprinkled with some occupational training" (p. 60). *Achieve* (2013b), an independent, bi-partisan, non-profit education reform organization led by governors and business leaders, recently defined college and career readiness as being prepared for the next steps, that all doors remain open as students continue to pursue their education and careers. Conley (2010) urges educators to reconsider their preparation standards.

The challenge is not to simply get students into postsecondary programs, as daunting as that challenge might be in some high schools and communities. It is to prepare them to

succeed in those programs. In essence, it means students ready to learn beyond high school, not simply to complete high school. (p. 14)

Similarly, Pinkus (2008) describes a proactive approach to ensure college and career readiness for every student. By preventing students from falling through the cracks and ensuring that they receive the appropriate level of attention, instruction, engagement, and support needed to succeed in their classes, educators can give every student the chance to graduate from high school prepared for college, the modern workforce, and life (Pinkus, 2008, p. 1). A focus on preparing all students for college and career readiness will require additional emphasis on supporting students throughout middle school. An emphasis on college and career readiness will require teachers and administrators to identify which students are *high school ready*.

### **Supporting College and Career Readiness in the Middle Grades**

What is the role of middle grades education in preparing students to become college and career ready? Research shows that “the level of academic achievement that students attain by eighth grade has a larger impact on their college and career readiness by the time they graduate from high school than anything that happens academically in high school” (ACT, 2008, p. 2). Balfanz and Legters (2004) describe the need for educators to widen their perspective when it comes to reform efforts. “A middle grades connection cannot be overlooked....high school reform must ultimately be seen as part of a broader secondary school reform” (p. 23). In order for ninth grade students to succeed, pre-K through eighth grade teachers and administrators must align their efforts and adequately prepare students for high school readiness (Neild, 2009).

Wimberly and Noeth (2005) indicated that college readiness begins in middle school and educators should use multiple indicators to inform their decisions. According to Balfanz (2009), the middle grades need to be seen as a “launching pad” as they prepare students for college and

careers. He also states for our nation to achieve its “goal of graduating all its high school students ready for college and career, it will be essential for students to enter high school with at least close-to-grade-level skills and knowledge” (Balfanz, 2009, p. 6). Students and families are often misled by a system that does not send clear signals regarding what is expected of them along the way (Conley, 2007; Kirst & Venezia, 2004; Wimberly & Noeth, 2005).

Traditionally, middle schools and junior high schools have given students a letter grade indicating how they performed in English, mathematics, science and other courses. The report card sent a message to families that students were prepared to succeed in high school courses. Each year, thousands of students enter their senior year of high school believing they are ready for college because they have completed the required courses and passed all of the standardized tests (Conley, 2007). “As critical as they are, large-scale assessments cannot measure everything that high school graduates need to know and be able to do” (Achieve, Inc., 2004, p. 13).

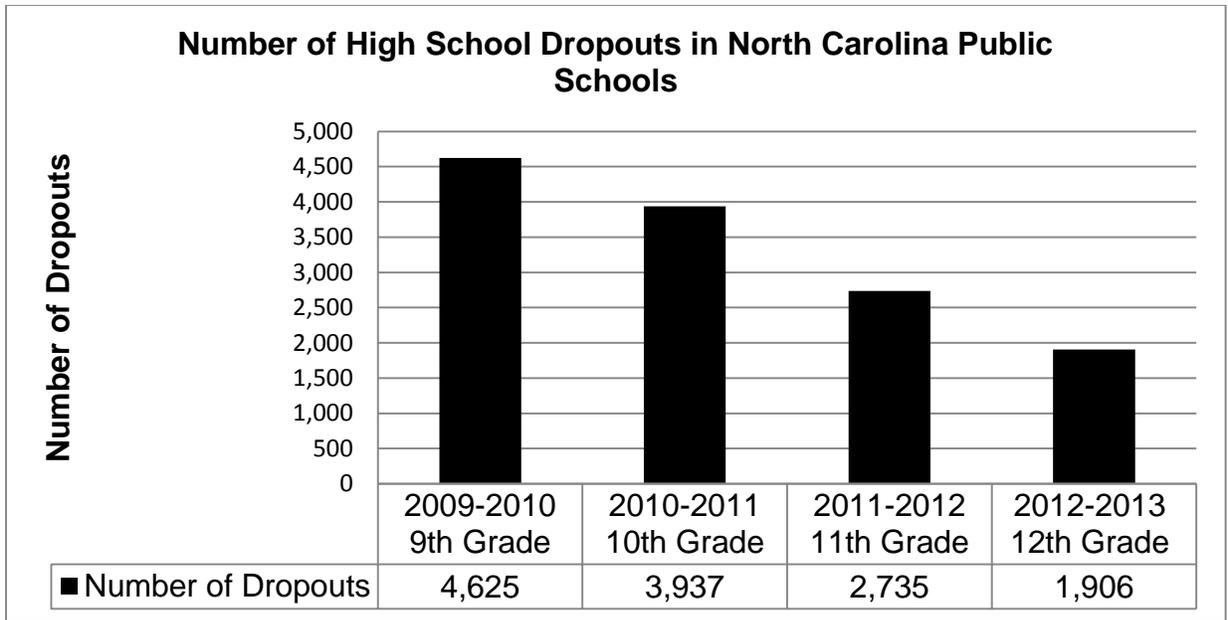
A significant percentage of students will continue to struggle with high school courses until the middle schools begin to measure on-track readiness for high school (SREB, 2004). Without sufficient preparation before high school, students cannot succeed at the high school level in English, mathematics, and reading (Greene & Winters 2005; SREB, 2009; Westover & Hatton, 2011). As early as 1960, Krug acknowledged that schooling “is always continuous from one level to the next; no one level of schooling is divorced from those adjacent to it” (p. 543).

High school graduation and a student’s readiness can be measured by analyzing academic and non-academic factors. “College readiness is not the belief that every student will go to college. It is the idea that every student deserves the opportunity to be educated in a way that prepares him or her for college” (Lopez, 2009). Ninth grade course failure is “driven by students’ lack of intermediate academic skills, weak reading comprehension and fluency

abilities, and underdeveloped mathematical knowledge” (Balfanz & Legters, 2004, p. 23). These findings demonstrate a connection between the importance of middle level education and high school readiness. “While educators cannot change the out-of-school factors that may contribute to a student’s decision to drop out, by focusing on improving students’ academic performance they can reduce how much those nonacademic factors interfere with students’ eventual educational success” (Pinkus, 2008, p. 3). Figure 1 highlights the number of North Carolina public school students who dropped out of school between 2009-2013. These years represent the four years students were in high school during the study that is being conducted by the researcher. This statewide data provides additional evidence that high school readiness may be a critical component to college and career readiness. If additional progress indicators could be identified, it is possible that more students would enter the ninth grade prepared to succeed.

Balfanz and Legters (2004) study found, “Every high school with weak promoting power is fed by one or more low-performing middle grades schools” (p. 23). “Accurately measuring and diagnosing college readiness is the first step to helping a greater number of students achieve college readiness” (Wiley et al., 2010, p. 14). If educators are going to increase high school graduation rates and make the shift to college and career readiness for all students, then school leaders will need timely data in order to determine whether students are on the path to college enrollment (National Governors Association, 2009).

While the current national focus is on college and career readiness, middle school educators could begin analyzing the high school readiness of each student. A focus on the middle school years could provide educators and researchers with a greater chance to impact high school readiness and the number of students who graduate college and career ready. U.S. colleges and universities require students to submit an SAT score, ACT score, and/or a Grade



*Note.* A student may be counted as a dropout more than once if he or she drops out of school in multiple years. However, no student who drops out is counted more than once each year.  
*Source:* North Carolina Department of Public Instruction, *Annual Dropout Reports (2010, 2011, 2012, 2013)*

*Figure 1.* Number of high school dropouts by grade level (2009-2013).

Point Average (GPA). This data is collected at the end of a student's high school years. While the data are reliable, it is lagging data. Middle school educators need to be able to identify whether or not students are prepared for high school.

Relying on data that is produced during a student's final two years of high school to determine college and career readiness makes it difficult for educators to provide academic and non-academic interventions. "Although the U.S. education system increasingly produces and collects more data, that information often is not shared, or comes too late to prompt appropriate interventions and supports" (Alliance for Excellent Education, Civic Enterprises, and the Data Quality Campaign, 2011, p. 1). Educators cannot focus on college and career readiness if they do not know where students stand (Roderick et al., 2009).

### **Identifying Middle Grades Students Who Are Off-Track for College and Career Readiness**

According to Williams, Rosin, and Kirst (2011), "Middle grades educators are key to enabling more students to become high school-ready and later, college- and career-ready" (p. 4). In a landmark study conducted by ACT (2008), the researchers concluded:

Eighth-grade students who are not on target for college and career readiness face severe academic obstacles in high school and are substantially more likely to be unprepared for college and career when they graduate than students who are on target to become ready for college and career in the eighth grade (p. 40).

Schools across the United States are being asked to prepare all students for college and career readiness by the time a student graduates from high school. The American high school was designed for college bound students at a time when less than 10% of students graduated from high school (National Education Association, 1893; Report, 1905). The foundation of the

American comprehensive high school was “based on students’ choosing between educational programs that lead to different futures or having the choice made for them by adults” (Conley, 2010, p. 6).

In U.S. schools, starting in elementary schools with the designation of instructional groups and programs based on test scores and recommendations, tracking becomes highly formalized by junior high school. From gifted-and-talented programs at the elementary level through advanced courses in secondary schools, the most experienced teachers offer rich, challenging curricula to select groups of students, on the theory that only a few students can benefit from such curricula (Darling-Hammond, 2007).

The move to college and career readiness will mean a significant shift for educators and students. The decision to enter a college prep pathway or a career prep pathway will be eliminated if states continue to adopt policies and standards which are designed to prepare all students for college and career readiness. If K-12 educators are asked to prepare students for college and career readiness, then tools need to be identified which support the transition from college admission for some to college and career readiness for all students. This study may support student achievement, but the indicators alone will be ineffective if school systems do not utilize the data to inform their policies and practices.

### **The Push for College and Career Readiness**

In 1893, the Committee of Ten determined,  
Every subject that is taught at all in a secondary school should be taught in the same way and to the same extent to every pupil so long as he pursues it, no matter what the probable destination of the pupil may be. (National Education Association, 1893)

Since that time, one of the ongoing philosophical debates in American education has been whether high schools should become college prep for the masses or an avenue to career readiness. In 1895, John Dewey described how the American high school “must, on the one hand, serve as a connecting link between the lower grades and the college, and it must, on the other, serve not as a steppingstone, but as a final stage” for the students who will go directly into society and the workforce (p. x). As student enrollment in the American high school increased, educators continued to question whether the high school could serve all students. “The flood of students who entered high school around 1910 to 1940 often sought an education that would lead directly to employment, not college” (Goldin, 1998, p. 352). *The American High School Today* was a landmark study which provided guidance on the structure of the American high school for several decades following its publication. Conant (1959), author of *The American High School Today*, asked,

Can a school at one and the same time provide a good education for all the pupils as future citizens of a democracy, provide elective programs for the majority to develop useful skills, and educate adequately those with a talent for handling advanced academic subjects? (p. 15)

Labaree (1997) wrote, “The history of American education has been a tale of ambivalent goals and muddled outcomes” (p. 41). “Although the American high school has experienced a remarkable transformation.....it still has a considerable way to go to achieve its current mission – to prepare all students for further schooling or training” (Balfanz, 2009, p. 32). “The nation’s K-12 educational systems may be reaching a potentially historic turning point. Initially designed to educate students to a ‘common’ level of basic education, public schools are now expected to

increasingly prepare the vast majority of students for education beyond high school” (Conley, 2009, p. 3).

In 2009, during his first address to Congress, President Barack Obama called on all Americans and brought national attention to the goal of College and Career Readiness.

So tonight I ask every American to commit to at least one year or more of higher education or career training. This can be a community college or a four-year school, vocational training or an apprenticeship. But whatever the training may be, every American will need to get more than a high school diploma. (White House, 2009)

### **Workforce Readiness**

As previously discussed, the American high school was initially designed to prepare a small percentage of students for college. “Through most of the 20<sup>th</sup> century, college readiness and career readiness were more or less distinct, in part because what we now call career readiness was called job training and took the form of vocational education” (Conley & McGaughy, 2012, p. 28). “In an ideal world, a high school diploma from any high school in the nation would be a valid and reliable certification that a student was ready for college, work, and life in the twenty-first-century global economy” (Pinkus, 2009, p. 2).

In recent years, educators, policymakers, and employers have pointed to surveys and data on employees indicating that high school graduates are underprepared for the 21<sup>st</sup> century workforce (ACT, 2006; ACT & The Education Trust, 2004; Achieve, Inc., 2004; Achieve, Inc., 2005; Casner-Lotto, & Barrington, 2006; Casner-Lotto, Rosenblum, & Wright, 2009; Jerald, 2008; Symonds, Schwartz, & Ferguson, 2011; Wagner, 2008). “The future U.S. workforce is here – and it is woefully ill-prepared for the demands of today’s (and tomorrow’s) workplace”

(Casner-Lotto, Barrington, & Wright, 2006, p. 9). In a survey of over 400 employers across the United States, among the most important skills cited by employers were:

- Professionalism/Work Ethic
- Oral and Written Communications
- Teamwork/Collaboration and
- Critical Thinking/Problem Solving (Casner-Lotto et al., 2006, p. 9)

“The United States is developing a deep social consensus that American high schools should ensure that all adolescents graduate from high school prepared for postsecondary schooling and training” (Balfanz, 2009, p. 17). In recent years, policymakers have begun to emphasize the goal that all students graduate from high school, college and career ready (National Governors Association Center for Best Practices, National Conference of State Legislatures, National Association of State Boards of Education, & Council of Chief State School Officers, 2008). However, the diploma from an American high school signifies a broken promise, according to a report published by the American Diploma Project (2004). The majority of recent high school graduates in the United States are not academically prepared for the rigor of postsecondary education or to enter the workforce (ACT, 2009a; Conley, 2007, Flippo & Caverly, 2009).

America has a large middle-skills gap. Nearly 50% of the jobs in America demand middle skills obtained through education or training beyond a high school diploma. These skills are necessary for the United States to compete in a global economy, says Martin Scaglione, president and chief operating officer of ACT’s Workforce Development Division (ACT, 2009b, p. 1).

According to the Association for Career and Technical Education (2010), Career Readiness involves three major skill areas: *core academic skills and the ability to apply those skills to concrete situations, employability skills* - such as critical thinking and responsibility, and *technical, job-specific skills*. “It is no secret that, as a nation, we have inadequately prepared millions of America’s young people to participate in the workforce of the 21<sup>st</sup> century” (American’s Promise Alliance, 2007, p. 1). “With new and rising skills being demanded of workers, and comparable academic requirements coming into focus for college- and career-bound students, it is clear that all high school graduates are expected to be able to do similar things” (Richmond, 2009, p. 3). Career readiness has changed. Consider that “Fifty years ago, the nation could afford to lose a high number of students because these students could still obtain sustained employment and a moderate level of income” (Fries, 2010, p. 3). “The economy can no longer absorb many unskilled workers at decent wages” (Darling-Hammond, 2007, p. 322).

Graduating from high school has become a minimum requirement for success in terms of employment, salary, and future career choices. However, nearly one-third of students nationwide do not graduate from high school, and the dropout rate is even higher for minority students. (Gwynne, Lesnick, Hart, & Allensworth, 2009, p. 5)

In a study titled, *The Ill-Prepared U.S. Workforce: Exploring the Challenges of Employer-Provided Workforce Readiness Training* (2009), more than one-third of the 217 employers polled indicated that newly hired high school graduates are deficiently prepared for the workforce. The Association for Career and Technical Education (ACTE, 2006) recommends, “All students need a strong arsenal of reading, comprehension, reasoning, problem-solving and personal skills to be ready for the world of meaningful postsecondary education and training as well as entry into the high-skilled workplace” (p. 1). The results of this

study indicate that students need to graduate from high school with similar skills, no matter their destination. In addition to the importance of academic skills such as reading, writing, and communication, employers are seeking graduates with soft skills such as attendance, teamwork and collaboration, and work habits (National Association of Manufacturers, 2005). “Although soft skills are often employers’ highest priority, they are rarely taught in high schools or colleges” (Rosenbaum, 2005). Soft skills were rarely discussed between 1900 – 2000. Students learned content and demonstrated mastery in each course. The students who performed at the highest level were prepared for college. Recently, colleges and universities, along with employers, have seen a need for students to possess soft skills upon graduation from high school. These skills reduce the number of college dropouts and save businesses millions of dollars in training courses that equip employees with basic skills.

“A great divide has emerged in the United States between the education and skills of the American workforce and the needs of the nation’s employers” (Bridgeland, Milano, & Rosenblum, 2011, p. 2).

According to a survey conducted by the National Association of Manufacturers (2001), inadequate basic employability skills (attendance, timeliness, work ethic), inadequate reading/writing skills, and inability to work in a team environment were cited as the most common reasons companies reject applicants as hourly production workers. “Skills such as critical thinking, problem solving, applying academic knowledge and situational judgment are more important than ever to an individual’s labor market success” (Association of Career and Technical Education, 2008, p. 7).

On January 8, 2002, President George W. Bush signed into law the *No Child Left Behind* (NCLB) *Act*, which is the most recent reauthorization of the 1965 Elementary and Secondary

Education Act. NCLB was designed to ensure that students in every public school achieve important learning goals while being educated in safe classrooms by well-prepared teachers (No Child Left Behind Act, P.L. 107-110, 2002). In order to increase student achievement, the law required school districts to assume responsibility for all students reaching 100% student proficiency levels within twelve years on tests assessing important academic content. Furthermore, NCLB requires schools to close academic gaps between economically advantaged students and students who are from different economic, racial, and ethnic backgrounds as well as students with disabilities (No Child Left Behind Act of 2001, 20 U.S.C. § 6301). One of the unintended consequences of the *No Child Left Behind Act* has been an overemphasis on test scores and test preparation (Balfanz, Legters, West, & Weber, 2007; Darling-Hammond, 2010; Kim & Sunderman, 2005; Wagner, 2008). While teachers and administrators have benefitted from student achievement data, a focus on improving student achievement for all students and increased accountability, some researchers argue that the increased focus on educational outcomes has caused educators to underemphasize inputs which influence student achievement outcomes (Moss et al., 2008; Superfine, 2008). Wagner (2008) defines the global achievement gap as the gap between what even our best schools are teaching and testing versus what all students will need in order to succeed as learners, workers, and citizens.

The focus on test scores and graduation rates has caused educators and policymakers to overlook the large number of high school graduates who lack soft skills such as teamwork, decision-making, and communication (America's Promise Alliance, 2007, p. 1). In a recent study titled, *Are They Really Ready to Work: Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21<sup>st</sup> Century U.S. Workforce* (Casner-Lott, Barrington, & Wright, 2006), employers listed professionalism, teamwork, oral communications, ethics &

social responsibility, and reading comprehension as the skills needed for success in the workforce. The report described this category as punctuality, time management, and working productively with others. In addition to a lack of teamwork and other skills employers seek, there is evidence that many high school graduates lack the work ethic needed for jobs that provide a middle-class wage (Symonds, Schwartz, & Ferguson, 2011).

The results from the *Are They Really Ready to Work* study (Casner-Lotto, Barrington, & Wright (2006) indicated that 70.3% of employer respondents reported that high school graduate entrants are ‘deficient’ in the area of Professionalism/Work Ethic. Educators “need new indicators that monitor college readiness – both mastery of rigorous coursework and development of ‘soft skills’ – diligence, engagement, tenacity, and motivation” (Foley, 2010, p. 2). This dissertation analyzed indicators that could be used to support the new goal of *College and Career Readiness*.

In the absence of clear indicators, teachers and administrators will be unable to measure their effectiveness in supporting students. Research and interviews conducted with employers, higher education officials, and K-12 public school data point out the need for a new direction. Preparing some students for college no longer meets the needs of the U.S. or global workforce. In addition to a changing workforce, higher education officials are seeking high school graduates with academic and soft skills. “The mission of the public education system must shift from educating some students and preparing them for the twentieth-century American economy to educating all students and preparing them for the twenty-first century global economy” (Alliance for Excellent Education, 2009, p. 4).

## **The Purpose of High Schools: A Historical Perspective**

In 1870, there were only 500 public high schools in the United States (Boyer, 1983) compared to approximately 16,000 high schools in 2011 (National Center for Education Statistics, 2012). At the time, there was a question of the purpose of the American high school. Traditional educators viewed high school as a college preparatory institution, while others believed that high schools should offer practical courses for students who did not intend to enroll in a college or university. In 1892, the National Education Association (NEA) appointed a committee known as the Committee of Ten, chaired by Charles W. Eliot, then president of Harvard University, to review existing course offerings and to make recommendations regarding the purpose of the American high school. In the final report the Committee of Ten wrote,

The secondary schools of the United States, taken as a whole, do not exist for the purpose of preparing boys and girls for colleges....Their main function is to prepare for the duties of life that small proportion of all the children in the country – a proportion small in number, but very important to the welfare of the nation – who show themselves able to profit by an education prolonged to the eighteenth year. (NEA, 1893, p. 51)

The committee recognized that a small portion of students enrolled in college and they recommended eight years of elementary education and four years of secondary education. The Committee of Ten believed that all students should experience a college preparatory curriculum, regardless of their intentions of enrolling in college. It should be noted that one in ten students enrolled in high school in 1900 (Tyack & Cuban, 1995). In 1895, John Dewey described how the American high school “must, on the one hand, serve as a connecting link between the lower grades and the college, and it must, on the other, serve not as a steppingstone, but as a final stage” for the students who will go directly into society and the workforce (p. x). Saunders, a

professor at the University of Mississippi, described the perspective of many Americans at the turn of the century. Saunders (1903) wrote,

College education is desirable and theoretically necessary for preeminence, but it is not for the masses, and it would be but a utopian theory to plan for the day when a bachelor's degree shall be a qualification for suffrage or a necessity for success and happiness.

(p. 73)

At the turn of the 20<sup>th</sup> century, the American high school was designed for college-bound students (Marsh & Coddling, 1999). In 1905, a report created by the National Association of Manufacturers reported, “Eighty percent of our public school pupils drop out before attaining to the high school, and 97% of all our public school pupils, from the primary grades to the high schools, drop out before graduation from high school” (Report, 1905, p. 142). In 1918, the National Education Association established a Commission on the Reorganization of Secondary Education. The commission released a report known as the *Cardinal Principles of Secondary Education*. The report outlined seven main objectives of secondary education and introduced the concept of a comprehensive high school, one that taught a wide range of subjects to a wide range of students. According to Krug (1960), an education historian, the report on secondary education redefined the role of the secondary school.

Unlike the report written by the Committee of Ten, the authors of *The Cardinal Principles of Secondary Education* (1918) noted that it was counterproductive to demand that students follow a college-preparatory program, since a majority of high school students would not enroll in the nation’s colleges or universities. The authors believed that students should have a differentiated curriculum based on each student’s needs, interests, and abilities. College and career readiness was not the goal. The changes that took place in education between 1900 –

1950 sorted students into two categories, college-ready and workforce-ready. In 1900, only 10 percent of the nation's fourteen to seventeen year old population attended high school – twenty years later, 31 percent were enrolled (Snyder, 1993).

From the report by The Committee of Ten through the 1950s, the debate over public high schools and their purpose could be summarized by the thoughts of Edward Thorndike.

Thorndike (1906) declared “no high school is successful which does not have in mind definitely the work in life its students will have to perform, and try to fit them for it” (p. 180). Educators, policymakers, and parents were beginning to question whether a comprehensive high school could support the nation's college-bound students, the workforce, and students who were undecided on their postsecondary goals.

As student enrollment in the American high school increased, educators continued to question whether the high school could serve all students. “The flood of students who entered high school around 1910 to 1940 often sought an education that would lead directly to employment, not college” (Goldin, 1998, p. 352). “The explosion of enrollments between 1930 and 1939, from almost 4.8 million to over 7.1 million (from just over half of all 14-17 year olds to nearly three-quarters)” raised concerns about declining student ability (Angus & Mirel, 1999, p. 70). Aldrich (1933) wrote, “If the children from the laboring groups are coming into our high schools in greater numbers, we must be more concerned with the training of this new type of pupil” (p. 489). Feingold (1934), a high school principal, gave a speech and declared,

The bulk of our high school population is moronic and unfit for the profitable pursuit of high school studies, as we know them. We have been hearing of late, for instance, that 50 percent of high school enrollment is made up of the sons and daughters of conductors, factory workers and scrubwomen, and since they will themselves become motormen,

truck drivers, and charwomen, the education of the high school ought to be of a type which will prepare them for that sort of life. (pp. 828-829)

As more students entered high school, teachers and administrators continued to search for the purpose of the American high school. Lund (1935), a high school science department chair, wrote, “The secondary school really should become the average person’s college; a place where he may secure a rounded out preparation for adult life” (p. 109).

Throughout the 1940s, student enrollment in American high schools continued to increase (Hollis, 1946; Tyack & Cuban, 1995), but the mission of high schools was not to prepare all students for college. In 1946, Hollis observed, “It required a half-century to extend the services of the high school beyond a small percentage of college-bound youth to two-thirds of the youth population” (p. 256). Hollis (1946) wrote, “Educational opportunity is not equal, and education is still reserved more for the middle and upper classes and for those with academic ability” (p. 26). In World War I, 80% of the men had not gone beyond the eighth grade. In World War II, only 31% of the men had not advanced beyond the eighth grade (Hollis, 1946). The increase in secondary school enrollment and graduation rates between 1900 – 1940 was “a uniquely American phenomenon” (Goldin, 1998, p. 350).

In 1959, James Bryant Conant, former president of Harvard University, wrote *The American High School Today*. Conant (1959) defined the comprehensive high school as “a high school whose programs correspond to the educational needs of all the youth of the community” (p. 12). Conant (1959) reaffirmed that the comprehensive high school was serving its purpose and concluded “American secondary education can be made satisfactory without any radical changes in the basic pattern” (p. 96). He characterized the comprehensive high school in the United States as “a great engine of democracy” (Conant, 1959). *The American High School*

*Today* was a landmark study, which provided guidance on the structure of the American high school for several decades following its publication. Conant (1959) asked,

Can a school at one and the same time provide a good education for all the pupils as future citizens of a democracy, provide elective programs for the majority to develop useful skills, and educate adequately those with a talent for handling advanced academic subjects? (p. 15)

Conant's questions outlined the ongoing struggle to define the purpose of public high schools in the United States. College and career readiness was viewed as an either or option for students.

According to Tyack (1974), "In 1960, over 46,000,000 students were in school, constituting about 99.5% of youth aged seven to thirteen, 90.3% of those aged fourteen to seventeen, and 38.4% of those aged eighteen to nineteen" (p. 269). As student enrollment surged, some educators continued to question the importance of all students attending secondary school beyond the eighth grade. The chairman of the Boston school board said, "We do not have inferior schools; we have been getting an inferior type of student" (Ryan, 1971, p. 32).

Mollenkof (1966) wrote, "More educators in this decade are committed to the principle of universal compulsory education than at any time in the history of our American democracy" (p. 143). Krug (1960) wrote, "According to the critics, a high school diploma may testify to nothing but the fact that its holder spent four years in high school" (pp. 2-3).

"In 1971, 78% of those twenty-five to twenty-nine years old had completed high school; in the year 2000, this number had increased to 88%" (U.S. Department of Education, 2001). A 1973 report conducted by the National Commission on the Reform of Secondary Education

described the American high school as “a beleaguered institution” (p. 8). The report also described how,

The American comprehensive high school today must be viewed as an establishment striving to meet the complex demands of a society in the throes of social change, at a time when the school system has become too large as an institution and is literally overrun with a mix of young people from inconsistent social backgrounds. (National Commission on the Reform of Secondary Education, 1973, p. 10)

High school graduation rates rose each decade between 1900 – 1980: in 1900 only 8% of the students graduated from the American high school; “1920, 7%; 1940, 51%; 1960, 69%; and 1980, 71%” (as cited in Tyack & Cuban, 1995, p. 48). As more Americans entered public schools, educators continued to wrestle with the purpose of high schools. Could a single school educate its best and brightest students for colleges and universities, while preparing the rest of the students for careers and life as good citizens?

“The comprehensive high school, which had enjoyed widespread support during the 1960s and 1970s, began to experience intense public scrutiny during the early 1980s” (Lee & Ready, 2009, p. 139). *A Nation at Risk* (National Commission on Excellence in Education, 1983) highlighted the decline in academic performance and compared public schools to schools around the world. The authors of *A Nation at Risk* alarmed Americans by reporting,

The educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people....Our society and its educational institutions seem to have lost sight of the basic purposes of schooling.

(National Commission on Excellence in Education, 1983, p. 112)

Throughout the twentieth century, educators, policymakers, citizens, and courts debated whether the goal of high school was to prepare students for college, the workforce, or both (Angus & Mirel, 1999; *Brown v. Board of Education of Topeka*, 1954; *Cardinal Principles of Secondary Education*, 1918; Caswell, 1946; Conant, 1959; Thorndike, 1906; Tyack & Cuban, 1995).

A majority of the youth who “can generally be classified as non-academic-general students who, because of lack of ability or sheer lack of interest, have no desire to learn or even to be in school” (Mollenkof, 1966, p. 143). *A Nation at Risk* highlighted the multiple goals that a comprehensive high school attempted to meet.

Secondary school curricula have been homogenized, diluted, and diffused to the point that they no longer have a central purpose. In effect, we have a cafeteria style curriculum in which the appetizers and desserts can easily be mistaken for the main courses.

Students have migrated from vocational and college preparatory programs to general track courses in large numbers. (National Commission on Excellence in Education, 1983, p. 162)

Oakes (1985) highlighted that the academic experience of students had become increasingly stratified, even within schools. Throughout the 1980s and 1990s, it became increasingly clear that the American high school was designed for all students. However, the sorting and selecting of students for college or careers was evident across the United States. Marsh and Coddling (1999) wrote, “The fundamental premise of the comprehensive high school, that only a few need to graduate with solid academic accomplishments to their credit, no longer holds” (p. xiii). At the turn of the 21<sup>st</sup> century, college freshmen were being forced to take remedial courses and employers were no longer satisfied with the skills that a majority of high

school graduates possessed. According to Tucker (1999), “No comprehensive high school prepares all of its students for a high academic standard or a high vocational skill. “Some do one, some do the other, most do neither well” (p. 27).

Students are no longer prepared for the workforce, if they experience a skills-based or workforce curriculum. Employers are seeking students with soft skills and academic skills. At the same time, more careers are requiring one or more years of education or training after high school (Bruce, Bridgeland, Fox, & Balfanz, 2011). “The goal of college and career readiness for all high school graduates is no longer a radical reform idea promulgated by a handful of states: It has emerged as the new norm throughout the nation” (Achieve, 2010, p. 23).

Although the American high school has experienced a remarkable transformation.....it still has a considerable way to go to achieve its current mission – to prepare all students for further schooling or training (Balfanz, 2009, p. 32).

Throughout the twentieth century, American high schools became an assembly line, sorting and selecting students for college or careers (Alliance for Excellent Education, Civic Enterprises, & the Data Quality Campaign, 2011; Conley, 2010; Darling-Hammond, Aness, & Ort, 2002; Powell, Farrar, & Cohen, 1985; Toch, 2003; Wagner, 1998). The factory-model, which sorts and selects students, “remains the pervasive model for high schools in the United States” (Darling-Hammond & Friedlaender, 2008, p. 15).

The goals of the American high school have changed, but the process of educating our nation’s youth looks similar to high schools from 1950 – 2000. “Comprehensive high schools systematically sort and select students through *No Child Left Behind*, performance scores, GPAs, class rankings, honors classes, basic skills, curriculum choices and even college endorsed high

school diplomas” (Fries, 2010, p. 1). “It is clear that today’s high school students have vastly different and more complex life experiences than the young people of the 1930s, 1940s and 1950s, for whom the prevailing high school model was designed” (ACTE, 2006, p. 10).

As the workforce continues to change, employers are seeking new skills from high school and college graduates (Homer & Griffin, 2006). “The nation’s K-12 educational systems may be reaching a potentially historic turning point. Initially designed to educate students to a ‘common’ level of basic education, public schools are now expected to increasingly prepare the vast majority of students for education beyond high school” (Conley, 2009, p. 3). The *SREB Fact Book on Higher Education* (2011b) reported, the fastest-growing job segments from 2008 to 2018 will be those requiring a bachelor’s degree, associate’s degree or postsecondary technical certificate. How will educators make the transition from college or career readiness to college and career readiness? If the goals of education are changing, then educators will need to be able to measure if students are on-track or off-track and if their efforts are preparing students to graduate college and career ready. One measure of success is the high school graduation rate. The difficulty with using the high school graduation rate as an exclusive indicator is that it is too late to measure college and career readiness.

The U.S. education system currently fails to prepare many young Americans to lead successful adult lives because our preparation strategy is narrow, focused on readying students to attend four-year colleges and universities. As a result, many youth leave high school no more fit to succeed in college than to thrive in the world of work.

(Symonds, 2012, p. 35)

School leaders are not equipped to lead this change, because they have been focused on encouraging students to choose between college or a career. District administrators want to

prepare students for life after high school, but recent reports indicate that schools are facing a changing job market that requires new skills and abilities. “Today’s high schools face unprecedented challenges in preparing graduates for today’s rapidly changing job market and for the variety of postsecondary experiences that the current economy is demanding” (Barton & Coley, 2011, p. 3).

“Outdated high schools built for a past era are yielding graduates unprepared for today’s knowledge-driven economy” (National Governors Association Center for Best Practices, National Conference of State Legislatures, National Association of State Boards of Education, & Chief Council of State School Officers, 2008, p. 1). A high school diploma once indicated that a student was prepared for college or the workforce. Due to the different tracks that have been created in high schools, millions of students have received a regular diploma by completing a general education, as opposed to a college-preparatory education. Conley (2003) wrote, “The general education track is truly a road to nowhere” (p. 11).

College and Career Readiness is a new term in education and with elected officials. As the United States seeks to maintain an educated workforce, compete globally, and maintain a strong economy the focus of education has shifted. “The goal of college and career readiness for all high school graduates is no longer a radical reform idea promulgated by a handful of states: It has emerged as the new norm throughout the nation” (Achieve, 2010, p. 23). In North Carolina, the guiding mission of the state Board of Education reads:

“The guiding mission of the North Carolina State Board of Education is that every public school student will graduate from high school, globally competitive for work and postsecondary education and prepared for life in the 21st Century” (North Carolina Department of Public Instruction, 2014).

When the nation's economy depended on factories, farming, and labor, the American high school had a different goal for students. Educators developed a curriculum for the masses who desired to enter the workforce upon high school graduation. "The reality is that whether students go to a four-year college or to other postsecondary training, they do, indeed, need the same rigorous academic preparation in high school" (Murray, 2012, p. 60).

As the nation shifts from college or career readiness to college and career readiness, teachers and administrators will need to change curriculum, assessment, and methods of measuring whether each student is on-track to graduate college and career ready. College and career readiness does not begin in high school, so middle schools will need a method for assessing if students are on-track for high school readiness. "No longer an end point in the public education system, the American high school is now being asked to prepare all its students for the postsecondary schooling and training required for full economic and social participation in U.S. society" (Balfanz, 2009, p. 18).

### **The American Junior High School**

The Committee of Ten reviewed the organization of K-12 education and determined It is impossible to make a satisfactory secondary school program, limited to a period of four years, and founded on the present elementary school subjects and methods. In the opinion of the Committee, several subjects now reserved for high schools,—such as algebra, geometry, natural science, and foreign languages,—should be begun earlier than now, and therefore within the schools classified as elementary; or, as an alternative, the secondary school period should be made to begin two years earlier than at present, leaving six years instead of eight for the elementary school period. Under the present organization, elementary subjects and elementary

methods are, in the judgment of the Committee, kept in use too long. (National Education Association, 1893)

The term junior high school was not used in the report from the Committee of Ten. The junior high school “emerged as the logical answer to many problems, a school designed to meet the needs of early adolescence” (Hunt, 1961, p. 392). Most scholars and historians agree, “the first junior high schools were opened during the 1909-1910 school year in Columbus, Ohio, and Berkley, California” (Clark & Clark, 1993, p. 448).

Between 1910-1925, the number of junior high schools increased to more than 2,000 (Koos, 1927). Glass (1927) wrote, “The day has gone when the high school was exclusively a preparatory stage to college” (p. 210). Critics of the junior high school saw the student enrollment numbers as a barrier to preparing students for high school and college.

Wisely or not, the American high school has been evolved on a theory that its doors should be opened to all alike; that every child should have a high-school education; and that such an equality of opportunity ought to constitute a significant element in the philosophy which characterizes America’s educational thinking. (Wager, 1924, p. 69)

Glass (1927) also shared that, “The Junior High School has been nationally accepted as the solution of many pressing and universal educational problems. Like an educational awakening, it has spread in fifteen years, through all forty-eight states” (Glass, 1927, p. 208).

Wiley (1933) described the sentiments of the junior high movement in the early 1930s by writing, “Nowhere in any school level is more constructive experimentation going on” (p. 328). The junior high school was designed to become “the unit of transition to weld together elementary and secondary education” (Glass, 1927, p. 208). “With the demands of the society

changing in the mid-1930s and dropouts becoming less of a problem during the middle years of adolescence, the junior high school philosophy was again studied” (Regen, 1967, p. 150).

Throughout the 1940s and 1950s, “the junior high had widely become accepted as the appropriate place for the education of early adolescents” (Clark & Clark, 1993, p. 449). “The junior high schools in 1952 were housing one and one-half million children or approximately 40 times as many as they did in 1920” (Greer, 1956, p. 89). Like the American high school, the junior high school had critics. In the late 1950s and early 1960s, there was a growing concern that the junior high school was not fulfilling its promise (Clark & Clark, 1993, p. 450). Regen (1967) posited that the junior high school had an identity crisis. From the beginning, “the mission of the junior high was diffuse” (Cuban, 1992, p. 230). In 1956, Greer stated, “Although the American junior high school is almost 50 years old, it is still in the developmental stage. Even now, educators are not always in agreement regarding its specific functions or goals” (Greer, 1956, p. 87). The junior high was designed to be a “miniature high school” (Clark & Clark, 1993, p. 450). Junior high schools “went from dropout preventing, job market preparing, adolescent saving institutions to miniature high schools heavily criticized for improperly educating teenagers” (Cuban, 1992, p. 230). “While these schools claimed to serve as a bridge from elementary to high school studies, few of them actually did” (Heller, Calderon, & Medrich, 2003, p. 2). Greer (1956) asserted, most of the junior high schools “are far from ideal” (p. 93). In an effort to support the junior high and its ongoing efforts to support students in between the elementary school and high school years, Hunt (1961) declared, “The junior high is here to stay” (p. 393)!

## **The American Middle School**

The core idea of the middle school is generally traced to a speech given by William Alexander, the Father of the Middle School, at a conference at Cornell University in 1963 (Meyer, 2011). In his critique of the American junior high school, Alexander said,

The general adoption by junior high schools of the schedule, the activity program, and the organization of the high school attests to the dominance of the idea that the bridge was fundamentally a vestibule added at the front door of the high school (North Carolina Association for Middle Level Education, 2012).

Alexander (1968) defined a middle school as “a school having at least three grades and not more than five grades, and including at least grades six and seven” (p. 1). Regen (1967) predicted that “The adjustment from a junior high to middle school philosophy will be a painless one” (p. 151). By the end of the 1960s, Alexander and Kealy (1969) declared,

We are witnessing a major reorganization of the middle years of our educational ladder.

The middle school movement is reaching bandwagon proportions and it seems inevitable that the remaining junior high schools soon will be challenged to change to middle schools or at least to adopt some of the middle school concepts (p. 151).

Madon (1966) described the middle school philosophy:

It is not a high school in miniature, nor is there an attempt to pattern the program in this way. Rather, it is one of trying to develop a curriculum around the child, recognizing that his needs are special at this age, that they require a special knowledge and understanding, and that, while similar to some previous aspects, this is a new experience, one of transition accompanied by marked physical and intellectual changes which, in turn, affect the social and emotional responses of the child (p. 330).

In 1973, the National Middle School Association was founded. *This We Believe* was published by the National Middle School Association and it outlined the essential features of a developmentally appropriate middle school. “It is interesting to note the similarity in the rationale of the emergent middle school and the basic concepts underlying the junior high school movement earlier in the century” (Alexander & Kealy, 1969, p. 151). An emerging middle school philosophy focused on the social and emotional side of becoming a teenager and integrated this approach with the traditional content that was taught in high schools.

The middle school philosophy was understood, but the middle school seemed to lack an identity. “It appears that many middle schools have adopted the educational programs and practices of junior highs, thus not successfully achieving the middle school concept” (Gatewood & Dilig, 1975, pp. 3-4). Yecke (2005) wrote, “Other than asserting that the middle school should be very different from the traditional junior high school, the movement struggled to establish its identity and creed” (p. 9).

One of the biggest criticisms of the middle school has been a perceived lack of academic rigor. In *Mayhem in the Middle*, Yecke (2005) wrote, American middle schools have become places “where academic achievement goes to die” (p. 1). In early 1998, an *Education Week* article described the middle school movement. “Thirty years after districts began shifting away from junior versions of the high school, the middle school model has come under attack for supplanting academic rigor with a focus on students’ social, emotional, and physical needs” (Bradley, 1988, p. 38). Middle schools played an important role in preparation for high school, according to some researchers. Bottoms and Timberlake (2006) wrote, “If middle grades students are better prepared academically to begin high school, they are less likely to fail ninth-grade and drop out” (p. ii). While it is critically important to prepare students for high school,

critics of the middle school movement asserted that the middle school curriculum did not focus on academics and high school preparation. “The middle school movement advances the notion that academic achievement should take a back seat to such ends as self-exploration, socialization, and group learning” (Yecke, 2005, p. ii). Assessment data pointed to the fact that academic achievement was lacking in middle schools across the United States. “In 1995, American fourth graders scored at the international average on the Third International Mathematics and Science Study (TIMSS) assessment of math. Four years later, the same students were 22 points below the international average” (Yecke, 2005, p. i).

