

**Relationship Between High School Graduation Routes from Fifth Grade English
Language Arts and Mathematics Performance**

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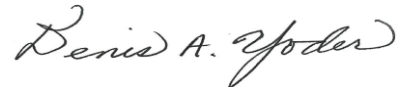
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Abstract

A student's ability to master a foundation in language arts and mathematics has widely been used to predict not only their academic success while in school but also their post-secondary success. Assumptions have even been made in the education community and beyond that state government agencies often have used third grade reading scores to predict the number of prison beds they will need in the future (Armstrong, 2021).

Researchers have noted that the sooner schools can identify students beginning to show signs correlated with dropping out of high school, the sooner interventions can be implemented to help them avoid that route (Block-Pedego, 1990). Students in District X are not placed into an alternative graduation program until their junior or senior year, at which point there is limited time to recoup skills that have not been mastered. Providing interventions to students in a timely manner can provide better opportunities for success in high school and beyond.

The purpose of this quantitative study was to determine if there is a connection between English language arts and mathematics scores (Below Basic, Basic, Proficient, and Advanced) in fifth grade, as determined on the Missouri Assessment Program (MAP) tests, and students' needs for an alternative program placement in order to graduate from high school. Data were examined from the graduating class of 2018 and their fifth grade MAP scores in both English language arts and mathematics from the 2010-2011 school year. The results of this study showed that there is a statistically significant relationship between students' fifth grade MAP scores and their graduation route. The implications of this study are that leaders in District X can use this relationship to provide interventions

in middle school and early high school to help all students have the opportunity to graduate traditionally.

Dedication

This dissertation is dedicated to any of my educator friends who are unsure if they should start or finish their next degree. You can, you should, and I hope you do. Education needs the best people, and I am pretty sure that includes you.

Acknowledgments

I would like to first acknowledge and thank my husband, Andrew, for making it possible for me to pursue this goal. Without your unwavering support, willingness to drive our kids everywhere, and constant encouragement of everything I set my mind to, I would not have been able to achieve this goal while keeping the family afloat. Thank you for believing in me and letting me chase every goal I dream up. I love you and the way you love me.

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Chapter 1

Introduction

Educators, politicians, parents, and communities have focused on students' reading and mathematics scores not only as indicators of a school or district's quality of education but as a predictor of individual student success. Rumors have even been circulated throughout the education community and beyond that state government agencies often have used third grade reading scores to predict the number of prison beds they will need in the future (Armstrong, 2021). While this claim has never been confirmed with research evidence, researchers have found a relationship between high school dropout rates and incarceration (Sum et al., 2009). The fact that mastering reading and mathematics in elementary school can increase the likelihood or probability that students will graduate from high school and help reduce the number of students who are unsuccessful after graduation should be an incentive for educators to provide more robust professional development, assessments, and education initiatives in schools around the country.

Once students enter high school, regardless of their mastery of skills, graduation becomes the primary goal. To increase the likelihood that students will graduate from high school, school districts have created alternative education programs that help students complete high school and pursue their post-secondary goals. According to Lange and Sletten (2002), alternative education programs began in the 1960s but have evolved over the decades to become a hot topic in educational reform. What states and districts define as alternative education varies, but most adhere to the concept of helping students find a more individualized route to education. Lange and Sletten (2002) estimated that, at

the time of the study, there were over 20,000 alternative education programs in operation to help students at-risk of not graduating with their cohort. Clearly, alternative education programs have been deemed to be a viable option to help students receive educational services throughout their journey through the K-12 education system.

While there are opportunities for alternative education in earlier grades, in some cases, students may not be identified as needing alternative education until the high school level as a last resort to graduation. Even though they do provide a route to graduation, alternative education programs often do not provide the same level of diploma and post-secondary opportunities as the traditional diploma (Lange & Sletten, 2002). Determining concrete predictive factors that students enrolled in alternative education share could help educators tailor instruction and eliminate the disparities in post-secondary options such as college, trade school, or military admittance for students who do not graduate traditionally.

Background

The district in which this study took place participates in standardized state testing in Grades 3-8 in mathematics and English language arts (Missouri Department of Elementary and Secondary Education, 2021b). The results of these tests are used to inform school performance, but they also are used to determine individual student placement in remedial or accelerated reading and mathematics sections (Missouri Department of Elementary and Secondary Education, 2021b). Students who have not mastered the foundational literacy and mathematical skills are often still promoted to the next grade level in elementary and middle school, regardless of mastery of skills, to keep students with their cohort (Costa, 2022). However, when students reach high school, they

must earn credits toward graduation. These credits are only earned if the student passes a class with a grade of a D or higher.

Students in the participating school district are required to earn 26 credits to graduate with the Career/College Readiness high school diploma (*Career/College Readiness Diploma*, 2021). The four high schools in the district have the same requirements for graduation, and each school begins monitoring whether students are on track to graduation as soon as the first semester of their freshmen year concludes (*Career/College Readiness Diploma*, 2021). Students deemed behind on credits are provided various options for credit recovery: summer school, credit recovery courses offered online, and intervention blocks during the day to help students earn credit toward graduation (executive director of secondary academic services, personal communication, August 22, 2022). Beginning the first semester of their junior year, students who are deemed as being significantly credit deficient (having below 10 credits) may be recommended for the High School Alternative Program (HSAP) (HSAP principal, personal communication, July 30, 2021).

Once recommended by the student's counselor, the student's placement is reviewed by the building's Student Assistance Team, which is comprised of the counselors, alternative programs teachers, school psychologist, and social worker, and the placement is then approved by the building principal who oversees alternative programs, parents, the HSAP advocate, and the HSAP principal. The HSAP advocate conducts an intake interview to review expectations and requirements (HSAP principal, personal communication, July 30, 2021). Upon completion of the program, which only requires 22 credits, four less than the College and Career Readiness diploma, the student is then

awarded a diploma with accreditation through the North Central Association of Colleges and Schools (*High School Alternative Program*, 2021). This diploma provides students acceptance into community colleges, military, and trade schools. However, it does not allow direct admittance into four-year colleges or universities.

Statement of the Problem

Early identification of students who are at-risk of not graduating from high school in four years is paramount to making certain that effective interventions are utilized or that an appropriate alternative education placement is made. Researchers have noted that the sooner schools can identify students beginning to show signs of dropping out of high school, the sooner interventions can be implemented to help them avoid that route (Block-Pedego, 1990). The identification of these students in the participating district is often made at the junior or senior level, when there may not be enough time to reteach skills and content, with the focus often shifting to credit recovery (HSAP principal, personal communication, July 30, 2021). It would be beneficial to know if a relationship exists between English language arts and mathematics assessment scores in upper elementary grades and the placement into alternative education in high school. A solid connection between early skill deficiency identification coupled with multiple opportunities for effective and focused interventions prior to high school could decrease the need for alternative graduation programs. Specific research connecting English language arts and mathematics performance in the upper elementary grades to students' need to enter into an alternative education program is limited. Current research primarily focuses on factors that are out of the school's control: socioeconomic status, race, and

ethnicity. Therefore, there is a need to research the academic skill levels that can predict a student's route to graduation.

Purpose of the Study

The purpose of this quantitative study was to determine if there is a correlation between English language arts scores (Below Basic, Basic, Proficient, and Advanced) in fifth grade, as determined on the Missouri Assessment Program tests, and students' needs for an alternative program placement in order to graduate from high school. The researcher also sought to determine if there is a correlation between low mathematics scores in fifth grade, as determined on the Missouri Assessment Program tests, and students' needs for an alternative program placement in order to graduate from high school.

Significance of the Study

Researchers have identified several factors that may contribute to a student being at-risk, including racial demographics, behavior patterns, academic performance, transiency, familial support and education, and socioeconomic status (Coleman et al., 2019; Hickman et al., 2017; Kilgus et al., 2017; Tsang, 2004). For example, there is a tendency for minority males from low socioeconomic backgrounds to need alternative education programming to graduate (Tsang, 2004), which leads to much discussion on the inequities in education that often lie out of a school district's realm of control. The results from this study could help district administrators determine to what extent a connection between elementary mathematics and English language arts scores and alternative education exists, which may help educators provide timely interventions to help at-risk students recover the skills necessary to graduate traditionally or eliminate

skill deficiencies early in the education process. This study will contribute to the body of literature on predictive factors of high school alternative programs' success.

Because high school alternative education programs focus primarily on recovering missing credits instead of reteaching concepts, identifying skill deficiencies early in a student's education journey could provide additional time to equip students with the skills necessary not only to graduate traditionally but to master the English language arts and mathematics skills they were behind on in fifth grade. The goal of public education, as stated by Kober (2007), involves six key elements, two of which are providing universal access and guaranteeing equal opportunities. If these are pivotal elements of public education, then providing students with access to the interventions and remediations that will help them have equal opportunities after graduation with a traditional diploma is crucial to meeting that goal. Identifying the connection between fifth grade English language arts and mathematics scores and the need for alternative education programs will help to provide equal opportunities for all students to be successful.

Delimitations

Lunenburg and Irby (2008) defined delimitations as "self-imposed boundaries set by the researcher on the purpose and scope of the study" (p.134). The delimitations for this study were:

1. The study was conducted in a suburban school district in the Midwest that consistently had performed above the state average in graduation rate (Missouri Department of Elementary and Secondary Education, 2020).

2. It was limited to students who graduated traditionally or from HSAP and had taken the Missouri Assessment Program exams in English language arts and mathematics in fifth grade.

Assumptions

This study was based on the following assumptions:

1. Students performed to the best of their ability on the MAP test in fifth grade.
2. The MAP materials were handled in an ethical manner.
3. The MAP assessment was administered under standardized testing conditions.
4. The MAP is a valid and reliable measure of student achievement and attainment.
5. Students were placed in HSAP after being identified as at-risk of graduating traditionally through a standardized process.

Research Questions

Based on the purpose of this study, the following research questions were used:

RQ 1

To what extent is there a statistically significant relationship between the level of fifth grade English language arts MAP scores and high school graduation route?

RQ 2

To what extent is there a statistically significant relationship between the level of fifth grade mathematics MAP scores and high school graduation route?

Definition of Terms

Alternative Graduation Route

The definition of an alternative graduation route is one that provides at-risk high school students the opportunity to graduate with a diploma. The programs students can use as an alternative graduation route vary depending on the state, district, and schools, but most allow for students to receive instruction in a separate setting, follow a different schedule, or work toward receiving their General Education Diploma (GED) (Poroskwi et al., 2014). In this study, the term alternative graduation route refers to students who did not meet the criteria of the participating district for a college readiness diploma.

High School Alternative Program

The High School Alternative Program is an alternative education route in which students take self-paced courses on a computer-generated program. The diploma is accredited through the North Central Association of Colleges and Schools, which is accepted for military, trade, and community college admissions. Students from all four high schools in District X attend classes in two and a half hour sessions coupled with work experiences to help prepare them for their post-secondary goals (*High School Alternative Program*, 2021).