Advocates for middle schools stated, “Middle level schools are less understood than elementary or high schools” (NASSP, 1987, p. 1). The middle school movement gained momentum in the 1980s. “In the 1980s, reformers endorsed a new middle school ‘concept’ intended to change the traditional junior high school to create an educational experience more appropriate for young adolescents” (RAND, 2004, p. 1). Most school districts in the United States shifted from junior high schools to middle schools.

During the 30-year history of the middle school movement, educators have been on a quest to establish an appropriate and effective education for young adolescents. Among the many components of middle school organization, four stand out: grade configuration, interdisciplinary teaming, scheduling, and specialized programs” (Thompson & Homestead, 2005, p. 1)

An implementation dip often accompanies change and new curriculum in schools. “The continuing lackluster performance of middle schools might also be explained, in part, by inadequate implementation of the middle school concept” (RAND, 2004, p. 2). Throughout the

1980's and 1990's, "Many middle level educators and parents are [were] asking, 'What is wrong with our school'" (Arth et al., 2004, p. 38)? The middle school has been labeled

'the weak link in American education,' primarily by those who believe the middle school's primary responsibility is to prepare students for advanced high school courses, and who presume that the school's concern for students as persons takes away from its academic responsibilities. The general public's perception, based largely on newspaper stories, that the middle school has been a failure is the result of the inability or unwillingness of critics to recognize the difference between the 'middle school concept' and 'the middle school' as it is commonly practiced. (Lounsbury, 2009, p. 32)

While middle school buildings exist, the middle school philosophy is often misunderstood among teachers, administrators, and families. In 2004, nearly nine million students attended "public 'middle schools' – schools that serve as an intermediary phase between elementary school and high school, typically consisting of grades 6-8" (RAND, 2004, p. 1).

Have the middle schools failed to produce students who are high school ready? Jackson and Davis (2000), authors of the influential *Turning Points 2000*, refuted the notion that the middle school has failed and, instead, optimistically claimed, "Far from having failed, middle grades education is ripe for a great leap forward" (p. 17). "In hundreds of middle schools around the country, the middle school concept is in practice to a significant degree, and in those communities, parents are more than pleased with the education their children receive" (Lounsbury, 2009, p. 33). Research on the middle school movement shows proponents for the middle school philosophy and critics, who claim that a middle school education is not rigorous.

In 1967, Regen wrote, "The grade alignment of 7-8-9, better known as a junior high school, is now dead. It died for want of identity" (p. 150). The aim of the middle school

movement was to change education during the middle level years. One of the top goals of the middle school movement was to offer more rigor than an elementary school experience and to serve as a bridge to more difficult high school curriculum.

The middle school years represent a critical time for young teens. Middle schools have been blamed for the increase in student behavior problems and cited as the cause of teens' alienation, disengagement from school, and low achievement. (RAND, 2004, p. 1)

Cuban (1992) described the middle school movement as "a mild latter-day reform of the junior high that, again, has yet to escape the shadow of the high school" (p. 249). The middle school philosophy has been touted by professional organizations such as the Association for Middle Level Education (AMLE), formerly known as the National Middle School Association. Middle schoolism is an ideology, whose "proponents view the purpose of schools as putting children in touch with their political, social, and psychological selves, eschewing competition and individual achievement, and focusing on identity development and societal needs" (Yecke, 2005, p. ii).

Some middle schools still operate like a traditional junior high school, or a mini high school, while others within the same school district attempt to implement the middle school philosophy outlined by the AMLE. One of the key struggles throughout the middle level years has been whether teachers are preparing students for high school or careers. A SREB report highlighted, "In general, SREB (2011b, p. 4) states have not clearly defined what it means for students to be ready at the end of the eighth grade to begin challenging high school courses".

Does college and career readiness begin in middle school? A common thread between the junior high movement and the middle school concept has been high school readiness. With the movement towards college and career readiness in the United States, the middle grades may

have a renewed purpose. “College and career readiness is not something that suddenly happens when a student graduates from high school but instead is the result of a process extending through all the years of a student’s education” (ACT, 2008, p. 3).

### **Uses of Indicators in Organizational Settings**

The idea of using leading and lagging indicators to measure the health of an organization was introduced by Robert Kaplan and David Norton (1993). The premise behind their theory is that lagging indicators will tell you nothing about how the outcomes were achieved, in the absence of leading indicators. Leading indicators provide early warnings about being on track to achieve your strategic goals. Lagging indicators measure what has already taken place. Leading indicators reflect those processes and actions one has not yet achieved but would like to achieve in order to be successful. “American businesses have long practiced data-driven decision-making, an approach that must be embraced by the education system” (Alliance for Excellent Education, Civic Enterprises, and the Data Quality Campaign, 2011, p. 16). Leading indicators is a term that originated in economic theory, but “leading indicators may be more useful in fields such as education or public health, in which growth is not necessarily cyclical” (Foley, Mishook, Thompson, Kubiak, Supovitz, & Rhude-Faust, 2008, p. 2).

The emerging work regarding on- and off- track indicators shows that in order for all students to graduate college and career ready, several key transitions must be navigated and students who struggle with them are thrown off the graduation path. In the elementary grades, it is critical for students to master key academic skills that provide the foundation for future learning. The emerging evidence indicates that chronic absenteeism in the early grades inhibits this, and hence consistently attending school from kindergarten forward matters. (Bruce, Bridgeland, Fox, & Balfanz, 2011, p. 13)

“Data can be powerful, serving as both a flashlight and a motivator. Identifying certain indicators as important enough to be defined, secured, and reported publicly raises their visibility and focuses attention on improving them (Pinkus, 2009, p. 3).

### **“On-Track” Indicators**

Recently, policymakers, educators, and national education organizations have called for a shift from increasing high school graduation rates to a new goal of College and Career Readiness for all students graduating from high school (Achieve and The Education Trust, 2008; ACT, 2008; Alliance for Excellent Education, 2009; Career Readiness Partner Council, 2010; Common Core State Standards, 2010; ConnectEd, 2012; Council of Chief State School Officers, 2013; National Governors Association, 2010; North Carolina Chamber of Commerce, 2013; Partnership for 21<sup>st</sup> Century Skills, 2006; The White House, 2010; United States Department of Education, 2010). According to the National Governors Association (2012), “There is a national consensus that schools should focus on students’ college and career readiness” (p. 3). If teachers and administrators are going to attempt to prepare all high school students to become College and career ready by the end of the K-12 experience, then schools and school districts will need early warning indicators, or a ‘check-engine light’ (Pinkus, 2009), to identify which students are on-track. According to Conley (2007), “Children from low-income families are particularly vulnerable to a system that does not send clear signals to students on how ready they are for college” (p. 10).

This dissertation analyzed the potential impact of On-Track Indicators and the ability of progress indicators to provide reliable data on each student. Education leaders can gather data that is currently available in most school districts and use the data to inform and plan systematic

changes which support college and career readiness, the new goal for secondary education (Roderick et al., 2009).

In a report titled *What Matters Most for Staying On-Track and Graduating in Chicago Public High Schools*, Allensworth and Easton (2007) determined that an On-Track ninth grade student can be determined by analyzing the number of credits earned and the number of Fs in high school core subjects. Allensworth and Easton (2007) shared how the Consortium on Chicago School Research at the University of Chicago studied high school freshmen and used these indicators to create the *On-Track Indicator* as a predictor of high school graduation. “Addressing freshman on-track rates should be a priority for schools working to improve graduation rates” (Allensworth & Easton, 2007, p. 18). One of the current barriers to measuring College and career readiness is the fact that “most high schools are rated on only two measures: graduation rates and student scores on basic skills tests given in a single year” (Aldeman, 2010, p. 1). According to the National Governors Association (2009), educators need timely data reports in order to determine whether students are on-track for college enrollment.

An educational indicator is a statistic about the educational system that reveals something about its performance or health. Like the odometer, speedometer, temperature, and fuel gauges in a car, educational indicators provide essential information about the system’s current functioning, suggest whether good progress is being made, and warn of potential problems. (Oakes, 1986, p. 1)

Traditional indicators of student achievement in American public schools include grades, test scores, behavior reports, graduation rates, and school climate. In recent years, state departments of education and local school districts have made reports more accessible to parents, students, community members, and policymakers. As public schools continue to move towards a

philosophy that all students should graduate college and career ready, Conley (2007) suggests, “Students need to understand what it means to be college-ready. They need to understand what they must do as well as what the system requires or expects of them” (p. 28).

In an era of rising college and workplace requirements, completing a quality high school education is more important than ever before. Students cannot be expected to exceed in rigorous high school studies if they do not receive adequate preparation before entering the ninth grade. Middle grades schools are responsible for preparing students for an accelerated high school curriculum that opens, rather than closes, doors to further education and careers. (Bottoms & Timberlake, 2008, p. 1)

Roderick et al. (2009) concluded that teachers and administrators cannot focus on the goal of college readiness if they do not have a strong data system and clear indicators of what it means for a student to be college ready. “Timely indicators are hugely important if institutional leaders are to know whether things are on track or off track – before it’s too late” (Offenstein, Moore, & Shulock, 2010, p. 1). Indicator systems are used in aviation, banking, restaurants, sales, and in medical professions (Kowal & Ableidinger, 2011). Indicators provide warning lights or alerts when a system is off-track or when a procedure may not be working. Goals are set and monitored in non-educational settings using an indicator system. “Decisions about what specific features of the educational system should be measured with indicators depends largely on what we want our school system to achieve” (Oakes, 1986, p. 32). Oakes recommended that the indicators selected should align with what we want our school system to achieve. College and career readiness is the new goal for students and indicators need to be identified prior to the twelfth grade year. While Americans want outputs from the education system, there is a need for academic and non-academic indicators that help predict and determine outputs such as high

school readiness. According to Porter (1991), “a system of school process indicators is needed to provide descriptions of educational opportunity, to monitor reform, and to explain outputs” (p. 13).

### **Early Warning Systems**

There is a need for early warning systems that identify students who may be off-track and may be at risk for success in high school and beyond (ACT, 2008; Allensworth & Easton, 2007; Balfanz, 2009; Foley, 2010; Greene & Winters, 2005; Heppen & Therriault, 2008; Mishook, Foley, Thompson, & Kubiak, 2008; Neild & Balfanz, 2006; Neild, Balfanz, & Herzog, 2007; Pinkus, 2009; Roderick et al., 2009; Westover & Hatton, 2011). “Accurately measuring and diagnosing college readiness is the first step to helping a greater number of students achieve college readiness” (Wiley et al., 2010, p. 14).

Early Warning Indicator and Intervention System (EWS) use ‘real time’ or ‘near real time’ data to identify students who are off track, so that educators can appropriately support them in advancing from grade to grade, and eventually in graduating from high school with their class. (Bruce, Bridgeland, Fox, & Balfanz, 2011, p. 1)

Indicators serve as an ‘early warning system’, alerting educators and policymakers in time to intervene and provide additional support to students (Oakes, 1986). Indicators should be “actionable at the school level, meaning that school leaders, teachers, and staff can use them to make changes that will have a demonstrable impact on student outcomes” (Pinkus, 2009, p. 5).

While standardized test scores are currently the main indicator used in K-12 education, the scores arrive too late to support the students and teachers – making the scores lagging indicators (Mishook et al., 2008). “Leading indicators in education, as in economics, signal early progress – or lack of it – in academic achievement while there is still time to intervene and provide

supports” (Foley, 2010, p. 1). Collecting information only on lagging indicators is like “playing the game with the scoreboard off. When the buzzer sounds at the end of the game, you flip the scoreboard on and say, ‘Wait a minute. I thought we were ahead’” (Foley, Mishook, Thompson, Kubiak, Supovitz, & Rhude-Faust, 2008, p. 3). Educators can use existing data, available at the school level, to make strategic decisions about student learning (Allensworth & Easton, 2005; Balfanz, 2009; Foley, 2010; Heppen & Therriault, 2008; Roderick et al., 2009).

Early Warning Indicator and Intervention Systems (EWS) are an evolving strategic response to one of our nation’s most pressing challenges: enabling all students to stay on track to graduate from high school ready for college and career. In an era of data-driven education reform, EWS are at the cutting edge. (Bruce et al., 2011, p. 1)

Data could be used to identify trends among students, enabling educators to intervene with those who are likely to leave the education system unless they are effectively supported. From an initial focus on dropout prevention, EWS are rapidly evolving toward even broader usage, with emergent efforts underway to examine and ultimately integrate both school readiness indicators at the start of student’s schooling, and college and career readiness indicators during K-12 schooling. (Bruce et al., 2011, p. 1)

According to a recent report on Early Warning Systems, “In an increasingly competitive global workforce, we need all the tools available—including Early Warning Indicator and Intervention Systems—to keep students on track for success” (Bruce et al., 2011, p. 53).

### **Measuring College Readiness at the Local Level: Developing Early Warning Systems**

Educators, policymakers, business leaders, and stakeholders have embraced the idea of college and career readiness as the new goal for all students (Pinkus, 2009). “The value of using Early Warning Systems (EWS) is just beginning to be recognized as a key to how schools,

students, educators, and communities can use data to help children achieve their dreams” (Bruce et al., 2011, p. 9).

Researchers have indicated that the next step for Early Warning Indicators (EWS) is to align college and career readiness efforts with EWS (Bruce et al., 2011, p. 7). They concluded that educators should “drive attention to the later elementary, middle, and ninth grades” (Bruce et al., 2011, p. 7).

It is useful to have a *check-engine light* identifying when a student is off-track for high school graduation (Pinkus, 2009). Several reports have highlighted that academic characteristics, especially GPA and course failures, are the strongest predictors of high school completion (Allensworth & Easton, 2005; National Research Council and National Academy of Education, 2011; Neild & Balfanz, 2006). “Leading indicators for education exist and are being used to differentiate instruction and improve outcomes for students” (Foley, Mishook, Thompson, Kubiak, Supovitz, & Rhude-Faust, 2008, p. 22).

If teachers and administrators desire to impact student achievement, they must analyze the effectiveness of the school’s inputs and outputs. When educators focus exclusively on outputs, there is a temptation to shift the blame for academic failure and poor performance to students, families, communities, poverty, lack of community support and other variables which teachers and administrators cannot control. According to Porter (1991), a system of school process indicators is needed to provide descriptions of educational opportunity; to monitor reform and to explain student outputs (p. 13). “When amassed at the school level, this information can be used to understand the nature of academic problems in low-graduation high schools, unearth systemic weaknesses, and guide education leaders’ efforts to address them head on” (Pinkus, 2009, p. 6). Marzano (2000) concluded, “If a school can simply identify those

variables on which it is not performing well, it can pinpoint and receive the information it needs to improve student achievement” (p. 87).

Since high school graduation is the goal of K-12 education in the United States, teachers and administrators must determine the inputs, which support students earning a high school diploma, and monitor those inputs on a regular basis. The role of educators should be to identify the specific barriers each student faces and examine how to remove the barrier or offer additional support to the student. In the absence of clear indicators, educators may continue to have a narrow focus on testing data and annual reports. The danger in focusing on outcome measures is that most educators feel powerless to impact change.

When determining which indicators to measure, school staff should identify indicators that are actionable, meaning that educators can use the data to make changes that will have a demonstrable impact on student outcomes (Pinkus, 2009). “At the student level, post-secondary readiness measures can help students and their parents understand whether they are on track to meet their goals” (Pinkus, 2009, p. 9). A research study titled, *The Forgotten Middle: Ensuring that All Students Are on Target for College and Career Readiness before High School* (2008) determined,

If we want not merely to improve but to maximize the college and career readiness of U.S. students, we need to intervene not only during high school but also before high school, in the upper elementary grades and in middle school. (ACT, 2008, p. 2)

According to Wimberly and Noeth (2005), “It is up to educational leaders and policymakers to help make college readiness a reality for all students” (p. 20). By using state school-level aggregated data and student-level data systems to identify school failure early on, “it is possible to not only target and tailor school interventions, but also identify students likely to be

retained in ninth grade years before they arrive in high school” (West, 2009, p. 19). The studies described in this section highlight recent attempts to monitor academic progress and to identify students who may be off-track for high school graduation.

### **The On-Track Indicator**

In a study conducted in Chicago Public Schools, the Consortium on Chicago School Research developed an ‘On-Track Indicator’ which is highly predictive of whether a student will eventually graduate from high school. Allensworth and Easton (2005) described on-track students as “students who have completed enough credits by the end of the school year to be promoted to tenth grade, and have failed no more than one semester of a core subject area” (p. 1). In addition researchers tracked student grades and absences, in an effort to determine barriers to student achievement. One of the weaknesses of the ‘On-Track Indicator’ is that students who are on-track for graduation are not necessarily college and career ready upon graduation. However, “students who are on-track at the end of their freshman year are more than three and one-half times more likely to graduate in four years than off-track students”(Allensworth & Easton, 2005, p. 18). Allensworth and Easton (2005) concluded, “Addressing freshman on-track rates should be a priority for schools working to improve graduation rates (p. 18).

In *What Matters for Staying On-Track and Graduating in Chicago Public Schools: A Focus on Students with Disabilities*, The Consortium on Chicago School Research utilized the ‘On-Track Indicator’ and found that the indicator is “equally or more predictive of graduation for students with disabilities” (Gwynne, Lesnick, Hart, & Allensworth, 2009, p. 22). The study also found that students who begin high school two or more years below grade level need additional attention from educators, researchers, and student support services. While the ‘On-Track Indicator’ measures if a student is on-track for high school graduation at the end of the ninth

grade there may need to be similar studies conducted prior to high school. Middle schools produce 100% of high school graduates and non-graduates. It seems logical that school districts would want an indicator system prior to the ninth grade to identify which students are off-track for graduating college and career ready. Under the No Child Left Behind (NCLB) Act (2001), a series of high-stakes assessments were given to students. The NCLB Act (2001) created an educational system where the indicators of a strong school are test scores and Adequate Yearly Progress (AYP) (Darling-Hammond, 2010; Moss et al., 2008; Scherff & Piazza, 2009). Wagner (2008) declared, across the United States, schools are “succeeding at making adequately yearly progress, but failing our students” (p. 23). Middle school students often struggle with academics and/or behavior and enter high school unprepared to succeed. “Without successful intervention strategies and programs in the middle grades, it is often too late for high school programs to make much difference in retaining struggling students and guiding them toward graduation” (SREB, 2009, p. 1).

### **Middle School Off-Track Indicators**

Until we transform high schools and the middle schools where a large number of students fall off the path to high school graduation, “the nation will not achieve its goal of graduating all its students from high school prepared for college, career, and civic life” (Balfanz, 2009, p. 13). Researchers from the Everyone Graduates Center found that more than 50% of the dropouts in Philadelphia Public Schools could be identified in the eighth grade using three indicators:

1. failing mathematics in eighth grade
2. failing English in eighth grade, and
3. attending school less than 80% of the time.

Balfanz monitored the ABCs (Attendance, Behavior, and Course Failures) in middle schools. His research found that “School districts with low graduation rates usually have significant – and often unrecognized – chronic absenteeism in the middle grades” (Balfanz, 2009). A study conducted by Balfanz and Herzog (2005) in Philadelphia Public Schools found that more than half of sixth graders with the following three criteria eventually left school:

- attended school less than 80% of the time,
- received a poor final grade from their teachers in behavior, and
- were failing either math or English.

Students face several key transition points as they progress from kindergarten through high school graduation (Neild, 2009). “College and career readiness is a process, not a point in time” (ACT, 2008, p. 37). Leading indicators

Enable education leaders, especially at the central office level in a school district, to make more strategic and less reactive decisions about services and supports to improve student learning. These indicators are a way of viewing and using data to inform systemwide decisions about education. (Foley, Mishook, Thompson, Kubiak, Supovitz, & Rhude-Faust, 2008, p. 2)

Employers have declared that the modern workforce is full of employees who made good grades in high school, but they struggle to succeed as employees. “Millions of young people are out of school and grossly ill-equipped to compete in the 21<sup>st</sup> century workforce” (Association for Career and Technical Education, 2006, p. 2). Waiting to measure students’ skills on a high school exit exam or graduation project seems like setting students up for failure. According to Williams, Rosin, and Kirst (2011), “The ability of middle grade schools to get more students high school-ready is an essential step in ensuring that students graduate from high school

college- and work-ready” (p. 4). Research has found that middle grades students demonstrate at-risk factors. “The research indicates that eighth-grade academic achievement and being on target for college and career readiness in eighth grade have a significant impact on students’ ability to become college and career ready by the end of high school” (Westover & Hatton, 2011, p. 1). Currently, most schools in the United States rely on grade point average (GPA), ACT Score or SAT Score, class rank, student leadership, community service, and citizenship to determine which students receive college scholarships. Very few high schools are currently analyzing eighth grade data to inform high school readiness. A student who is high school ready is prepared to enter high school equipped to pass the coursework required to earn a high school diploma. High school readiness is an important bridge to college and career readiness.

“The middle grades are make-or-break years in students’ journey toward high school graduation, college and career readiness” (SREB, 2011a, p. 21). If school leaders seek to increase the number of students graduating college and career ready, then an indicator system should be developed to support high school readiness. School leaders often focus on data which analyzes content knowledge. College freshmen and entry-level employees need content knowledge and skills, which are not currently measured on standardized tests. “Students who leave eighth grade without the essential skills they need to be on target for college and career readiness too often leave high school not ready for any kind of meaningful future” (ACT, 2008, p. 3). A focus on college and career readiness must not overlook the importance of the middle school years.

Middle grades are the vital center – the make or break point – of our K-12 public school system. If we do not cultivate confident, willing learners in the sixth, seventh, and eighth grades and give them a rock-solid foundation of skills and knowledge, hundreds of

thousands of young people will go on to falter in high school, college and careers.  
(SREB, 2011a, p. i)

West (2009) concluded, “By adding newly available state school-level aggregated data and using student-level data systems to identify school failure early on, it is possible to not only target and tailor school interventions, but also identify students likely to be retained in ninth grade years before they arrive in high school” (p. 19).

### **Middle School Indicators Explained**

Balfanz (2009) concluded, educators need to “Drive down the number of students exhibiting off-track indicators and drive up the number of students exhibiting on-track indicators” (p. 6). Students who underperform in the middle grades tend to find it extremely difficult to make a successful transition to high school-level studies (Cooney & Bottoms, 2002). “Of those students who have multiple risk factors in the eighth grade, only 60% graduate from high school on time” (Heller, Calderon, & Medrich, 2003, p. 10).

### **Attendance**

Balfanz (2009) monitored the ABCs (Attendance, Behavior, and Course Failures) in middle schools. His research indicated that “school districts with low graduation rates usually have significant – and often unrecognized – chronic absenteeism in the middle grades” (Balfanz, 2009). Research in Philadelphia indicated that approximately 50% of the students who eventually dropped out of school could be identified before entering high school, using indicators such as poor grades, attendance, or both (Neild, 2009). “Excused or not, absence from school or classes hampers a student’s opportunity to learn. Not surprisingly, absenteeism, cutting classes, and truancy all have been found to be highly correlated with dropping out” (Pinkus, 2009, p. 6).

“Attendance data can be used at the school level to guide both preventive and responsive strategies to low attendance” (Pinkus, 2009, p. 6).

### **Behavior**

“Students in Philadelphia who in sixth grade failed either a math or English course, had an attendance rate of under 80%, or had a final ‘unsatisfactory’ behavior mark in at least one class had at least a 75% chance of dropping out of high school” (Pinkus, 2009, p. 2). Four indicators used by the Philadelphia Education Fund and the School District of Philadelphia were poor attendance, poor behavior marks, a failing grade in math, or a failing grade in English” (Pinkus, 2009, p. 6). The indicators were highly effective in identifying the majority of sixth graders who were off-track for graduation.

### **Course Failure**

Several reports have highlighted that academic characteristics, especially GPA and course failures, are the strongest predictors of high school completion” (Allensworth & Easton, 2005; National Research Council and National Academy of Education, 2011; Neild & Balfanz, 2006). Ninth grade course failure is “driven by students’ lack of intermediate academic skills, weak reading comprehension and fluency abilities, and underdeveloped mathematical knowledge” (Balfanz & Legters, 2004, p. 23). In addition researchers tracked student grades and absences, in an effort to determine barriers to student achievement. By using state school-level aggregated data and student-level data systems to identify school failure early on, “it is possible to not only target and tailor school interventions, but also identify students likely to be retained in ninth grade years before they arrive in high school” (West, 2009, p. 19). Table 1 outlines the non-promotion rate for North Carolina students between 2006-2013. The data are consistent with previous research conducted by Allensworth and Easton (2005), Balfanz (2009), and SREB

Table 1

*Non-Promotion Rate Data – Class of 2013 (Cohort Data from 2006-2013)*

Date	Grade Level	Enrollment	Non-Promotion
2006-2007	6	109,350	2,540
2007-2008	7	110,355	2,617
2008-2009	8	109,990	2,791
2009-2010	9	129,943	14,814
2010-2011	10	112,148	7,748
2011-2012	11	102,685	5,132
2012-2013	12	93,096	2,636

*Note.* The year that the most students were identified as ‘non-promotion’ was the ninth grade year. Source: North Carolina Department of Public Instruction. Statistical Profile. Retrieved from <http://www.ncpublicschools.org/fbs/resources/data>.

(2011a). This statewide data provides additional evidence that high school readiness may be a critical component to college and career readiness. If additional progress indicators could be identified, it is possible that more students would enter the ninth grade prepared to succeed. If educators are going to increase high school graduation rates and make the shift to college and career readiness for all students, then school leaders will need timely data in order to determine which students are on the path to college enrollment (National Governors Association, 2009).

### **Extracurricular Participation**

Research conducted by Youniss and Yates (1997) explained how participating in extracurricular activities helps students develop their talents and skills, learn about different jobs, establish relationships with school personnel, and gather postsecondary and career planning information. In an article titled, *Are Graduates Ready to Work*, Bendt (2008) explains how students can learn the soft skills needed for the workforce through participation in extracurricular activities. In addition to the importance of academic skills such as reading, writing, and communication, employers are seeking graduates with soft skills such as attendance, teamwork and collaboration, and work habits (National Association of Manufacturers, 2005).

In a study titled, *Are They Really Ready to Work: Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21<sup>st</sup> Century U.S. Workforce* (Casner-Lotto, Barrington, & Wright, 2006), employers listed professionalism, teamwork, oral communications, ethics & social responsibility, and reading comprehension as the skills needed for success in the workforce. According to a survey conducted by the National Association of Manufacturers (2001), inadequate basic employability skills (attendance, timeliness, work ethic), inadequate reading/writing skills, and inability to work in a team environment were cited as the most common reasons companies reject applicants as hourly production workers. "Organizations in

the United States and around the world are finding themselves ill-equipped to compete in the 21st-century economy. The reason: too many workers lack the right skills to help their employers grow and succeed” (Homer & Griffin, 2006, p. 4).

### **Number of Students Reading Below Grade Level**

High school teachers and administrators have traditionally analyzed grades from middle school English Language Arts and mathematics as a determining factor for placement in standard-level or honors courses at the high school. Grades have not always provided a consistent indicator of a student’s preparation for high school. Without sufficient preparation before high school, students cannot succeed at the high school level in English, mathematics, and reading (Greene & Winters 2005; SREB, 2009; Westover & Hatton, 2011). A student’s reading ability or current reading level should not be overlooked during the transition between middle school and high school. Ninth grade course failure is “driven by students’ lack of intermediate academic skills, weak reading comprehension and fluency abilities, and underdeveloped mathematical knowledge” (Balfanz & Legters, 2004, p. 23). A leading indicator in identifying college and career readiness in the middle schools could be the number of students reading below grade level. The Association for Career and Technical Education (ACTE, 2006) recommends, “All students need a strong arsenal of reading, comprehension, reasoning, problem-solving and personal skills to be ready for the world of meaningful postsecondary education and training as well as entry into the high-skilled workplace” (p. 1). In the absence of a leading indicator, school staff may be focused on the wrong data. The Alliance for Excellent Education (2009) found that “Seventy percent of students enter ninth grade reading below grade level, significantly hampering their ability to succeed in high school courses and in life after graduation” (p. 10). This data cannot be overlooked when determining how an indicator system

could support the goal of increasing the number of students who graduate college and career ready.

### **Over Age Students**

In a study of middle school students conducted in Baltimore City Schools, being over age for a grade was the single strongest predictor of non-graduation (Baltimore Education Research Consortium, 2011).

### **High School Readiness**

Determining if a student is college and career ready is a process that begins prior to high school. Middle grades students “need to be prepared for high school and beyond using the best evidence currently available” (Heller, Calderon, & Medrich, 2003, p. 11). Data are available at the middle school level to make strategic decisions about student learning (Allensworth & Easton, 2005; Balfanz, 2009; Foley, 2010; Heppen & Therriault, 2008; Roderick et al., 2009). “Evidence is growing that students who fall off track during the freshman year have very low odds of earning a high school diploma” (Neild, 2009, p. 55). Research in Philadelphia indicated that approximately 50 percent of the students who eventually dropped out of school could be identified before entering high school, using indicators such as poor grades, attendance, or both (Neild, 2009). In *College and Career Ready: Helping All Students Succeed Beyond High School*, Conley (2010) wrote, “The challenge is not simply to get students into postsecondary programs....It is to prepare them to succeed.....not simply to complete high school” (p. 14).

The goal of the American high school has changed from sorting and selecting to preparing all students for postsecondary opportunities (Alliance for Excellent Education, Civic Enterprises, & the Data Quality Campaign, 2011; Conley, 2007; National Governors Association, Council of Chief State School Officers, & Achieve, 2008; SREB, 2010; Wiley et

al., 2010). “The goal of college and career readiness for all high school graduates is no longer a radical reform idea promulgated by a handful of states: It has emerged as the new norm throughout the nation” (Achieve, 2010, p. 23).

Eighth-grade students who are not on target for college and career readiness face severe academic obstacles in high school and are substantially more likely to be unprepared for college and career when they graduate than students who are on target to become ready for college and career in the eighth grade. The best middle grades students continue to excel in high school, while students who enter high school with below-grade-level skills — often low-income and minority students — continue to fall further and further behind. (ACT, 2008)

Early Warning Indicator and Intervention Systems (EWS) are an evolving strategic response to one of our nation’s most pressing challenges: enabling all students to stay on track to graduate from high school ready for college and career. In an era of data-driven education reform, EWS are at the cutting edge. (Bruce et al., 2011, p. 1)

Throughout the twentieth century, educators, policymakers, citizens, and courts debated whether the goal of high school was to prepare students for college, the workforce, or both (Angus & Mirel, 1999; *Brown v. Board of Education of Topeka*, 1954; Cardinal Principles of Secondary Education, 1918; Caswell, 1946; Conant, 1959; Thorndike, 1906; Tyack & Cuban, 1995). For the past century, the goal of the American high school was to prepare the majority of students for the workforce and a small number of students for colleges or universities. “The goal of college and career readiness for all high school graduates is no longer a radical reform idea promulgated by a handful of states: It has emerged as the new norm throughout the nation” (Achieve, 2010, p. 23). College *and* career readiness is the idea that all students are educated in

a manner, which prepares them for college and a career. Tracking systems, counseling students into a career-focused course pathway, and having lower expectations for students who are non-college bound will look different in high schools who claim to graduate students who are college and career ready. Readiness is not a point in a student's K-12 learning experience. A student cannot graduate college and career ready, unless the K-12 system determines what a middle school student should know and be able to do. The Common Core State Standards were recently adopted by over 45 states. The Common Core State Standards, adopted by the National Governors Association, emphasize college and career readiness. "No longer an end point in the public education system, the American high school is now being asked to prepare all its students for the postsecondary schooling and training required for full economic and social participation in U.S. society" (Balfanz, 2009, p. 18).

On-track indicators or an Early Warning System will allow school leaders to support students during the middle school years. The new goal is to prepare all students for college and career readiness, rather than a small percentage. This study analyzed the potential impact of On-Track Indicators and the ability of progress indicators to provide reliable data on each student. Educational leaders can gather data that are currently available in most school districts and use the data to inform and plan systematic changes which support college and career readiness, the new goal for secondary education (Kowal & Ableidinger, 2011; Roderick et al., 2009).

Schools and school districts need a set of progress indicators that can provide a snapshot or warning light regarding high school readiness, which could support college and career readiness. While the goal of the American high school is college and career readiness, clarity about the phrase is lacking. College and career readiness involves more than a single indicator. This study analyzed multiple progress indicators which could support educators as they prepare

students for high school. While the high school graduation rate, college freshmen admission rates, number of students employed out of high school, and the number of high school graduates enrolled in remedial courses are strong indicators of a school district's efforts to prepare students for college and career readiness, each is an example of a lagging indicator. Preparing students to graduate college and career ready may require a High School Readiness Index, or leading indicators, that determine when students are off-track for high school. Middle schools can be a 'launching pad' (Balfanz, 2009) for college and career readiness. Organizing school data in a manner that is easy to understand and allows educators to make timely decisions is one way that middle school educators can support the goal of college and career readiness for each student. "The debate about whether high school is for job training or college prep is over. All adults in the school community, including parents, faculty, and business leaders, understand that the school's mission is focused on college and career readiness for all" (Conley & McGaughy, 2012). If K-12 educators are asked to prepare students for college and career readiness, then tools need to be identified to support the transition from middle school to high school.

Chapter 2 included a review of the current literature related to this study. Themes from the literature included: college and career readiness, early warning systems, on-track indicators, soft skills, and high school readiness. This literature review gives a thorough analysis of the changing goals of the American high school, junior high school, and middle school, as well as several other major themes. College and career readiness is a goal that has emerged within the past five years. Research from the literature highlighted that the skills a student needs to enter the modern workforce are closely aligned with the skills a student needs to succeed as a freshman at a community college. As the workforce and colleges continue to seek qualified

applicants, American middle schools and high schools will need to develop a way to determine if students are on-track for college and career readiness.

Early warning systems can alert educators and students when a behavior or a skill is off-track. Having a clear understanding of which students are off-track enables educators to provide timely support and interventions. In the absence of an early warning system or High School Readiness Index, students may continue to fall through the cracks and graduate unprepared for college or the workforce. American students will continue to see increased competition for jobs from students who studied in K-12 schools and universities around the globe. Preparing students for college and career readiness is a worthy goal, but most school systems currently do not have a method for measuring if they are preparing students to graduate college and career ready.

Chapter 3 gives a thorough description of the study methodology and design. The chapter outlines the research questions, research design, and includes descriptive data about North Carolina public school students between 2006-2013. This study begins with a cohort of sixth graders from every public middle school in the state of North Carolina in the 2006-2007 school year, and follows the students through high school graduation in 2012-2013. The study analyzed student data sets that are available to researchers through the North Carolina Education Research Data Center at Duke University. The North Carolina Education Research Data Center at Duke University archives statewide data, collected by the North Carolina Department of Public Instruction. This study analyzed multiple variables in an attempt to build upon existing research on preparing students to graduate college and career ready. The emphasis of the study was high school readiness, since college and career readiness begins before high school. This study used the definition of college and career readiness recently adopted by the North Carolina State Board of Education (2015):

In North Carolina, students are considered career and college ready when they have the knowledge and academic preparation needed to enroll and succeed, without the need for remediation, in introductory college credit-bearing courses in English Language Arts and Mathematics within an associate or baccalaureate degree program. These same attributes and levels of achievement are needed for entry into and success in postsecondary workforce education, the military or directly into a job that offers gainful employment and career advancement.

Prior studies have determined that college and career readiness begins before high school and that educators can use longitudinal data to support student achievement (ACT (2008); Allensworth and Easton (2005); Balfanz (2009); Balfanz and Letgers (2004); Conley (2010); SREB (2011a); West (2009); and Williams, Rosin, and Kirst (2011)). Organizing school data in a manner that is easy to understand and allows educators to make timely decisions could empower middle school educators in supporting the goal of high school readiness for each student.

The researcher used simple linear regression models, two-way tables, chi-square test of independence, and analysis of variance to make predictions about the longitudinal data and independent variables collected by the North Carolina Department of Public Instruction. The research questions will carefully review descriptive data about North Carolina public school students between 2006-2013. These analyses used statistical methods, which showed if there is a relationship between the indicator and high school readiness.

This research study examined the reliability of middle school progress indicators and their potential impact on supporting high school readiness, along with college and career readiness.

## **CHAPTER 3: METHODOLOGY**

Chapter 3 describes the methodology for the study and examines data currently collected by school districts in North Carolina and by the North Carolina Department of Public Instruction. Chapter 3 was organized by the following themes: (1) methodology for the study; (2) description of progress indicators collected by the North Carolina Department of Public Instruction; (3) review of research studies that supported this study; (4) high school readiness defined; (4) college and career readiness defined; (5) research questions and hypotheses; (6) overarching research hypotheses; (7) description of North Carolina public schools; (8) descriptive data about North Carolina public schools between 2006-2013; and (9) context of the study.

Public schools in North Carolina collect data on student attendance, test scores, student discipline, longitudinal academic records, and more. While these data are collected annually, teachers, counselors, and administrators do not have a data dashboard or a single place to track indicators in real time. The data may be stored in multiple locations, making it difficult to identify students who are off-track. The methodology outlines the research questions and includes descriptive data about North Carolina public school students between 2006-2013. The study begins with a cohort of sixth graders from every public middle school in the state in the 2006-2007 school year, and follows the group through high school graduation in 2012-2013.

This study analyzed student data sets that are available to researchers through the North Carolina Education Research Data Center at Duke University. The North Carolina Education Research Data Center at Duke University archives statewide data, collected by the North Carolina Department of Public Instruction. The center has received data from the North Carolina Department of Public Instruction on every district, school, teacher, and student in the North Carolina public school system from the mid-1990s to the present. The North Carolina Education

Research Data Center at Duke University has created longitudinal student and teacher databases, which allow researchers to follow students and teachers over time and link their records across files.

The intent of this study was to identify progress indicators that could support the goal of high school readiness, college readiness, and career readiness. There was no risk involved, as the researcher used existing data and will have no direct contact with students, teachers, administrators, or other stakeholders. The data which is archived at The North Carolina Education Research Data Center at Duke University does not contain identifying variables related to student data.

The North Carolina Education Research Data Center can accommodate requests for copies of data sets that currently exist in the Data Center. When a researcher's application for using these data are approved, the North Carolina Education Research Data Center provides access to the requested data through a secure server. The Data Center conducts its activities in strict compliance with the Family Educational Rights and Privacy Act (FERPA).

If educators are going to increase high school graduation rates and make the shift to college and career readiness for all students, then school leaders will need timely data in order to determine whether students are on the path to college enrollment (National Governors Association, 2009). A significant percentage of students will continue to struggle with high school courses until the middle schools begin to measure on-track readiness for high school (SREB, 2004).

The study analyzed student data sets that are available to researchers through the North Carolina Education Research Data Center at Duke University. The North Carolina Education Research Data Center at Duke University archives statewide data, collected by the North

Carolina Department of Public Instruction. This study analyzed multiple variables in an attempt to build upon existing research on preparing students to graduate college and career ready. The emphasis of the study was high school readiness, since college and career readiness begins before high school. This study used the definition of college and career readiness recently adopted by the North Carolina State Board of Education (2015):

In North Carolina, students are considered career and college ready when they have the knowledge and academic preparation needed to enroll and succeed, without the need for remediation, in introductory college credit-bearing courses in English Language Arts and Mathematics within an associate or baccalaureate degree program. These same attributes and levels of achievement are needed for entry into and success in postsecondary workforce education, the military or directly into a job that offers gainful employment and career advancement.

### **Description of Statistical Methods**

The researcher studied data sets that had been collected by the North Carolina Department of Public Instruction. SAS programming allowed the researcher to create two-way tables. Comparison studies were conducted using two-way tables. Multi-dimension tables can be analyzed using PROC FREQ. PROC FREQ computes frequencies for the variables listed, along with the percentages for each category. Using PROC FREQ, the researcher ran tests and measures of association. In order to determine a relationship between the variables, the researcher used a chi-square analysis. A large chi-square statistic corresponds to a small p-value. If the p-value is small enough ( $< 0.05$ ), then researchers can conclude that there is an association between the row and the column variables. In order to answer the major research questions, the researcher analyzed multiple variables from student data collected by the North

Carolina Department of Public Instruction. The results of the study were converted into graphs, followed by a detailed explanation of the findings.

The researcher compared sixth, seventh, and eighth grade EOG Reading achievement level scores (I – IV) to English I scores. EOG Reading achievement level scores were also compared to high school grade point average (GPA). The same comparison study was conducted between sixth seventh, and eighth grade EOG mathematics achievement level scores (1-4) and Algebra I, followed by comparisons between EOG mathematics achievement level and high school GPA. Middle school attendance data was compared to the scores that students earned on their EOG Reading test, EOG Mathematics test, and high school GPA. The independent variables analyzed included EOG Reading Grade Six, EOG Reading Grade 7, EOG Reading Grade 8, EOG Mathematics Grade 6, EOG Mathematics Grade 7, EOG Mathematics Grade 8, English I EOC, Algebra I EOC, student attendance in grades 6, 7, and 8, and high school GPA.

Building on research conducted by ACT (2008), Allensworth and Easton (2005), Balfanz (2009), Balfanz and Letgers (2004), Conley (2010), SREB (2011a), West (2009), and Williams, Rosin, and Kirst (2011), this study analyzed multiple variables in an attempt to support the goal of college and career readiness. Prior studies have determined that college and career readiness begins before high school and that educators can use longitudinal data to support student achievement. Historically, high school readiness meant that a junior high or middle school student passed all of their courses and entered high school ready to pass high school classes. Preparing students to graduate college and career ready may require a High School Readiness Index, or leading indicators, that determine when students are off-track for high school. Organizing school data in a manner that is easy to understand and allows educators to make

timely decisions could empower middle school educators in supporting the goal of college and career readiness for each student.

A focus on college and career readiness must not overlook the importance of the middle school years. Identifying students who are high school ready could lead to supporting the goal of college and career readiness. West (2009) concluded, “By adding newly available state school-level aggregated data and using student-level data systems to identify school failure early on, it is possible to not only target and tailor school interventions, but also identify students likely to be retained in ninth grade years before they arrive in high school” (p. 19).

As school districts implement programs and strategies for supporting college and career readiness, it will be important to analyze which students are off-track. In order to determine *readiness*, educators will need a set of indicators to monitor. Table 2 outlines progress indicators and a description of each indicator. This research study examined the reliability of middle school progress indicators and their potential impact for supporting high school readiness, along with college and career readiness. Middle school and high school indicators provide longitudinal data about a student’s progress. The middle school and high school progress indicators used in this study are outlined in Table 3.

### **High School Readiness**

A student who is high school ready is prepared to enter high school equipped to pass the coursework required to earn a high school diploma. To achieve the nation’s goal of graduating all of its high school students ready for college and career, “it will be essential for students to enter high school with at least close-to-grade-level skills and knowledge” (Balfanz, 2009, p. 6). Determining if a student is college and career ready is a process that begins prior to high school.

Table 2

*Progress Indicators and Description of Each Indicator*

Indicators	Description
Attendance	A student’s attendance is one indicator of ‘readiness’ and it can have a positive or negative effect on a student’s grades and future opportunities in high school and beyond.
Number of Days of In-School Suspension	Some students are suspended on a regular basis. Career readiness involves the ability to collaborate with co-workers, the ability to follow directions and take constructive feedback, and the ability to share ideas without having a fight. Educators may be able to identify students who are ‘off-track’ by identifying the students in a school who are suspended and are missing instruction due to violations of the student code of conduct. Educators often provide academic support and interventions, but some students are in need of behavior support and interventions.
Number of Days of Out-of-School Suspension	Some students are suspended on a regular basis. Early warning systems can alert educators and students when a behavior or a skill is off-track. Having a clear understanding of which students are off-track enables educators to provide timely support and interventions. In the absence of an early warning system, students may continue to fall through the cracks and graduate unprepared for college or the workforce. Educators often provide academic support and interventions, but some students are in need of behavior support and interventions.
Number of Days Absent	Failing math or English, having low attendance, and poor behavior were determined to be “off-track” indicators for middle school students in multiple studies conducted by Robert Balfanz (2009).

Table 2 (continued)

Indicators	Description
End-of-Grade (EOG) Reading Tests Grades 6-8	<p>Each student in grades 3 through 8 is tested in reading and math each year. The assessments are aligned to the state standards. The North Carolina Education Research Data Center has a separate file for each of these grades, and each file has one record for each student who was a member of that school at the time of the test.</p> <p>EOG data are end of year data and are not as helpful as student grades, which come at the end of each nine weeks. However, longitudinal data can provide a snapshot at a student’s strengths or areas where additional academic support may be needed. Longitudinal data could identify students who are “off-track” for high school prior to the ninth grade.</p>
End-of-Grade (EOG) Mathematics Tests Grades 6-8	<p>Each student in grades 3 through 8 is tested in reading and math each year. The assessments are aligned to the state standards. The North Carolina Education Research Data Center has a separate file for each of these grades, and each file has one record for each student who was a member of that school at the time of the test.</p> <p>EOG data are end of year data and are not as helpful as student grades, which come at the end of each nine weeks. However, longitudinal data can provide a snapshot at a student’s strengths or areas where additional academic support may be needed. Longitudinal data could identify students who are “off-track” for high school prior to the ninth grade.</p>
End-of-Course (EOC) Test - Algebra I	<p>The North Carolina End of Course (EOC) Tests are used to sample a student’s knowledge of subject-related concepts as specified in the North Carolina Standard Course of Study and to provide an estimate of the student’s mastery of the material in a particular content area.</p> <p>EOC data are end of course or end of year data and are not as helpful as student grades or results from district benchmark assessments. However, EOC data can provide a snapshot of a student’s academic progress. College and career readiness cannot be predicted from a single test, but the data can support teachers and administrators as they attempt to identify students who are “off-track” for high school graduation and/or college and career readiness.</p>

Table 2 (continued)

Indicators	Description
End-of-Course (EOC) Test – English I	<p>The North Carolina End of Course (EOC) Tests are used to sample a student’s knowledge of subject-related concepts as specified in the North Carolina Standard Course of Study and to provide an estimate of the student’s mastery of the material in a particular content area.</p> <p>EOC data are end of course or end of year data and are not as helpful as student grades or results from district benchmark assessments. However, EOC data can provide a snapshot of a student’s academic progress. College and career readiness cannot be predicted from a single test, but the data can support teachers and administrators as they attempt to identify students who are “off-track” for high school graduation and/or college and career readiness.</p>
End-of-Course (EOC) Test – Biology	<p>The North Carolina End of Course (EOC) Tests are used to sample a student’s knowledge of subject-related concepts as specified in the North Carolina Standard Course of Study and to provide an estimate of the student’s mastery of the material in a particular content area.</p> <p>EOC data are end of course or end of year data and are not as helpful as student grades or results from district benchmark assessments. However, EOC data can provide a snapshot of a student’s academic progress. College and career readiness cannot be predicted from a single test, but the data can support teachers and administrators as they attempt to identify students who are “off-track” for high school graduation and/or college and career readiness.</p>
Anticipated Reading Grade	<p>The data from The North Carolina Education Research Data Center provides information on each student’s Anticipated Reading Grade.</p> <p>The Anticipated Reading Grade is determined by the student’s current classroom teacher. This is another progress indicator that could provide data on ‘readiness.’ If a student is ‘off-track’ in sixth, seventh, and eighth grade, based on teacher predictions, then there is strong evidence that intensive academic and/or behavior interventions may support the student’s progress. At the time of this study, most North Carolina educators are not using this data/indicator.</p>

Table 2 (continued)

Indicators	Description
Anticipated Math Grade	<p>The data from The North Carolina Education Research Data Center provides information on each student’s Anticipated Math Grade.</p> <p>The Anticipated Math Grade is determined by the student’s current classroom teacher. This is another progress indicator that could provide data on ‘readiness.’ If a student is ‘off-track’ in sixth, seventh, and eighth grade, based on teacher predictions, then there is strong evidence that intensive academic and/or behavior interventions may support the student’s progress. At the time of this study, most North Carolina educators are not using this data/indicator.</p>
Over Age	<p>The data from the North Carolina Education Research Data Center provides the date of birth (set to the 15th of the month), so you are able to calculate students’ age.</p> <p>Some students are retained in elementary school. An off-track indicator would help middle school teachers identify over age students. This could support the goal of high school readiness. If a student enters the ninth grade over age, it can be a predictor of ‘high school readiness.’ Teachers should use this data to determine if students need additional support in the ninth grade. Statewide data indicate that more students failed courses in the ninth grade than any other grade level. An off-track indicator that identifies over age students may support students as they transition from middle school to high school.</p>
Graduate Survey Data Future Plans	<p>The Graduate Survey is the survey completed by high school seniors.</p> <p>Information submitted by each senior includes intentions to:</p> <ul style="list-style-type: none"> <li>• Enroll in a Four Year Institution</li> <li>• Enroll in a Two Year Institution</li> <li>• Enroll in Other Schools</li> <li>• Military Service</li> <li>• Employment</li> <li>• All Others</li> </ul>

Table 3

*Progress Indicators*

Middle School Progress Indicators	High School Progress Indicators
Attendance/Absences	Attendance/Absences
Number of Days of In-School Suspension	Number of Days of In-School Suspension
Number of Days of Out-of-School Suspension	Number of Days of Out-of-School Suspension
End-of-Grade (EOG) Reading Tests Grades 6, 7, and 8	End-of-Course (EOC) English I Test
End-of-Grade (EOG) Mathematics Tests Grades 6, 7, and 8	End-of-Course (EOC) Algebra I Test
Anticipated Reading Grade Grades 6, 7, and 8	End-of-Course (EOC) Biology Test
	Over Age
Anticipated Mathematics Grade Grades 6, 7, and 8	Grade Point Average (GPA) Senior Year
Over Age	Graduate Survey Data

Middle grades students “need to be prepared for high school and beyond using the best evidence currently available” (Heller, Calderon, & Medrich, 2003, p. 11). Data are available at the middle school level to make strategic decisions about student learning (Allensworth & Easton, 2005; Balfanz, 2009; Foley, 2010; Heppen & Therriault, 2008; Roderick et al., 2009). With a thorough understanding of current research and issues surrounding college and career readiness, teachers, administrators, and parents can support the goal of high school readiness. Schools and school districts need a set of progress indicators that can provide a snapshot or warning light regarding high school readiness. High school readiness is not measured in most school districts. While the current national focus is on college and career readiness, middle school educators could begin analyzing the high school readiness of each student. A focus on the middle school years could provide educators and researchers with a greater chance to impact the number of students who graduate College and Career Ready.

### **College and Career Readiness**

College *and* career readiness is the idea that all students are educated in a manner which prepares them for college and a career. A focus on college and career readiness must not overlook the importance of the middle school years. “Few states fully leverage college and career ready indicators in their accountability systems, and still fewer back these indicators up into elementary and middle school to focus the system on lifting and supporting students on a path to college and career readiness throughout their education” (Achieve, 2013, p. 1).

College readiness is the level of achievement a student needs to be ready to enroll and succeed—without remediation—in credit-bearing first-year postsecondary courses. By postsecondary, this definition means primarily two-year or four-year institutions, trade schools, and technical schools (ACT, 2008; Conley, 2007; National Governors Association, 2009).

Workplace readiness demands the same level of knowledge and skills as college readiness (ACTE, 2010; Career Readiness Partner Council, 2012). While not every student plans to attend college after high school, many of the jobs that can support a family require knowledge and skills comparable to those expected of the first-year college student (ACT, 2006). College and career readiness is a shift from preparing some students for college and others for careers to preparing all students for college and the workforce, because the demands of the workforce have changed. Ninth grade course failure is “driven by students’ lack of intermediate academic skills, weak reading comprehension and fluency abilities, and underdeveloped mathematical knowledge” (Balfanz & Legters, 2004, p. 23). These findings demonstrate a connection between the importance of middle level education and high school readiness. One of the major findings from *The Forgotten Middle* (ACT, 2008) was that “being on target for college and career readiness in grade 8 puts students on a trajectory for success; that is, if students are on target to be ready for college and career as early as grade 8, their chances of being ready for college and career by high school graduation are substantially increased” (as cited by Radunzel & Noble, 2012). If educators are going to increase high school graduation rates and make the shift to college and career readiness for all students, then school leaders will need timely data in order to determine whether students are on the path to college enrollment (National Governors Association, 2009).

### **Research Design**

This study incorporated and built on the work of Allensworth and Easton (2005), who analyzed longitudinal quantitative data from the Chicago Public Schools. They validated an “on-track” indicator for ninth graders. According to their research, if a student demonstrates on-track behavior and progress at the end of the ninth grade year, then the student is on-track for high

school graduation. Balfanz (2009) analyzed longitudinal data in multiple U.S. school districts and states to establish at-risk indicators. While Allensworth and Easton focused on the ninth grade transition year, Balfanz has conducted landmark studies at the middle school level. Balfanz cites the ABCs: Attendance, Behavior, and Course Performance as leading indicators for students who are off-track for high school readiness. These are three of the leading researchers who influenced this study titled, *Examining the reliability of progress indicators and their potential for supporting the goal of college and career readiness*.

Prior studies have determined that college and career readiness begins before high school and that educators can use longitudinal data to support student achievement (ACT (2008); Allensworth and Easton (2005); Balfanz (2009); Balfanz and Letgers (2004); Conley (2010); SREB (2011a); West (2009); and Williams, Rosin, and Kirst (2011)). In this study, the researcher will not know whether students are “on-track” or “off-track” until the study is completed. It is difficult to make predictions about this study, because the researcher is taking student data from multiple schools and analyzing different variables. Some students will be “off-track” in attendance and other students may have multiple “off-track” indicators. Multiple “off-track” indicators provide a ‘warning light’ or ‘red flag’ for educators. New indicators were researched, in addition to attendance and behavior. This study analyzed multiple variables in an attempt to build upon existing research on preparing students to graduate college and career ready. The variables that were analyzed in the study include:

- Attendance/Absences
- Number of Days of In-School Suspension
- Number of Days of Out-of-School Suspension
- Number of Days Absent

- End-of-Grade Reading (EOG) Tests Scores (Grades 6, 7, and 8)
- End-of-Grade Mathematics (EOG) Test Scores (Grades 6, 7, and 8)
- End-of-Course (EOC) Algebra I Test Scores
- End-of-Course (EOC) Biology Test Scores
- End-of-Course (EOC) English I Test Scores
- Anticipated Reading Grade (Grades 6, 7, and 8)
- Anticipated Mathematics Grade (Grades 6, 7, and 8)
- Over Age (For Grade Level)
- Grade Point Average (GPA) – Senior Year Only
- Graduate Survey Data

Year end data was analyzed, but such data could lead to future opportunities for school administrators and/or state departments of education to support students in real time, rather than waiting until the end of the year. Table 4 outlines the number of public school districts in North Carolina during this time. If educators have a system for identifying students who are off-track, they may be able to make more informed decisions about strategic and timely interventions.

#### **Research Studies: College and Career Readiness and On-Track Indicators**

There is a need for early warning systems that identify students who may be off-track and may be at risk for success in high school and beyond (ACT, 2008; Allensworth & Easton, 2007; Balfanz, 2009; Foley, 2010; Greene & Winters, 2005; Heppen & Therriault, 2008; Mishook, Foley, Thompson, & Kubiak, 2008; Neild & Balfanz, 2006; Neild, Balfanz, & Herzog, 2007; Pinkus, 2009; Roderick et al., 2009; Westover & Hatton, 2011). This study analyzed multiple variables in an attempt to support the goal of college and career readiness. Prior studies have

Table 4

*Number of School Districts in North Carolina*

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Date	County Units	City Units
2006-2007	100	15
2012-2013	100	15

Total School Districts in North Carolina - 115

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*Note.* North Carolina Department of Public Instruction. Facts and Figures. Summary Data by School Year. Retrieved from <http://www.ncpublicschools.org/fbs/resources/data>.

determined that college and career readiness begins before high school and that educators can use longitudinal data to support student achievement.

Allensworth and Easton (2005) and their colleagues analyzed longitudinal quantitative data from the Chicago Public Schools. They validated an “on-track” indicator by combining two factors that most strongly predicted which ninth graders would drop out of high school: Failure in core courses and number of credits completed during their freshman year. Students were considered on-track if they received at least five out of seven credits and failed no more than one core course.

Balfanz analyzed longitudinal data in multiple U.S. school districts and states to establish at-risk indicators. Balfanz cites the ABCs: Attendance, Behavior, and Course Performance as leading indicators for students who are off-track for high school readiness. Balfanz (2009) concluded, “Until we transform high schools and the middle schools where a large number of students fall off the path to high school graduation, “the nation will not achieve its goal of graduating all its students from high school prepared for college, career, and civic life” (p. 13).

Conley has written multiple articles and books on the topic of college readiness and has researched college readiness for nearly two decades. His research is based on both empirical evidence gathered via multiple research studies and on-the-ground interactions with practitioners attempting to improve programs that affect a wide range of students (Conley, 2012). According to Conley (2011), “College readiness is a multifaceted concept comprising numerous variables that include factors both internal and external to the school environment” (p. 8). Conley’s comprehensive definition of college readiness includes four dimensions: Key Cognitive Skills, Key Content Knowledge, Academic Behaviors, and Contextual Skills and Awareness. Conley (2011) concluded that “a measurement system that had the capacity to connect all measures

would be preferable to one that reported each separately” (p. 17). According to Conley’s (2011) research findings, “The ultimate result would be one set of scores or indicators across multiple dimensions and measures that could be tracked over time from perhaps sixth grade through high school that would allow everyone involved to be aware of where a student stood relative to the various dimensions of college readiness at any given point in time” (p. 18).

This study analyzed North Carolina End-of-Grade (EOG) test scores in reading and mathematics in grades six, seven, and eight. Longitudinal data could be used to determine the high school readiness of each student. In most states, a data dashboard is not used and educators often determine which students are off-track for high school at the end of the first semester of the ninth grade. A student who is ‘high school ready’ should enter high school equipped to pass the coursework required to earn a high school diploma. High school readiness is not measured in most school districts. According to Williams, Rosin, and Kirst (2011), “Middle grades educators are key to enabling more students to become high school-ready and later, college- and career-ready” (p. 4). This research study examined the reliability of middle school progress indicators and their potential impact on supporting high school readiness, along with college and career readiness. Middle school and high school indicators provide longitudinal data about a student’s progress.

Balfanz (2009) concluded, educators need to “Drive down the number of students exhibiting off-track indicators and drive up the number of students exhibiting on-track indicators” (p. 6). Students who underperform in the middle grades tend to find it extremely difficult to make a successful transition to high school-level studies (Cooney & Bottoms, 2002). “Of those students who have multiple risk factors in the eighth grade, only 60% graduate from high school on time” (Heller, Calderon, & Medrich, 2003, p. 10). This dissertation analyzed

indicators that could be used to support high school readiness and the new goal of College *and* Career Readiness. In the absence of clear indicators, teachers and administrators will be unable to measure whether or not middle school students are *high school ready*.

### **Research Questions**

This research project was designed to answer the following major question:

Can educators use progress indicators in the middle grades to support the goal of College and Career Readiness for all students?

In order to answer the above question, the researcher attempted to answer the following questions throughout the research and data analysis (see Table 5 and 6).

### **Overarching Research Hypotheses**

The hypotheses for this study are:

1. Progress indicators can be used to support the goal of college and career readiness.
2. Progress indicators can be used in the middle grades to prepare more students to enter the ninth grade high school ready.
3. School districts can use non-academic indicators to support the goal of college and career readiness.
4. A high school readiness index could be developed based on existing progress indicators.

### **Description of Progress Indicators**

This study analyzed statewide longitudinal data and student data sets that are available to researchers through the North Carolina Education Research Data Center at Duke University. The North Carolina Education Research Data Center at Duke University archives statewide data, collected by the North Carolina Department of Public Instruction.

Table 5

*Middle School Indicators, Research Questions, Hypotheses, and Data Points*

Indicator	Research Question	Hypotheses	Data Points
1. High School Readiness Index	Is there a relationship between middle school progress indicators and high school progress indicators?	<i>Hypothesis 1</i> There will be a relationship between middle school progress indicators and high school progress indicators.	
2. Middle School Indicators vs. Skills Students Need To Become College and Career Ready	Is there a relationship between middle school indicators aligned with the skills students need to become College and Career Ready by the end of high school?	<i>Hypothesis 2</i> There will be a relationship between middle school indicators and each student's final grade point average (GPA) at the end of the twelfth grade.	4.0 GPA 3.5 – 3.9 GPA 3.0 – 3.4 GPA 2.5 – 2.9 GPA 2.0 – 2.4 GPA 1.5 – 1.9 GPA 1.0 – 1.4 GPA - Compared to middle school End-of-Grade (EOG) reading scores - Compared to middle school End-of-Grade (EOG) mathematics scores - Compared to Number of Days of In-School Suspension - Compared to Number of Days Out-of-School Suspension - Compared to Anticipated Reading Grade (Grade 8) - Compared to Anticipated Mathematics Grade (Grade 8) - Compared to Over Age students

Table 5 (continued)

Indicator	Research Question	Hypotheses	Data Points
		<p><i>Hypothesis 2b</i>            There will be a relationship between multiple middle school indicators (i.e., attendance, suspension data, and End-of-Grade scores) and the skills employers seek (i.e., attendance, collaboration, reading skills, and math skills).</p>	<p>Attendance            - 0 Absences            - 1 – 5 Absences            - 6 – 10 Absences            - 11 – 15 Absences            - 16 – 20 Absences            - 20 – 25 Absences            - 26 – 30 Absences            - 30 – 35 Absences            - 46 – 40 Absences            - More than 40 Absences            Suspension Data            - 0 – 3 Days            - 4 – 7 Days            - 8 – 11 Days            - 12 – 15 Days            - 16 – 20 Days            - More than 20 Days            Middle School End-of-Grade (EOG) Reading Test Scores            - Level I            - Level II            - Level III            - Level IV            Middle School End-of-Grade (EOG) Mathematics Test Scores            - Level I            - Level II            - Level III            - Level IV</p>

Table 5 (continued)

Indicator	Research Question	Hypotheses	Data Points
3. In-School Suspension and Level I and Level II End-of-Grade (EOG) Scores	Is there a relationship between In-School Suspensions and Level I and Level II End-of-Grade (EOG) scores?	<i>Hypothesis 3</i> There will be a relationship between the students who received In-School Suspension and the students who scored a Level I or Level II on the End-of-Grade (EOG) tests.	In School Suspension - 0 – 3 Days - 4 – 7 Days - 8 – 11 Days - 12 – 15 Days - 16 – 20 Days - More than 20 Days Middle School End-of-Grade (EOG) Reading Test Scores - Level I - Level II - Level III - Level IV Middle School End-of-Grade (EOG) Mathematics Test Scores - Level I - Level II - Level III - Level IV

Table 5 (continued)

Indicator	Research Question	Hypotheses	Data Points
4. Out-of-School Suspension and Level I and Level II End-of-Grade (EOG) Scores	Is there a relationship between Out-of-School Suspensions and Level I and Level II End-of-Grade (EOG) scores?	<p><i>Hypothesis 4</i>            There will be a relationship between the students who received Out-of-School Suspension and the students who scored a Level I or Level II on the End-of-Grade (EOG) tests.</p>	<p>Out of School Suspension</p> <ul style="list-style-type: none"> <li>- 0 – 3 Days</li> <li>- 4 – 7 Days</li> <li>- 8 – 11 Days</li> <li>- 12 – 15 Days</li> <li>- 16 – 20 Days</li> <li>- More than 20 Days</li> </ul> <p>Middle School End-of-Grade (EOG) Reading Test Scores</p> <ul style="list-style-type: none"> <li>- Level I</li> <li>- Level II</li> <li>- Level III</li> <li>- Level IV</li> </ul> <p>Middle School End-of-Grade (EOG) Mathematics Test Scores</p> <ul style="list-style-type: none"> <li>- Level I</li> <li>- Level II</li> <li>- Level III</li> <li>- Level IV</li> </ul>

Table 5 (continued)

Indicator	Research Question	Hypotheses	Data Points
5. Student Attendance and Level I and Level II End-of-Grade (EOG) Scores	Is there a relationship between attendance and Level I and Level II End-of-Grade (EOG) scores?	<p><i>Hypothesis 5a</i> There will be a negative relationship between students who miss 0-14 days of school (excused or unexcused absences) and the students who scored a Level I or Level II on the End-of-Grade (EOG) tests.</p> <p><i>Hypothesis 5b</i> There will be a positive relationship between students who miss 15 or more days of school (excused or unexcused absences) and the students who scored a Level I or Level II on the End-of-Grade (EOG) tests.</p>	<p>Attendance</p> <ul style="list-style-type: none"> <li>- 0 Absences</li> <li>- 1 – 5 Absences</li> <li>- 6 – 10 Absences</li> <li>- 11 – 15 Absences</li> <li>- 16 – 20 Absences</li> <li>- 20 – 25 Absences</li> <li>- 26 – 30 Absences</li> <li>- 30 – 35 Absences</li> <li>- 46 – 40 Absences</li> <li>- More than 40 Absences</li> </ul> <p>Middle School End-of-Grade (EOG) Reading Test Scores</p> <ul style="list-style-type: none"> <li>- Level I</li> <li>- Level II</li> <li>- Level III</li> <li>- Level IV</li> </ul> <p>Middle School End-of-Grade (EOG) Mathematics Test Scores</p> <ul style="list-style-type: none"> <li>- Level I</li> <li>- Level II</li> <li>- Level III</li> <li>- Level IV</li> </ul>

Table 5 (continued)

Indicator	Research Question	Hypotheses	Data Points
6. Level I and Level II End-of-Grade (EOG) Scores in Middle School Reading and Level I or Level II High School End-of-Course (EOC) English I Scores	Is there a relationship between students with a Level I or Level II End-of-Grade (EOG) test score in middle school reading and a Level I or Level II high school End-of-Course (EOC) English I?	<i>Hypothesis 6</i> There will be a relationship between students who score a Level I or Level II on the EOG middle school reading test and the students who score a Level I or Level II on the EOC English I test.	Middle School End-of-Grade (EOG) Reading Test Scores - Level I - Level II - Level III - Level IV  Compared To English I End-of-Course (EOC) Test Scores - Level I - Level II - Level III - Level IV
7. Level I and Level II End-of-Grade (EOG) Scores in Middle School Reading and Level I or Level II High School End-of-Course (EOC) Biology Scores	Is there a relationship between students with a Level I or Level II End-of-Grade (EOG) test score in middle school reading and a Level I or Level II End-of-Course (EOC) Biology test scores?	<i>Hypothesis 7</i> There will be a relationship between students who score a Level I or Level II on the EOG middle school reading test and the students who score a Level I or Level II on the EOC Biology test.	Middle School End-of-Grade (EOG) Reading Test Scores - Level I - Level II - Level III - Level IV  Compared To Biology End-of-Course (EOC) Test Scores - Level I - Level II - Level III - Level IV

Table 6

*Middle School and High School Indicators, Research Questions, Hypotheses, and Data Points*

Indicator	Research Question	Hypotheses	Data Points
8. Level I and Level II End-of-Grade (EOG) Scores in Middle School Mathematics and Level I or Level II High School End-of-Course (EOC) Algebra I Scores	Is there a relationship between students with a Level I or Level II End-of-Grade (EOG) test score in mathematics and high school Algebra I End-of-Course (EOC) test score?	<i>Hypothesis 8</i> There will be a relationship between students with a Level I or Level II EOG test score in middle school mathematics and the students who score a Level I or Level II on the Algebra I EOC test.	Middle School End-of-Grade (EOG) Mathematics Test Scores - Level I - Level II - Level III - Level IV  Compared To Algebra I End-of-Course (EOC) Test Scores - Level I - Level II - Level III - Level IV
9. Anticipated Reading Grade Assigned By The Classroom Teacher in 6 <sup>th</sup> Grade and the Student's 7 <sup>th</sup> Grade Reading End-of-Grade (EOG) Test Score	Is there a relationship between the Anticipated Reading Grade assigned by the classroom teacher in 6 <sup>th</sup> grade and the student's 7 <sup>th</sup> grade reading End-of-Grade (EOG) test score?	<i>Hypothesis 9</i> There will be a relationship between the Anticipated Reading Grade assigned by the classroom teacher in 6 <sup>th</sup> grade and the student's 7 <sup>th</sup> grade reading EOG test score.	Anticipated Reading Grade at the End of 6 <sup>th</sup> Grade - A - B - C - D - F  Grade 7 - End-of-Grade (EOG) Reading Test Scores - Level I - Level II - Level III - Level IV

Table 6 (continued)

Indicator	Research Question	Hypotheses	Data Points
10. Anticipated Mathematics Grade Assigned by the Classroom Teacher in 6 <sup>th</sup> Grade and the Student's 7 <sup>th</sup> Grade Mathematics End-of-Grade (EOG) Score	Is there a relationship between the Anticipated Mathematics Grade assigned by the classroom teacher in 6 <sup>th</sup> grade and the student's 7 <sup>th</sup> grade mathematics End-of-Grade (EOG) test score?	<i>Hypothesis 10</i> There will be a relationship between the Anticipated Mathematics Grade assigned by the classroom teacher in 6 <sup>th</sup> grade and the student's 7 <sup>th</sup> grade mathematics EOG test score.	Anticipated Mathematics Grade at the End of 6 <sup>th</sup> Grade - A - B - C - D - F Grade 7 - End-of-Grade (EOG) Mathematics Test Scores - Level I - Level II - Level III - Level IV
11. Longitudinal Data: Out-of-School Suspensions in Middle School	Is there a relationship between middle school students who demonstrate a consistent record of behavior infractions (between grades 6-12) resulting in Out-of-School Suspensions?	<i>Hypothesis 11</i> Longitudinal data will show a positive relationship between students who demonstrate a consistent record of behavior infractions (between grades 6-12) resulting in Out-of-School Suspensions.	Out of School Suspension (Between Grade 6 – Grade 12) - 0 – 3 Days - 4 – 7 Days - 8 – 11 Days - 12 – 15 Days - 16 – 20 Days - More than 20 Days

Table 6 (continued)

Indicator	Research Question	Hypotheses	Data Points
12. Over Age Students: Proficient or Above Scores on the Eighth Grade End-of-Grade (EOG) Reading Test	Is there a relationship between over age students who score proficient or above on the eighth grade End-of-Grade (EOG) reading test?	<i>Hypothesis 12</i> There will be a relationship between over age students and the students who scored a Level III and Level IV scores on the eighth grade EOG reading test.	Over Age (8 <sup>th</sup> Grade) Students Compared to 8 <sup>th</sup> Grade Middle School End-of-Grade (EOG) Reading Test Scores - Level I - Level II - Level III - Level IV
13. Over Age Students: Proficient or Above Scores on the Eighth Grade End-of-Grade (EOG) Mathematics Test	Is there a relationship between over age students who score proficient or above on the eighth grade End-of-Grade (EOG) mathematics test?	<i>Hypothesis 13</i> There will be a relationship between over age students and the students who scored a Level III and Level IV scores on the eighth grade EOG mathematics test.	Over Age (8 <sup>th</sup> Grade) Students Compared to 8 <sup>th</sup> Grade Middle School End-of-Grade (EOG) Mathematics Test Scores - Level I - Level II - Level III - Level IV

Table 6 (continued)

Indicator	Research Question	Hypotheses	Data Points
14. End-of-Grade (EOG) Reading Test and End-of-Course (EOC) English I Scores	Is there a relationship between the End-of-Grade (EOG) reading test and the English I End-of-Course (EOC) test scores?	<i>Hypothesis 14</i> There will be a predictive relationship between the EOG reading test and the English I EOC test, based on longitudinal data from grades 6, 7, and 8.	6 <sup>th</sup> , 7 <sup>th</sup> , and 8 <sup>th</sup> Grade Middle School End-of-Grade (EOG) Reading Test Scores - Level I - Level II - Level III - Level IV English I End-of-Course (EOC) Test Scores - Level I - Level II - Level III - Level IV
109	15. On-Track Readiness Based On Indicators Selected and Graduate Survey Data	Is there a relationship between the students in the Class of 2013 and on-track readiness, based on the indicators selected and the combined data outlined in the Graduate Survey Data?	<i>Hypothesis 15</i> Based on statewide data, there will be a relationship between on-track readiness for college and career readiness, based on the indicators selected in this study and based on the student's post-high school intentions outlined in the Graduate Survey Data.  Graduate Survey Data (Student Intentions) - Attend a 4-Year College - Attend a 2-Year College - Trade/Business School - Military - Full-Time Employment - Other  Compared To - Compared to middle school End-of-Grade (EOG) reading scores - Compared to middle school End-of-Grade (EOG) mathematics scores - Compared to Number of Days of In-School Suspension - Compared to Number of Days Out-of-School Suspension - Compared to Anticipated Reading Grade (Grade 8) - Compared to Anticipated Mathematics Grade (Grade 8) - Compared to Over Age students

Progress indicators are needed to measure which students are on-track to enter the ninth grade *High School Ready*. Standards alone cannot guarantee that students will graduate from high school college- and career-ready. Progress indicators will illuminate whether or not each student is on-track for success in high school. “The power of early-warning indicators lies in the willingness and capacity of school leaders and educators to transform actionable data into strategic decision making that leads to improved student outcomes” (Pinkus, 2008b, p. 7). Waiting to measure college and career readiness until high school may be too late to provide students with the intervention and support that they need.

The researcher selected the following progress indicators. While North Carolina educators have access to these indicators, the data are often stored in multiple locations. It is difficult for a teacher or administrator to determine which students are off-track. A high school readiness index could be developed, if this study identifies indicators that support the goal of college and career readiness.

### **Description of North Carolina Public Schools**

At the time of this study, the United States was shifting from a focus on completing high school to completing high school, college and career ready. According to the United States Department of Education (2010), “The goal for America’s educational system is clear: Every student should graduate from high school ready for college and a career” (United States Department of Education, Office of Planning, Evaluation and Policy Development, ESEA Blueprint for Reform, p. 7). In 2010, North Carolina became one of the first states to adopt the Common Core State Standards. The Common Core State Standards were released by the National Governors Association for Best Practices and the Council of Chief State School Officers. The K-12 standards were designed to prepare students for college and the workforce.

Over one million students enter K-12 schools in North Carolina each day. While the goal is to prepare students for college and careers, most teachers and administrators do not currently have progress indicators or a data dashboard to monitor student achievement and other indicators that lead to college and career readiness. According to the National Governors Association (2012), “There is a national consensus that schools should focus on students’ college and career readiness” (p. 3).

In order to determine *readiness*, educators will need a set of indicators to monitor. This research study examined the reliability of middle school progress indicators and their potential impact on supporting high school readiness, along with college and career readiness. Middle school principals will gain insight regarding the use of indicators that could support decision-making and identify students who are off-track for high school readiness. Policymakers can utilize current findings to refine or develop new policies regarding college and career readiness and the use of indicators at the middle school level. Parents and teachers could also benefit from the information presented in this research.

### **Context of the Study**

According to a biennial report released by the North Carolina Department of Public Instruction (Public Schools of North Carolina, 2010), “Each school morning, educators in North Carolina’s 2,524 traditional and charter public schools welcome more than 1.4 million students into their classrooms for another day of learning” (p. 4). Former North Carolina Governor Bev Perdue (2010) said, “Every student — no matter where he or she lives in North Carolina — must graduate from high school with what it really takes to succeed in a career, in a two- or four-year college or in technical training” (p. 1). The guiding mission of the North Carolina State Board of Education is that every public school student will graduate from high school, globally

competitive for work and postsecondary education and prepared for life in the 21st Century.

During the past decade, state policymakers and school leaders have placed a growing emphasis on college and career readiness.

In 2008, the North Carolina Department of Public Instruction reported that out “Of every 100 students who enter ninth grade in a public high school in North Carolina, only 70 graduate within five years. Only 42 of them enroll in college, and only 19 of them complete a two-year or four-year degree within six years of graduating from high school” (Public Schools of North Carolina, 2008, p. 20). Since 2007, the graduation rate has increased from 69.5% to 82.5% in 2013. Table 7 highlights the North Carolina four-year graduation rate (2007-2013). While graduation rates are an important measure, the state has determined that high school graduation is no longer the only focus. If the goals of education are changing, then educators will need to be able to measure if students are on-track or off-track and if their efforts are preparing students to graduate college and career ready.

The high school graduation rate has traditionally been used to measure the effectiveness of a school district. The difficulty with using the high school graduation rate as an exclusive indicator is that it is too late to measure college and career readiness. Universities, employers, and the military need students who graduate prepared to contribute upon high school graduation. While the goal of the American high school is shifting, educators have yet to determine how to measure if a student is on-track to graduate college and career ready. Preparing students to graduate college and career ready may require a High School Readiness Index or leading indicators that determine when students are off-track for high school.

Table 7

*North Carolina 4-Year Cohort Graduation Rate*

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Year	4-Year Cohort Graduation Rate
2007	69.5%
2008	70.3%
2009	71.8%
2010	74.2%
2011	77.9%
2012	80.4%
2013	82.5%

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*Note.* Disaggregated Longitudinal Report (December 1, 2013) State of North Carolina Source: <http://www.ncpublicschools.org/docs/graduate/statistics/cohort-report.pdf>. “North Carolina's statewide four-year cohort graduation rate for 2012-13 is 82.5%, which is up 2.1 percentage points from 2011-12. This rate has improved every year since 2006 when North Carolina reported its first measurement of a cohort graduation rate.”

### **Description of Cohort Population (2006-2013)**

The study analyzed data collected by the North Carolina Department of Public Instruction between 2006–2013. Tables 7 through 15 provide descriptive statistics on the number of public schools in North Carolina between 2006-2013. The charts below provide a snapshot of the class of 2013. Statistics are used to highlight high school graduation data, the four-year cohort graduation rate, the annual non-promotion rate for the cohort, the number of public schools in the state, high school dropouts, and the high school graduates' intentions.

The *Report to the North Carolina General Assembly: Consolidated Data Report, 2012-2013*, provides compelling evidence regarding the need for a progress indicator that monitors attendance. Table 15 lists the reasons why North Carolina high school students in the class of 2013 dropped out of high school. Nearly fifty percent of the students who dropped out of high school in 2012-2013, chose to drop out because of attendance issues. “Excused or not, absence from school or classes hampers a student’s opportunity to learn. Not surprisingly, absenteeism, cutting classes, and truancy all have been found to be highly correlated with dropping out” (Pinkus, 2009, p. 6). Balfanz monitored the ABCs (Attendance, Behavior, and Course Failures) in middle schools. His research found that “School districts with low graduation rates usually have significant – and often unrecognized – chronic absenteeism in the middle grades” (Balfanz, 2009). Failing math or English, having low attendance, and poor behavior were determined to be “off-track” indicators for middle school students (Balfanz, 2009). Some would argue that keeping students in school is not the same as graduating all students prepared for college and career readiness. If students are not graduating, then they are entering the workforce unprepared to contribute and maintain a job. Employers have cited attendance/absenteeism and arriving late for work as a career ready skill that many of our

Table 8

*North Carolina Public Schools – Final Enrollment, Excluding Charter Schools*


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Grade Level/Year of Study	Total Number of Students
6 <sup>th</sup> Grade/2006-2007	109,350
7 <sup>th</sup> Grade/2007-2008	110,355
8 <sup>th</sup> Grade/2008-2009	109,990
9 <sup>th</sup> Grade/2009-2010	129,943
10 <sup>th</sup> Grade/2010-2011	112,148
11 <sup>th</sup> Grade/2011-2012	102,685
12 <sup>th</sup> Grade/2012-2013	93,096

*Note.* North Carolina Department of Public Instruction. Statistical Report – LEA Final Pupil Enrollment by Grade Level. Retrieved from <http://apps.schools.nc.gov/pls/apex/f?p=1:1:0>.

Table 9

*Number of Public Schools in North Carolina – (2006-2007)*

---

Description	Number of Schools
Elementary (PK-8)	1,766
Secondary (9-12)	428
Combined	110
Charter Schools	93
Total	2,397

---

*Note.* North Carolina Department of Public Instruction. Statistical Profile. Retrieved from <http://www.ncpublicschools.org/fbs/resources/data>.

Table 10

*Number of Public Schools in North Carolina – (2007-2008)*

---

Description	Number of Schools
Elementary (PK-8)	1,786
Secondary (9-12)	460
Combined	108
Charter Schools	98
Total	2,452

---

*Note.* North Carolina Department of Public Instruction. Statistical Profile. Retrieved from <http://www.ncpublicschools.org/fbs/resources/data>.

Table 11

*Number of Public Schools in North Carolina – (2008-2009)*

---

Description	Number of Schools
Elementary (PK-8)	1,811
Secondary (9-12)	479
Combined	109
Charter Schools	97
Total	2 ,496

---

*Note.* North Carolina Department of Public Instruction. Statistical Profile. Retrieved from <http://www.ncpublicschools.org/fbs/resources/data>.

Table 12

*Number of Public Schools in North Carolina – (2009-2010)*

---

Description	Number of Schools
Elementary (PK-8)	1,854
Secondary (9-12)	488
Combined	80
Charter Schools	96
Total	2,518

*Note.* North Carolina Department of Public Instruction. Statistical Profile. Retrieved from <http://www.ncpublicschools.org/fbs/resources/data>.

Table 13

*Number of Public Schools in North Carolina – (2010-2011)*

---

Description	Number of Schools
Elementary (PK-8)	1,835
Secondary (9-12)	417
Combined (9-12/Early College)	64
Combined	109
Charter Schools	99
Total	2,452

---

*Note.* North Carolina Department of Public Instruction. Statistical Profile. Retrieved from <http://www.ncpublicschools.org/fbs/resources/data>.

Table 14

*Number of Public Schools in North Carolina – (2011-2012)*

---

Description	Number of Schools
Elementary (PK-8)	1,828
Secondary (9-12)	417
Combined (9-12/Early College)	67
Combined	100
Charter Schools	100
Total	2,512

---

*Note.* North Carolina Department of Public Instruction. Statistical Profile. Retrieved from <http://www.ncpublicschools.org/fbs/resources/data>.

Table 15

*Number of Public Schools in North Carolina – (2012-2013)*

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Description	Number of Schools
Elementary (PK-8)	1,834
Secondary (9-12)	413
Combined (9-12/Early College)	73
Combined	98
Charter Schools	108
Total	2,526

---

*Note.* North Carolina Department of Public Instruction. Statistical Profile. Retrieved from <http://www.ncpublicschools.org/fbs/resources/data>.

students lack when entering the workforce (North Carolina Commission on Workforce Development, 2014 Employer Needs Survey, August 2014).

While attendance is a non-academic issue, it appears to have a direct correlation to high school readiness, college readiness, career readiness, and the high school graduation rate. A progress indicator that focuses on attendance could support the goal of college and career readiness. Poor attendance habits often begin before high school.

The number of students who intended to enter college and the workforce did not change significantly between 2006-2013. Tables 16 and 17 highlight the high school graduates' intentions for North Carolina public schools during the time of the study. The numbers in the class of 2012-2013 indicate that 83% of the graduating seniors planned to enter a two- or four-year institution, while 8.2% planned to enter directly into the workforce. An argument for college and career readiness indicators could be made by analyzing the intentions of North Carolina graduates. "College and career readiness is not something that suddenly happens when a student graduates from high school but instead is the result of a process extending through all the years of a student's education" (ACT, 2008, p. 3). With over 90% of the Class of 2013 indicating plans to enter college or the workforce after high school, it is evident that the state needs a process for monitoring if students are on-track to meet the goal of college and career readiness, prior to high school graduation.