Academic or Behavioral Interventions

Academic or behavioral interventions include the instructional and supplemental supports provided to students to help them learn in a school setting. A successful intervention is tailored to specific student needs, and progress is monitored to adjust the intervention as it is implemented. Interventions can range from changing instruction methods, to providing different settings, to implementing a plan to help students make

progress in small increments with defined rewards or consequences (Oklahoma State Department of Education, n.d.).

Standardized Testing

Standardized tests are forms of assessment that require students to answer the same questions, or items from a set of the same questions, under the same testing conditions. Question types can include multiple choice, short answer, matching, fill-in-the-blank, essay, or other mixes of questions if they are consistent across administrations. Testing conditions include timing restrictions, prohibited items, access to reference materials, etc. These tests are also scored in a standardized and consistent manner to ensure that data can be accurately compared and representative of what students have mastered (The Glossary of Education Reform, 2015).

Traditional Graduation Route

The traditional graduation route in the participating district requires students to earn 26 credits. Students must earn four credits in English language arts and four credits in mathematics, three credits in science and three credits in social studies, one credit in fine arts, practical arts, and physical education, 0.5 credits in health and personal finance, and eight credits in electives. Students must also earn 20 hours of community service and pass the required U.S. Constitution and Missouri Constitution tests (*Career/College Readiness Diploma*, 2021).

Organization of the Study

This study is organized into five chapters. The first chapter served as an introduction to the background, need, and purpose of the study, as well as defining the research questions and specific aspects of the study. The second chapter is a review of

literature that presents the history and current practices in alternative education, defining and predicting at-risk student behavior, and a brief history of standardized testing in the nation and state of Missouri. Chapter 3 consists of the research design of this quantitative study, the participants, and the measurement tools of this study. Chapter 4 consists of the results of the study, with an analysis of the data and hypothesis testing. Finally, Chapter 5 contains the interpretations and suggestions for further studies.

Chapter 2

Review of the Literature

The education system is continuously evolving to meet the needs of students. Researchers have sought to determine why students are struggling and how the system can be improved to help them succeed. The literature reviewed for this study provides insight into alternative education, identifying at-risk students, and the use of standardized testing to determine student achievement levels in the state of Missouri.

Introduction to Alternative Education

Educating future citizens who can contribute to their communities and compete globally is the collective goal of educational institutions in America. As the nation has sought to improve the public education system by implementing higher learning standards and higher-level assessments, many students have fallen behind (Aron, 2003). For various reasons, students who have fallen behind cannot graduate from the traditional K-12 system, so alternative education routes have been created to allow students to graduate with a high school diploma or its equivalent (HISSET). A thorough discussion of alternative education, including the history of its development in America, how students are placed in those programs, and the implications of that placement, are described below.

Defining Alternative Education

Clearly defining alternative education has been the goal of researchers, state education departments, and federal agencies. In their report prepared for the Institute of Education Sciences, Porowski et al. (2014) defined alternative education programs as "educational activities that happen outside of the traditional K-12 curriculum" that

“frequently serve students who are at-risk of school failure” (p. 1). Aron (2003) further added to this definition by including homeschooling, GED preparation programs, charter schools, etc. Similarly, the federal definition of alternative education is “a public elementary/secondary school that addresses needs of students that typically cannot be met in a regular school, provides nontraditional education, serves as an adjunct to a regular school, or falls outside the categories of regular, special, or vocational education” (Sable et al., 2010, p.C-1). These definitions broadly encapsulate the nuanced versions of alternative educational programming that students use as a path to reach high school graduation.

Aron (2003) worked to compile the literature addressing alternative education to create a typology of alternative education programs. He found that there are four dimensions to defining the nuances of alternative education: who the program is serving, where that program is taking place, what the program does, and how it is structured. The answers to these questions are responsible for the variation in alternative education within states, school districts, and schools. Porowski et al. (2014) explained that “These four dimensions reveal the complexity of developing a standard definition of alternative education. For example, the definition of a program on vocational training may differ from that of a program on credit recovery,” (p. 2). The variance in definitions allows students to receive education in ways that better meet their needs through different approaches to curriculum, settings, and supports.

It is important to note that while for this study, alternative education is discussed primarily in relation to students identified as at-risk, some of the first alternative schools were created as an act of resistance against the traditional education system that was not

deemed to be as student-centered or progressive (Aron, 2003). For example, the Free Schools Movement and Freedom Schools, described below, were created out of a need to provide a better education than public schools. Aron (2003) noted that while there are some outliers to the definition of alternative education programs, “many alternative schools today are more likely to be viewed by public education systems as disciplinary or remedial in nature” (p. 6). Narrowing the definition down to focus on students needing alternative education for this purpose connects most closely to the purpose of this study.

The High School Alternative Program (HSAP) referred to in this study, according to the district’s website, “provides an alternative educational pathway for students utilizing a self-paced, computer-based approach to instruction coupled with work experience to allow students the opportunity to gain from traditional academic offerings, as well as receive real-world know-how” (██████████, 2022). Students admitted into the HSAP program must be credit-deficient, be at least a junior, and agree to the conditions of attending the program in the school setting (HSAP principal, personal communication, March 29, 2022). This program most aligns with the definition of Prowoski et al. (2014), as it serves students who would not graduate under the district's College and Career graduation requirements. The HSAP diploma students earn is fully accredited through the state, while the lower graduation requirements make it more attainable for at-risk students.