### **The Need for Longitudinal Data**

Powerful indicators can be identified based on the analysis of longitudinal data that tracks individual student progress over time (Bruce et al., 2011, p. 43). According to a report titled, *Using Data to Increase College and Career Readiness* (2013), "Longitudinal data are critical to informing the development, implementation and evaluation of [college and career-ready] policies

Table 16

*Non-Promotion Rate Data – Class of 2013 (Listed by Reason)*

Reason	Code	Count	Percent
Attendance	ATTD	5,068	45.9%
Enrollment in a Community College	COMM	1,941	17.6%
Lack of Engagement with School and/or Peers	ENGA	674	6.1%
Unknown	UNKN	570	5.2%
Academic Problems	ACAD	420	3.8%
Moved, School Status Unknown	MOVE	419	3.8%
Choice of Work Over School	WORK	350	3.2%
Incarcerated In Adult Facility	ICR	265	2.4%
Unstable Home Environment	HOME	242	2.2%
Failure to Return After a Long-Term Suspension	LTSU	205	1.9%
Discipline Problem	DISC	194	1.8%
Need to Care for Children	CHLD	158	1.4%
Pregnancy	PREG	121	1.1%
Health Problems	HEAL	120	1.1%
Employment Necessary	EMPL	114	1.0%
Runaway	RNAW	90	0.8%
Expectations of Culture, Family, or Peers	EXPC	39	0.4%
Suspected Substance Abuse	ABUS	38	0.3%
Marriage	MARR	13	0.1%
Difficulties with English Language	LANG	8	0.1%
Total		11,049	100.0%

*Note.* The chart displays the frequencies of all reason codes that were submitted by North Carolina public high schools/school districts for dropout events that occurred in grades 9 through 12 in 2012-2013. Source: *Report to the North Carolina General Assembly: Consolidated Data Report, 2012-2013*, p. 112 (December 1, 2013). State of North Carolina. Retrieved from <http://www.ncpublicschools.org/docs/research/discipline/reports/consolidated/2012-13/consolidated-report.pdf>, p. 112. Students who are expelled from a school and fail to return to school are coded with “Expulsion” (EXPL) as a reason for dropping out. In accordance with NC General Statute §115C-12 (21), Students who are expelled from a school and fail to return to school are coded with “Expulsion” (EXPL) as a reason for dropping out. In accordance with NC General Statute expelled students are not to be counted in the dropout rate, therefore, these dropout events are not included in the official counts or rates that appear in this report. In 2012-2013, there were 23 dropout events coded with EXPL.

Table 17

*High School Graduates' Intentions (2006-2007)*

---

Post-Secondary Intentions	Number of Students	Percentage
Enroll in Four Year Institution	36,926	48.0%
Enroll in Two Year Institution	26,489	34.4%
Enroll in Other Schools	1,593	2.1%
Military Service	2,653	3.4%
Employment	6,911	9.0%
All Others	2,368	3.1%

---

*Note.* North Carolina Department of Public Instruction. Statistical Profile. High School Graduates' Intentions. Retrieved from <http://www.ncpublicschools.org/fbs/resources/data>.

(Data Quality Campaign, 2012, p. 1). “The advent of longitudinal data systems has greatly increased the capacity of researchers, policy makers, and practitioners to learn about students’ trajectories over time” (U.S. Department of Education, 2012, p. 59). Table 16 provides data on the non-promotion rate for North Carolina public school students in 2013. 2013 was the graduation year for the students in this study. If school districts and state departments of education wait until the senior year to determine if students are on-track for college and career readiness, they will continue to lose thousands of students annually. Attendance or absenteeism was the reason that 45.9% of the students who did not graduate with the four-year cohort.

As states put new P-20 longitudinal data systems to use to calculate performance indicators, “they should ask questions about how early academic indicators in elementary and middle school predict college- and career-ready outcomes” (Achieve, 2013). Very few high schools are currently analyzing middle school data to inform high school readiness.

As a result, it is not surprising that initiatives aimed at calculating and reporting accurate graduation data are increasingly accompanied by recommendations for building and supporting longitudinal data systems—statewide data systems that provide more accurate student-level data by following each student from the time he or she enters the educational pipeline until he or she leaves it. (Pinkus, 2006, p. 3)

Middle school educators need to be able to identify whether or not students are prepared for high school. Relying on data that is produced during a student’s final two years of high school to determine college and career readiness makes it difficult for educators to provide academic and non-academic interventions.

Table 18 outlines the number of North Carolina high school graduates in the class of 2013, by ethnicity. Table 19 provides an example of how the graduation rate can support college

and career readiness efforts at the building level, but the data comes too late to support the students. Table 20 highlights the number of male and female students in the Class of 2013, according to the North Carolina Four-Year Cohort Graduation Rate, as reported by the North Carolina Department of Public Instruction. The number of students in the study changed from one year to the next, due to several reasons such as student transfer to out of state schools, enrollment in home school or a private school, retention, high school drop outs, and health of the student. The study analyzed student data from the sixth grade year (2006-2007) and followed the students enrolled in North Carolina public schools until graduation in 2013, as noted by the data in Tables 18, 19, and 20.

Data are available at the middle school level to make strategic decisions about student learning (Allensworth & Easton, 2005; Balfanz, 2009; Foley, 2010; Heppen & Therriault, 2008; Roderick et al., 2009). Wimberly and Noeth (2005) indicated that college readiness begins in middle school and educators should use multiple indicators to inform their decisions. This study analyzed multiple indicators which could support educators as they support each student in becoming *high school ready*.

Table 18

*High School Graduates' Intentions (2012-2013)*

---

Post-Secondary Intentions	Number of Students	Percentage
Enroll in Four Year Institution	42,569	45%
Enroll in Two Year Institution	35,963	38%
Enroll in Other Schools	1,619	1.7%
Military Service	4,751	5.0%
Employment	7,767	8.2%
All Others	1,854	2.0%

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*Note.* North Carolina Department of Public Instruction. Statistical Profile. High School Graduates' Intentions. Retrieved from <http://www.ncpublicschools.org/fbs/resources/data>.

Table 19

*High School Graduates (By Ethnicity) – Class of 2013*

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Ethnicity	Number of Graduates in Class of 2013
Indian	1,307
Black	25,855
White	53,343
Hispanic	9,180
Asian	2,498
Pacific Islander	86
Two or More	2,999
Total	95,268

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*Note.* North Carolina Department of Public Instruction. Statistical Profile. Retrieved from <http://www.ncpublicschools.org/fbs/resources/data>.

Table 20

*High School Graduates (By Gender) – Class of 2013*

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Male	Female	Total
47,085	48,173	95,268

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*Note.* 2012-2013 North Carolina 4-Year Cohort Graduation Rate: Report to the Superintendent (April 14, 2014) State of North Carolina

Source: <http://www.ncpublicschools.org/docs/graduate/statistics/cohort-report.pdf>.

## **CHAPTER 4: PRESENTATION AND ANALYSIS OF THE DATA**

### **Introduction**

This study analyzed statewide longitudinal data and student data sets that are available to researchers through the North Carolina Education Research Data Center at Duke University. The North Carolina Education Research Data Center at Duke University archives statewide data, collected by the North Carolina Department of Public Instruction. Progress indicators are needed to measure which students are on-track to enter the ninth grade *High School Ready*.

### **Description of the Sample**

The researcher analyzed a cohort of sixth graders from every public middle school in the state of North Carolina in the 2006-2007 school year, and followed the students through high school graduation in 2012-2013. The study analyzed student data sets that are available to researchers through the North Carolina Education Research Data Center at Duke University. This study analyzed multiple variables in an attempt to build upon existing research related to preparing students to graduate college and career ready. The data provided a snapshot of North Carolina students from sixth grade through high school graduation. This research study examined the reliability of middle school progress indicators and their potential impact on supporting high school readiness, along with college and career readiness.

The following data sets were analyzed by the researcher:

- Sixth Grade End-of-Grade (EOG) Reading Test Scores (By Achievement Level I - IV)
- Sixth Grade End-of-Grade (EOG) Mathematics Test Scores (By Achievement Level I - IV)
- Seventh Grade End-of-Grade Reading (EOG) Test Scores (By Achievement Level I - IV)

- Seventh Grade Grade End-of-Grade (EOG) Mathematics Test Scores (By Achievement Level I - IV)
- Eighth Grade End-of-Grade (EOG) Reading Test Scores (By Achievement Level I - IV)
- Eighth Grade End-of-Grade (EOG) Mathematics Test Scores (By Achievement Level I - IV)
- Algebra I End-of-Course (EOC) (By Achievement Level I - IV)
- English I End-of-Course (EOC) (By Achievement Level I - IV)
- Attendance/Absences (Grades 6-12)
- High School Cumulative Grade Point Average (GPA)

The North Carolina Education Research Data Center at Duke University archives statewide data, collected by the North Carolina Department of Public Instruction. To date the center has received data from the North Carolina Department of Public Instruction on every district, school, teacher, and student in the North Carolina public school system from the mid-1990s to the present. The North Carolina Education Research Data Center at Duke University has created longitudinal student and teacher databases, which allow researchers to follow students and teachers over time and link their records across files.

### **Description of Statistical Methods**

The researcher studied data sets that had been collected by the North Carolina Department of Public Instruction. SAS programming allowed the researcher to create two-way tables. Comparison studies were conducted using two-way tables. Multi-dimension tables can be analyzed using PROC FREQ. PROC FREQ computes frequencies for the variables listed, along with the percentages for each category. Using PROC FREQ, the researcher ran tests and

measures of association. In order to determine a relationship between the variables, the researcher used a chi-square analysis. A large chi-square statistic corresponds to a small p-value. If the p-value is small enough ( $< 0.05$ ), then researchers can conclude that there is an association between the row and the column variables. In order to answer the major research questions, the researcher analyzed multiple variables from student data collected by the North Carolina Department of Public Instruction. The results of the study were converted into graphs, followed by a detailed explanation of the findings.

The researcher compared sixth, seventh, and eighth grade EOG Reading achievement level scores (I – IV) to English I scores. EOG Reading achievement level scores were also compared to high school grade point average (GPA). The same comparison study was conducted between sixth seventh, and eighth grade EOG mathematics achievement level scores (1-4) and Algebra I, followed by comparisons between EOG mathematics achievement level and high school GPA. Middle school attendance data was compared to the scores that students earned on their EOG Reading test, EOG Mathematics test, and high school GPA. The independent variables analyzed included EOG Reading Grade Six, EOG Reading Grade 7, EOG Reading Grade 8, EOG Mathematics Grade 6, EOG Mathematics Grade 7, EOG Mathematics Grade 8, English I EOC, Algebra I EOC, student attendance in grades 6, 7, and 8, and high school GPA.

### **Statistical Analysis Addressing Research Questions**

The data analysis in this chapter was designed to answer the following major question:

*Can educators use progress indicators in the middle grades to support the goal of College and Career Readiness for all students?*

In order to answer the above question, the research attempted to answer the following questions throughout the research and data analysis.

### **Middle School Indicators and Hypotheses**

#### **Research Question One: High School Readiness Index**

Is there a relationship between middle school progress indicators and high school progress indicators?

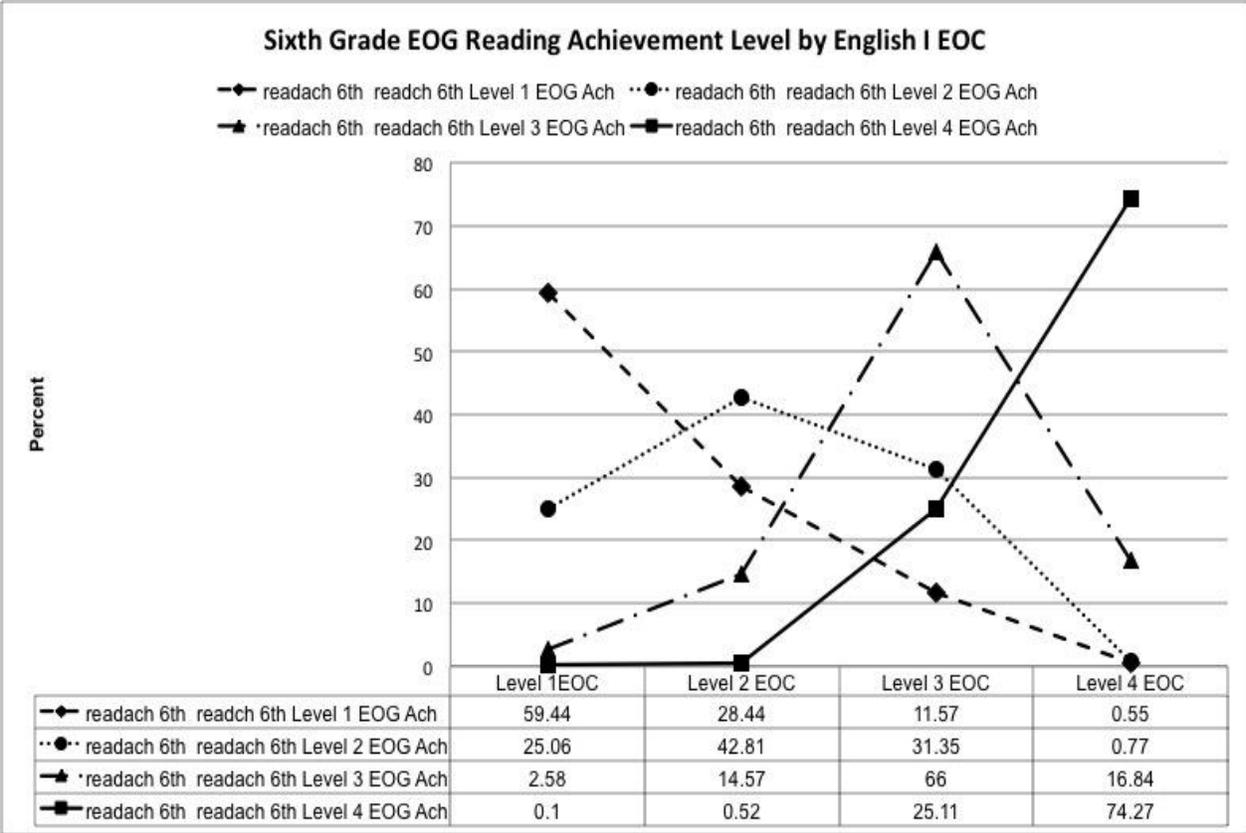
#### **Hypothesis 1**

There will be a relationship between middle school progress indicators and high school progress indicators.

#### **EOG Reading Achievement Level Compared to EOC English I Achievement Level**

The study compared middle school End-of-Grade (EOG) reading scores with students' final high school grade point average (GPA). The comparison between EOG Reading achievement level and final GPA indicates there is a strong relationship between a student's ability to read at grade level in the sixth, seventh, and eighth grade and their high school readiness. A chi-square analysis was conducted to determine the reliability between the EOG Reading achievement level scores and GPA. The result of the chi-square analysis was  $<.0001$ , which indicates a very significant relationship. Figure 2 illustrates the sixth grade reading level of 94,568 students compared to each student's English I EOC achievement level. The data selected for the graph attempts to answer research question one.

The researcher attempted to determine if the sixth grade EOG Reading achievement level scores could be used as a high school readiness indicator. The study revealed that 87.88% of the sixth grade students who scored a Level I on the sixth grade EOG Reading test scored below achievement Level III on the English I EOC test. 67.87% of the sixth grade students who scored



Note. n = 94,568.

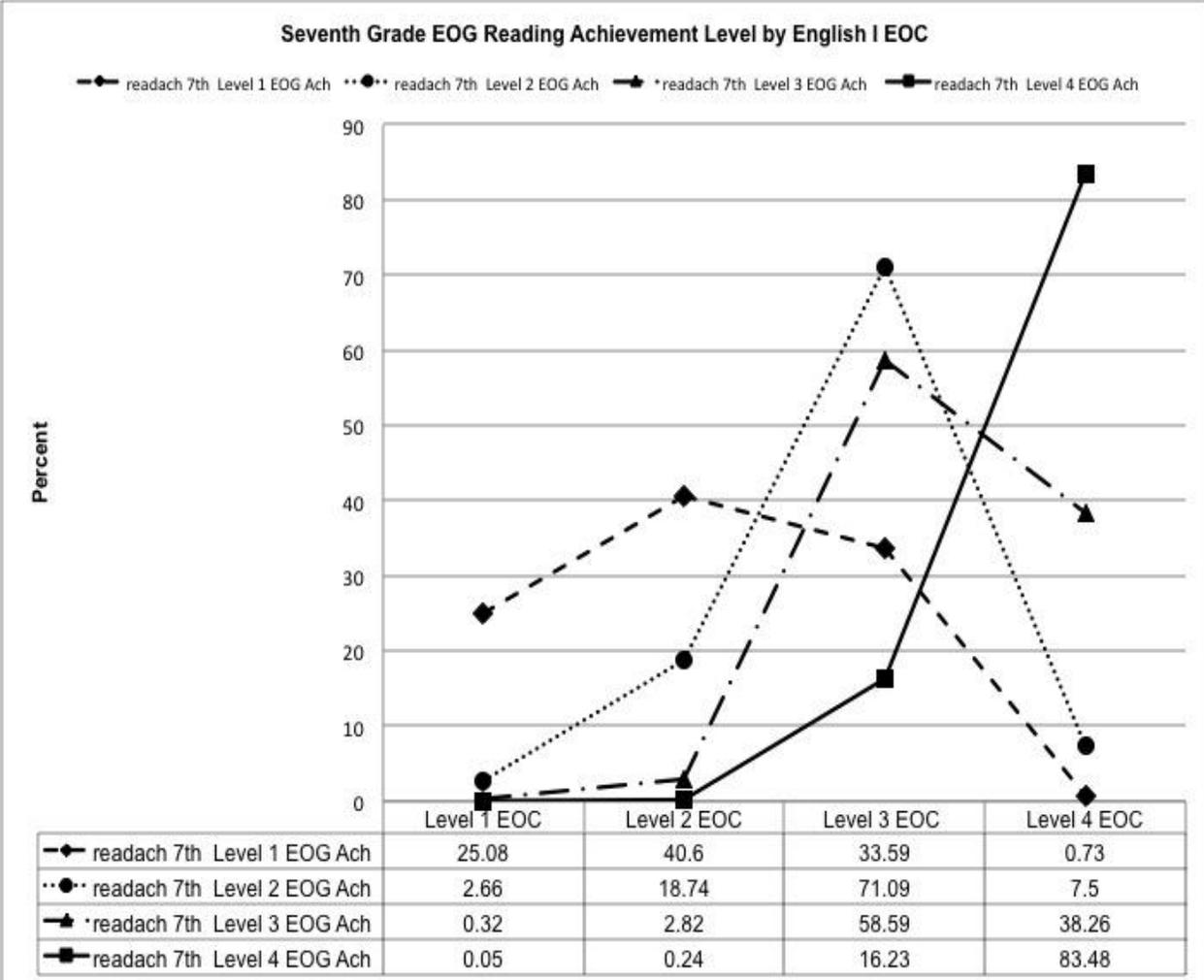
Figure 2. Sixth grade EOG reading achievement level by English I EOC (2007).

a Level II on the sixth grade EOG Reading test scored below achievement Level III on the English I EOC test.

In the seventh grade, 65.68% of the students who scored a Level I on the seventh grade EOG Reading test scored below achievement Level III on the English I EOC test. 21.4% of the sixth grade students who scored a Level II on the seventh grade EOG Reading test scored below achievement Level III on the English I EOC test. Figure 3 illustrates the seventh grade reading level of 99,522 students compared to each student's English I EOC achievement level. The data selected for the graph attempts to answer research question one.

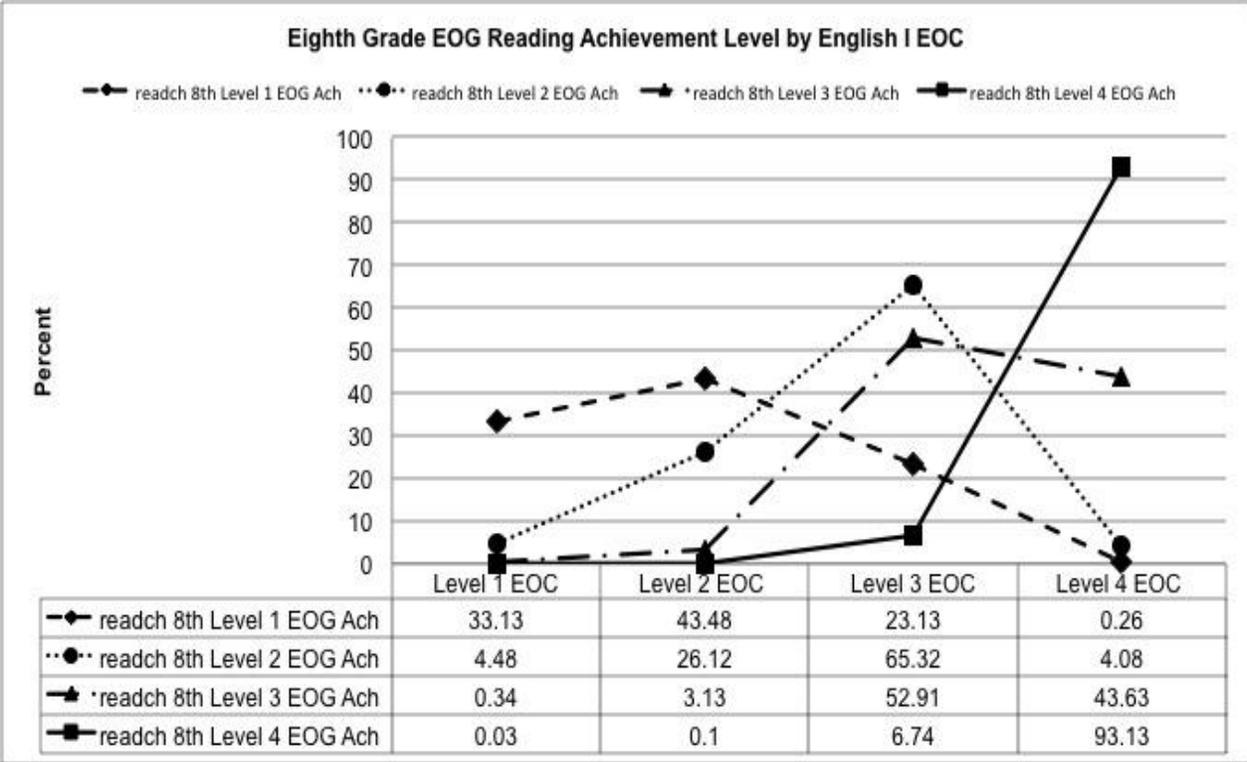
In the eighth grade, 76.61% of the students who scored a Level I on the eighth grade EOG Reading test scored below achievement Level III on the English I EOC test. 30.6% of the sixth grade students who scored a Level II on the eighth grade EOG Reading test scored below achievement Level III on the English I EOC test. Figure 4 illustrates the eighth grade reading level of 102,915 students compared to each student's English I EOC achievement level. The data selected for the graph attempts to answer research question one.

The comparison between EOG Reading achievement level and English I EOC achievement level indicates there is a strong relationship between a student's ability to read at grade level in the sixth, seventh, and eighth grade and their high school readiness. A chi-square analysis was conducted to determine the reliability between the EOG Reading achievement level scores and a student's English I EOC achievement level. The results of the chi-square analysis was  $<.0001$ , which indicates a very significant relationship.



Note. n = 99,522.

Figure 3. Seventh grade EOG reading achievement level by English I EOC (2008).



Note. n = 102,915.

Figure 4. Eighth grade EOG reading achievement level by English I EOC (2009).

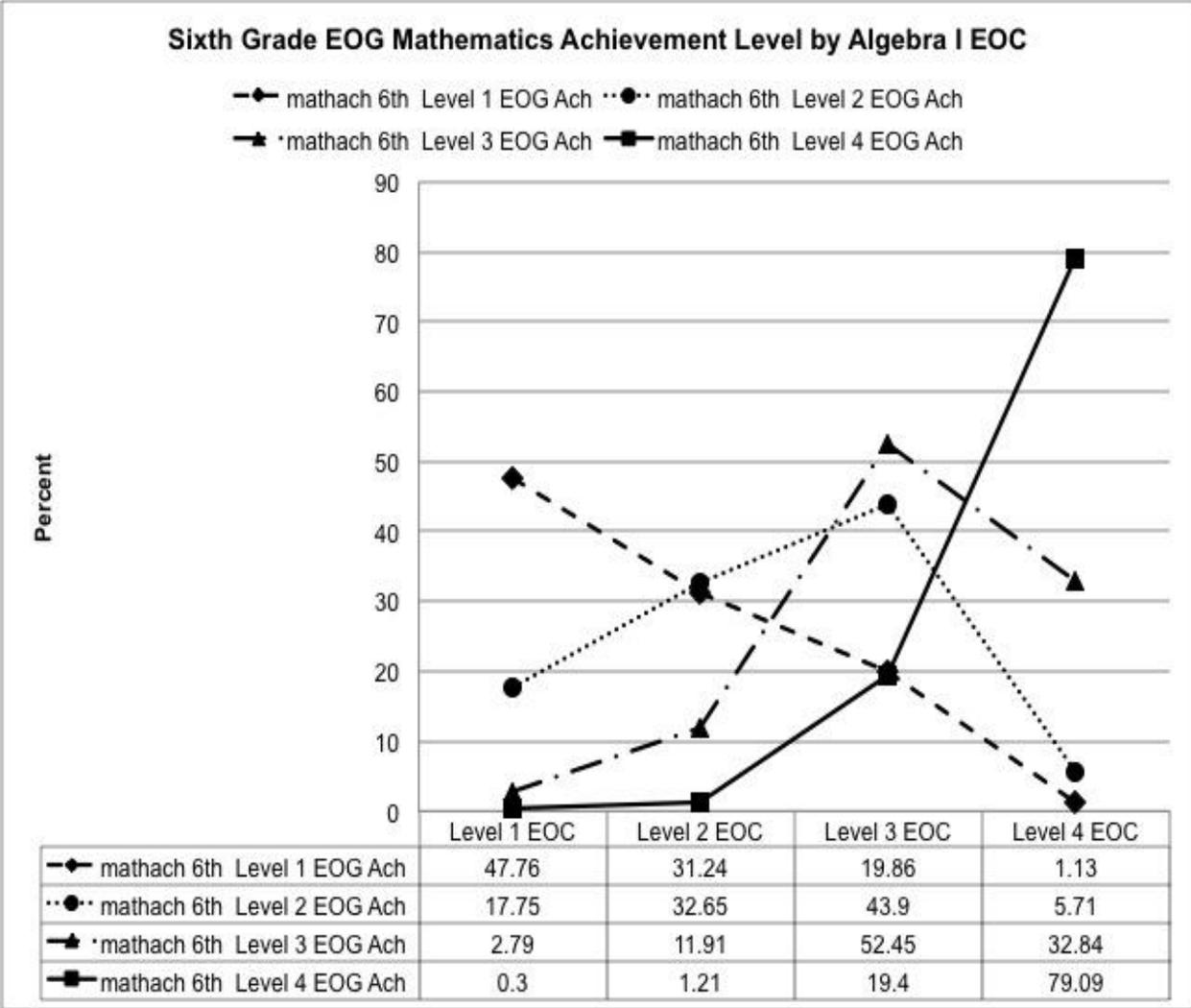
## **EOG Mathematics Achievement Level Compared to EOC Algebra I Achievement Level**

The researcher attempted to determine if the sixth, seventh, and eighth grade EOG Mathematics achievement level scores could be used as a high school readiness indicator.

The researcher attempted to determine if the sixth grade EOG Mathematics achievement level scores could be used as a high school readiness indicator. The study revealed that 79.0% of the sixth grade students who scored a Level I on the sixth grade EOG Mathematics test scored below achievement Level III on the Algebra I EOC test. 50.4% of the students who scored a Level II on the sixth grade EOG Mathematics test scored below a Level III on the Algebra I EOC test. Figure 5 illustrates the sixth grade EOG mathematics achievement level of 68,671 students compared to each student's Algebra I EOC achievement level. The data selected for the graph attempts to answer research question one.

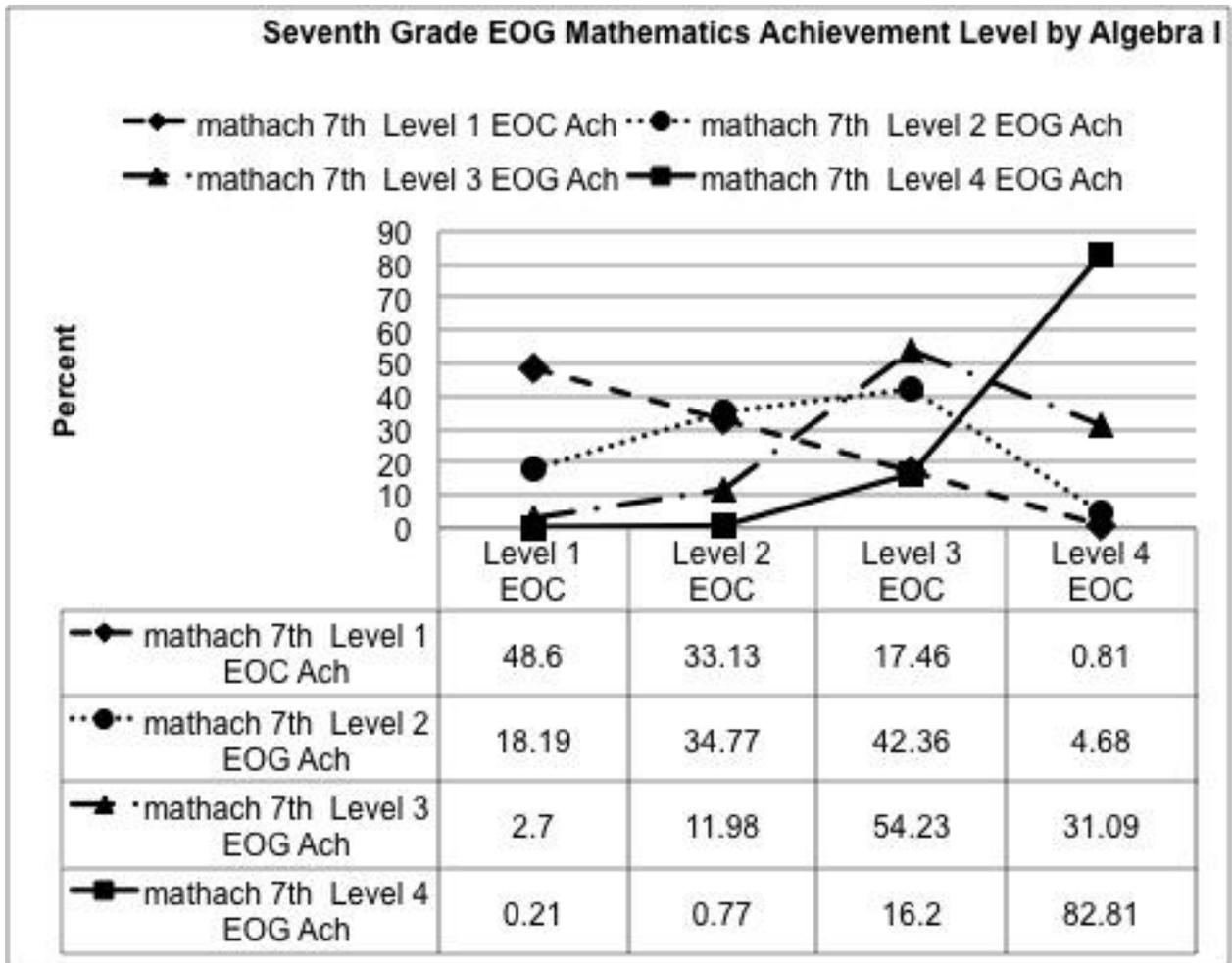
In the seventh grade, 81.73% of the students who scored a Level I on the seventh grade EOG Mathematics scored below achievement Level III on the Algebra I EOC test. 52.96% of the students who scored a Level II on the seventh grade EOG Mathematics test scored below a Level III on the Algebra I EOC test. Figure 6 illustrates the seventh grade EOG mathematics achievement level of 72,322 students compared to each student's Algebra I EOC achievement level. The data selected for the graph attempts to answer research question one.

In the eighth grade, 84.71% of the students who scored a Level I on the eighth grade EOG Mathematics scored below achievement Level III on the Algebra I EOC test. 61.57% of the students who scored a Level II on the eighth grade EOG Mathematics test scored below a Level III on the Algebra I EOC test. The comparison between EOG Mathematics achievement level and Algebra I EOC achievement level indicates there is a strong relationship between a



Note. n = 68,671.

Figure 5. Sixth grade EOG mathematics achievement level by Algebra I EOC (2007).



Note. n = 72,322.

Figure 6. Seventh grade EOG mathematics achievement level by Algebra I EOC (2008).

student's ability to perform at grade level in sixth, seventh, and eighth grade mathematics and high school readiness. A chi-square analysis was conducted to determine the reliability between the EOG Mathematics achievement level scores and a student's Algebra I EOC achievement level. The results of the chi-square analysis was  $<.0001$ , which indicates a very significant relationship. Figure 7 illustrates the eighth grade EOG mathematics achievement level of 69,992 students compared to each student's Algebra I EOC achievement level. The data selected for the graph attempts to answer research question one.

### **Research Question Two: Middle School Indicators vs. Skills Students Need to Become College and Career Ready**

Is there a relationship between middle school indicators aligned with the skills students need to become college and career ready by the end of high school?

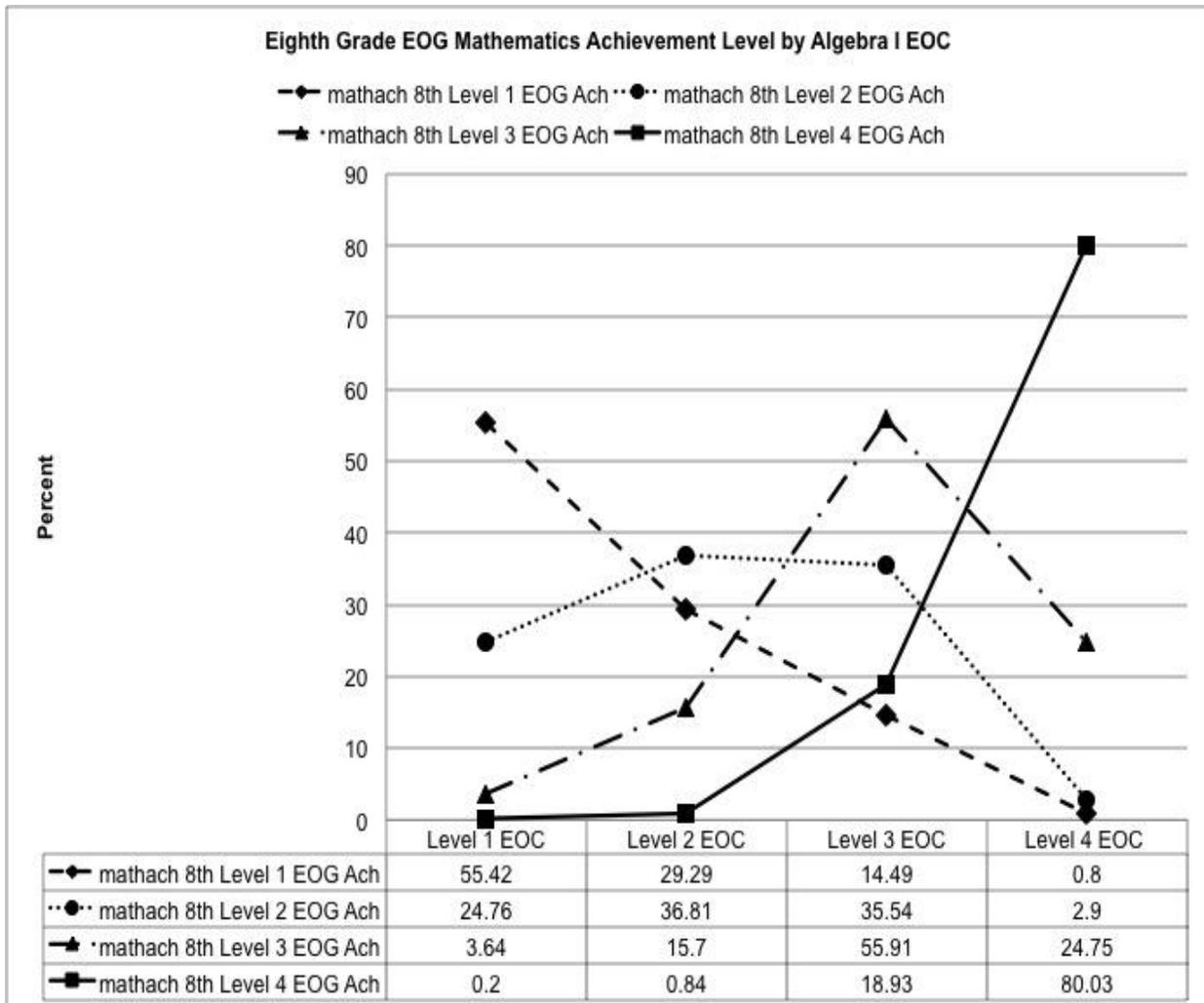
#### **Hypothesis 2A**

There will be a relationship between middle school indicators and each student's final grade point average (GPA) at the end of the twelfth grade.

Traditionally, high schools have used a student's grade point average (GPA) to determine valedictorian, class rank, and how well a student is prepared to enter college or the workforce. Universities use grade point average as one indicator of a student's readiness to enroll in a college or university.

#### **EOG Reading Achievement Level Compared to High School GPA**

The researcher attempted to determine if the sixth, seventh, and eighth grade EOG Reading achievement level scores could be used as a high school readiness indicator. In order to determine if there is a relationship between achievement level scores and high school grade point



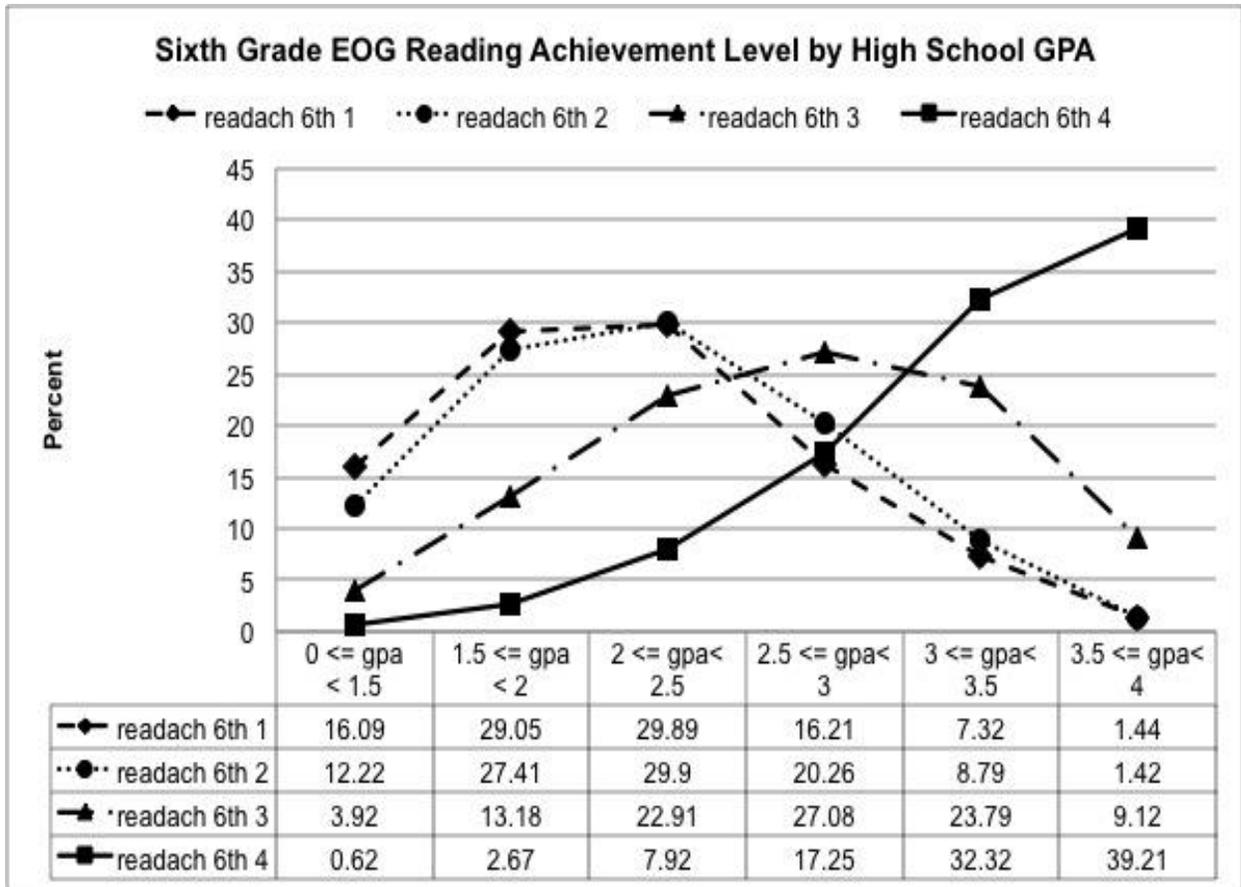
Note. n = 69,992.

Figure 7. Eighth grade EOG mathematics achievement level by Algebra I EOC (2009).

average (GPA), the researcher used statistical analysis to compare each student's final high school GPA with middle school EOG reading scores.