A Brief History of Alternative Education Programs

Researchers place the beginning of modern alternative education during the civil rights movement. Young (1990) and Raywid (1980) described the education system in the 1950s and 1960s as racist institutions focused on only certain students' success.

Critics explicitly stated that excellence in education was defined “solely in narrow cognitive terms at the expense of equity” (Young, 1990, p. 9). Students who were not provided the same access to quality education and schools based on their race and socioeconomic status were simply out of luck. As the nation's focus turned toward helping those in poverty, the Elementary and Secondary Education Act of 1965 was passed to provide more equitable educational opportunities to all students regardless of race and socioeconomic status (Lenge & Sletten, 2002). This shift allowed for various forms of alternative education to develop to reach students deemed as being disenfranchised or at risk of dropping out.

Stemming from the need to educate students marginalized from the public education system in the 1960s, Freedom Schools were created in the southern United States to provide enrichment in the summer months to poor white and black students (Menkart & View, 2021). The government was also combating poverty, and President Johnson placed an emphasis on using education to help students from low socioeconomic status break out of the poverty cycle (Lange & Sletten, 2002). The Freedom Schools provided students from oppressed populations with a more equitable learning experience and operated outside of the public education setting. These schools focused on community partnerships and a localized approach to determining how to best educate students within the neighborhoods they would be contributing to as adults (Lange & Sletten, 2002).

Also, during this time, the Free Schools Movement focused on more individualized measures of success and achievement instead of the prescribed curriculum (Lange & Sletten, 2002). Mainstream education was seen as something that inhibited

student learning and growth, and so providing schools focusing on individual student needs became more prominent. The belief was the prescribed curriculum was acting as a barrier for students to learn and explore topics that interested them and nurtured their own goals (Lange & Sletten, 2002). As quoted in Young (1990), founder of one of the Free Schools, A.S. Neill stated, “My view is that a child is innately wise and realistic, if left to himself without adult suggestion of any kind, he will develop as far as he is capable of developing” (p.10). This time of exploring different educational avenues laid the foundation for present-day alternative school programs (Lange & Sletten, 2002).

While these two types of alternative schools focused on serving students outside of the public-school setting, there was also reform happening within schools to create alternative programming. These schools were called Open Schools and employed several characteristics meant to help struggling students be more successful in the traditional school setting. Lange and Slatten (2002) stated, “These schools were characterized by parent, student and teacher choice; autonomy in learning and pace; non-competitive evaluation; and a child-centered approach” (p. 4). As referenced in Lange & Slatten (2002), Young (1990) noted the following influences of the Open Schools movement:

- Schools without Walls-emphasized community-based learning; individuals within the community were brought in to teach students.
- Schools within a School—intended to make large high schools into smaller communities of belonging; individual groups were designed to meet the educational needs and interests of students.

- Multicultural Schools—designed to integrate culture and ethnicity into the curriculum; some had a diverse student body, and some catered to a specific ethnic group.
- Continuation Schools –used as an option for those who were failing in the regular school system because of issues such as dropout, pregnancy, and failing grades; these schools were less competitive and more individualized.
- Learning Centers – intended to meet student needs by including special resources, such as vocational education, in the school setting.
- Fundamental Schools – emphasized a back-to-basics approach in reaction to the lack of academic rigor perceived in the Free Schools.
- Magnet Schools – developed in response to the need for racial integration; offered a curriculum that emphasized themes meant to attract diverse groups of students from a range of racial and cultural backgrounds. (pp. 4-5)

Lange and Slatten (2002) identified several authors during the 1970s as being prominent voices in promoting alternative education as not only a natural extension of education for the continuance of democracy but as the best way to bring renewal to the public education system. Raywid (1981) noted that in the 1970s, alternative schools expanded from 100 to more than 10,000 over the course of just one decade. The need for the public education system to provide alternative programs was not only evident but growing at a rate that required further research and support (Lange & Slatten, 2002). The flexibility of scheduling, autonomy for student choice, and an emphasis on community

and post-secondary planning made alternative schools an appealing option for districts across the country.

Barr (1981) described the benefits of alternative schools in the 1970s as helping to desegregate urban schools, reducing school violence and vandalism, and increasing community and parent involvement. Barr (1981) also credited alternative schools with experimenting with innovative concepts like written evaluations instead of letter grades, peer tutors, internships, and off-campus learning opportunities. Alternative schools in the 1980s provided students with needs (ranging from gifted education to teen pregnancy support) the opportunity to continue their education in a more successful way than in the traditional school setting. As families began to relocate to the suburbs for more successful public and private schools, Barr (1981) identified alternative programming as a way to help stop urban migration. The research that supported the optimism of alternative schools in the 1980s was attributed to five broad categories: smaller school and class sizes, closer relationships with teachers and staff, a higher success rate of students, improved student self-esteem through academic success rate, and students feeling more confident in their decision-making (Barr, 1981). These factors played a key role in the success of academic programming.

The safety and security of schools became a focal point during the 1990s as school violence and the shooting at Columbine High School made headlines (“The 1990s Education: Topics in the News,” 2019). In addition to the fear of violence and shootings in their students’ schools, parents were also unimpressed with testing scores across the nation, so the pursuit of options outside of public education ramped up. Education reformists and parents began advocating for school choice, which would allow parents to

send their children to private schools at the expense of taxpayers (“The 1990s Education: Topics in the News,” 2019). The desire for something other than public schools grew significantly in the 1990s,

Although fewer than one-half of the people in an annual Gallup Poll [1998] favored allowing students to choose a private school at public expense, the numbers who agreed with the idea grew during the 1990s, from 26 percent in 1991 to 44 percent in 1998, (“The 1990s Education: Topics in the News,” 2019, para. 8).

In order to keep students enrolled in public education, states had to consider how to better ensure the safety of all students in their buildings.

The need to keep schools safer meant enacting harsher consequences for safety violations. This led to students being suspended for longer amounts of time and possibly expelled (Missouri Revisor of Statutes, 1996). This loss of seat time can negatively impact a student’s success in the classroom, thus increasing the likelihood of them dropping out or needing alternative education. The state of Missouri enacted the *Safe Schools Act* in 1996, which outlined the responsibility of the school to still provide instruction regardless of violating school policy (Missouri Revisor of Statutes, 1996).

Chapter 167 of the *Safe Schools Act* (1996) specifically stated that

Any suspension issued pursuant to section 167.161, or this section, or expulsion pursuant to section 167.161, shall not relieve the state or the suspended student's parents or guardians of their responsibilities to educate the student. School districts are encouraged to provide an in-school suspension system and to search

for other acceptable discipline alternatives prior to using suspensions of more than ten days or expelling a student from the school. (chapter 167.164)

This policy goes on to state that should a student need to be expelled, the district must provide the means for the student to receive education in another setting by providing an alternative program or paying for the student to attend another school at the expense of the district (Missouri Revisor of Statutes, 1996).

Kleiner et al. (2002) established a system of collecting data on the need for and uses of alternative education after the rise of students being sent out of the public education system for at-risk or dangerous behaviors. The results of this study found that in the 2000-2001 school year, 39% of school districts in the United States had at least one alternative education program within their district; 59% of those programs were held in facilities outside of the traditional school building (Kleiner et al., 2002). Of those districts that had an alternative program, 92% of them had programming at the secondary level, 67% provided programming at the middle school level, and 21% had programming at the elementary level (Kleiner et al., 2002). Notably, 53% of districts with alternative programming reported that demand for enrollment exceeded their capacity (Kleiner et al., 2002). The increase in the need for alternative education has continued to shape present-day programming.

Current Views of and Practices in Alternative Programs

Present-day models of alternative education are classified into three types, according to Raywid (1995). Type I alternative schools are schools of choice which students can attend based on their interests and aptitudes. These could include magnet schools students want to attend based on the projects or themes of programs of study

(Raywid, 1995). Type II alternative schools are primarily seen as a last chance attempt to help students who have been expelled or need to work on behavioral issues that keep them from succeeding in the traditional school setting (Raywid, 1995). Type III schools provide remediation for students who need social or academic assistance to perform at the same level as their peers (Raywid, 1995). Alternative schools do not always fit into one type perfectly, and different school districts and researchers classify varying degrees of education systems, including homeschooling, as "alternative" as education continues to evolve (Lenge & Sletten, 2002). Using these definitions, Type II best classifies the alternative school used in this study.

Impact of Alternative Education on Students

To measure alternative education's impact on students, researchers have set out to determine the effects on program completion, academic achievement, and social-emotional factors. In terms of graduation, Dynarski and Gleason (2002) found that students enrolled in an alternative program were more likely to graduate with a high school diploma than to earn a Graduate Equivalency Diploma (GED). While most states recognize the GED as fulfilling a high school education, Ewert (2012) notes that students who received a GED went on to receive post-secondary training or education at only 43% as opposed to 73% of those who graduated with a traditional high school diploma. It is also significant that those with a GED received "lower earnings than those who earned a regular high school diploma regardless of sex, race and ethnicity or age. Overall, high school diploma holders earned approximately \$4,700 in mean monthly earnings compared with GED certificate holders, who earned \$3,100" (Ewert, 2012, para. 3). However, the Dynarski and Gleason (2002) study also found that alternative programs

focused more on students completing the GED had a lower dropout rate than those focused on graduating with a high school diploma. If the goal was to have students complete the program, focusing on the short-term completion of the GED was an option that allowed for a higher level of success.

Studies also show that students enrolled in alternative education often report closer relationships with their teachers, higher self-esteem, and a stronger sense of belonging to school due to shared characteristics with their peers (Lenge & Sletten, 2002). Students enrolled in alternative education programs did not find a connection in traditional settings, as cited in the study by Facey et al. (2020). Students reported that traditional school requires an understanding of the complex social structures, can be fraught with bullying and violence, and can often leave students feeling isolated and excluded (Facey et al., 2020). Lange & Sletten (2002) pointed out that providing a more inviting school climate that focuses on relationships and student ownership is embedded in alternative schools' mission statement and purpose. This emphasis on culture resulted in students reporting a stronger sense of belonging than in traditional schools.

Numerous studies have been conducted to determine the educational benefits or repercussions of placing students in an alternative education setting with contradictory results (Elias, 2011). In the U.S. Department of Education's three-stage evaluation of the effectiveness of alternative education programs, a key finding was that most programs did not significantly prevent students from dropping out (Dynarski & Gleason, 2022). While some programs were able to positively impact indicators like attitude toward school, attendance, or test scores, no programs evaluated were able to increase all student outcomes (Dynarski & Gleason, 2022). The programs that had the most positive impact

on students prepared students who had already dropped out to prepare for the GED and ones that provided strong connections to teachers and students (Dynarski & Gleason, 2022). Having a clear path to graduation, as well as a solid support system, proved to be vital in helping students succeed.