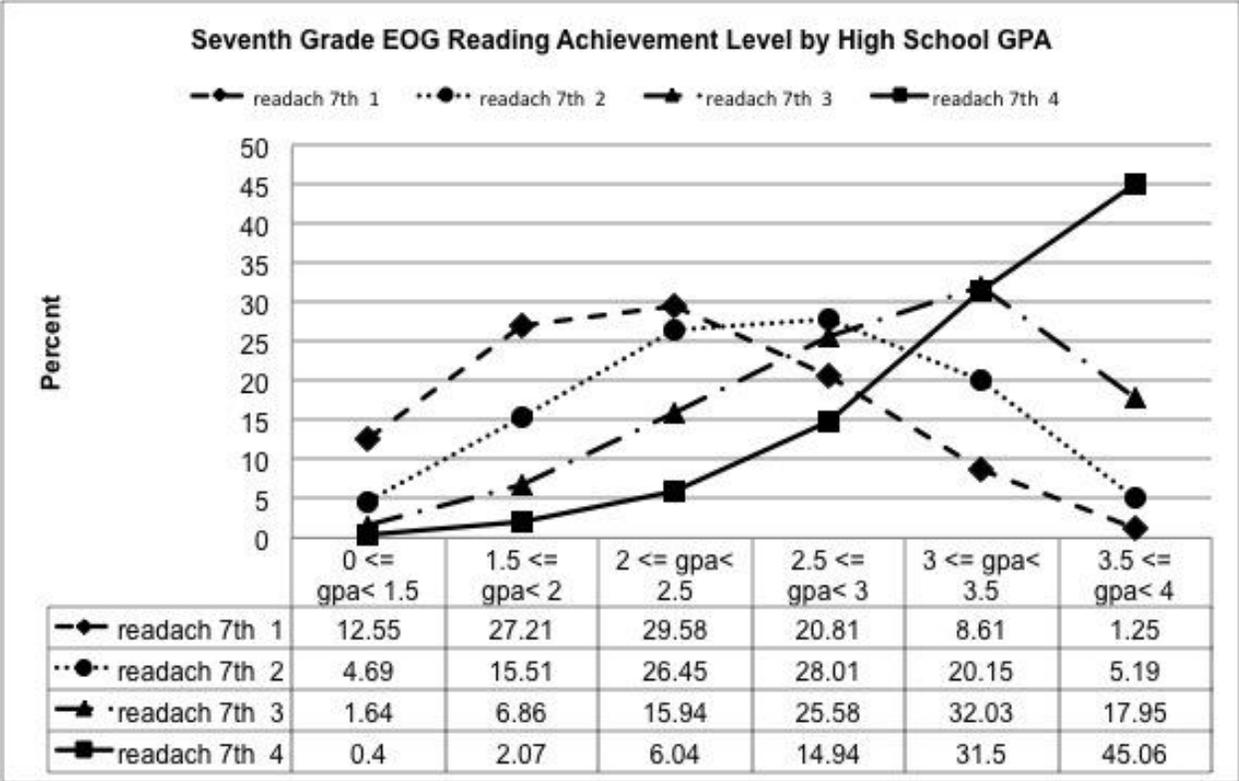
The researcher attempted to determine if the sixth grade EOG Reading achievement level scores could be used as a high school readiness indicator. In the sixth grade, 75.03% of the students who scored a Level I on the sixth grade EOG Reading test graduated from high school with less than a 2.5 GPA. 69.53% of the students who scored a Level II on the sixth grade EOG Reading test graduated from high school with less than a 2.5 GPA. In contrast, 40.01% of the students who scored a Level III on the sixth grade EOG Reading test earned less than a 2.5 GPA in high school. Finally, 11.21% of the students who scored a Level IV on the sixth grade EOG Reading test graduated from high school with less than a 2.5 GPA. Figure 8 illustrates the sixth grade EOG reading achievement level compared to each student's high school GPA. The data selected for the graph attempts to answer research question two.

The researcher attempted to determine if the seventh grade EOG Reading achievement level scores could be used as a high school readiness indicator. In the seventh grade, 69.34% of the students who scored a Level I on the seventh grade EOG Reading test graduated from high school with less than a 2.5 GPA. 46.65% of the students who scored a Level II on the seventh grade EOG Reading test graduated from high school with less than a 2.5 GPA. In contrast, 24.44% of the students who scored a Level III on the seventh grade EOG Reading test earned less than a 2.5 GPA in high school. Finally, 8.51% of the students who scored a Level IV on the seventh grade EOG Reading test graduated from high school with less than a 2.5 GPA. Figure 9 illustrates the seventh grade EOG reading achievement level compared to each student's high school GPA. The data selected for the graph attempts to answer research question two.



Note. n = 73,107.

Figure 8. Sixth grade EOG reading achievement level by high school GPA (2007).



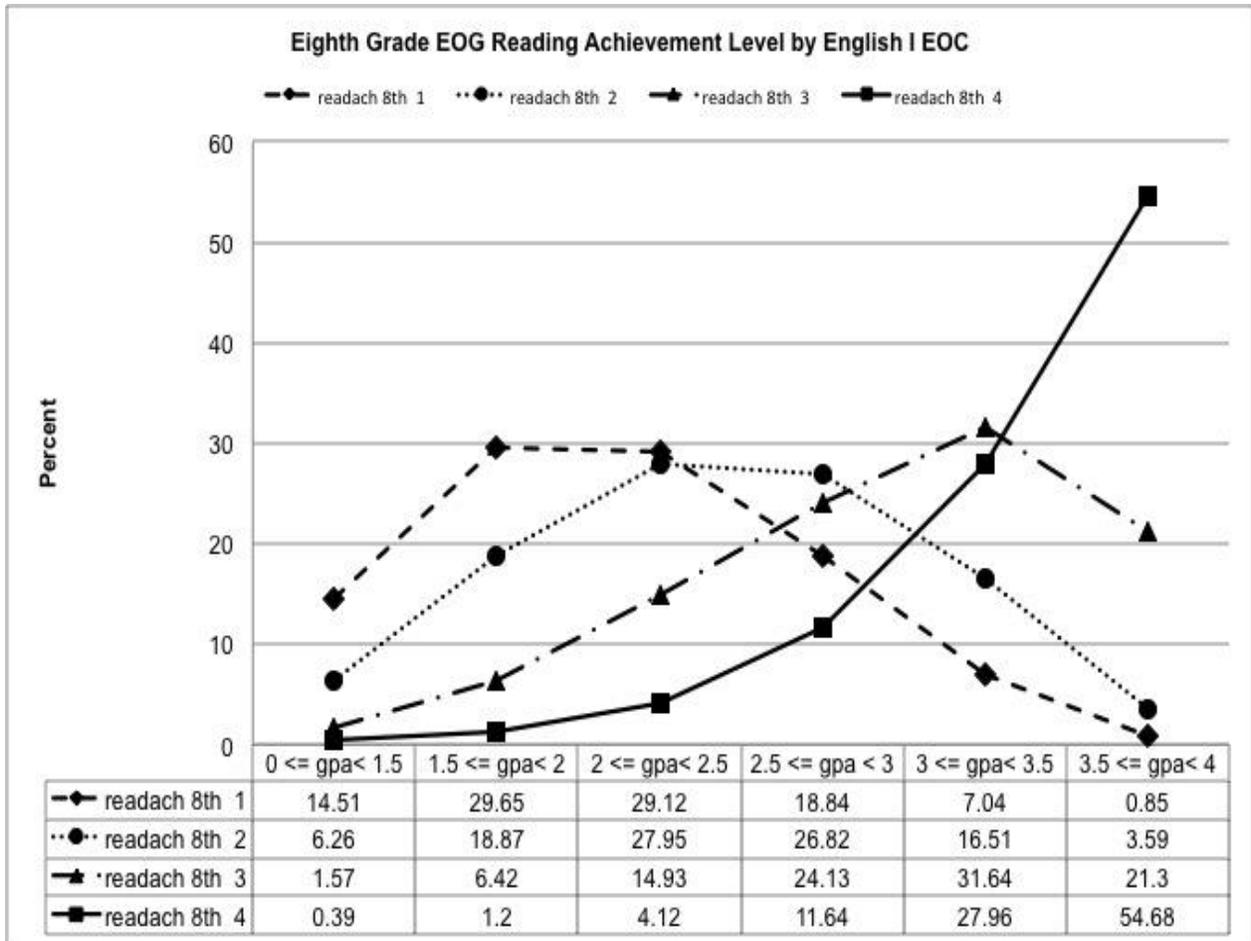
Note. n = 76,235.

Figure 9. Seventh grade EOG reading achievement level by high school GPA (2008).

The researcher attempted to determine if the eighth grade EOG Reading achievement level scores could be used as a high school readiness indicator. The result of the analysis will be explained. In the eighth grade, 73.28% of the students who scored a Level I on the eighth grade EOG Reading test graduated from high school with less than a 2.5 GPA. 53.08% of the students who scored a Level II on the eighth grade EOG Reading test graduated from high school with less than a 2.5 GPA. In contrast, 22.92% of the students who scored a Level III on the eighth grade EOG Reading test earned less than a 2.5 GPA in high school. Finally, 5.71% of the students who scored a Level IV on the sixth grade EOG Reading test graduated from high school with less than a 2.5 GPA. . Figure 10 illustrates the eighth grade EOG reading achievement level compared to each student's high school GPA. The data selected for the graph attempts to answer research question two.

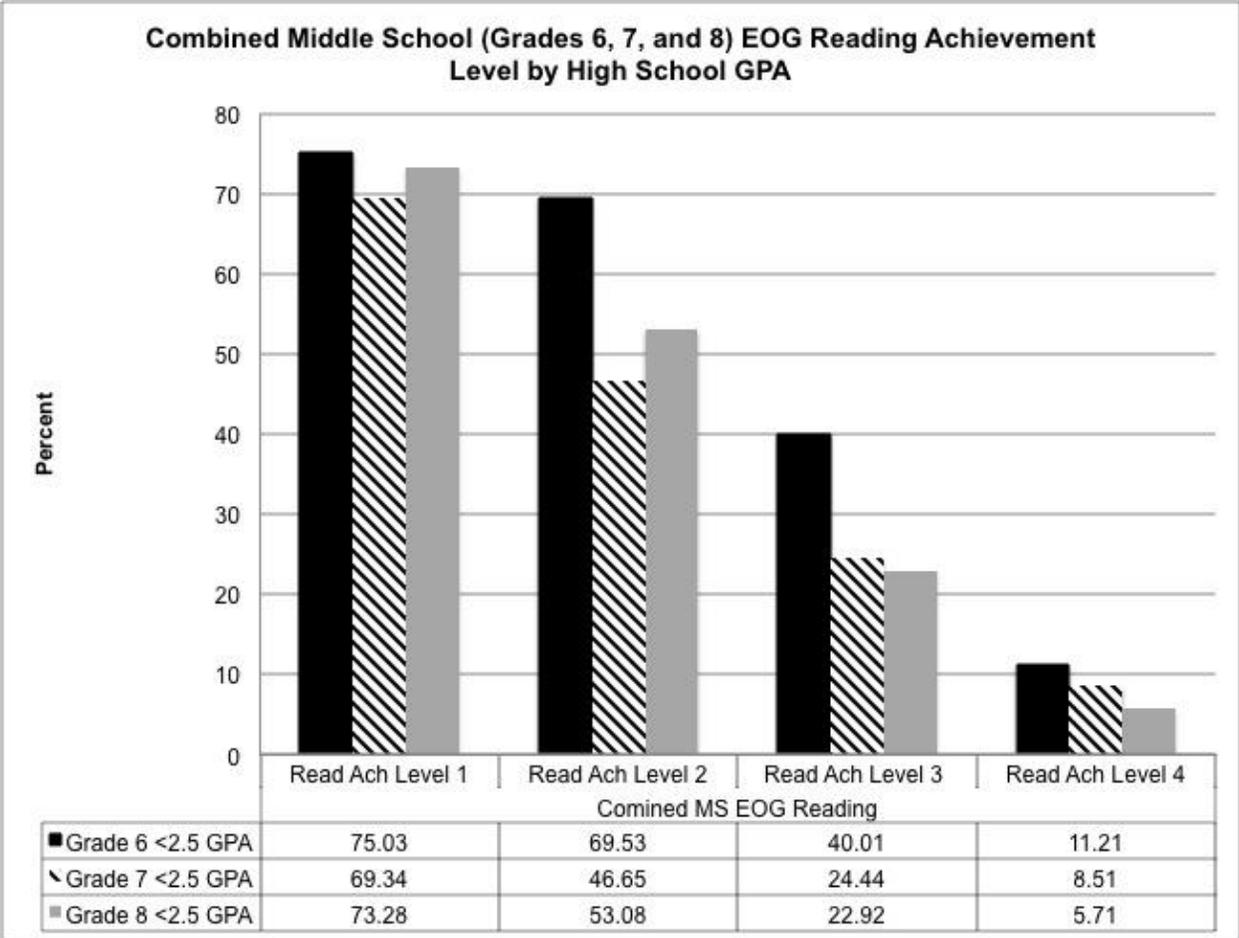
The comparison between EOG Reading achievement level and final GPA indicates there is a strong relationship between a student's ability to read at grade level in the sixth, seventh, and eighth grade and their high school readiness. A chi-square analysis was conducted to determine the reliability between the EOG Reading achievement level scores and GPA. The results of the chi-square analysis was  $<.0001$ , which indicates a very significant relationship.

Figure 11 illustrates a strong relationship between the EOG Reading achievement level a student receives at the end of each grade level and the final high school grade point average. Students who scored a Level I or Level II on the North Carolina EOG Reading Comprehension Test(s) were more likely to graduate with less than a 2.5 grade point average. The minimum admission requirement for the University of North Carolina (UNC) System is a 2.5 unweighted grade point average. While this study focused on college and career readiness, it is clear that students who scored less than a Level III or Level IV on the North



Note. n = 78,145.

Figure 10. Eighth grade EOG reading achievement level by high school GPA (2009).



*Note.* n = 227,487.

*Figure 11.* Combined middle school (Grades 6, 7, and 8) EOG reading achievement level by high school GPA (2007, 2008, and 2009).

Carolina EOG Reading Comprehension Test(s) were at risk for graduating with the option of entering one of the state's sixteen public universities.

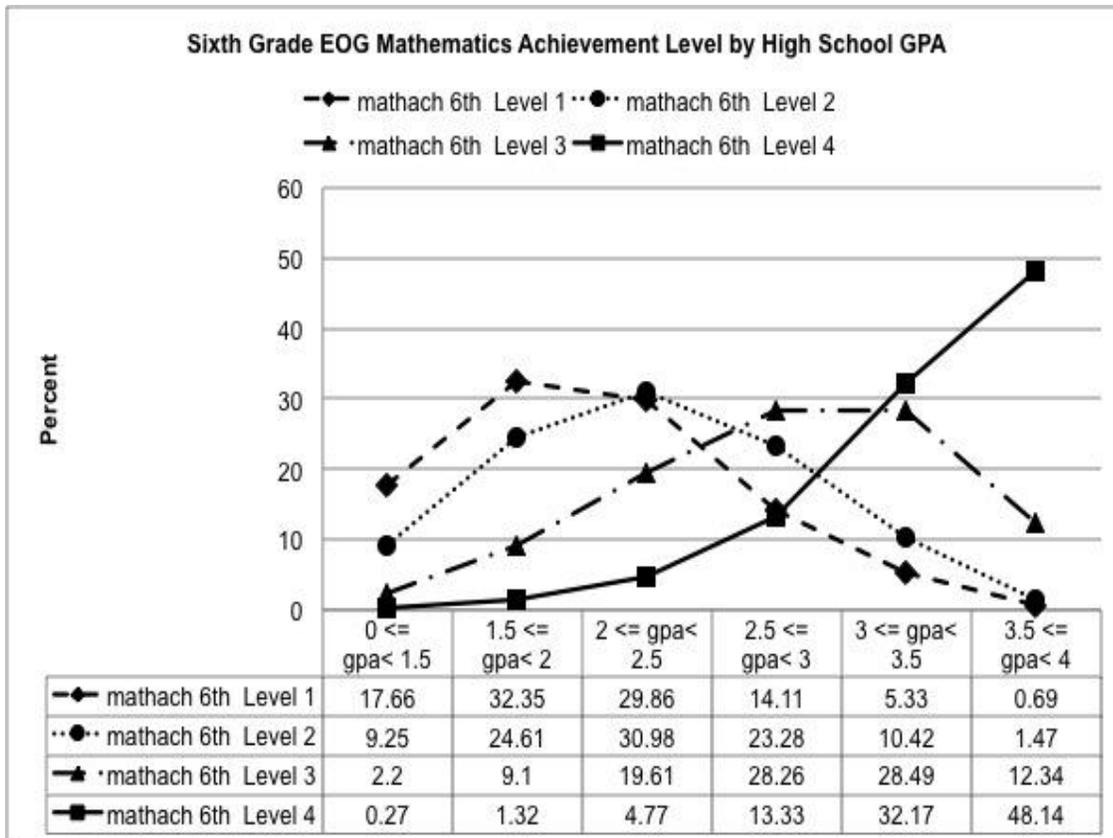
### **EOG Mathematics Achievement Level Compared To High School GPA**

The researcher attempted to determine if the sixth, seventh, and eighth grade EOG Mathematics level scores could be used as a high school readiness indicator. The achievement level scores were compared to the student's high school grade point average (GPA).

The researcher attempted to determine if the sixth grade EOG Mathematics achievement level scores could be used as a high school readiness indicator. 79.87% of the students who scored a Level I on the sixth grade EOG Mathematics test graduated from high school with less than a 2.5 GPA. 64.84% of the students who scored a Level II on the sixth grade EOG

Mathematics test graduated from high school with less than a 2.5 GPA. In contrast, 30.91% of the students who scored a Level III on the sixth grade EOG Mathematics test earned less than a 2.5 GPA in high school. Finally, 6.36% of the students who scored a Level IV on the sixth grade EOG Mathematics test graduated from high school with less than a 2.5 GPA. Figure 12 shows the sixth grade EOG mathematics achievement level of 73,307 students compared to each student's high school GPA. The data selected for the graph attempts to answer research question two.

The researcher attempted to determine if the seventh grade EOG Mathematics achievement level scores could be used as a high school readiness indicator. In the seventh grade, 79.27% of the students who scored a Level I on the seventh grade EOG Mathematics test graduated from high school with less than a 2.5 GPA. 63.66% of the students who scored a Level II on the seventh grade EOG Mathematics test graduated from high school with less than a 2.5 GPA. In contrast, 29.75% of the students who scored a Level III on the seventh grade EOG



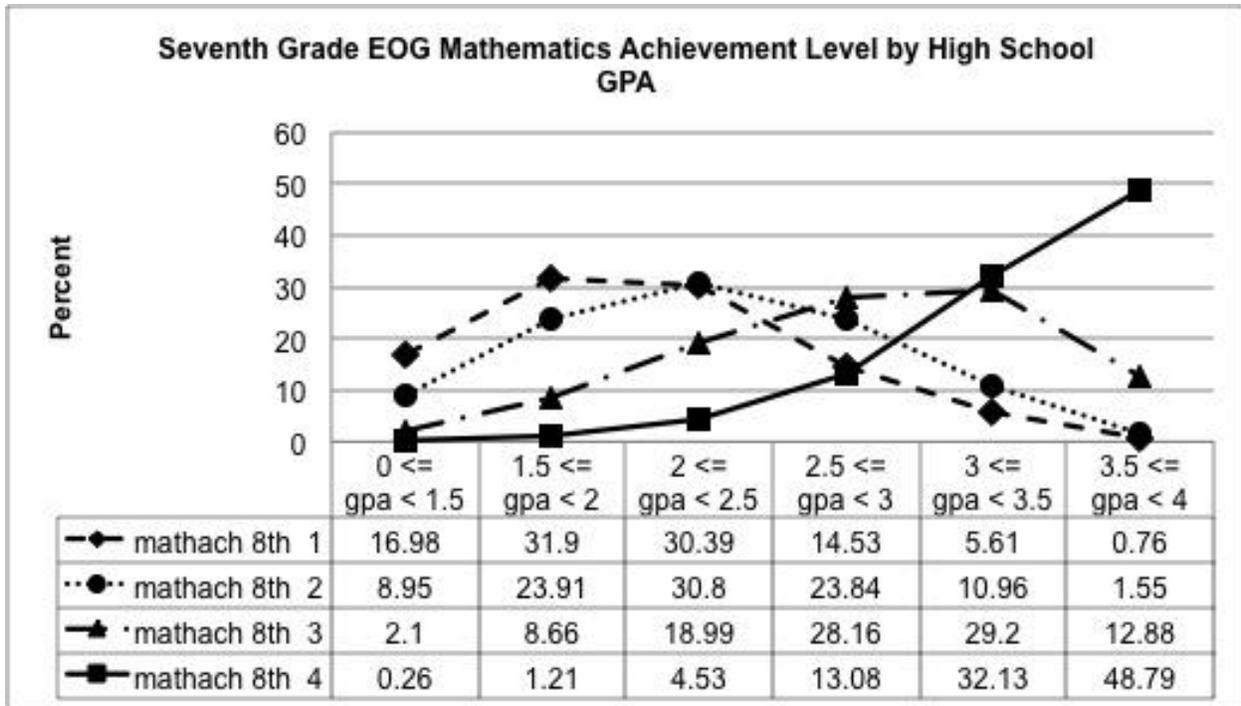
Note. n = 73,307.

Figure 12. Sixth grade EOG mathematics achievement level by high school GPA (2007).

Mathematics test earned less than a 2.5 GPA in high school. Finally, 6.0% of the students who scored a Level IV on the seventh grade EOG Mathematics test graduated from high school with less than a 2.5 GPA. Figure 13 shows the seventh grade EOG mathematics achievement level of 76,384 students compared to each student's high school GPA. The data selected for the graph attempts to answer research question two.

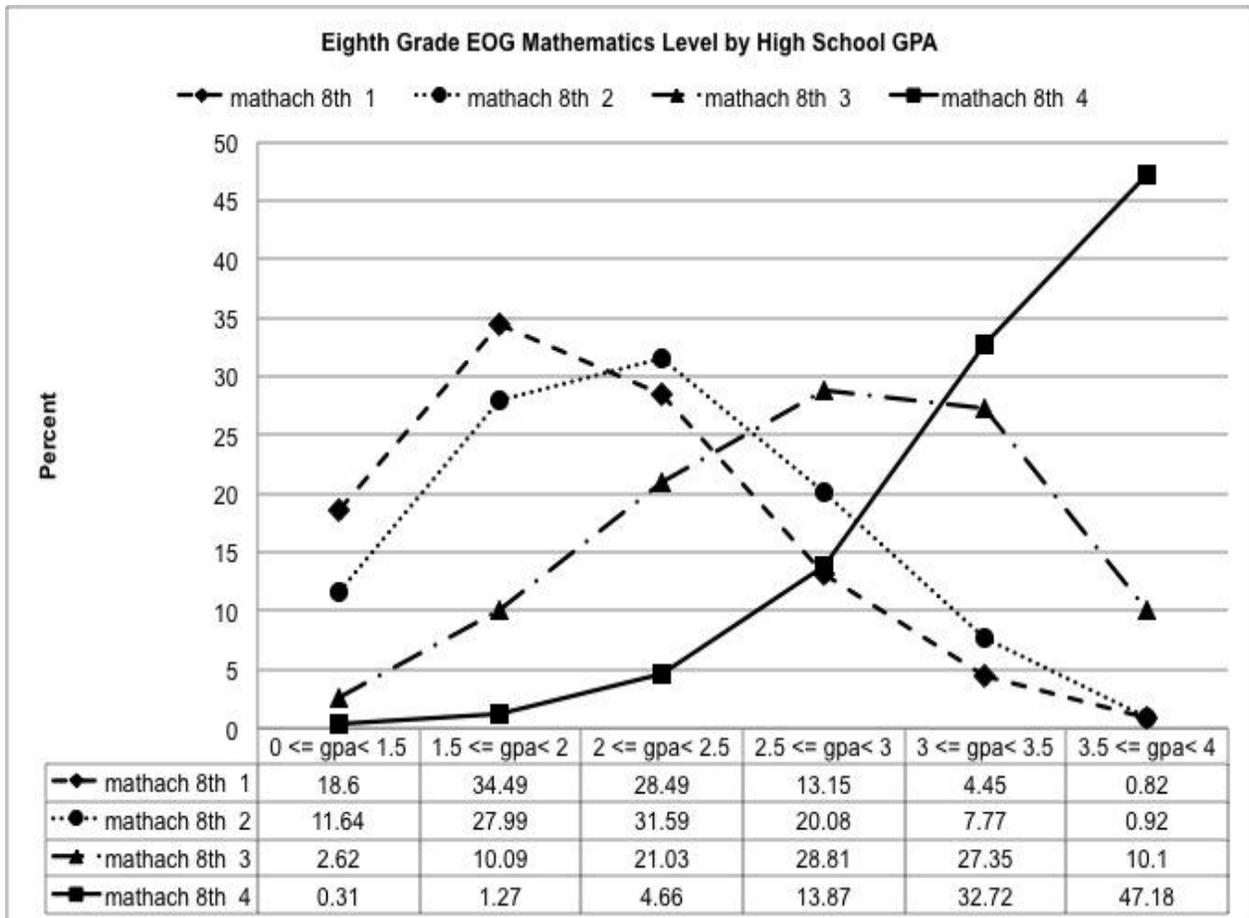
The researcher attempted to determine if the eighth grade EOG Mathematics achievement level scores could be used as a high school readiness indicator. 81.58% of the students who scored a Level I on the eighth grade EOG Mathematics test graduated from high school with less than a 2.5 GPA. 71.22% of the students who scored a Level II on the eighth grade EOG Mathematics test graduated from high school with less than a 2.5 GPA. In contrast, 33.74% of the students who scored a Level III on the eighth grade EOG Mathematics test earned less than a 2.5 GPA in high school. Finally, 6.24% of the students who scored a Level IV on the eighth grade EOG Mathematics test graduated from high school with less than a 2.5 GPA. Figure 14 shows the eighth grade EOG mathematics achievement level of 74,006 students compared to each student's high school GPA. The data selected for the graph attempts to answer research question two.

The comparison between EOG Mathematics achievement level and final GPA indicates there is a strong relationship between a student's ability to perform at grade level in the sixth, seventh, and eighth grade and their high school readiness. A chi-square analysis was conducted to determine the reliability between the EOG Mathematics achievement level scores and GPA. The results of the chi-square analysis was  $<.0001$ , which indicates a very significant relationship.



Note. n = 76,384.

Figure 13. Seventh grade EOG mathematics achievement level by high school GPA (2008).



Note. n = 74,006.

Figure 14. Eighth grade EOG mathematics achievement level by high school GPA (2009).

Figure 15 illustrates a strong relationship between the EOG Mathematics achievement level a student receives at the end of each grade level and the final high school grade point average. Students who scored a Level I or Level II on the North Carolina EOG Mathematics Test(s) were more likely to graduate with less than a 2.5 grade point average. The minimum admission requirement for the University of North Carolina (UNC) System is a 2.5 unweighted grade point average. While this study focused on college and career readiness, it is clear that students who scored less than a Level III or Level IV on the North Carolina EOG Mathematics Test(s) were at risk for graduating with the option of entering one of the state's sixteen public universities.

### **Research Question Three: Student Attendance and Level I and Level II End-of-Grade (EOG) Scores**

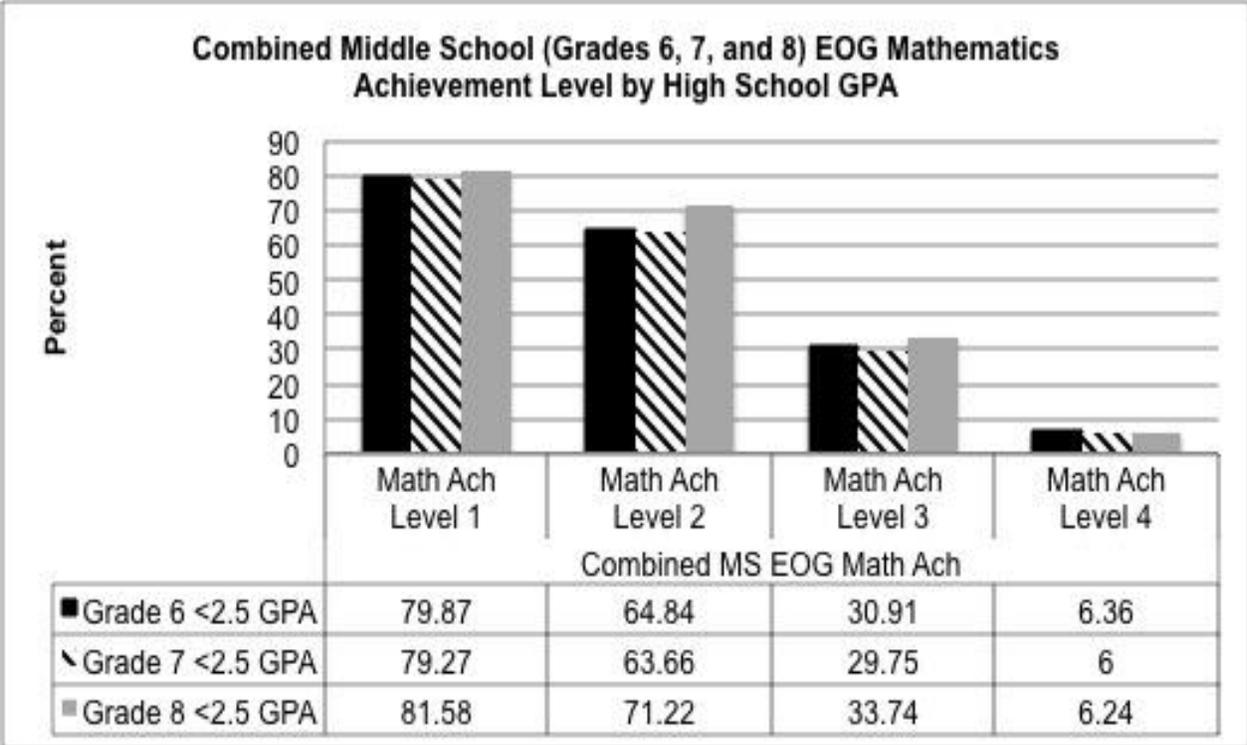
Is there a relationship between attendance and Level I and Level II End-of-Grade (EOG) scores?

#### **Hypothesis 3A**

There will be a negative relationship between students who miss 0-14 days of school (excused or unexcused absences) and the students who scored a Level I or Level II on the End-of-Grade (EOG) tests.

#### **Hypothesis 3B**

There will be a positive relationship between students who miss 15 or more days of school (excused or unexcused absences) and the students who scored a Level I or Level II on the End-of-Grade (EOG) tests.



*Note.* n = 223,697.

*Figure 15.* Combined middle school (Grades 6, 7, and 8) EOG mathematics achievement level by high school GPA (2007, 2008, and 2009).

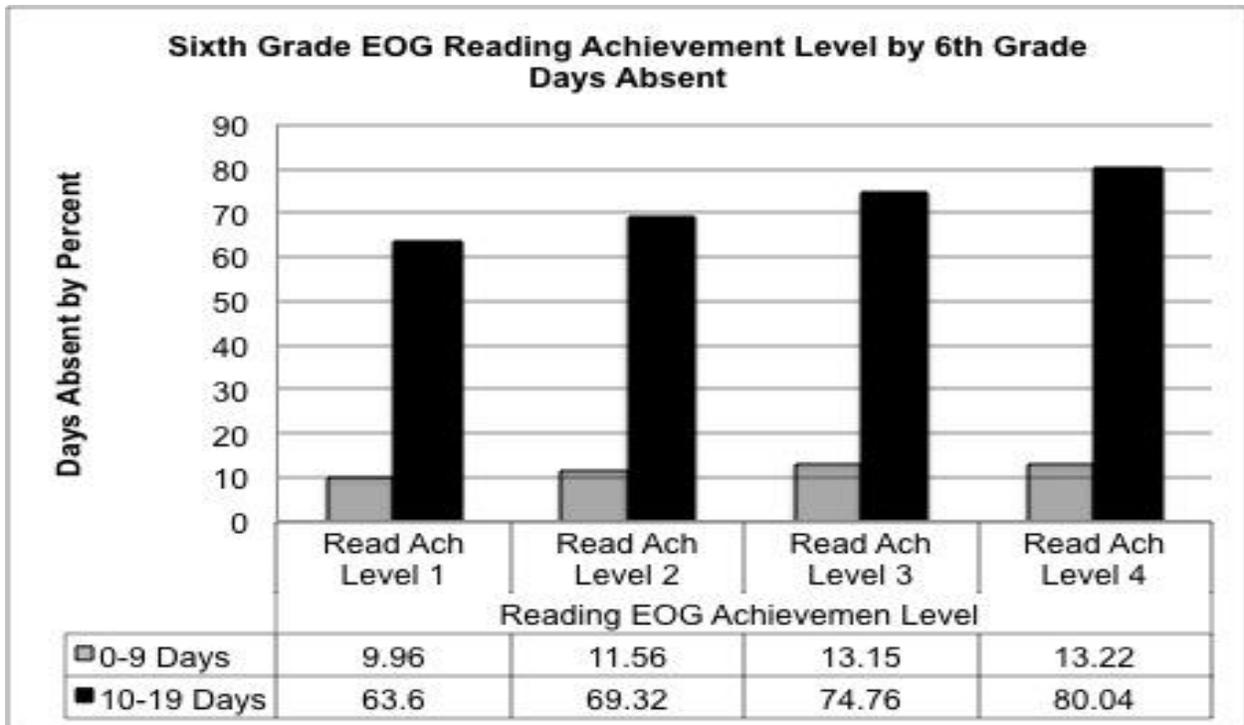
### **EOG Reading Achievement Level Compared to Number of Days Absent by Percent**

The researcher attempted to determine if student attendance in the sixth grade (2007) could be used as a high school readiness indicator. Each student's sixth grade EOG Reading achievement level was compared to the number of days a student was absent. A majority of the sixth grade absences fell between 10-19 days. There was a difference between the percent of students who scored a Level I and a Level IV on the sixth grade EOG Reading test. Figure 16 shows sixth grade EOG reading achievement level compared to the number of days each student was absent in the sixth grade. The data selected for the graph attempts to answer research question three.

63.6% of the students who scored a Level I were absent for 10-19 days. 69.32% of the students who scored a Level II were absent 10-19 days. 74.6% of the students who scored a Level III were absent 10-19 days. Finally, 80.04% of the students who scored a Level IV were absent 10-19 days.

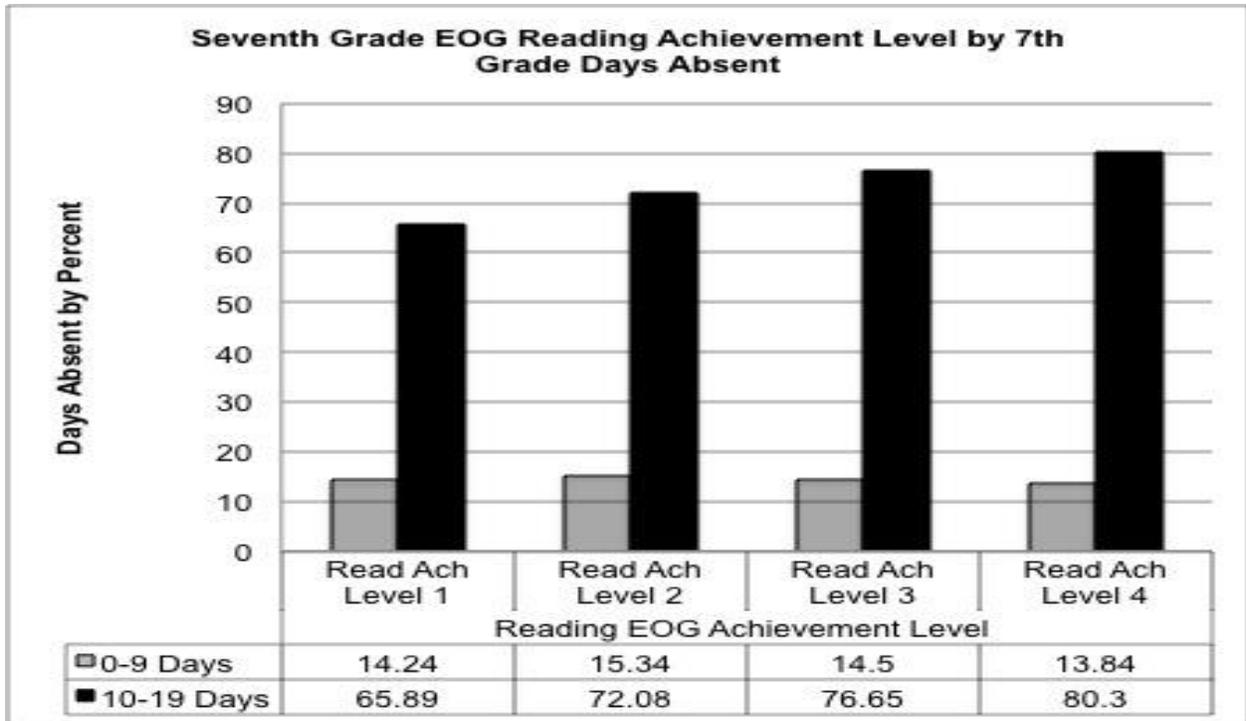
The researcher attempted to determine if student attendance in the seventh grade (2008) could be used as a high school readiness indicator. Each student's seventh grade EOG Reading achievement level was compared to the number of days a student was absent. A majority of the seventh grade absences fell between 10-19 days. There was a difference between the percent of students who scored a Level I and a Level IV on the seventh grade EOG Reading test. Figure 17 shows seventh grade EOG reading achievement level compared to the number of days each student was absent in the seventh grade. The data selected for the graph attempts to answer research question three.

65.89% of the students who scored a Level I were absent for 10-19 days. 72.08% of the students who scored a Level II were absent 10-19 days. 76.65% of the students who scored a



*Note.* n = 116,668.

*Figure 16.* Sixth grade EOG reading achievement level by 6<sup>th</sup> grade days absent (2006-2007).



Note. n = 118,152.

Figure 17. Seventh grade EOG reading achievement level by 7<sup>th</sup> grade days absent (2007-2008).

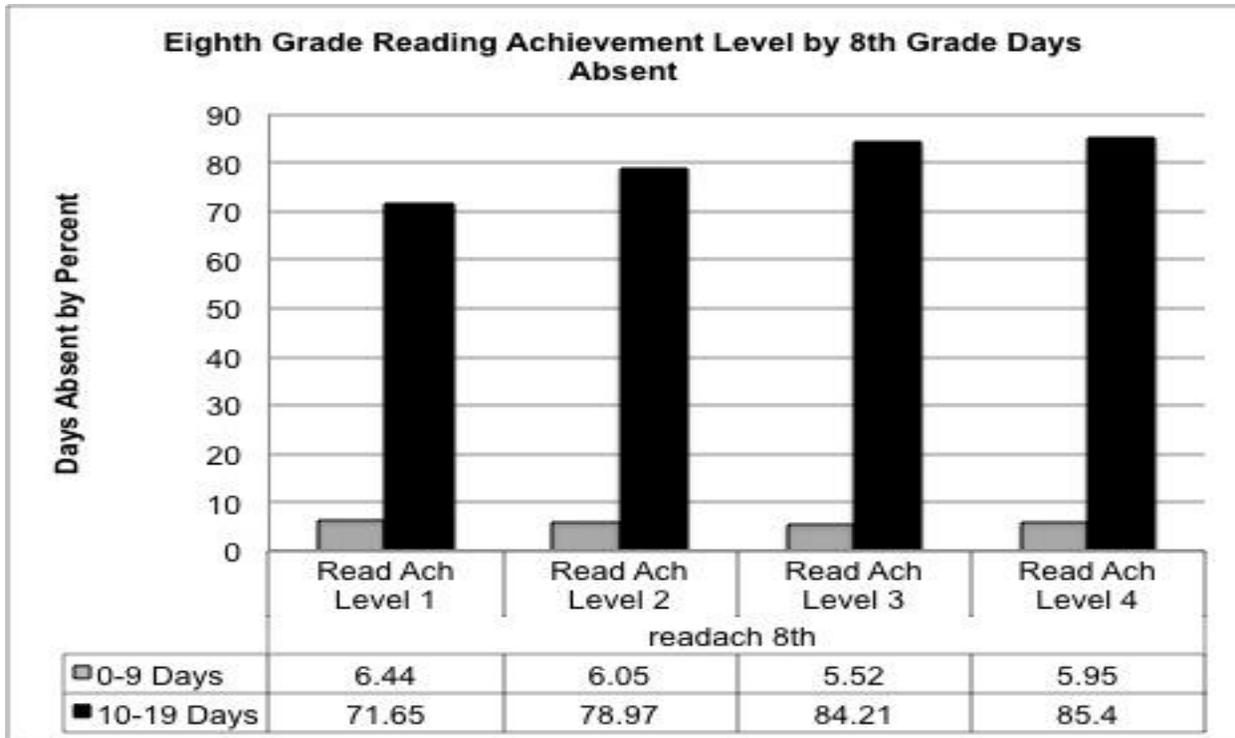
Level III were absent 10-19 days. Finally, 80.3% of the students who scored a Level IV were absent 10-19 days.

The researcher attempted to determine if student attendance in the eighth grade (2009) could be used as a high school readiness indicator. Each student's eighth grade EOG Reading achievement level was compared to the number of days a student was absent. A majority of the eighth grade absences fell between 10-19 days. There was a difference between the percent of students who scored a Level I and a Level IV on the eighth grade EOG Reading test. Figure 18 shows eighth grade EOG reading achievement level compared to the number of days each student was absent in the seventh grade. The data selected for the graph attempts to answer research question three.

71.65% of the students who scored a Level I were absent for 10-19 days. 78.97% of the students who scored a Level II were absent 10-19 days. 84.21% of the students who scored a Level III were absent 10-19 days. Finally, 85.4% of the students who scored a Level IV were absent 10-19 days.