In his study to determine if the amount of time a student spent in alternative education programming impacted his or her achievement, Elias (2011) found little to no difference in reading and math progression between students in alternative and traditional education programs. Students in his study saw little to no regression in their achievement scores, which he claimed shows no adverse impact on student education once enrolled in an alternative program. Students can return to traditional education and not be behind their peers (Elias, 2011). Studies show varying results on the impact of alternative education on students, and it largely depends on the type and quality of the programming.

Identifying At-Risk Students

Often, students are enrolled in alternative education because they are labeled as at-risk and require support and intervention to help them succeed in school. Researchers have sought to determine what predictive factors can help identify students who might be at risk of dropping out of school or needing alternative education. While various studies have found different markers, some factors repeatedly surface. While this study focuses on the academic predictive factor of Missouri Assessment Program testing, it is essential to highlight the factors contributing to students needing to pursue alternative means of graduation. This section will define at-risk, outline predictive factors in the identification of at-risk students, common interventions, and common characteristics for alternative education program graduates.

Defining At-Risk

Defining what is meant for a young person to be "at-risk" can be applied to youth who have been in trouble criminally, are in danger of dropping out of school, abuse drugs and alcohol, teen moms, and adolescents who struggle with mental health issues (Tidwell & Garrett, 1994). *The Glossary of Education Reform* (2013) broadens the definition to include students who can be identified as homeless, have serious health issues, experience domestic violence, or have a history of transiency. The definition may also refer to students who have learning disabilities, receive low test scores, have disciplinary problems, or are held back for grade retentions. An at-risk child can also be defined as one who is deemed not capable of transitioning successfully into adulthood or one who might not be able to fulfill the requirements of certain rites of passage in the society” (Ghongkedze, 2018, p.1). Graduating from high school is a rite of passage that students deemed at-risk are in jeopardy of missing.

Schlessman and Hurtado (2012) used common criteria to label students as at-risk in their multi-state study of alternative education programs. These factors were: psychiatric disorder or behavior, academic progress, drug or alcohol use, pregnancy or parenting, and retention (Schlessman & Hurtado, 2012). Each state had individual differences in their definitions of at-risk. For example, California used achievement scores in the areas of math and reading, but the five criteria listed above were the factors that were commonly used in all six states in the study. These defining characteristics can help define what it means for a student to be at-risk. While there may be other predictive factors, if a student reaches high school and has all these characteristics, they will likely be categorized as at-risk for not graduating with their cohort class.

While these defining characteristics may provide a generalized view of what external factors can contribute to a student being at-risk, Gerard (1995) argued that looking at external factors alone is not the best way to define at-risk students. He believed that students should have a voice in their placement in alternative education. This voice is more than asking the student whether they want to attend the alternative program; it requires a deeper look at their internal motivation and fit with the traditional or alternative program (Gerard, 1995). For example, if a student became pregnant causing her daily attendance to drop, yet past grades indicate that the student was focused, motivated, and capable of excelling, taking those factors into account when determining placement would allow educators to decide placement by looking at the student holistically instead of just the external factor impacting the student at the time. Gerard's (1995) definition relied more on the student's internal drive than the outside factors that may be out of their control.

Predictive Factors

Along with academic factors such as low-test scores and grades, learning disabilities, and disciplinary actions that would put a student at risk of not graduating, several non-academic factors can help to identify these students (Ghongkedze, 2018). Coleman et al. (2019) identified that a lack of family support, socioeconomic factors, educational success and value of education from parents, poor motivation, and low self-esteem can all contribute to students being at risk for dropping out. One study by Hickman et al. (2017) found that students' initial grade point average at the end of their first semester could determine if those students would graduate traditionally. Specifically, they found that “for every one-unit increase ($S.D. = .83$) in initial GPA, the odds of

graduating increased by 8%. We also found that graduates' initial ninth-grade first semester...were no different than their final GPAs...when they graduated high school” (Hickman et al., 2017, p. 49).

Predicting if a student will be at-risk for graduation has become a top concern for many schools. Students with certain demographic identifiers are more likely to be labeled as at-risk. The National Research Council (2001) cited that the students most at-risk of dropping out of high school are Hispanic or black, are more likely to live in poverty, attend urban schools, are English Language Learners, or have a disability. These factors do not indicate a student's ability or willingness to learn, but they show the common characteristics of students identified as at-risk. The authors also noted that being at-risk for needing alternative education is a process that "may begin in the early years of elementary school, not an isolated event that occurs during the last few years of high school" (National Research Council, 2001, p. 14). Identifying at-risk students early in their educational career can help prevent them from needing an alternative education program in high school.

Assessments or inventories that can provide schools with this information accurately and succinctly will enable schools to provide timely interventions. Lane et al. (2019) examined one such assessment used at the secondary level to predict if students are in danger of being at-risk. The study analyzed the results of the *Student Risk Screening Scale for Internalizing and Externalizing Behaviors* (Drummond, 1994), which rated students in 12 behaviors: 1) stealing; 2) lying, cheating, or sneaking; 3) behavior problems; 4) peer rejection; 5) low academic achievement; 6) negative attitude; 7) aggressive behavior; 8) emotionally flat; 9) shy or withdrawn; 10) sad or depressed; 11)

anxious; and 12) lonely (Lane et al., 2019). Teachers rated students on a Likert-type scale in middle school, and then those results were analyzed for connection to at-risk labeling in high school. The study found that the most predictive factor of a student's future as being at-risk was peer rejection, followed by low academic achievement. The need for social connection and acceptance was more indicative of future school success than academic performance.

Conversely, Dynarski and Gleason (2002) found that identifying early risk factors was not an accurate predictor of whether a student would drop out. The risk factors identified in their study were being raised in a single-parent home, receiving public assistance, limited English proficiency, low grades, disciplinary issues, having children, and attendance issues. The study found that students who have two or more of those risk factors in middle school may still be able to graduate traditionally, while students who had none of those risk factors would drop out of school entirely, seemingly with no risk factors. The risk factor that Dynarski and Gleason (2002) found to be the best predictor of being at-risk was low attendance. Relying on risk factors alone to predict the need for alternative education is not as accurate as is needed to provide the best interventions.

Interventions

In his study on the impact of early intervention on primary students, Harris Jr. (1993) found a significant difference in the academic performance of students in grades kindergarten- second grade when students participated in a pre-kindergarten intervention program. This study showed that students could receive individualized interventions when identified early and get caught up with their peers by the time they reached second grade. Early identification of and response to a student's need for intervention is critical

in getting students on track to graduation. The 2016 report by Hanover Research, *Early Skills and Predictors of Academic Success*, found that the mastery of reading and math skills at the early grade levels was the most significant factor in predicting future academic success. The researchers found that providing math and reading interventions as soon as the deficiency is discovered is crucial to helping students be successful (Hanover Research, 2016).

Roth et al. (2000) found that students who received early interventions in the areas of reading and mathematics foundations in a Florida Pre-K program were more likely to score in the highest performance bands in fourth grade than students who did not participate in the program. Notably, the research found that the students who were the most likely to score higher in fourth grade if they participated in an early intervention program were black and Hispanic, while white students who participated in the early intervention did not score higher than their counterparts who did not participate (Barr et al., 2000). The researchers did not have a clear explanation for the lack of success in white students who participated, but the researchers hypothesized that the white students who did participate in the early intervention program came from the lowest socioeconomic group of students. Most white students who participated in faith-based or private pre-K interventions programs went on to see the greatest growth (Barr et al., 2000). The success of students who received early reading and mathematics interventions saw the benefits in their testing at the fourth-grade level, which suggests that early interventions often see gains years after they are implemented.

Once students enter ninth grade, the need to provide reading and math support quickly is even more important, as there are only four years left to provide direct

interventions and instruction. In their research on the impact of reading and math intervention on students identified as being at-risk, Campbell Collaboration (2020) found that a low understanding of literacy and numeracy often led to adverse life experiences later in life, including opportunities for employment, earning potential, and overall health. Their review of research included 71 studies in which students were given reading and math interventions, and then their results on standardized tests were analyzed to determine if students had grown (Campbell Collaboration, 2020). While in the short term of seeing growth immediately on standardized tests given in the same year, there was also a long-term impact of interventions positively impacting their success in the areas of career opportunities, earning potential, and health (Campbell Collaboration, 2020). Interventions at the high school level can have an immediate impact on scoring higher on standardized tests that are often the focus of instruction, but the results of this review of the 71 studies found that there is not enough research to show that interventions this late in a student's school career will change their need for alternative education.

To solidify positive connections between at-risk students and their high school's interventions, Jefferson Jr. (2022) found that connecting at-risk students with mentors through a school-wide mentorship program improved attendance and lowered discipline referrals. The study found that the most beneficial elements of the program were structured curriculum work with the mentor on scheduled meeting times. It also showed that students involved in the mentorship program had higher self-esteem and a sense of belonging (Jefferson Jr, 2022). A different approach to creating a similar sense of connection was used in Gilstrap's (2022) study. His research was centered on whether participation in extracurricular activities could help at-risk students be more successful in

the traditional setting. The study found that involvement in an extracurricular activity not only positively impacted at-risk student attendance, but students who participated in activities had fewer disciplinary incidents and an increased GPA (Gilstrap, 2022). These interventions centered around connecting students to the school experience and saw benefits in supporting at-risk students.

Creating stronger student support systems is another intervention strategy to help at-risk students. In a study on the impact of an Integrated Student Support model (ISS) in an urban school district, Petsagourakis (2022) found that providing a tiered approach to supporting systems met the needs of the whole student. City Connects, the name of the ISS model implemented in the study, categorized areas of need into four dimensions: family, social-emotional, health, and academic (Petsagourakis, 2022). By identifying the dimension(s) that the student most needs help in, the tiered approach to helping support the child increased student achievement. Additionally, there was not only an increase in student achievement in at-risk students, but students who were high achieving also saw the benefit of achievement gains (Petsagourakis, 2022). The tiered system of support to address all student needs was a successful approach to preventing students from dropping out.

Harper (2022) conducted a research study on the impact of creating a school-community-guidance center (SCGC) that would "assist at-risk students in completing their graduation requirements without being separated from their publicly funded, regularly attended campus of their peers" (p. 1). The interventions described in this study involve identifying a problem, implementing an intervention, and then measuring the success of the intervention. An example of an academic intervention might be to assign a

student struggling in math class to an after-school tutoring session. If that works, the intervention is deemed successful. If it does not work, another intervention, like note-taking assistance, would be assigned (Harper, 2022). The process provides an engrained follow-up protocol to implement intervention until one is found to be successful. The study found that the real need in supporting at-risk students is to identify the root cause of their struggle, and most students need both academic and behavioral interventions (Harper, 2022). Supporting the whole student can lead to improved success for at-risk students.