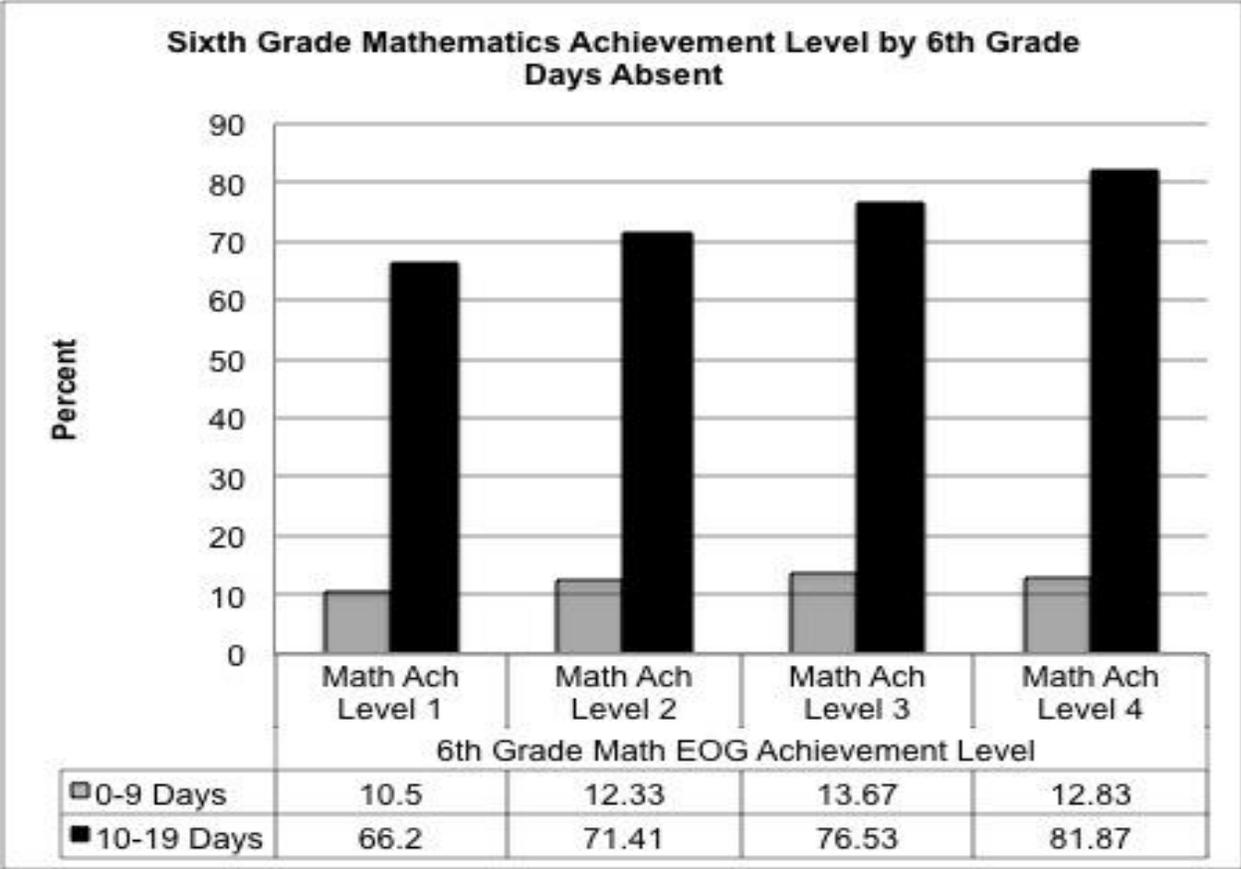
### **EOG Mathematics Achievement Level Compared to Number of Days Absent by Percent**

The researcher attempted to determine if student attendance in the sixth grade (2007) could be used as a high school readiness indicator. Each student's sixth grade EOG Mathematics achievement level was compared to the number of days a student was absent. A majority of the sixth grade absences fell between 10-19 days. There was a slight difference between the percent of students who scored a Level I and a Level IV on the sixth grade EOG Mathematics test. Figure 19 shows sixth grade EOG mathematics achievement level compared to the number of days each student was absent in the sixth grade. The data selected for the graph attempts to answer research question three.



*Note.* n = 114,933.

*Figure 18.* Eighth grade EOG reading achievement level by 8<sup>th</sup> grade days absent (2008-2009).



Note. n = 117,145.

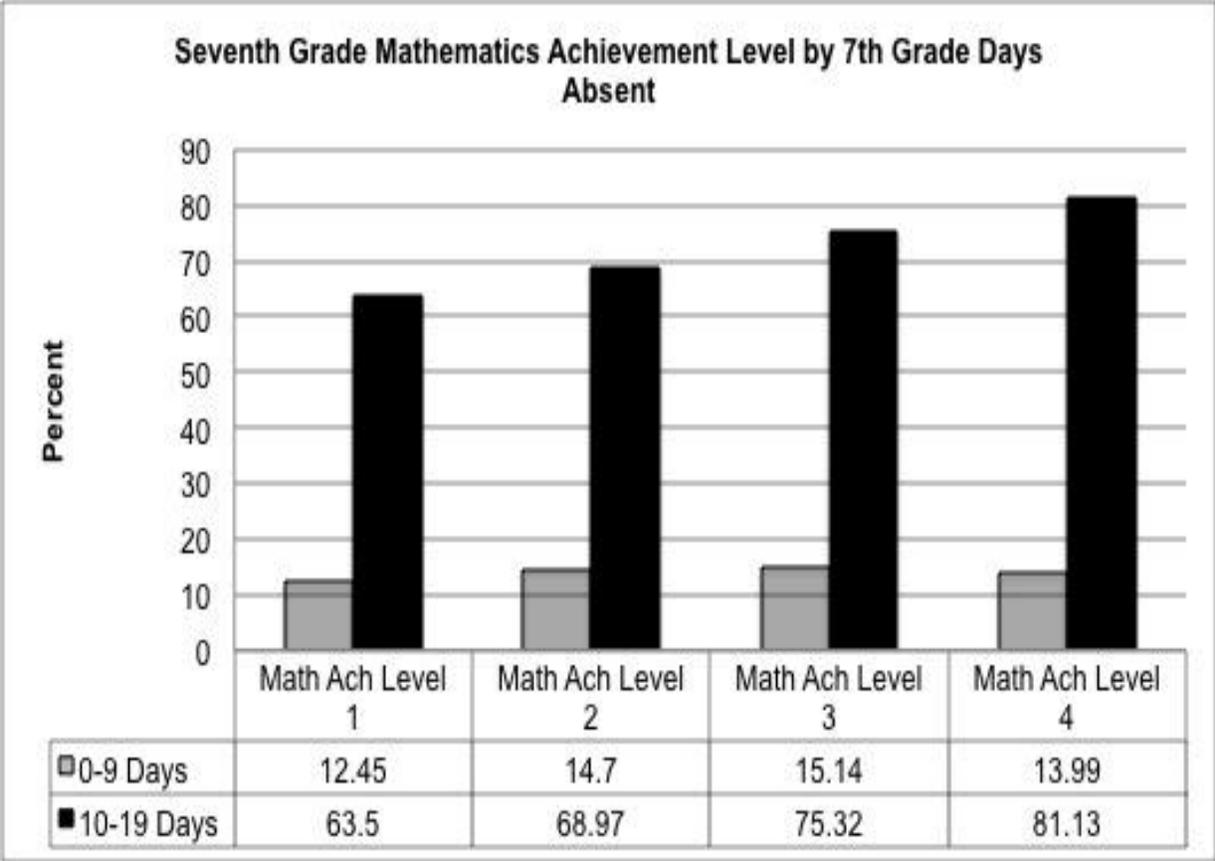
Figure 19. Sixth grade mathematics achievement level by 6<sup>th</sup> grade days absent (2006-2007).

66.2% of the students who scored a Level I were absent for 10-19 days. 71.41% of the students who scored a Level II were absent 10-19 days. 76.53% of the students who scored a Level III were absent 10-19 days. Finally, 81.87% of the students who scored a Level IV were absent 10-19 days.

The researcher attempted to determine if student attendance in the seventh grade (2008) could be used as a high school readiness indicator. Each student's seventh grade EOG Mathematics achievement level was compared to the number of days a student was absent. A majority of the seventh grade absences fell between 10-19 days. There was a slight difference between the percent of students who scored a Level I and a Level IV on the seventh grade EOG mathematics test. Figure 20 shows seventh grade EOG mathematics achievement level compared to the number of days each student was absent in the seventh grade. The data selected for the graph attempts to answer research question three.

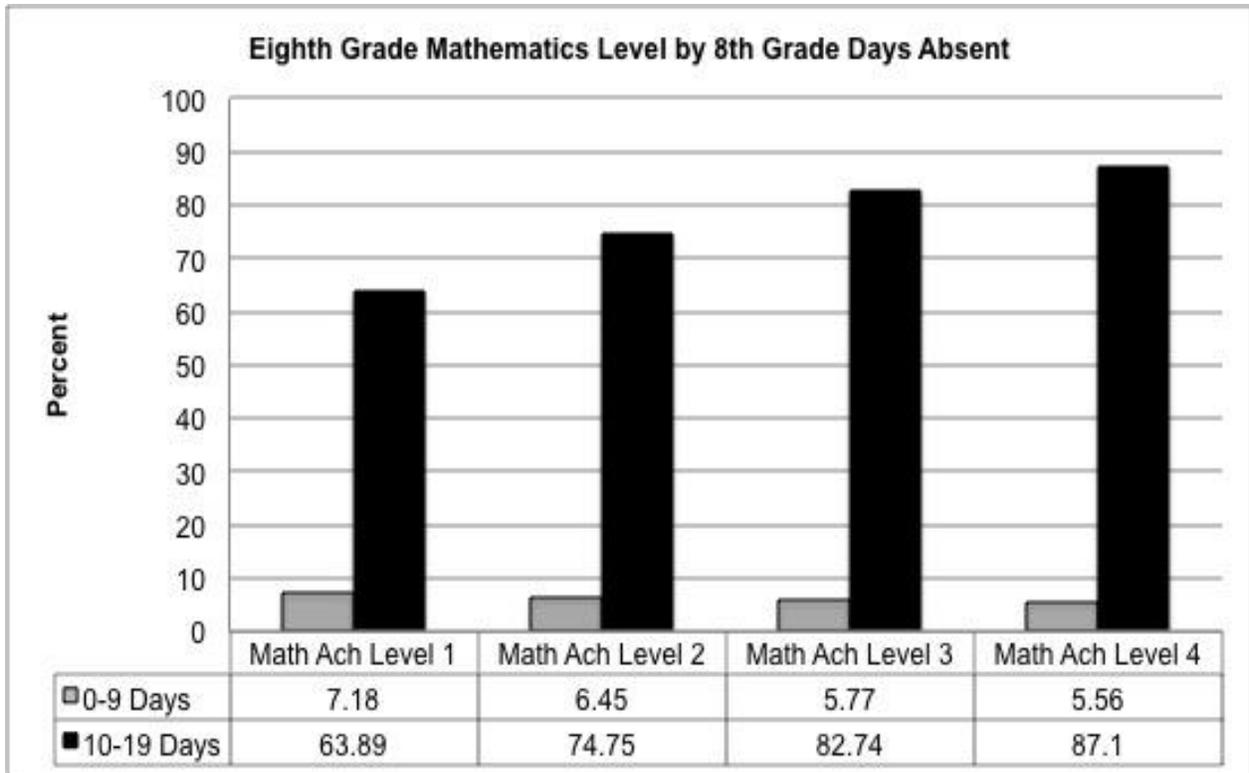
63.5% of the students who scored a Level I were absent for 10-19 days. 68.97% of the students who scored a Level II were absent 10-19 days. 75.32% of the students who scored a Level III were absent 10-19 days. Finally, 81.13% of the students who scored a Level IV were absent 10-19 days.

The researcher attempted to determine if student attendance in the eighth grade (2009) could be used as a high school readiness indicator. Each student's eighth grade EOG Mathematics achievement level was compared to the number of days a student was absent. A majority of the eighth grade absences fell between 10-19 days. There was a slight difference between the percent of students who scored a Level I and a Level IV on the eighth grade EOG Mathematics test. Figure 21 shows eighth grade EOG mathematics achievement level compared



Note. n = 118,425.

Figure 20. Seventh grade mathematics achievement level by 7<sup>th</sup> grade days absent (2007-2008).



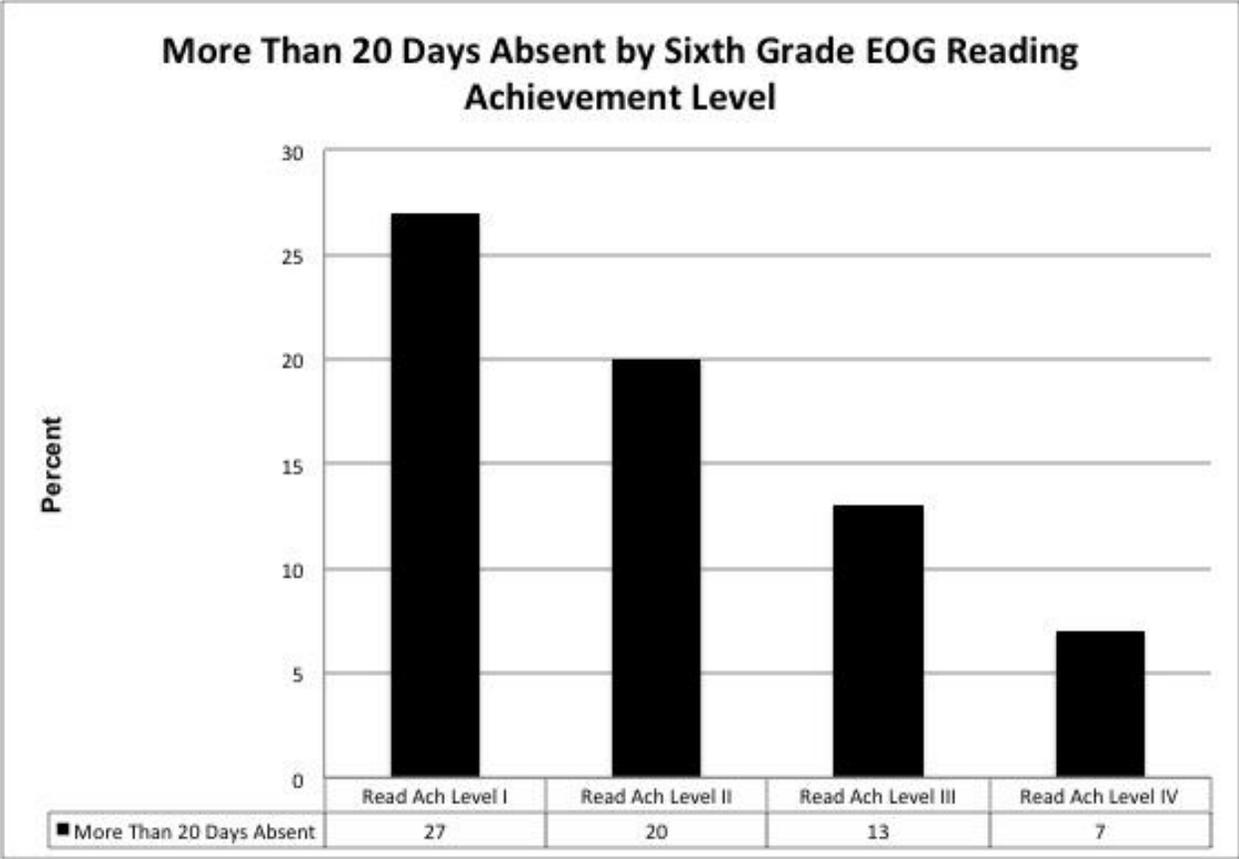
Note. n = 109,692.

Figure 21. Eighth grade mathematics level by 8<sup>th</sup> grade days absent (2008-2009).

to the number of days each student was absent in the eighth grade. The data selected for the graph attempts to answer research question three.

63.89% of the students who scored a Level I were absent for 10-19 days. 74.75% of the students who scored a Level II were absent 10-19 days. 82.74% of the students who scored a Level III were absent 10-19 days. Finally, 87.1% of the students who scored a Level IV were absent 10-19 days.

The researcher concluded that a majority of students in the study missed between zero – nineteen days of school. After comparing middle school EOG Reading achievement levels and middle school EOG mathematics levels with the number of absences, the researcher analyzed the number of days absent compared with sixth grade EOG Reading achievement levels. Figure 22 is titled shows the number of students who missed more than 20 days of school in the sixth grade compared with each student's sixth grade reading achievement level. 27.0% of the sixth grade students who missed more than 20 days of school scored a Level I. 20.0% of the students who missed more than 20 days of school scored a Level II. 13.0% of the students who missed more than 20 days of school scored a Level III. Finally, 7.0% of the students who missed more than 20 days of school scored a Level IV. Based on the data available from the North Carolina Department of Public Instruction, middle school educators could establish over 19 absences as a warning light for middle school students. There is a relationship between student absences and the predicted achievement level on EOG tests in reading and mathematics.



Note. n = 13,799.

Figure 22. More than 20 days absent by sixth grade EOG reading achievement level (2006-2007).

## **Research Question Four: Level I and Level II End-of-Grade (EOG) Scores in Middle School Reading and Level I or Level II High School End-of-Course (EOC) English I Scores**

Is there a relationship between students with a Level I or Level II End-of-Grade (EOG) test score in middle school reading and a Level I or Level II high school End-of-Course (EOC) English I?

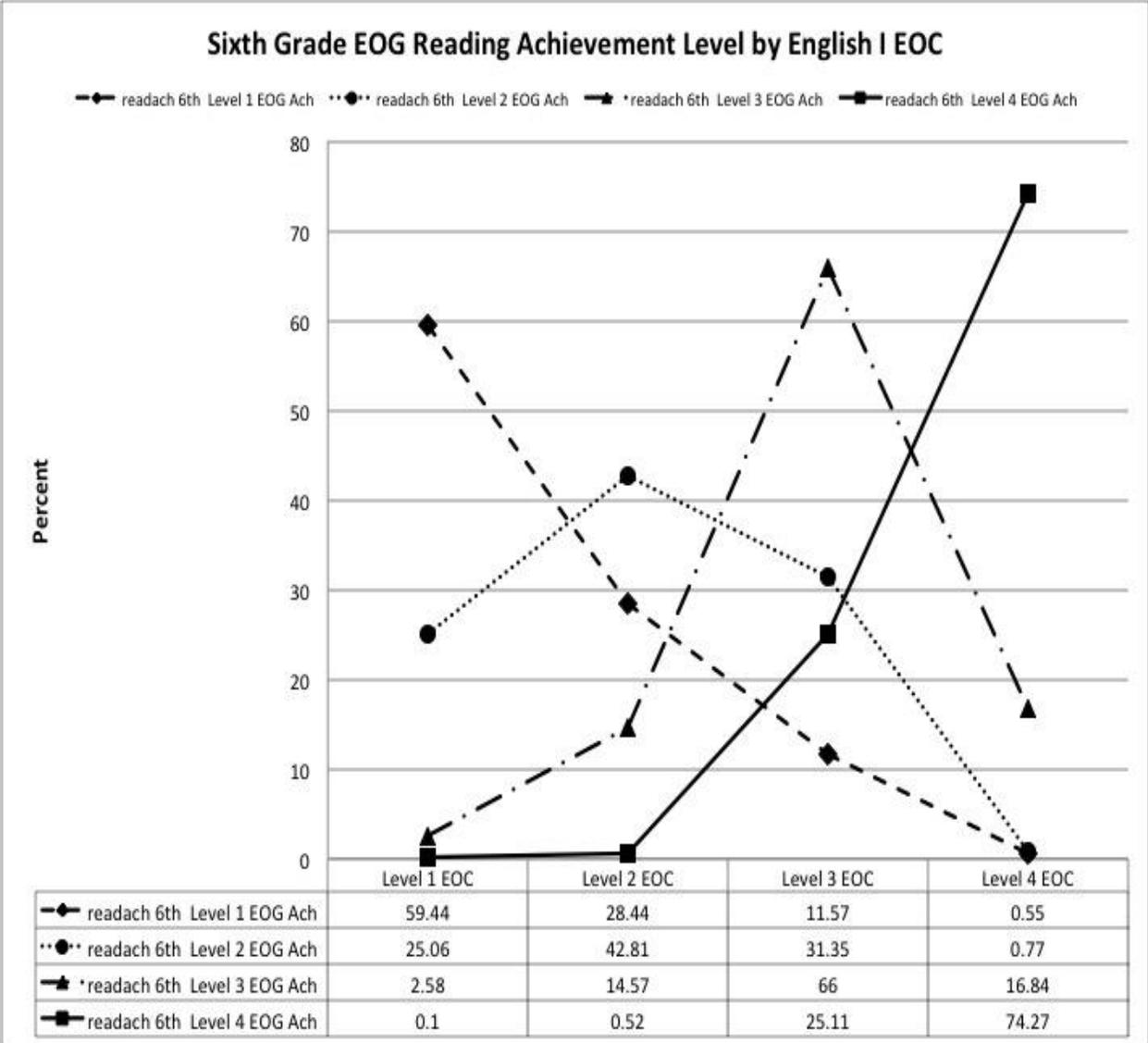
### **Hypothesis 4**

There will be a relationship between students who score a Level I or Level II on the EOG middle school reading test and the students who score a Level I or Level II on the EOC English I test.

### **EOG Reading Achievement Level Compared to EOC English I Achievement Level**

The researcher attempted to determine if the sixth grade (2007) EOG Reading achievement level scores could be used as a high school readiness indicator. 59.44% of the students who scored a Level I on the sixth grade EOG Reading test scored a Level I on the high school English I EOC test. 74.27% of the sixth graders who scored a Level IV on the sixth grade EOG Reading test scored a Level IV on the high school English I EOC test.

87.88% of North Carolina sixth grade students (2007) who scored a Level I on the sixth grade EOG Reading test scored below a Level III on the high school English I EOC test. 67.87% of North Carolina sixth grade students who scored a Level II on the sixth grade EOG Reading test scored below a Level III on the high school English I EOC test. Out of the sixth grade students who scored a Level III on the sixth grade EOG Reading test, 17.15% scored below a Level III on the high school English I EOC test. Finally, out of the sixth grade students who scored a Level IV on the sixth grade Reading EOG test, 0.62% scored below a Level III on the high school English I EOC test. Figure 23 shows the sixth grade EOG reading achievement level



Note. n = 94,568

Figure 23. Sixth grade EOG reading achievement level by English I EOC (2007).

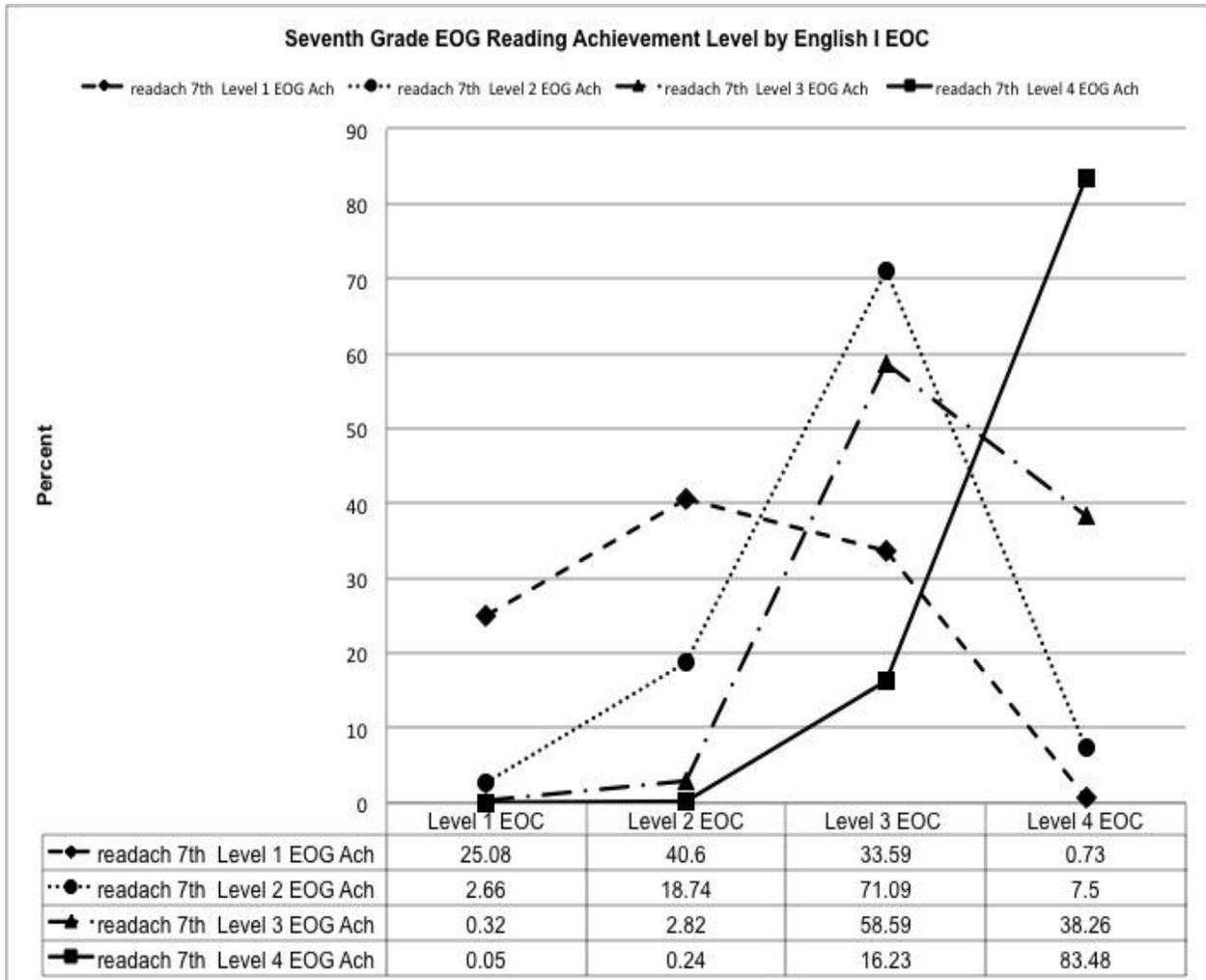
of 94,568 students compared to each student's English I EOC achievement level. The data selected for the graph attempts to answer research question four.

The researcher attempted to determine if the seventh grade (2008) EOG Reading achievement level scores could be used as a high school readiness indicator. 25.08% of the students who scored a Level I on the seventh grade EOG Reading test scored a Level I on the high school English I EOC test. 83.48% of the seventh graders who scored a Level IV on the seventh grade EOG Reading test scored a Level IV on the high school English I EOC test.

Figure 24 shows the seventh grade EOG reading achievement level of 99,522 students compared to each student's English I EOC achievement level. The data selected for the graph attempts to answer research question four.

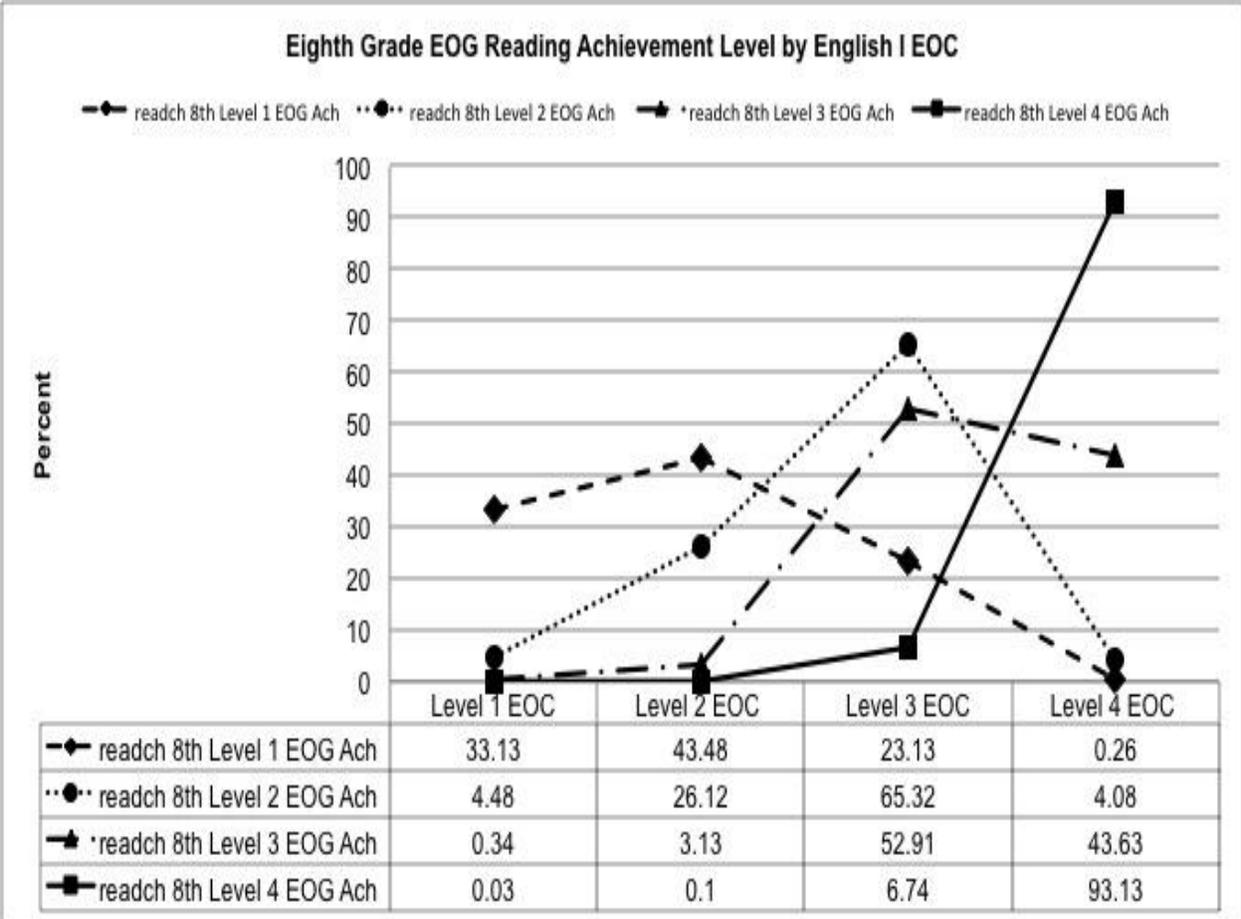
65.68% of North Carolina seventh grade students (2008) who scored a Level I on the seventh grade EOG Reading test scored below a Level III on the high school English I EOC test. 21.4% of North Carolina seventh grade students who scored a Level II on the seventh grade EOG Reading test scored below a Level III on the high school English I EOC test. Out of the seventh grade students who scored a Level III on the seventh grade EOG Reading test, 3.14% scored below a Level III on the high school English I EOC test. Finally, out of the seventh grade students who scored a Level IV on the seventh grade Reading EOG test, 0.29% scored below a Level III on the high school English I EOC test.

The researcher attempted to determine if the eighth grade (2009) EOG Reading achievement level scores could be used as a high school readiness indicator. 33.13% of the students who scored a Level I on the eighth grade EOG Reading test scored a Level I on the high school English I EOC test. 93.13% of the eighth graders who scored a Level IV on the eighth grade EOG Reading test scored a Level IV on the high school English I EOC test. Figure 25



Note. n = 99,522.

Figure 24. Seventh grade EOG reading achievement level by English I EOC (2008).



Note. n = 102,915.

Figure 25. Eighth grade EOG reading achievement level by English I EOC (2009).

shows the eighth grade EOG reading achievement level of 102,915 students compared to each student's English I EOC achievement level. The data selected for the graph attempts to answer research question four.

76.61% of North Carolina eighth grade students (2009) who scored a Level I on the eighth grade EOG Reading test scored below a Level III on the high school English I EOC test. 30.6% of North Carolina seventh grade students who scored a Level II on the eighth grade EOG Reading test scored below a Level III on the high school English I EOC test. Out of the eighth grade students who scored a Level III on the eighth grade EOG Reading test, 3.47% scored below a Level III on the high school English I EOC test. Finally, out of the eighth grade students who scored a Level IV on the eighth grade Reading EOG test, 0.13% scored below a Level III on the high school English I EOC test.

**Research Question Five: Level I and Level II End-of-Grade (EOG) Scores in Middle School Mathematics and Level I or Level II High School End-of-Course (EOC) Algebra I Scores**

Is there a relationship between students with a Level I or Level II End-of-Grade (EOG) test score in mathematics and high school Algebra I End-of-Course (EOC) test score?

**Hypothesis 5**

There will be a relationship between students with a Level I or Level II EOG test score in middle school mathematics and the students who score a Level I or Level II on the Algebra I EOC test.

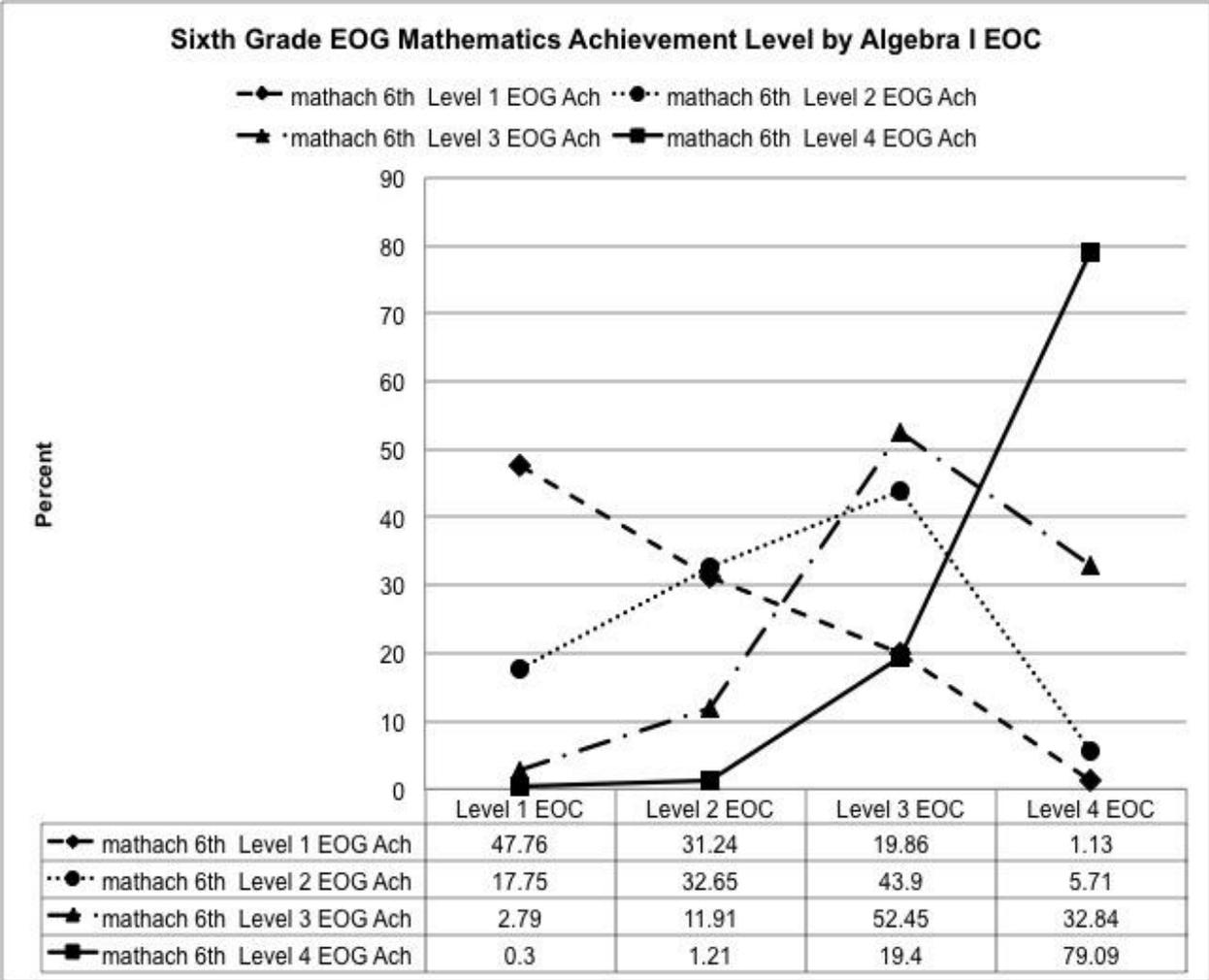
**EOG Mathematics Achievement Level Compared To EOC Algebra I Achievement Level**

The researcher attempted to determine if the sixth grade (2007) EOG Mathematics achievement level scores could be used as a high school readiness indicator. 47.76% of the

students who scored a Level I on the sixth grade EOG Mathematics test scored a Level I on the high school Algebra I EOC test. 79.09% of the sixth graders who scored a Level IV on the sixth grade EOG Mathematics test scored a Level IV on the high school Algebra I EOC test. Figure 26 shows the sixth grade EOG mathematics achievement level of 68,671 students compared to each student's Algebra I EOC achievement level. The data selected for the graph attempts to answer research question five.

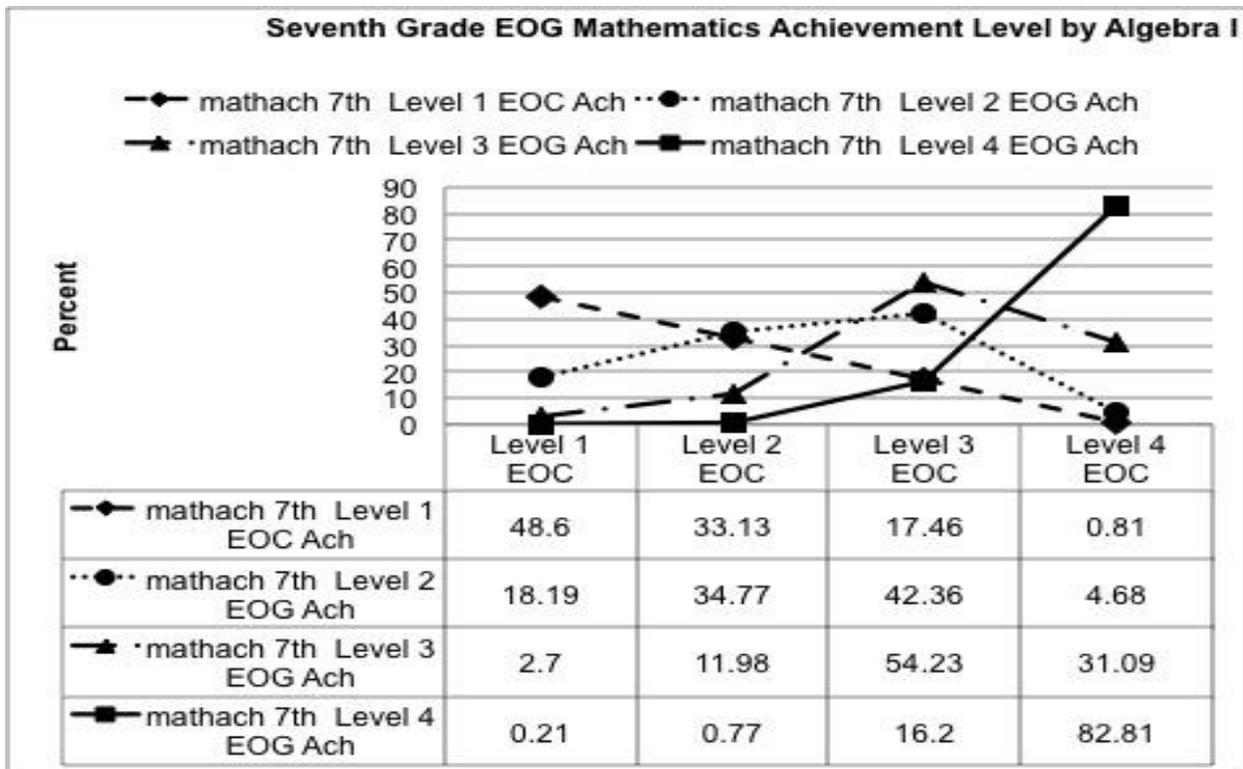
79.0% of North Carolina sixth grade students (2007) who scored a Level I on the sixth grade EOG Mathematics test scored below a Level III on the high school Algebra I EOC test. 50.4% of North Carolina sixth grade students who scored a Level II on the sixth grade EOG Mathematics test scored below a Level III on the high school Algebra I EOC test. Out of the sixth grade students who scored a Level III on the sixth grade EOG Mathematics test, 14.7% scored below a Level III on the high school English I EOC test. Finally, out of the sixth grade students who scored a Level IV on the sixth grade Mathematics EOG test, 1.51% scored below a Level III on the high school Algebra I EOC test.

The researcher attempted to determine if the seventh grade (2008) EOG Mathematics achievement level scores could be used as a high school readiness indicator. 48.6% of the students who scored a Level I on the seventh grade EOG Mathematics test scored a Level I on the high school Algebra I EOC test. 82.81% of the seventh graders who scored a Level IV on the seventh grade EOG Mathematics test scored a Level IV on the high school Algebra I EOC test. Figure 27 shows the seventh grade EOG mathematics achievement level of 72,322 students compared to each student's Algebra I EOC achievement level. The data selected for the graph attempts to answer research question five.



Note. n = 68,671.

Figure 26. Sixth grade EOG mathematics achievement level by Algebra I EOC (2007).



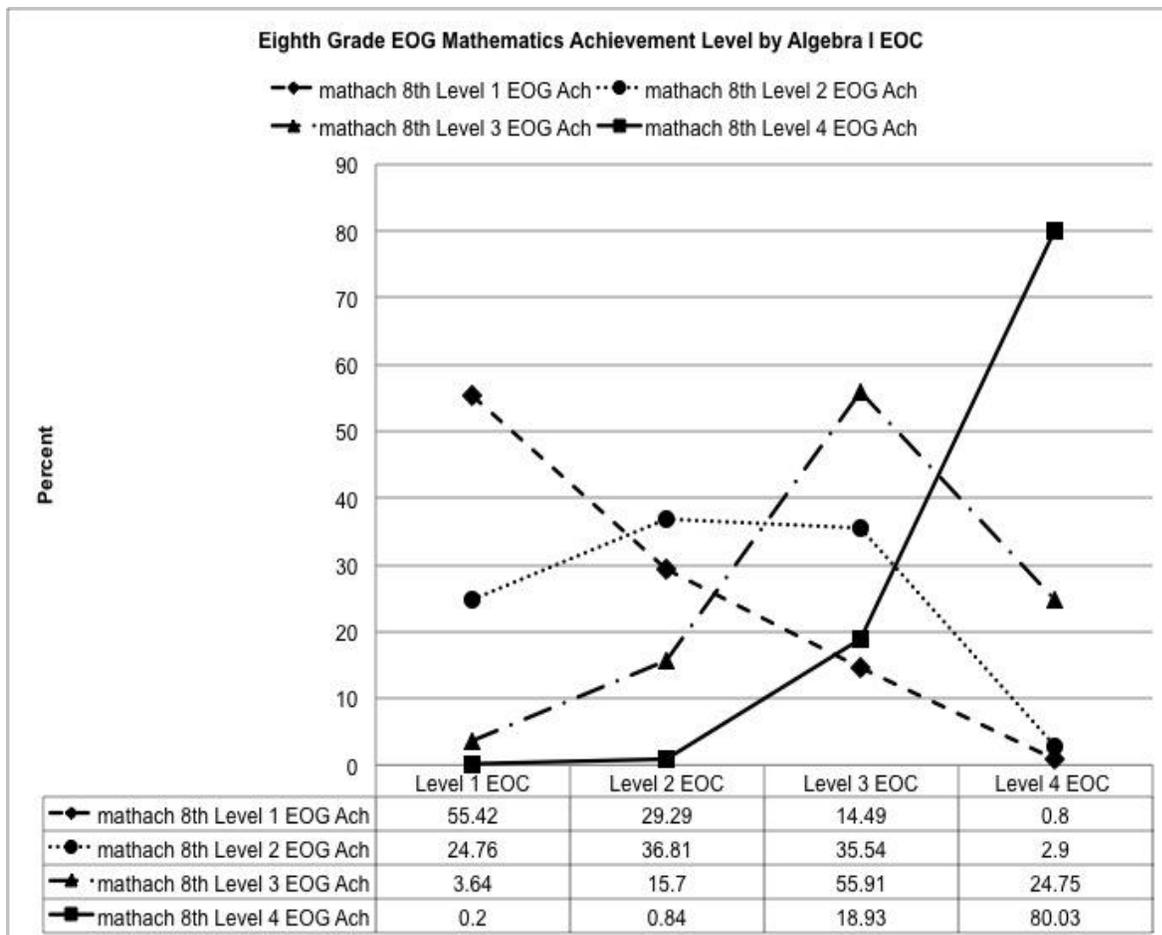
Note. n = 72,322.

Figure 27. Seventh grade EOG mathematics achievement level by Algebra I EOC (2008).

81.73% of North Carolina seventh grade students (2008) who scored a Level I on the seventh grade EOG Mathematics test scored below a Level III on the high school Algebra I EOC test. 52.96% of North Carolina seventh grade students who scored a Level II on the seventh grade EOG Mathematics test scored below a Level III on the high school Algebra I EOC test. Out of the seventh grade students who scored a Level III on the seventh grade EOG Mathematics test, 14.68% scored below a Level III on the high school English I EOC test. Finally, out of the seventh grade students who scored a Level IV on the seventh grade Mathematics EOG test, 0.98% scored below a Level III on the high school Algebra I EOC test.

The researcher attempted to determine if the eighth grade (2009) EOG Mathematics achievement level scores could be used as a high school readiness indicator. 55.42% of the students who scored a Level I on the eighth grade EOG Mathematics test scored a Level I on the high school Algebra I EOC test. 80.03% of the eighth graders who scored a Level IV on the eighth grade EOG Mathematics test scored a Level IV on the high school Algebra I EOC test. Figure 28 shows the seventh grade EOG mathematics achievement level of 69,992 students compared to each student's Algebra I EOC achievement level. The data selected for the graph attempts to answer research question five.

84.71% of North Carolina eighth grade students (2009) who scored a Level I on the eighth grade EOG Mathematics test scored below a Level III on the high school Algebra I EOC test. 61.57% of North Carolina eighth grade students who scored a Level II on the eighth grade EOG Mathematics test scored below a Level III on the high school Algebra I EOC test. Out of the eighth grade students who scored a Level III on the eighth grade EOG Mathematics test,



Note. n = 69,992.

Figure 28. Eighth grade EOG mathematics achievement level by Algebra I EOC (2009).

19.34% scored below a Level III on the high school English I EOC test. Finally, out of the eighth grade students who scored a Level IV on the seventh grade Mathematics EOG test, 1.04% scored below a Level III on the high school Algebra I EOC test.

### **Overarching Research Hypotheses**

The hypotheses for this study were:

1. Progress indicators can be used to support the goal of college and career readiness.
2. Progress indicators can be used in the middle grades to prepare more students to enter the ninth grade high school ready.
3. School districts can use non-academic indicators to support the goal of college and career readiness.
4. A high school readiness index could be developed based on existing progress indicators.

### **Results of the Study**

The results of the study indicated that there was a strong relationship between a student's high school grade point average and middle school progress indicators, such as attendance, end-of-grade reading scores and end-of-grade math scores. It would be beneficial for each state department of education to provide school districts with a High School Readiness Index, or the equivalent of a data dashboard to measure high school readiness.

This study provided information on middle school progress indicators and the potential for using progress indicators to support the nation's goal of college and career readiness. Progress readiness indicators could provide policymakers, educators, students, and families with data that supports college and career readiness. If the goal is to enter the ninth grade as high

school ready, then a traditional report card will not provide enough data for supporting student readiness.

The research in this study confirmed that middle school progress indicators provide high school educators with reliable data for supporting the goal of college and career readiness.

Building on the research conducted in this study, educators should monitor the number of ninth graders who are on-track when they enter high school. A student who is high school ready is prepared to enter high school equipped to pass the coursework required to earn a high school diploma. High school readiness is an important bridge to college and career readiness. If school administrators and teachers know the number of students who are entering high school ready for success, then efforts can be made to support the students who are not high school ready.

## **CHAPTER 5: DISCUSSION AND RECOMMENDATIONS**

### **Review of Research Problem**

The purpose of this study was to add to the current body of research on college and career readiness, in an effort to enable more students to enter high school, on the path to graduate college and career ready. The results of this study could support policymakers, building administrators, guidance counselors, central office staff, classroom teachers, students and families in making informed decisions that support the goal of high school readiness. While the national focus is on college and career readiness, middle school educators could begin analyzing the high school readiness of each student. A focus on the middle school years could provide educators and researchers with a greater chance to impact the number of students who graduate college and career ready.

While much of the political rhetoric and emphasis by employers is focused on college and career readiness, few studies have analyzed the role of middle schools in preparing all students for high school readiness. A student who is high school ready is prepared to enter high school equipped to pass the coursework required to earn a high school diploma. College and career readiness begins before high school. Schools and school districts need a set of progress indicators that can provide a snapshot or warning light regarding high school readiness, which could support college and career readiness. This study analyzed multiple progress indicators that could support educators as they prepare students for high school.

The final chapter provides a summary of potential high school readiness indicators and the current study's research questions. The researcher shares a High School Readiness Index that was designed as a result of the study, along with recommendations for measuring and

reporting high school readiness. This chapter concludes with review of methodology, summary of major findings regarding research questions, limitations of the study, implications of the study, practical implications of the study, limitations of the study, and recommendations for future research.

### **Review of Methodology**

The methodology outlines the research questions and includes descriptive data about North Carolina public school students between 2006-2013. The study begins with a cohort of sixth graders from every public middle school in the state in the 2006-2007 school year and follows the group through high school graduation in 2012-2013.

This study analyzed student data sets that are available to researchers through the North Carolina Education Research Data Center at Duke University. The North Carolina Education Research Data Center at Duke University archives statewide data, collected by the North Carolina Department of Public Instruction. The center has received data from the North Carolina Department of Public Instruction on every district, school, teacher, and student in the North Carolina public school system from the mid-1990s to the present. The North Carolina Education Research Data Center at Duke University has created longitudinal student and teacher databases, which allow researchers to follow students and teachers over time and link their records across files.

If educators are going to increase high school graduation rates and make the shift to college and career readiness for all students, then school leaders will need timely data in order to determine whether students are on the path to college enrollment (National Governors Association, 2009). This study compared multiple variables in an attempt to build upon existing research on preparing students to graduate college and career ready. The emphasis of the study

was high school readiness, since college and career readiness begins before high school. This study used the definition of college and career readiness recently adopted by the North Carolina State Board of Education (2015):

In North Carolina, students are considered career and college ready when they have the knowledge and academic preparation needed to enroll and succeed, without the need for remediation, in introductory college credit-bearing courses in English Language Arts and Mathematics within an associate or baccalaureate degree program. These same attributes and levels of achievement are needed for entry into and success in postsecondary workforce education, the military or directly into a job that offers gainful employment and career advancement.

Building on research conducted by ACT (2008), Allensworth and Easton (2005), Balfanz (2009), Balfanz and Letgers (2004), Conley (2010), SREB (2011a), West (2009), and Williams, Rosin, and Kirst (2011), this study analyzed multiple variables in an attempt to support the goal of college and career readiness. Prior studies determined that college and career readiness begins before high school and that educators can use longitudinal data to support student achievement.

The intent of this study was to identify progress indicators that could support the goal of high school readiness, college readiness, and career readiness. There was no risk involved, as the researcher used existing data and had no direct contact with students, teachers, administrators, or other stakeholders. The data which is archived at The North Carolina Education Research Data Center at Duke University does not contain identifying variables related to student data.

The North Carolina Education Research Data Center can accommodate requests for copies of data sets that currently exist in the Data Center. When a researcher's application for

using these data are approved, the North Carolina Education Research Data Center will provide access to the requested data through a secure server. The Data Center conducts its activities in strict compliance with the Family Educational Rights and Privacy Act (FERPA).

This study incorporated and built on the work of Allensworth and Easton (2005), who analyzed longitudinal quantitative data from the Chicago Public Schools. They validated an “on-track” indicator for ninth graders. According to their research, if a student demonstrates on-track behavior and progress at the end of the ninth grade year, then the student is on-track for high school graduation. Balfanz (2009) analyzed longitudinal data in multiple U.S. school districts and states to establish at-risk indicators. While Allensworth and Easton focused on the ninth grade transition year, Balfanz has conducted landmark studies at the middle school level. Balfanz cites the ABCs: Attendance, Behavior, and Course Performance as leading indicators for students who are off-track for high school readiness. These are three of the leading researchers who influenced this study titled, *Examining the Reliability of Progress Indicators and Their Potential for Supporting the Goal of College and Career Readiness*.

Prior studies have determined that college and career readiness begins before high school and that educators can use longitudinal data to support student achievement (ACT (2008); Allensworth and Easton (2005); Balfanz (2009); Balfanz and Letgers (2004); Conley (2010); SREB (2011a); West (2009); and Williams, Rosin, and Kirst (2011). In this study, the researcher will not know whether students are “on-track” or “off-track” until the study is completed. It is difficult to make predictions about this study, because the researcher is taking student data from multiple schools and analyzing different variables. Some students will be “off-track” in attendance and other students may have multiple “off-track” indicators. Multiple “off-track” indicators provide a ‘warning light’ or ‘red flag’ for educators. New indicators were researched,

in addition to attendance and behavior. This study analyzed multiple variables in an attempt to build upon existing research on preparing students to graduate college and career ready. The variables that were analyzed in the study include:

- Attendance/Absences
- End-of-Grade Reading (EOG) Tests Scores (Grades 6, 7, and 8)
- End-of-Grade Mathematics (EOG) Test Scores (Grades 6, 7, and 8)
- End-of-Course (EOC) Algebra I Test Scores
- End-of-Course (EOC) English I Test Scores
- Grade Point Average (GPA) – High School

### **Summary of Major Findings Regarding Research Questions**

Research Question 1: Is there a relationship between middle school progress indicators and high school progress indicators?

#### **Major Findings: Significant Relationship between Middle School Progress Indicators and High School Progress Indicators**

There is a significant relationship between middle school progress indicators and high school progress indicators. The study revealed that 87.88% of the sixth grade students who scored a Level I on the eighth grade EOG Reading test scored below achievement Level III on the English I EOC test. In the seventh grade, 65.68% of the students who scored a Level I on the seventh grade EOG Reading test scored below achievement Level III on the English I EOC test. In the eighth grade, 76.61% of the students who scored a Level I on the eighth grade EOG Reading test scored below achievement Level III on the English I EOC test. The comparison between EOG Reading achievement level and English I EOC achievement level indicates there is a strong relationship between a student's ability to read at grade level in the sixth, seventh, and

eighth grade and their high school readiness. A chi-square analysis was conducted to determine the reliability between the EOG Reading achievement level scores and a student's English I EOC achievement level. The results of the chi-square analysis was  $<.0001$ , which indicates a very significant relationship.

**Middle School EOG Mathematics Achievement Level Compared  
to High School Algebra I EOC Achievement Level**

There is a significant relationship between middle school progress indicators and high school progress indicators. The study revealed that 79% of the students who scored a Level I on the sixth grade EOG Mathematics scored below achievement Level III on the Algebra I EOC test. In the seventh grade, 81.73% of the students who scored a Level I on the seventh grade EOG Mathematics scored below achievement Level III on the Algebra I EOC test. In the eighth grade, 84.71% of the students who scored a Level I on the eighth grade EOG Mathematics scored below achievement Level III on the Algebra I EOC test. The comparison between EOG Mathematics achievement level and Algebra I EOC achievement level indicates there is a strong relationship between a student's ability to perform at grade level in sixth, seventh, and eighth grade mathematics and high school readiness. A chi-square analysis was conducted to determine the reliability between the EOG Mathematics achievement level scores and a student's Algebra I EOC achievement level. The results of the chi-square analysis was  $<.0001$ , which indicates a very significant relationship.

Research Question 2: Is there a relationship between middle school indicators aligned with the skills students need to become college and career ready by the end of high school?

## **Major Findings: Middle School EOG Reading Achievement Level Compared to High School Grade Point Average (GPA)**

The researcher attempted to determine if the sixth grade EOG Reading achievement level scores could be used as a high school readiness indicator. In the sixth grade, 75.03% of the students who scored a Level I on the sixth grade EOG Reading test graduated from high school with less than a 2.5 GPA. 69.53% of the students who scored a Level II on the sixth grade EOG Reading test graduated from high school with less than a 2.5 GPA. In contrast, 40.01% of the students who scored a Level III on the sixth grade EOG Reading test earned less than a 2.5 GPA in high school. Finally, 11.21% of the students who scored a Level IV on the sixth grade EOG Reading test graduated from high school with less than a 2.5 GPA.

In the seventh grade, 69.34% of the students who scored a Level I on the seventh grade EOG Reading test graduated from high school with less than a 2.5 GPA. 46.65% of the students who scored a Level II on the seventh grade EOG Reading test graduated from high school with less than a 2.5 GPA.

In the eighth grade, 73.28% of the students who scored a Level I on the eighth grade EOG Reading test graduated from high school with less than a 2.5 GPA. 53.08% of the students who scored a Level II on the eighth grade EOG Reading test graduated from high school with less than a 2.5 GPA.

A chi-square analysis was conducted to determine the reliability between the EOG Reading achievement level scores and GPA. The results of the chi-square analysis was  $<.0001$ , which indicates a very significant relationship.

## **Middle School EOG Mathematics Achievement Level Compared to High School Grade Point Average (GPA)**

The researcher attempted to determine if the sixth, seventh, and eighth grade EOG Mathematics level scores could be used as a high school readiness indicator. The achievement level scores were compared to the student's high school grade point average (GPA).

79.87% of the students who scored a Level I on the sixth grade EOG Mathematics test graduated from high school with less than a 2.5 GPA. 64.84% of the students who scored a Level II on the sixth grade EOG Mathematics test graduated from high school with less than a 2.5 GPA. In contrast, 30.91% of the students who scored a Level III on the sixth grade EOG Mathematics test earned less than a 2.5 GPA in high school. Finally, 6.36% of the students who scored a Level IV on the sixth grade EOG Mathematics test graduated from high school with less than a 2.5 GPA.

The researcher attempted to determine if the seventh grade EOG Mathematics achievement level scores could be used as a high school readiness indicator. In the seventh grade, 79.27% of the students who scored a Level I on the seventh grade EOG Mathematics test graduated from high school with less than a 2.5 GPA. 63.66% of the students who scored a Level II on the seventh grade EOG Mathematics test graduated from high school with less than a 2.5 GPA.

81.58% of the students who scored a Level I on the eighth grade EOG Mathematics test graduated from high school with less than a 2.5 GPA. 71.22% of the students who scored a Level II on the eighth grade EOG Mathematics test graduated from high school with less than a 2.5 GPA.

A chi-square analysis was conducted to determine the reliability between the EOG Mathematics achievement level scores and GPA. The results of the chi-square analysis was  $<.0001$ , which indicates a very significant relationship.

Research Question 3: Is there a relationship between attendance and Level I and Level II End-of-Grade (EOG) scores?

**Major Findings: Middle School Attendance Compared to EOG Reading  
or EOG Mathematics Achievement Level**

The researcher did not find enough evidence to indicate that middle school attendance had a significant impact on a student's middle school EOG Reading or EOG Mathematics score. Data from the North Carolina Department of Public Instruction indicated that a majority of middle school students missed between 10-19 days of school each year. While previous studies (Allensworth and Easton (2005) and Balfanz (2009) indicated attendance as an off-track indicator, the data in this study did not show a strong relationship between attendance and a student's achievement level on state end-of-grade tests.

Research Question 4: Is there a relationship between students with a Level I or Level II End-of-Grade (EOG) test score in middle school reading and a Level I or Level II high school End-of-Course (EOC) English I test?

**Major Findings: Significant Relationship between Level I and Level II EOG Test Scores  
and the High School English I Achievement Level**

There is a significant relationship between Level I and Level II EOG test scores and the scores students earned at the end of the high school English I course. The researcher attempted to determine if the sixth grade (2007) EOG Reading achievement level scores could be used as a high school readiness indicator. 87.88% of North Carolina sixth grade students (2007) who

scored a Level I on the sixth grade EOG Reading test scored below a Level III on the high school English I EOC test. 67.87% of North Carolina sixth grade students who scored a Level II on the sixth grade EOG Reading test scored below a Level III on the high school English I EOC test. Out of the sixth grade students who scored a Level III on the sixth grade EOG Reading test, 17.15% scored below a Level III on the high school English I EOC test. Finally, out of the sixth grade students who scored a Level IV on the sixth grade Reading EOG test, 0.62% scored below a Level III on the high school English I EOC test.

The researcher attempted to determine if the seventh grade (2008) EOG Reading achievement level scores could be used as a high school readiness indicator. 65.68% of North Carolina seventh grade students (2008) who scored a Level I on the seventh grade EOG Reading test scored below a Level III on the high school English I EOC test. 21.4% of North Carolina seventh grade students who scored a Level II on the seventh grade EOG Reading test scored below a Level III on the high school English I EOC test. Out of the seventh grade students who scored a Level III on the seventh grade EOG Reading test, 3.14% scored below a Level III on the high school English I EOC test. Finally, out of the seventh grade students who scored a Level IV on the seventh grade Reading EOG test, 0.29% scored below a Level III on the high school English I EOC test.

The researcher attempted to determine if the eighth grade (2009) EOG Reading achievement level scores could be used as a high school readiness indicator. 76.61% of North Carolina eighth grade students (2009) who scored a Level I on the eighth grade EOG Reading test scored below a Level III on the high school English I EOC test. 30.6% of North Carolina seventh grade students who scored a Level II on the eighth grade EOG Reading test scored below a Level III on the high school English I EOC test. Out of the eighth grade students who

scored a Level III on the eighth grade EOG Reading test, 3.47% scored below a Level III on the high school English I EOC test. Finally, out of the eighth grade students who scored a Level IV on the eighth grade Reading EOG test, 0.13% scored below a Level III on the high school English I EOC test.

Research Question 5: Is there a relationship between students with a Level I or Level II End-of-Grade (EOG) test score in mathematics and high school Algebra I End-of-Course (EOC) test score?

**Major Findings: Significant Relationship between Level I and Level II EOG Mathematics Achievement Level and High School Algebra I Achievement Level**

There is a significant relationship between Level I and Level II EOG test scores and the scores students earned at the end of the high school Algebra I course. The researcher attempted to determine if the sixth grade (2007) EOG Mathematics achievement level scores could be used as a high school readiness indicator. 79.0% of North Carolina sixth grade students (2007) who scored a Level I on the sixth grade EOG Mathematics test scored below a Level III on the high school Algebra I EOC test. 50.4% of North Carolina sixth grade students who scored a Level II on the sixth grade EOG Mathematics test scored below a Level III on the high school Algebra I EOC test. Out of the sixth grade students who scored a Level III on the sixth grade EOG Mathematics test, 14.7% scored below a Level III on the high school English I EOC test. Finally, out of the sixth grade students who scored a Level IV on the sixth grade Mathematics EOG test, 1.51% scored below a Level III on the high school Algebra I EOC test.

The researcher attempted to determine if the seventh grade (2008) EOG Mathematics achievement level scores could be used as a high school readiness indicator. 81.73% of North Carolina seventh grade students (2008) who scored a Level I on the seventh grade EOG

Mathematics test scored below a Level III on the high school Algebra I EOC test. 52.96% of North Carolina seventh grade students who scored a Level II on the seventh grade EOG Mathematics test scored below a Level III on the high school Algebra I EOC test. Out of the seventh grade students who scored a Level III on the seventh grade EOG Mathematics test, 14.68% scored below a Level III on the high school English I EOC test. Finally, out of the seventh grade students who scored a Level IV on the seventh grade Mathematics EOG test, 0.98% scored below a Level III on the high school Algebra I EOC test.

The researcher attempted to determine if the eighth grade (2009) EOG Mathematics achievement level scores could be used as a high school readiness indicator. 84.71% of North Carolina eighth grade students (2009) who scored a Level I on the eighth grade EOG Mathematics test scored below a Level III on the high school Algebra I EOC test. 61.57% of North Carolina eighth grade students who scored a Level II on the eighth grade EOG Mathematics test scored below a Level III on the high school Algebra I EOC test. Out of the eighth grade students who scored a Level III on the eighth grade EOG Mathematics test, 19.34% scored below a Level III on the high school English I EOC test. Finally, out of the eighth grade students who scored a Level IV on the seventh grade Mathematics EOG test, 1.04% scored below a Level III on the high school Algebra I EOC test.

### **Limitations of the Study**

#### **Unable To Track GPA Annually**

While the study focused on high school readiness, the researcher did not have access to middle school grades. The state of North Carolina collects high school grade point average (GPA) for students. The high school GPA was available following graduation, so it is a lagging indicator, rather than a leading indicator. Future studies should focus on the ability to support

high school readiness by tracking students' grades in real time. If a student is falling behind in the sixth grade, it is easier to support the student than waiting until the student falls behind in the ninth grade and falls off-track for high school graduation.

Grades are a single indicator, but they provide timely data and are available throughout the school year. Students' high school GPA, used in this study, was a reliable indicator of high school readiness. The high school GPA was used as an anchor indicator and was compared with middle school End-of-Grade Reading (EOG) and End-of-Grade (EOG) Mathematics achievement levels. Tracking student grades is something that can be done at the building or district level. Future studies should analyze middle school grades and the ability of using grades as an additional indicator to monitor and support high school readiness or a High School Readiness Index.

### **Data Was Collected After the Students Graduated from High School**

A High School Readiness Index should collect data throughout the school year. Longitudinal data will provide educators and policymakers with a picture of how well students are doing prior to high school. This study analyzed existing student data sets that are available to researchers through the North Carolina Education Research Data Center at Duke University. The North Carolina Education Research Data Center at Duke University archives statewide data, collected by the North Carolina Department of Public Instruction. The North Carolina Education Research Data Center at Duke University has created longitudinal student and teacher databases, which allow researchers to follow students and teachers over time and link their records across files.

While this was not a major limitation, it should be noted that the data used in the study was from a cohort of North Carolina students enrolled in public schools between 2006-2007 and

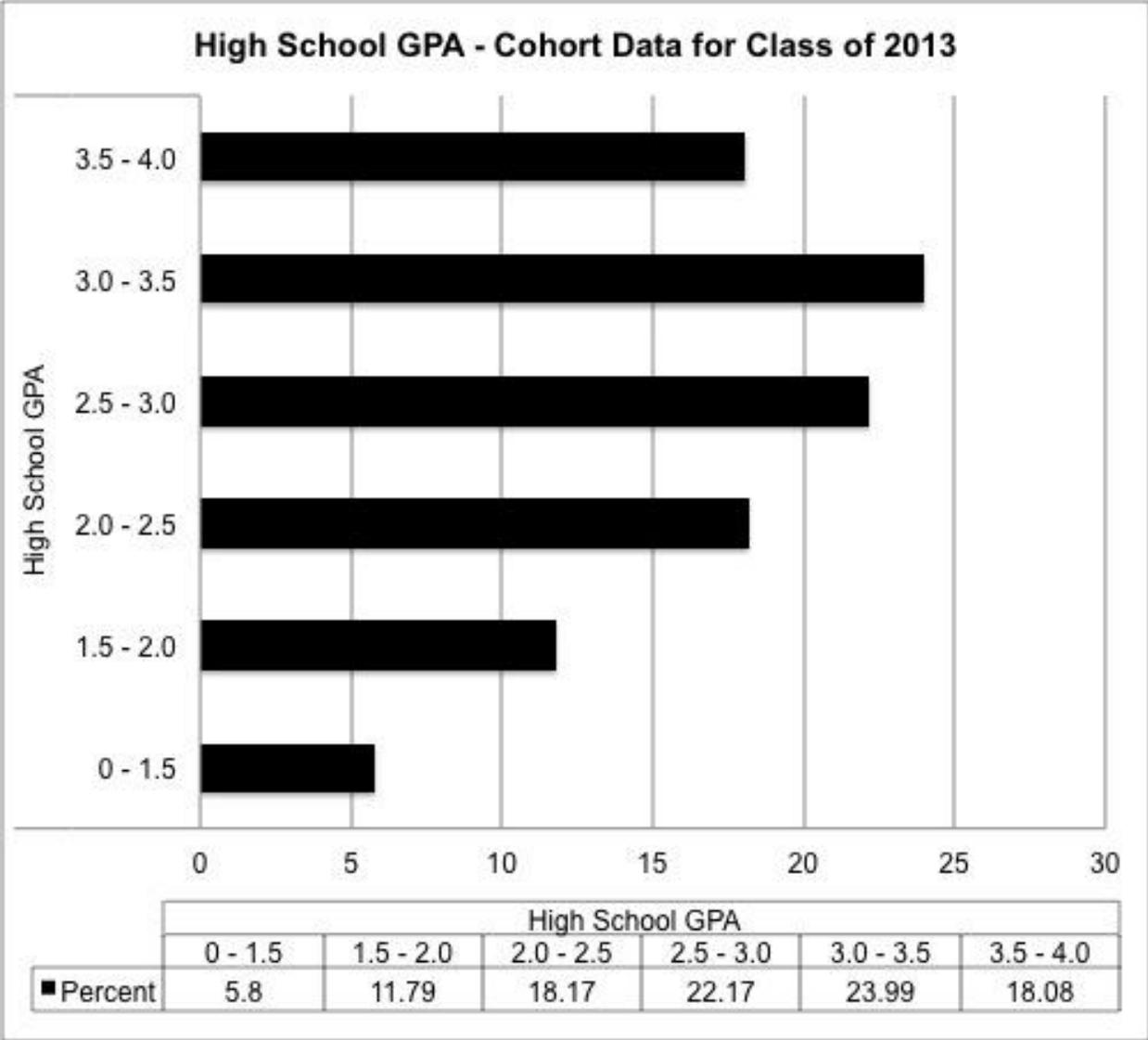
2012-2013. During this period, data was collected by the North Carolina Department of Public Instruction. The data that was available supported the study and future recommendations.

The cohort in this study entered sixth grade in the 2006-2007 school year. If students graduated on time, the graduation year was 2013. Figure 29 outlines the grade point average (GPA) for North Carolina high school students enrolled in public schools (Class of 2013).

18.08% of the students completed high school with a 3.5 to 4.0 unweighted GPA. 23.99% of the seniors had a 3.0-3.5 unweighted GPA. 22.17% of the senior class earned a 2.5 to 3.0 unweighted GPA. It is important to note that 35.76% of the students in the study graduated with a 2.5 or lower unweighted GPA. The minimum admission requirement for the University of North Carolina (UNC) System is a 2.5 unweighted grade point average. The study showed a strong correlation between middle school EOG scores in reading and mathematics and high school GPA. If college and career readiness is the nation's goal, then a case can be made for analyzing middle school indicators. It is too late to prepare a student for college and career readiness if we use GPA and graduation rate as an indicator. This study highlights the importance of analyzing data that is available that can support the dual goals of high school readiness and college and career readiness.

### **Unable to Identify an Indicator that would Measure Soft Skills**

The researcher attempted to identify one or more indicators that would align with college and career readiness. Since the study followed students from every public middle and high school in the state of North Carolina, there was no way to track participation in student clubs, co-curricular activities, extracurricular activities, leadership, community service, and other indicators. Students learn soft skills such as collaboration, critical thinking, communication, creativity, contribution, leadership, and perseverance through participation in student clubs and



*Note.* n = 102,486. North Carolina Department of Public Instruction. Statistical Profile. Retrieved from <http://www.ncpublicschools.org/fbs/resources/data>.

*Figure 29.* High school GPA – Cohort data for class of 2013.

school activities. Colleges and universities look at participation in school clubs and programs when they determine admissions and scholarships. As educators and policymakers continue to study the topics of high school readiness and college and career readiness, it will be important to analyze the number of students participating in school clubs.

The research conducted in this study focused on attendance data, and End-of-Grade (EOG) and End-of-Course (EOC) test data, and grade point average (GPA). If college and career readiness includes soft skills needed for success after high school, then school districts and state departments of education need to identify a way to measure the number of students participating in clubs and programs that promote soft skills. The curriculum taught in classrooms should teach soft skills, but soft skills are not measured on high-stakes tests that require multiple choice answers. In an effort to support high school readiness, school administrators could create a progress indicator for students who are participating in student clubs, co-curricular activities, and extracurricular activities.

### **Unable to Identify the Number of Exceptional Students in the Study**

The data available to the researcher did not indicate the number of North Carolina students who were classified as Exceptional Children (EC) or those receiving EC services. Future studies should analyze this data to get a clear understanding of the number of EC students who are on-track for high school readiness. Data on EC students is important to teachers and administrators as the number of support and intervention systems in place are different from those available to other students in the graduating class. Identification of EC students will provide additional support to the nation's goal of college and career readiness.

## **What Does It Mean To Be High School Ready?**

Currently, there is no consensus on what it means to enter the ninth grade as *high school ready*. The initial goal of the study was to research college and career readiness. Through the literature review, it became evident that more research needed to be conducted regarding high school readiness. Future studies could build on this study to show the connection between middle school and the goal of entering the ninth grade high school ready. Measuring high school readiness could support the overarching goal of college and career readiness. High school readiness is a new term in education. One of the key struggles throughout the middle level years has been whether teachers are preparing students for high school or careers. As recently as 2011, an SREB (2011a) report highlighted, “In general, SREB states have not clearly defined what it means for students to be ready at the end of the eighth grade to begin challenging high school courses” (p. 4). A clear definition of high school readiness would assist in designing a High School Readiness Index or data dashboard that sends a clear message to students, families, educators, and policymakers. According to Williams, Rosin, and Kirst (2011), “What happens in the middle grades matters now more than ever. Success at this level is a prerequisite for entering high school prepared for a college- and career-ready path” (p. 1).

## **Longitudinal Data**

Most states have limited longitudinal data connecting students who have graduated from high school to their freshman year in college. In other words, if states were able to track students, they could determine the percentage of students who were successful in their freshman year of college. North Carolina is able to track students who enter the UNC system, but not students who enroll in private schools or out of state schools. This study followed North Carolina students from the sixth grade through twelfth grade. In order to analyze college

readiness, states should develop systems to follow students beyond high school graduation. The data produced from K-16 or 6th grade - college graduation would allow educators and policymakers to determine if the K-12 experience supported college readiness. The next step is analyzing college and career readiness is to determine how well students perform and the number of students who earn degrees from colleges and universities. Analyzing career readiness would be difficult to follow at this time. If the goal is to increase college and career readiness, then school districts need a way to measure how well students performed following high school graduation.

### **Student Discipline Data**

The researcher attempted to study the impact of in-school-suspension and out-of-school suspension on high school readiness. The goal was to compare student suspensions with EOG Reading and EOG Mathematics achievement levels to determine if suspensions impacted high school readiness. Further study would compare high school GPA to in-school-suspension and out-of-school suspension data. The student discipline data collected by the North Carolina Department of Public Instruction was missing unique student identifiers for over half of the student discipline reports. Between 2006-2013, school districts collected discipline data and academic data using different software. The data was collected, but it was not available to the researcher. This made it impossible to connect academic data and discipline data. When students miss classroom instruction and the opportunity to interact with classmates, there can be a negative impact on student understanding. School administrators and district administrators should analyze discipline data to see if high school readiness is impacted by student discipline. The ability to measure grades, EOG achievement levels, and attendance provides a snapshot for school leaders. In the absence of student discipline data, one important progress

indicator may be missing from a High School Readiness Index. This timely data could predict when students fall off-track. Middle school teachers and administrators can support students if they have the data in a single location.

### **College and Career Readiness Defined**

While policymakers and educators support the goal of college and career readiness, most states do not have a strategy for measuring if students are on-track to graduate college and career ready. The researcher built on studies conducted by Allensworth and Easton (2005); Balfanz (2009); Balfanz and Letgers (2004); Conley (2010); SREB (2011a); West (2009); and Williams, Rosin, and Kirst (2011). In the absence of a clear definition of college and career readiness, it is difficult for educators to measure if students are off-track in middle school. Indicators have been identified for high school dropout prevention. However, the goal of college and career readiness goes beyond keeping students in school until graduation. One measure of success is the high school graduation rate. The difficulty with using the high school graduation rate as an exclusive indicator is that it is too late to measure college and career readiness. Allensworth and Easton (2005) studied ninth graders. Waiting to measure college and career readiness until high school may be too late to provide students with the intervention and support that they need.

In 2010, the Council of Chief State School Officers (CCSSO) announced the Common Core State Standards. The standards were designed to prepare students to graduate college and career ready. The standards can be measured by analyzing grades and results from high stakes tests. One limitation to measuring the standards has been agreement by states on which test to use. States were given two options, The Partnership for Assessment of Readiness for College and Careers (PARCC) and the Smarter Balanced Assessment Consortium (SBAC). Controversy of the tests, standards, and the amount of money for administering the high-stakes tests has led to

several states reverting to state-designed tests. If tests are not aligned to the standards, it will be challenging to measure the impact of the college and career ready standards.

Progress indicators are needed to measure which students are on-track to enter the ninth grade High School Ready. Standards alone cannot guarantee that students will graduate from high school college and career ready. Progress indicators will illuminate whether or not each student is on-track for success in high school. “The power of early-warning indicators lies in the willingness and capacity of school leaders and educators to transform actionable data into strategic decision making that leads to improved student outcomes” (Pinkus, 2008b, p. 7). One of the limitations of the study was that college and career readiness is a term people use in education, but a limited number of educators know how to prepare a student to graduate college and career ready.

### **The Number of Students Available in Each Data Set**

A limitation of the study was the number of students available in each data set. The number of students included in each graph is represented by n. Each graph reflects a different number of students for a variety of reasons. The reasons include: 1) Students leave a public school and enroll in home school or a private school; 2) Students move outside North Carolina; 3) In middle school, some students accelerate and enroll in high school courses; 4) Students may be enrolled in school but absent for End-of-Grade (EOG) testing; 5) Students drop out of school and 6) Students graduate early. These were the reasons that the data changed from 7<sup>th</sup> grade reading to 7<sup>th</sup> grade math. While this was a limitation of the study, the broad scope of the study provided the researcher with a large database. The limitation would not be as large if a local school district analyzed student data. At the local level, more data may be kept on when students enter and exit the school district.

## **English Language Arts and Mathematics as Off-Track Indicators**

It would be a misinterpretation of this study if educators and researchers conclude that school districts should place a greater emphasis on English Language Arts and mathematics, in order for students to graduate college and career ready. A limitation of the study was the lack of grades for courses completed in middle school and high school. The student's final high school grade point average was available, but not by course or grade level. The researcher selected middle school test data for English Language Arts and mathematics, because it was available. Middle school test data was also compared to high school English I and Algebra I end-of-course achievement levels. At the time of the study, North Carolina did not administer end-of-grade tests in science, social studies, arts education, or other courses. Future studies could identify additional off-track indicators.

### **Theoretical Implications of this Study's Major Research Findings**

“National leaders and the education policy community have embraced the idea that the education system must establish ‘college and career readiness’ as the goal for all students” (Pinkus, 2009, p. 1). While the goal of the American high school is shifting, educators have yet to determine how to measure if a student is on-track to graduate college and career ready. If college and career readiness is the new goal for our nation's youth, then middle school educators must take new approaches and determine whether or not all students are prepared for high school. Preparing students to graduate college and career ready may require a High School Readiness Index or leading indicators that determine when students are off-track for high school.

Organizing school data in a manner that is easy to understand and allows educators to make timely decisions could empower middle school educators in supporting the goal of college

and career readiness for each student. If K-12 educators are asked to prepare students for college and career readiness, then tools need to be identified to support the transition from middle school to high school.

This study analyzed a cohort of sixth graders from every public middle school in the state of North Carolina in the 2006-2007 school year, and followed the students through high school graduation in 2012-2013. This study adds to the current body of research on college and career readiness, in an effort to enable more students to enter high school, on the path to graduate college and career ready. Middle school and high school progress indicators provide longitudinal data about a student's progress. *High school readiness* is not measured in most school districts. A student who is high school ready is prepared to enter high school equipped to pass the coursework required to earn a high school diploma. Students who enter high school performing below grade level are at risk for success in high school, which also places this group of students at risk for graduating college and career ready. If middle school educators can identify students who are off track, the middle school experience could support the goal of increasing college and career readiness. Balfanz (2009) identified failing math or English, having low attendance, and poor behavior as "off-track" indicators for middle school students. Off-track indicators allow a school or school system to provide additional academic and non-academic support in order to prepare the student for the next level of learning. This statewide study analyzed the high school readiness of North Carolina middle school students by tracking student data from sixth grade through high school graduation. This study builds on the research conducted by Balfanz. High school readiness is an important prerequisite to supporting the goal of college and career readiness. The following groups could benefit from the study and its findings.

## Recommendations for Practice

### Policymakers

Policymakers can utilize current findings to refine or develop new policies regarding college and career readiness and the use of indicators at the middle school level. Progress indicators will illuminate whether or not each student is on-track for success in high school. Table 21 illustrates progress indicators that could be combined to create a High School Readiness Index. When the data indicate that students are falling off-track, funding and intervention strategies can be implemented in targeted areas and schools. The research conducted in this study focused on attendance data, and End-of-Grade (EOG) and End-of-Course (EOC) test data, and grade point average (GPA). The state department of education or a group of states could develop a High School Readiness Index or a data dashboard to support the goal of high school readiness.

Additional indicators could include a student's grades in each course, student discipline, PSAT scores, ACT and SAT scores, and participation in student clubs (extracurricular or co-curricular participation). Table 22 is titled, College and Career Readiness Index. While Table 20 identified middle school progress indicators, Table 21 highlights high school progress indicators. Policymakers do not currently have enough information available to make informed decisions and next steps for supporting the goal of college and career readiness. In most states, the data are stored in multiple databases and is not easily retrieved when decisions need to be made by policymakers. The National Governors Association has announced their support for college and career readiness. The next step should be identifying progress indicators which measure high school readiness and provide leaders with data that can be connected to each student, school, and school district. Table 23 outlines progress indicators for college freshman.

Table 21

*High School Readiness Index – Middle School Years*

Progress Indicator	Description
Sixth Grade - Course Grades Progress Reports and Nine Weeks Grades	Grades are often the first indicator that a student is falling behind in a course or in more than one course. Grades should be monitored to determine if a student needs academic support. This indicator is provides real time data each nine weeks.
Sixth Grade Attendance Each Nine Weeks	A student’s attendance is one indicator of ‘readiness’ and it can have a positive or negative effect on a student’s grades and future opportunities in high school and beyond.
Sixth Grade In-School Suspension	Educators may be able to identify students who are ‘off-track’ by identifying the students in a school who are suspended and are missing instruction due to violations of the student code of conduct. Educators often provide academic support and interventions, but some students are in need of behavior support and interventions.
Sixth Grade Out-of-School Suspension	Some students are suspended on a regular basis. Having a clear understanding of which students are off-track enables educators to provide real time support and interventions. In the absence of an early warning system, students may continue to fall through the cracks and graduate unprepared for college or the workforce.
Sixth Grade End-of-Grade (EOG) Reading Test Score	The EOG Reading Score provides an indicator that is aligned to the state standards. If a student is below grade level at the end of the sixth grade, then educators can work to support the student so he/she will enter high school working at grade level and high school ready.
Sixth Grade End-of-Grade (EOG) Mathematics Score	The EOG Mathematics Score provides an indicator that is aligned to the state standards. If a student is below grade level at the end of the sixth grade, then educators can work to support the student so he/she will enter high school working at grade level and high school ready.

Table 21 (continued)

Progress Indicator	Description
Seventh Grade - Course Grades Progress Reports and Nine Weeks Grades	Grades are often the first indicator that a student is falling behind in a course or in more than one course. Grades should be monitored to determine if a student needs academic support. This indicator provides real time data each nine weeks.
Seventh Grade Attendance Each Nine Weeks	A student’s attendance is one indicator of ‘readiness’ and it can have a positive or negative effect on a student’s grades and future opportunities in high school and beyond.
Seventh Grade In-School Suspension	Educators may be able to identify students who are ‘off-track’ by identifying the students in a school who are suspended and are missing instruction due to violations of the student code of conduct. Educators often provide academic support and interventions, but some students are in need of behavior support and interventions.
205 Seventh Grade Out-of-School Suspension	Some students are suspended on a regular basis. Having a clear understanding of which students are off-track enables educators to provide real time support and interventions. In the absence of an early warning system, students may continue to fall through the cracks and graduate unprepared for college or the workforce.
Seventh Grade End-of-Grade (EOG) Reading Test Score	The EOG Reading Score provides an indicator that is aligned to the state standards. If a student is below grade level at the end of the sixth grade, then educators can work to support the student so he/she will enter high school working at grade level and high school ready.
Seventh Grade End-of-Grade (EOG) Mathematics Score	The EOG Mathematics Score provides an indicator that is aligned to the state standards. If a student is below grade level at the end of the sixth grade, then educators can work to support the student so he/she will enter high school working at grade level and high school ready.
Eighth Grade - Course Grades Progress Reports and Nine Weeks Grades	Grades are often the first indicator that a student is falling behind in a course or in more than one course. Grades should be monitored to determine if a student needs academic support. This indicator provides real time data each nine weeks.

Table 21 (continued)

Progress Indicator	Description
Eighth Grade Attendance Each Nine Weeks	A student’s attendance is one indicator of ‘readiness’ and it can have a positive or negative effect on a student’s grades and future opportunities in high school and beyond.
Eighth Grade In-School Suspension	Educators may be able to identify students who are ‘off-track’ by identifying the students in a school who are suspended and are missing instruction due to violations of the student code of conduct. Educators often provide academic support and interventions, but some students are in need of behavior support and interventions.
Eighth Grade Out-of-School Suspension	Some students are suspended on a regular basis. Having a clear understanding of which students are off-track enables educators to provide real time support and interventions. In the absence of an early warning system, students may continue to fall through the cracks and graduate unprepared for college or the workforce.
Eighth Grade End-of-Grade (EOG) Reading Test Score	The EOG Reading Score provides an indicator that is aligned to the state standards. If a student is below grade level at the end of the sixth grade, then educators can work to support the student so he/she will enter high school working at grade level and high school ready.
Eighth Grade End-of-Grade (EOG) Mathematics Score	The EOG Mathematics Score provides an indicator that is aligned to the state standards. If a student is below grade level at the end of the sixth grade, then educators can work to support the student so he/she will enter high school working at grade level and high school ready.

Table 22

*High School Readiness Index – High School Years*

Progress Indicator	Description	
Ninth - Twelfth Grade Reading Level	<p>Ninth grade course failure is “driven by students’ lack of intermediate academic skills, weak reading comprehension and fluency abilities, and underdeveloped mathematical knowledge” (Balfanz &amp; Legters, 2004, p. 23). A leading indicator in identifying college and career readiness in the middle schools could be the number of students reading below grade level. Teachers and administrators should use the High School Readiness Index from middle school to identify which students are entering high school reading below grade level.</p> <p>This indicator should be monitored throughout high school.</p>	
207	Ninth - Twelfth Grade Math Class	<p>Some students take high school math courses in middle school. While other students struggle to pass Algebra I or the entry level ninth grade math course. Teachers and administrators should use the High School Readiness Index from middle school to identify which students are entering high school below grade level in mathematics.</p> <p>This indicator should be monitored throughout high school.</p>
Ninth Grade - Twelfth Grade Course Grades Progress Reports and Nine Weeks Grades	<p>Schools should have the ability to track student grades. Advances in technology have made it easier to identify which students are falling behind in a course.</p> <p>This indicator should be monitored throughout high school.</p>	

Table 22 (continued)

Progress Indicator	Description
Ninth - Twelfth Grade Course Credits	<p>Course failure should be a warning light to educators. If a student fails to earn enough credits to advance from ninth grade to tenth grade, then it places the student at-risk for graduating from high school. The more times a student enrolls in a course, but does not earn credit for the course, the least likely that student is to graduate college and career ready.</p> <p>This indicator should be monitored throughout high school.</p>
Ninth - Twelfth Grade Grade Point Average (GPA)	<p>Grade Point Average (GPA) is one indicator that colleges and universities review to determine admission. The GPA can also be used to track longitudinal data. For example, were the students' middle school EOG scores, grades, and other indicators a predictor of how well the student performed in high school?</p>
Ninth - Twelfth Grade Attendance Every Five Weeks	<p>A student's attendance is one indicator of 'readiness' and it can have a positive or negative effect on a student's grades and future opportunities in high school and beyond. High school students who begin skipping school or have irregular attendance typically begin to fall behind in their coursework. This indicator could serve as a warning indicator before grades or course completion highlight that there is an issue.</p>
Ninth - Twelfth Grade In-School Suspension	<p>Educators may be able to identify students who are 'off-track' by identifying the students in a school who are suspended and are missing instruction due to violations of the student code of conduct. Educators often provide academic support and interventions, but some students are in need of behavior support and interventions.</p>
Ninth - Twelfth Grade Out-of-School Suspension	<p>Some students are suspended on a regular basis. Having a clear understanding of which students are off-track enables educators to provide real time support and interventions. In the absence of an early warning system, students may continue to fall through the cracks and graduate unprepared for college or the workforce.</p>

Table 22 (continued)

Progress Indicator	Description
Ninth - Twelfth Participation in Co-Curricular and Extracurricular Clubs and Activities	<p>Research in the field of business and higher education have indicated that non-academic factors may be as important as academic factors in determining college and career readiness. While employers are seeking students with strong academic skills, they are having trouble finding applicants who can collaborate, create, think outside the box, and communicate.</p>
PSAT Scores	<p>PSAT scores are another indicator that can measure college and career readiness. While PSAT scores have traditionally measured the top students in the nation, the scores can also analyze how well each student is performing at a benchmark or point during high school. The PSAT score can also be used to track longitudinal data. For example, were the students' middle school EOG scores, grades, and other indicators a predictor of how well the student performed on the PSAT?</p>
ACT Score	<p>The ACT College Readiness benchmarks are scores on the ACT subject-area tests that represent the level of achievement required for students to have a 50% chance of obtaining a B or higher or about a 75% chance of obtaining a C or higher in corresponding credit-bearing first-year college courses. These college courses include English composition, college algebra, introductory social science courses, and biology.</p> <p>The ACT College Readiness benchmarks can also be used to track longitudinal data. For example, were the students' middle school EOG scores, grades, and other indicators a predictor of how well the student performed on the ACT?</p>
SAT Score	<p>The SAT recommends that SAT scores be used to assess the effectiveness of academic preparation over time. Educators should use the data to identify achievement gaps across demographic groups based on college readiness findings. This is a single indicator and should not be the only indicator used to determine college and career readiness. The SAT score can be used to track longitudinal data. For example, were the students' middle school EOG scores, grades, and other indicators a predictor of how well the student performed on the SAT?</p>

Table 22 (continued)

Progress Indicator	Description
High School Graduation Date	Did the student graduate with the four-year cohort? Did the student graduate in five years? Did the student graduate early? Did the student drop out of high school? If the student dropped out of high school or did not graduate in four years, were there warning signals in the High School Readiness Index and or College and Career Ready Index?

Table 23

*College Freshman Readiness Index*

Progress Indicator	Description
High School ACT/SAT Score(s)	These data allows high schools to see which universities accept students from our high school.
High School Grade Point Average (GPA)	These data allows high schools to analyze the expected GPA level for freshman admissions.
University or College that students from our high school enrolled in	These data are currently tracked in North Carolina. The <i>Freshman Measures</i> report tracks North Carolina high school students who enroll in a University of North Carolina system school. Longitudinal data could be traced to see if students’ middle school EOG scores, grades, and other indicators served as a predictor of admission to a two-year school or four year university.
211 Freshman Grades Fall Semester	These data are currently tracked in North Carolina. The <i>Freshman Measures</i> report tracks North Carolina high school students who enroll in a University of North Carolina system school. Longitudinal data could be traced to see if students’ middle school EOG scores, grades, and other indicators served as a predictor of college readiness.
Freshman Grades Spring Semester	These data are currently tracked in North Carolina. The <i>Freshman Measures</i> report tracks North Carolina high school students who enroll in a University of North Carolina system school. Longitudinal data could be traced to see if students’ middle school EOG scores, grades, and other indicators served as a predictor of college readiness.
Number of College Credits Earned After Freshman Year	These data are currently tracked in North Carolina. The <i>Freshman Measures</i> report tracks North Carolina high school students who enroll in a University of North Carolina system school. Longitudinal data could be traced to see if students’ middle school EOG scores, grades, and other indicators served as a predictor of college readiness.

Table 23 (continued)

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Progress Indicator	Description
Did the student return to college?	In the absence of an indicator system, superintendents and educators can only proclaim a goal of college and career readiness. Measuring if a student is college and career ready requires a definition of what that student looks like upon high school graduation and what that student should look like at each grade level, beginning in the sixth grade.
Did the student transfer to another school?	
Did the student drop out of school after the first year?	

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By extending this study beyond the twelfth grade, future studies could identify how well students were prepared for two-year and four-year colleges and universities.

The study focused on data collected by the North Carolina Department of Public Instruction. Testing data may vary by state. Based on the study, the researcher concluded that progress indicators could be tracked in order to support high school readiness for each student.

A High School Readiness Index or data dashboard could measure and track the following progress indicators:

This research study analyzed progress indicators that could be used to support the new goal of college and career readiness. “Eighth-grade students who are not on target for college and career readiness face severe academic obstacles in high school and are substantially more likely to be unprepared for college and career when they graduate than students who are on target to become ready for college and career in the eighth grade” (ACT, 2008).

Organizing school data in a manner that is easy to understand and allows educators to make timely decisions is one way that middle school educators can support the goal of college and career readiness for each student. Early warning systems can alert educators and students when a behavior or a skill is off-track. Having a clear understanding of which students are off-track enables educators to provide timely support and interventions. In the absence of an early warning system or High School Readiness Index, students may continue to fall through the cracks and graduate unprepared for college or the workforce. An emphasis on college and career readiness will require teachers and administrators to identify which students are *high school ready*. This research study can assist the following educational stakeholders in measuring high school readiness.

## **Superintendents**

In 2010-2011, forty-five states adopted the Common Core State Standards. The new standards represent a set of expectations for student knowledge and skills that high school graduates need to master to succeed in college and careers. Progress indicators are needed to measure which students are on-track to enter the ninth grade *High School Ready*. Standards alone cannot guarantee that students will graduate from high school college and career ready. Superintendents would benefit from progress indicators and reports that indicate how many students are on-track for high school. Longitudinal data are available to superintendents, but the databases that are used in most states makes the process of identifying students who are struggling difficult and inefficient. Real time data is needed in school districts, similar to the databases used in other professions. “American businesses have long practiced data-driven decision-making, an approach that must be embraced by the education system” (Alliance for Excellent Education, Civic Enterprises, and the Data Quality Campaign, 2011, p. 16). Leading indicators is a term that originated in economic theory, but “leading indicators may be more useful in fields such as education or public health, in which growth is not necessarily cyclical” (Foley, Mishook, Thompson, Kubiak, Supovitz, & Rhude-Faust, 2008, p. 2). Roderick et al. (2009) concluded that teachers and administrators cannot focus on the goal of college readiness if they do not have a strong data system and clear indicators of what it means for a student to be college ready. “Timely indicators are hugely important if institutional leaders are to know whether things are on track or off track – before it’s too late” (Offenstein, Moore, & Shulock, 2010, p. 1). Superintendents need a High School Readiness Index or data dashboard so they can analyze progress indicators in real time. Superintendents would benefit from a High School Readiness Index or data dashboard developed or provided by the state department of public

instruction. Each school district should not have to design their own high school readiness system. Some school districts may not have the funding to purchase a data dashboard or readiness index. When school superintendents are equipped with an efficient way to measure high school readiness progress indicators, they will have the ability to impact college and career readiness. If a superintendent knows that twenty percent of the rising ninth graders are off-track for high school readiness, then decisions can be made at the local level to support the goal of college and career readiness.

### **State and Local Board of Education**

School board members often receive reports that include lagging data, such as graduation rate, number of student dropouts, Advanced Placement (AP) scores, achievement gap data, End-of-Grade (EOG) test scores, discipline data, and average daily membership. A high school readiness index or data dashboard could provide leading indicators, which would allow school board members to prioritize their allocations and focus on supporting the students who need support. It is too late for the Board of Education to offer support when they learn that the high school graduation rate was 85%. Elected officials often ask, “What could we have done to support the 15% of the students who did not graduate with their classmates?”

In order to achieve the goal of college and career readiness, school districts must be equipped with tools and resources that analyze student indicators. According to Williams, Rosin, and Kirst (2011), “The ability of middle grade schools to get more students high school-ready is an essential step in ensuring that students graduate from high school college- and work-ready” (p. 4). Research has found that middle grades students demonstrate at-risk factors. “The research indicates that eighth-grade academic achievement and being on target for college and career readiness in eighth grade have a significant impact on students’ ability to become college

and career ready by the end of high school” (Westover & Hatton, 2011, p. 1). Most school boards do not begin measuring high school readiness until a student fails a course or drops out of high school. Middle school indicators have traditionally been viewed as a measure of the health of the middle school. A focus on the middle school years could provide educators and researchers with a greater chance to impact the number of students who graduate college and career ready.

The indicators that provide the most illumination on student progress should be used by all school districts. While some school districts may have the means to develop a High School Readiness Indicator, it should not be left up to the leaders in each district. A state or national data dashboard would support school board members as they support the goals of high school readiness and college and career readiness for every student.

### **Curriculum Directors**

College and career readiness is a shift from the traditional focus of curriculum directors. For nearly a century, curriculum directors designed curriculum and students were either at grade level or below. Prior to the new focus on college and career readiness, students were determined to be workforce ready if they could not demonstrate college readiness in high school courses and on standardized tests. Today, curriculum directors need access to data about student performance. In the absence of clear indicators, teachers and administrators will be unable to measure the effectiveness of the curriculum. The testing and accountability department has traditionally provided curriculum directors with end of year data on student achievement, as measured by test scores.

Curriculum directors can design curriculum and create courses for students who need acceleration, as well as for students who are struggling. There is no one-size-fits-all curriculum.

The indicators that a high school readiness index could provide, would allow curriculum directors to support the goal of college and career readiness. The Common Core State Standards provide a path for supporting the goal of readiness. However, many educators are still struggling to identify how to measure readiness in a timely manner. A High School Readiness Index or data dashboard would allow curriculum directors to determine when students are off-track prior to high school. Organizing school data in a manner that is easy to understand and allows educators to make timely decisions could empower curriculum directors in supporting the goal of high school readiness for each student.

### **Chief Finance Officers**

The Chief Financial Officer for Financial and Business Services for the North Carolina Department of Public Instruction manages nearly \$10.4 billion in state and federal funds and provides various technical support services for the 115 local education agencies (LEAs), charter schools, their employees, and the Department of Public Instruction.

On January 8, 2015, the North Carolina State Board of Education adopted the following definition of College and Career Readiness:

In North Carolina, students are considered career and college ready when they have the knowledge and academic preparation needed to enroll and succeed, without the need for remediation, in introductory college credit-bearing courses in English Language Arts and Mathematics within an associate or baccalaureate degree program. These same attributes and levels of achievement are needed for entry into and success in postsecondary workforce education, the military or directly into a job that offers gainful employment and career advancement. (North Carolina State Board of Education, 2015).

A High School Readiness Index (see Figure 30) or data dashboard is needed to provide timely indicators such as student attendance, grades, in-school suspension data, out-of-school suspension data, End-of-Grade (EOG) Reading score, and End-of-Grade (EOG) Mathematics score for sixth, seventh, and eighth grade. Real time indicators would assist financial decisions. More importantly, data about high school readiness could support the Chief Financial Officer and the finance departments in each school district. Early warning signs enable education leaders to make more strategic and less reactive decisions about services and supports to improve student learning.

A High School Readiness Index would support the Chief Financial Officer and the finance offices in each of the 115 school districts in North Carolina. If the state board of education is focused on the goal of college and career readiness, then state officials must determine how much of the state funding should be allocated for supporting college and career readiness. There are multiple initiatives in the state, but the focus on college and career readiness usually reverts to lagging indicators such as graduation rate, dropout rate, ACT/SAT scores, summer school enrollment, and college enrollment data. Millions of dollars will be spent each year to support the new goal of college and career readiness. The money should be spent in ways that support teaching and learning. In the absence of clear indicators, teachers and administrators will be unable to measure whether or not middle school students are *high school ready*. Finance departments will not be able to effectively measure the impact of their financial investment or the return on investment without such dashboards or indicators measuring high school readiness.

# Implications for The Field



*Figure 30.* High school readiness index.

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## **Principals and Assistant Principals**

Principals and assistant principals are called to be the instructional leaders in each school. It is difficult for principals and assistant principals to identify which students are off-track for high school readiness until a reporting period. Grades are a single indicator reflecting if a student is on-track for the next grade level. This study analyzed middle school attendance data, middle school End-of-Grade (EOG) Reading achievement level, middle school End-of-Grade (EOG) Mathematics achievement level, high school End-of-Course (EOC) Algebra I achievement level, high school End-of-Course (EOC) English I achievement level, and high school grade point average (GPA). The state department of education or a group of states could develop a High School Readiness Index (see Table 21 and Table 22) or a data dashboard to support school administrators in monitoring and increasing high school readiness.

In most school districts, principals are data rich. In other words, data is available to principals and they have access to multiple indicators. Data for discipline may be stored in one database, while student achievement data is stored in a database purchased by the school district. The current methods for retrieving student data are a barrier to monitoring and supporting high school readiness. A High School Readiness Index or data dashboard would provide principals and assistant principals with real time indicators, allowing principals and assistant principals to provide additional academic and non-academic support in order to prepare the student for the next level of learning.

High school readiness is not measured in most school districts. Traditionally, middle school principals monitor the number of students who are promoted from middle school to high school. The promotion rate is monitored, but having passing grades does not mean a student is high school ready. Multiple indicators should be monitored in order to determine when a student

is off-track for high school readiness. Balfanz (2009) concluded, “Until we transform high schools and the middle schools where a large number of students fall off the path to high school graduation, the nation will not achieve its goal of graduating all its students from high school prepared for college, career, and civic life” (p. 13). According to Conley’s (2011) research findings, “The ultimate result would be one set of scores or indicators across multiple dimensions and measures that could be tracked over time from perhaps sixth grade through high school that would allow everyone involved to be aware of where a student stood relative to the various dimensions of college readiness at any given point in time” (p. 18).

In order to support high school readiness and college and career readiness, school administrators need a single database that is easy to navigate and supports timely decisions. Students depend on the leaders in the building to support them on their way to college and career readiness. Some students may not have another adult in their life to help them reach high school graduation and the opportunities that are available to a college and career ready graduate. The role of the middle school is becoming more important in preparing students to graduate college and career ready. While the goal is to prepare students for college and careers, most teachers and administrators do not currently have progress indicators, a High School Readiness Index, or a data dashboard to monitor student achievement and other indicators which lead to college and career readiness.

### **Teachers**

Classroom teachers understand that the goal has shifted from college or career readiness to college and career readiness. Teacher have either participated in curriculum alignment at the district level or aligned their lessons to the Common Core State Standards and other state standards. To date, most school districts in the United States do not have a way to measure high

school readiness or college and career readiness. A teacher may know that the student performed below grade level the previous year, but most schools do not have a list of students who are off-track for high school readiness. Attendance, Grades, End-of-Grade (EOG) achievement level, student discipline record, and district benchmark scores are each stand-alone indicators. Prior studies have determined that college and career readiness begins before high school and that educators can use longitudinal data to support student achievement (ACT (2008); Allensworth and Easton (2005); Balfanz (2009); Balfanz and Letgers (2004); Conley (2010); SREB (2011a); West (2009); and Williams, Rosin, and Kirst (2011)). Longitudinal data identified in this dissertation study could be used to determine the high school readiness of each student. Longitudinal data can provide a snapshot at a student's strengths or areas where additional academic support may be needed. Longitudinal data could identify students who are "off-track" for high school prior to the ninth grade. Roderick et al. (2009) concluded that teachers and administrators cannot focus on the goal of college readiness if they do not have a strong data system and clear indicators of what it means for a student to be college ready.

Teachers should not be left to determine college and career readiness indicators on their own. If a set of progress indicators can be identified, teachers can support students and provide timely updates to families. Progress indicators should be "actionable at the school level, meaning that school leaders, teachers, and staff can use them to make changes that will have a demonstrable impact on student outcomes" (Pinkus, 2009, p. 5).

## **Counselors**

Counselors play a key role in preparing students for college and career readiness. Traditionally, counselors have helped place students in college-ready courses or career-ready courses. If educators are going to increase high school graduation rates and make

the shift to college and career readiness for all students, counselors will need timely data in order to determine which students are on the path to college enrollment (National Governors Association, 2009). A set of progress indicators would support the conversations that counselors have with students and families. In a high school with 900 - 1,600 students, it is unlikely that a counselor knows each student's story, their success in each course, future goals, and progress towards college and career readiness. Counselors need an online system that allows them to support all students. In the absence of an early warning system or High School Readiness Index, students may continue to fall through the cracks and graduate unprepared for college or the workforce.

Middle school counselors have not played an active role in high school readiness. A career day may be hosted in middle school or a college field trip may take place. Some schools administer a career exploration survey to assist students in identifying future career fields. If middle school counselors had access to a High School Readiness Index (see Figure 30), it would transform the role of the middle school counselor.

Students are falling off-track in middle school and are not entering ninth grade as high school ready. The literature review outlines how the basic mission of middle schools should be to ensure that middle grades students are prepared for success in high school (SREB, 2009). With timely data about attendance, grades, EOG achievement level, discipline data, and district benchmark scores, a counselor could support middle school students and teachers. The focus on college and career readiness has been emphasized with high school counselors, but has not been a priority for middle school counselors, due to a lack of data organized in a way that is easy to analyze in a timely manner.

## **Parents and Families**

Traditionally, middle schools and junior high schools have given students a letter grade indicating how their child performed in English, mathematics, science and other courses. The report card sends a message to families that students are prepared to succeed in high school courses. Each year, thousands of students enter their senior year of high school believing they are ready for college because they have completed the required courses and passed all of the standardized tests (Conley, 2007). Table 24 shares multiple progress indicators that could be shared with students and families.

College and career readiness is not the same as passing a series of courses or having perfect attendance. Grades and attendance are indicators that are measured, but there may be other indicators that schools need to track and report to families. “The middle grades are make-or-break years in students’ journey toward high school graduation, college and career readiness” (SREB, 2011a, p. 21). If school leaders seek to increase the number of students graduating college and career ready, then an indicator system should be developed to support high school readiness. Families need to have a clear understanding of what it means to graduate college and career ready and how they can become partners with the school staff. Schools need to communicate a clear message to families.

## **Students**

Students need adults who will help them make the connection between a High School Readiness Index and whether or not they are demonstrating growth. Since the student has the most control over academic growth and behavior in school, it is imperative that the adults explain how the High School Readiness Index (see Table 21) is a tool to support students on the journey to entering ninth grade as high school ready. A High School Readiness Index would

Table 24

*High School Readiness – Reporting for Families*

Progress Indicator	Description
Sixth Grade - Course Grades Progress Reports and Nine Weeks Grades	Course grades are already reported to families. A High School Readiness Report would provide families with a more detailed overview of their child. If High School Readiness is the goal, then a report card is simply a snapshot.
Sixth Grade Attendance Each Nine Weeks	Attendance is reported on the student report card. Most students do not take middle school attendance seriously. Poor attendance in high school could result in course failure. By including attendance in a High School Readiness Index, it would place greater emphasis on attendance in middle school. Poor attendance habits often begin before high school. A student’s attendance is one indicator of ‘readiness’ and it can have a positive or negative effect on a student’s grades and future opportunities in high school and beyond.
Sixth Grade In-School Suspension	Families may be well aware of in-school suspension data. However, some families may not see the connection between missing classroom instruction and high school readiness. By tracking in-school suspension data it allows families to see the number of days a student has missed classroom instruction. In-school suspension may have a direct impact on high school readiness.
Sixth Grade Out-of-School Suspension	Families may be well aware of out-of-school suspension data. However, some families may not see the connection between missing classroom instruction and high school readiness. By tracking out-of-school suspension data it allows families to see the number of days a student has missed classroom instruction. Out-of-school suspension may have a direct impact on high school readiness.

Table 24 (continued)

Progress Indicator	Description
Sixth Grade End-of-Grade (EOG) Reading Test Score	<p>Sixth Grade End-of-Grade (EOG) Reading Achievement Levels are reported in a score report. If families could see the connection to other middle school indicators, it may be easier to read the score report. Some families dismiss the EOG test scores, because it is a state mandated test, given on a single day.</p> <p>By combining an EOG score report with a High School Readiness report, families will have a better understanding of their child’s high school readiness. By the end of eighth grade, a family would have longitudinal data. This would be more powerful than an eighth grade report card.</p>
Sixth Grade End-of-Grade (EOG) Mathematics Score	<p>Sixth Grade End-of-Grade (EOG) Mathematics Achievement Levels are reported in a score report. If families could see the connection to other middle school indicators, it may be easier to read the score report. Some families dismiss the EOG test scores, because it is a state mandated test, given on a single day.</p> <p>By combining an EOG score report with a High School Readiness report, families will have a better understanding of their child’s high school readiness. By the end of eighth grade, a family would have longitudinal data. This would be more powerful than an eighth grade report card.</p>
Seventh Grade - Course Grades Progress Reports and Nine Weeks Grades	<p>Course grades are already reported to families. A High School Readiness Report would provide families with a more detailed overview of their child. If High School Readiness is the goal, then a report card is simply a snapshot.</p>
Seventh Grade Attendance Each Nine Weeks	<p>Attendance is reported on the student report card. Most students do not take middle school attendance seriously. Poor attendance in high school could result in course failure. By including attendance in a High School Readiness Index, it would place greater emphasis on attendance in middle school. Poor attendance habits often begin before high school. A student’s attendance is one indicator of ‘readiness’ and it can have a positive or negative effect on a student’s grades and future opportunities in high school and beyond.</p>

Table 24 (continued)

Progress Indicator	Description
Seventh Grade In-School Suspension	Families may be well aware of in-school suspension data. However, some families may not see the connection between missing classroom instruction and high school readiness. By tracking in-school suspension data it allows families to see the number of days a student has missed classroom instruction. In-school suspension may have a direct impact on high school readiness.
Seventh Grade Out-of-School Suspension	Families may be well aware of out-of-school suspension data. However, some families may not see the connection between missing classroom instruction and high school readiness. By tracking out-of-school suspension data it allows families to see the number of days a student has missed classroom instruction. Out-of-school suspension may have a direct impact on high school readiness.
Seventh Grade End-of-Grade (EOG) Reading Test Score	<p data-bbox="657 756 1881 894">Seventh Grade End-of-Grade (EOG) Reading Achievement Levels are reported in a score report. If families could see the connection to other middle school indicators, it may be easier to read the score report. Some families dismiss the EOG test scores, because it is a state mandated test, given on a single day.</p> <p data-bbox="657 935 1881 1040">By combining an EOG score report with a High School Readiness report, families will have a better understanding of their child’s high school readiness. By the end of eighth grade, a family would have longitudinal data. This would be more powerful than an eighth grade report card.</p>
Seventh Grade End-of-Grade (EOG) Mathematics Score	<p data-bbox="657 1081 1881 1219">Seventh Grade End-of-Grade (EOG) Mathematics Achievement Levels are reported in a score report. If families could see the connection to other middle school indicators, it may be easier to read the score report. Some families dismiss the EOG test scores, because it is a state mandated test, given on a single day.</p> <p data-bbox="657 1227 1881 1333">By combining an EOG score report with a High School Readiness report, families will have a better understanding of their child’s high school readiness. By the end of eighth grade, a family would have longitudinal data. This would be more powerful than an eighth grade report card.</p>

Table 24 (continued)

Progress Indicator	Description
Eighth Grade - Course Grades Progress Reports and Nine Weeks Grades	Course grades are already reported to families. A High School Readiness Report would provide families with a more detailed overview of their child. If High School Readiness is the goal, then a report card is simply a snapshot.
Eighth Grade Attendance Each Nine Weeks	Attendance is reported on the student report card. Most students do not take middle school attendance seriously. Poor attendance in high school could result in course failure. By including attendance in a High School Readiness Index, it would place greater emphasis on attendance in middle school. Poor attendance habits often begin before high school. A student's attendance is one indicator of 'readiness' and it can have a positive or negative effect on a student's grades and future opportunities in high school and beyond.
Eighth Grade In-School Suspension	Families may be well aware of in-school suspension data. However, some families may not see the connection between missing classroom instruction and high school readiness. By tracking in-school suspension data it allows families to see the number of days a student has missed classroom instruction. In-school suspension may have a direct impact on high school readiness.
Eighth Grade Out-of-School Suspension	Families may be well aware of out-of-school suspension data. However, some families may not see the connection between missing classroom instruction and high school readiness. By tracking out-of-school suspension data it allows families to see the number of days a student has missed classroom instruction. Out-of-school suspension may have a direct impact on high school readiness.
Eighth Grade End-of-Grade (EOG) Reading Test Score	Eighth Grade End-of-Grade (EOG) Reading Achievement Levels are reported in a score report. If families could see the connection to other middle school indicators, it may be easier to read the score report. Some families dismiss the EOG test scores, because it is a state mandated test, given on a single day. By combining an EOG score report with a High School Readiness report, families will have a better understanding of their child's high school readiness. By the end of eighth grade, a family would have longitudinal data. This would be more powerful than an eighth grade report card.

Table 24 (continued)

Progress Indicator	Description
Eighth Grade End-of-Grade (EOG) Mathematics Score	<p data-bbox="655 386 1885 529">Eighth Grade End-of-Grade (EOG) Mathematics Achievement Levels are reported in a score report. If families could see the connection to other middle school indicators, it may be easier to read the score report. Some families dismiss the EOG test scores, because it is a state mandated test, given on a single day.</p> <p data-bbox="655 570 1885 675">By combining an EOG score report with a High School Readiness report, families will have a better understanding of their child's high school readiness. By the end of eighth grade, a family would have longitudinal data. This would be more powerful than an eighth grade report card.</p>

support multiple stakeholders, but it is unlikely to increase high school readiness in a school district if the students do not know how to interpret each indicator that is reported.

Millions of students enter U.S. schools with the goal of completing high school. The messages that a school district sends to students allow each student to analyze their progress. Beginning in kindergarten, students receive progress reports and report cards. Students also begin taking a series of high-stakes tests in elementary school, which indicate if the student is at or below grade level. If the goal has shifted from high school graduation to college and career readiness, how will students know if they are on-track or off-track? Traditionally, students discovered that they were off-track when they dropped out of high school. Another clear indicator to students was when they dropped out of college their freshman year, because they discovered they were not college ready. Employers are indicating that high school graduates are ill-prepared for the workforce.

How can schools provide students with data regarding their progress towards college and career readiness? Most students are not thinking about college and career readiness in the sixth grade. If the middle schools could share a High School Readiness Index with students and families, it could support the goal of college and career readiness. While policymakers, superintendents, principals, and teachers are committed to supporting the goal of college and career readiness, it is a goal without a clear scoreboard. How will students know when they are off-track? What support will students receive once they have been identified as off-track? If students are going to enter high school prepared for success and ready to graduate college and career ready, they need to know where they stand at each point between sixth grade and twelfth grade. Students will fall off-track at different points, but the school staff should be able to communicate what the student needs to do in order to get back on-track. Grades on report cards

tell students if they passed a class, but grades do not reflect high school readiness. As the nation shifts its attention to college and career readiness, schools need to provide new reports to students. A new report would help middle school students and families determine if they are making progress towards high school readiness. The goal has changed from making it to high school graduation to graduating from high school prepared to enter the world college and career ready. In the absence of a clear reporting system, school districts are sending conflicting messages to students.

### **Recommendations for Further Study**

#### **Percentage of On Track Students Entering Ninth Grade**

Building on the research conducted in this study, educators should monitor the number of ninth graders who are on-track when they enter high school. A student who is high school ready is prepared to enter high school equipped to pass the coursework required to earn a high school diploma. High school readiness is an important bridge to college and career readiness. If school administrators and teachers know the number of students who are entering high school ready for success, then efforts can be made to support the students who are not high school ready.

Scheduling is one method for supporting struggling learners. Identifying the right teachers for struggling learners is another important strategy for impacting college and career readiness. School counselors could meet with students on a regular basis, if they knew which students were entering high school ready and those who were not. Frequent meetings could prevent a student from failing one or more classes during their freshman year. A school should analyze the academic and behavior support programs to see if the right programs exist for the incoming freshman class. Too often, high schools place students into three tracks: advanced, honors, and standard. The standard track was not designed to prepare students to graduate

college and career ready. The comprehensive high school was “designed to process a great number of students efficiently, selecting and supporting only a few for ‘thinking work’ while tracking others into a basic-skills curriculum aimed at preparation for the routinized manufacturing jobs of the time” (Darling-Hammond & Friedlaender, 2008, p. 15). College and career readiness will require schools to identify students needing additional support prior to the first week of high school. Middle school progress indicators and a High School Readiness Index will provide educators with baseline data. Balfanz & Legters (2004) determined that ninth grade course failure is “driven by students’ lack of intermediate academic skills, weak reading comprehension and fluency abilities, and underdeveloped mathematical knowledge” (p. 23). The research in this study confirmed that middle school progress indicators provide high school educators with reliable data for supporting the goal of college and career readiness.

### **Percentage of Students On Track at the End of Ninth Grade**

Additional studies could examine high school readiness prior to high school. This study focused on the importance of the middle school years. The researcher did not have access to student grades at the end of ninth grade. A data dashboard would provide information regarding grades in real time. Educators should track the students who receive Cs, Ds, or Fs. The data should be tracked at the end of each nine weeks. The marks a student receives at the semester and end of year indicate if the student is actually high school ready. During the first year of high school, it is important to measure high school readiness. The researcher was unable to connect the middle school indicators to freshman grades. Data was available for high school GPA, but it was only available when the student graduated from high school.

Identifying students who are off-track in the ninth grade is an important step in measuring college and career readiness. Allensworth and Easton (2005) described on-track students as

“students who have completed enough credits by the end of the school year to be promoted to tenth grade, and have failed no more than one semester of a core subject area” (p. 1). In addition researchers tracked student grades and absences, in an effort to determine barriers to student achievement. Future studies should compare the middle school indicators (attendance, EOG Reading, and EOG Mathematics) to freshman grades at the semester and nine weeks. The stronger the relationship between the progress indicators and freshman grades, the higher the potential of impacting high school readiness during middle school.

### **Study the Students Who Failed the End-of-Grade Tests in Middle School**

If the goal is to increase the number of students who graduate college and career ready, then additional studies should focus on the students who scored a Level I or Level II on the End-of-Grade tests in middle school. Additional analysis could identify strategies that school districts are using to support students when they fall off track for high school readiness. This study analyzed all North Carolina students. If researchers can identify students who exhibited off-track indicators in middle school, but were able to get back on track in high school, then more students could be supported. A high school readiness index should not be designed to monitor the number of students who are off-track, but should be used to support students with additional academic and behavioral support. At the state level, state officials could identify school districts who are successful at supporting students who entered high school with one or more at-risk indicators. At the local level, a superintendent may identify strategies that are successful at one high school and could replicate the strategies with other teachers and school staff in the school district. Building on this study, researchers can learn from narrowing the research and studying the students who scored a Level I or Level II on the End-of-Grade tests in middle school.

Longitudinal studies could increase the number of students who graduate college and career ready.

#### **Graduation: 4-Year Cohort Graduation Rate**

Additional studies could measure additional anchor data or longitudinal data. This study analyzed each student's high school GPA and compared it to middle school attendance records, EOG Reading achievement levels, and EOG Mathematics achievement levels. Middle school and high school progress indicators provide longitudinal data about a student's progress. Each school district should compare middle school progress indicators to the four-year cohort graduation rate. This analysis could take educators several hours if they do not have a data dashboard or software that archives longitudinal data. The four-year graduation rate will allow researchers to know which students graduated with the cohort and which students failed to graduate in four years. By comparing the graduation rate of each student to middle school progress indicators, educators may be able to analyze the strengths and weaknesses of curriculum and instruction, district assessments, and the district's ability to prepare students for high school and beyond. Measuring middle school progress indicators is a starting point. Linking the data to the four-year cohort graduation rate enables researchers and educators to determine the validity of the high school readiness progress indicators.

#### **Graduation: 5- and/or 6-Year Cohort Graduation Rate**

State and district leaders should study and compare the middle school progress indicators to five and six year-cohort graduation data. The goal has changed from completing high school to graduating college and career ready. Researchers and educators should determine if students who need additional time to graduate are graduating college and career ready. Middle school progress indicators may show that a student fell off track during the middle level

years. However, longitudinal data may show when the student was back on-track for college and career readiness. Students who graduate later than their classmates may have been on-track for high school readiness in middle school, but fell off track during high school.

Longitudinal data can support decisions about academic support programs, behavior support programs, curriculum and instruction, instructional strategies, and dropout prevention. While these data are collected annually, teachers, counselors, and administrators do not have a data dashboard or a single place to track indicators in real time. The data may be stored in multiple locations, making it difficult to identify students who are off-track. Future studies should build on the existing research around college and career readiness. If the nation seeks to increase the number of students who graduate college and career ready, then the five and six-year cohort data could provide data about students who were unable to graduate in four years.

### **Credits Earned**

High school staff should monitor the number of credits each student earns at the end of ninth grade. If the school is organized using a block schedule, then the number of credits earned should be monitored at the end of each semester. Students will not graduate with their cohort if they do not earn credit for courses during their freshman year. These data should be compared to the available middle school readiness indicators. Comparing the data will allow educators to determine if the students who struggle to earn course credits were struggling in middle school. These data will support future groups of students as the school district attempts to improve high school readiness for all students. Credit recovery, tutoring, repeating the course, and researched-based programs can support students in getting back on track for graduation. The key in future studies will be getting students back on track for college and career readiness, not simply earning enough credit to graduate from high school.

## **Data Dashboard**

Public schools in North Carolina collect data on attendance, test scores, student discipline, longitudinal academic records, and more. While these data are collected annually, teachers, counselors, and administrators do not have a data dashboard or a single place to track indicators in real time. The data may be stored in multiple locations, making it difficult to identify students who are off-track. The researcher developed a High School Readiness Index (see Table 21) which outlines potential progress indicators and a description of each indicator.

Future studies should analyze the effect that a data dashboard could have on supporting the nation's goal of college and career readiness. This study identified multiple progress indicators for grades 6-12, and recommended indicators (see Table 22) for college freshman (see Table 23). School districts need a method for identifying when students fall off-track. A data dashboard would support decisions about which students need support and intervention. Longitudinal data could support decisions made at the national, state, and local levels. In the absence of a data dashboard, school districts may not be equipped to support the goal of college and career readiness.

## **Conclusion**

These findings will cause the education community to begin to evaluate the value of a High School Readiness Index (see Table 21) to determine whether students are high school ready. The following recommendations for future research are based on the findings of this study:

1. The United States should adopt a common definition for College and Career Readiness, rather than allowing 50 different state departments of education to define. The lack of research related to college and career readiness makes it difficult for

- policymakers, educators, and boards of education to make an impact on the number of students who graduate college and career ready.
2. A focus on the middle school years could provide educators and researchers with a greater chance to impact the number of students who graduate college and career ready. A High School Readiness Index should be required at the middle school level. The indicators may be slightly different, since each state creates their own state tests. Indicators such as attendance, grades and behavior would be universal indicators.
  3. School districts should use the middle school progress indicators as an Early Warning System. Early Warning Indicator and Intervention System (EWS) use ‘real time’ or ‘near real time’ data to identify students who are off track, so that educators can appropriately support them in advancing from grade to grade, and eventually in graduating from high school with their class (Bruce, Bridgeland, Fox, & Balfanz, 2011, p. 1). Middle school progress indicators should be used to identify students who are off-track for high school readiness.
  4. Future studies should determine if additional indicators could be identified to measure high school readiness. At the district level, school leaders could identify indicators such as benchmark assessment scores, participation in clubs and extracurricular activities, scores on college and career readiness assessments, or other local indicators.
  5. Longitudinal data should be made available to policymakers, state departments of education, superintendents, principals, counselors, teachers, students, and families. Data dashboards will illuminate whether or not each student is on-track for

success in high school. “Timely indicators are hugely important if institutional leaders are to know whether things are on track or off track – before it’s too late” (Offenstein, Moore, & Shulock, 2010, p. 1). Indicator systems are used in aviation, banking, restaurants, sales, and in medical professions (Kowal & Ableidinger, 2011). This study highlighted how U.S. public schools were designed to measure if students passed a course or graduated from high school. Most states are not currently measuring college and career readiness. Middle school progress indicators will help school districts measure and report data aligned with the nation’s goal of college and career readiness.

6. Future studies should analyze middle school readiness. This study made it clear that college and career readiness does not begin in high school. Building on this study, researchers could identify a Middle School Readiness Index. Preparing students to enter middle school ready for success can be analyzed using elementary school progress indicators.
7. This study followed North Carolina students from the sixth grade through twelfth grade. In order to analyze college readiness, states should develop systems to follow students beyond high school graduation. The data produced from K-16 or 6th grade - college graduation would allow educators and policymakers to determine if the K-12 experience supported college readiness. The next step is analyzing college and career readiness is to determine how well students perform and the number of students who earn degrees from colleges and universities. Analyzing career readiness would be difficult to follow at this time. If the goal is to increase college and career readiness,

then school districts need a way to measure how well students performed following high school graduation.

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## APPENDIX: INSTITUTIONAL REVIEW BOARD APPROVAL LETTER



### EAST CAROLINA UNIVERSITY

#### University & Medical Center Institutional Review Board Office

4N-70 Brody Medical Sciences Building · Mail Stop 682

600 Moye Boulevard · Greenville, NC 27834

Office **252-744-2914**  · Fax **252-744-2284**  · [www.ecu.edu/irb](http://www.ecu.edu/irb)

## Notification of Initial Approval: Expedited

From: Social/Behavioral IRB  
To: [Steven Weber](#)  
CC: [Hal Holloman](#)  
Date: 7/22/2015  
Re: [UMCIRB 15-001207](#)  
Identifying High School Readiness Indicators

I am pleased to inform you that your Expedited Application was approved. Approval of the study and any consent form(s) is for the period of 7/17/2015 to 7/16/2016. The research study is eligible for review under expedited category # 5. The Chairperson (or designee) deemed this study no more than minimal risk.

Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The Investigator must adhere to all reporting requirements for this study.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

Name	Description
Dissertation Proposal - March 5, 2015	Study Protocol or Grant Application
Procedures-for-Obtaining-Data.pdf	Dataset Use Approval/Permission

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

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