Perspectives of Alternative Education Graduates

Upon the completion of alternative education, students can reflect on their experiences as they prepare to move on to their next goals in life. Snyder (2009) conducted a study in which she asked seven college graduates who had dropped out of high school to obtain their General Education Diploma (GED) why they were successful in the college setting but needed to drop out of high school. She found a common sentiment amongst all seven college graduates: they all experienced a feeling of displacement or lack of connection to their high school curriculum, peers, and teachers. She stated, “School was disappointed in their students’ lack of commitment and enthusiasm for traditional coursework, and the students, in turn, were disappointed that School cared so little for their needs. Dropping out protected them from the pain of further displacement” (Snyder, 2009, p. 3). It is clear from this study that what was lacking from their traditional education experience was not a lack of skill or ability but a lack of connection to their school and education.

Students enrolled in alternative education programs may show growth and different behaviors once engaged in an environment that better suits their needs. Watson (2014) conducted a study in which the perspectives of two alternative education program graduates were compared and analyzed. The study found that the students did not demonstrate the same behaviors or characteristics that labeled them at-risk while working in the alternative education program. The students showed a much higher intrinsic motivation and were genuinely invested in their education as the path to reaching their post-secondary goals. Upon graduation, the students attended community college and could use skills learned in the alternative education program, like balancing academics with responsibilities, time management, and focus (Watson, 2014). This change in behavior and ability to apply real-world skills to their post-secondary goals shows that alternative programs can help set students up to be successful.

In her dissertation, Knopf (2013) studied the perspectives of alternative education graduates after completion of their program in Pennsylvania. The study found that students had a more favorable view of the alternative program than the traditional one because of the smaller class sizes, relationships with adults, and sense of community in a smaller setting. The students also had a positive view of the alternative program after graduation because it helped them graduate when it seemed like they were out of opportunities to graduate (Knopf, 2013). The factors that surfaced as being the most influential on students completing the program were "increased attendance, academic achievement, smaller class sizes, and a caring and nurturing environment" (Knopf, 2013, p. v). The qualitative and quantitative nature of the study allows educators to rethink traditional settings to ensure student success.

Likewise, Harnden (2016) conducted a study in which students who had attended both traditional and alternative high schools were interviewed to gain insight into their different experiences. The study found that students responded best in both settings when the instructional practices and personnel were inviting and personalized. They also mentioned how important the culture and climate of the setting were to their success, both in terms of the physical environment and the feel of the school. Notably, in both school settings, students discussed the importance of having at least one adult they felt supported them and would help them succeed (Harnden, 2016). The students also commented on how they were more successful in the alternative setting because the class sizes were smaller than traditional ones, and the students could receive more individualized attention (Harnden, 2016). The feeling of the building was also crucial, and students remarked that the environment at the alternative schools felt more welcoming and inviting than the traditional school. Students felt that if traditional schools could have provided smaller class sizes and stronger relationships with the students to feel welcome in the building, more students would be able to graduate traditionally (Harnden, 2016). The implications educators can take away from these perspectives may help to keep students engaged in their traditional classrooms.

Standardized Testing to Determine Student Achievement Levels

State standardized testing aims to show what students have learned at the end of a grade level or course (Marso & Pigge, 1991). Colleges have also used standardized testing as a part of their admittance requirements, as it has been believed to show what students have mastered in their high school educational career (Allen et al., 2017). According to Allen et al. (2017), students who achieve readiness Benchmarks on the

ACT are 50% more likely to earn at least a B in an introductory college course.

Standardized tests are to be given under the same testing conditions, with high test security and fidelity in administration (Bourque, 2018). Under these conditions, the goal is for stakeholders to see how students score on the same test under the same conditions and hold schools accountable for educating all students. The state of Missouri has a history of standardized testing impacted by national and state policies, as outlined below.

A Brief History of the Missouri Assessment Program (MAP)

In 1993, under Governor Mel Carnahan, Missouri passed the Outstanding Schools Act, a legislative initiative aimed at providing more funding to Missouri schools while requiring the adoption of more rigorous standards and a new assessment system to hold schools accountable for teaching students the skills necessary upon graduation (Missouri Governor's Office, 1993). Prior to the Outstanding Schools Act, there was not a common set of standards that Missouri public schools were expected to teach across grade levels, which made measuring student mastery at a state level virtually impossible. The new assessment program aimed to not only measure knowledge but how students could use that knowledge to solve problems (Missouri Governor's Office, 1993). The first system of assessment was designed to assess students in grades 3, 7, and 11 in Communication Arts (now called English language arts), grades 4, 8, and 10 in math, and 3, 7, and 10 in science; these tests would measure students' mastery of the Missouri Show-Me Standards (Missouri Department of Elementary and Secondary Education, 2021b). This was the beginning of MAP standardized testing, a shift in teaching to common standards across the state, while holding schools accountable for what skills students could demonstrate mastery of in the content areas.

The next shift in MAP standardized testing came after the 2001 No Child Left Behind Act (NCLB) was passed. This federal legislation was signed into law in January 2002 by President George W. Bush. This legislation was supported in both the House of Representatives and Senate to make the American education system competitive with international systems (*No Child Left Behind Act of 2001*, 2020). The growing belief was that American students were behind their counterparts from other countries. This federal legislation held schools accountable for teaching students the necessary skills to be competitive in a global economy. NCLB required “states to test students in grades 3-8 in reading and math and break down student data into subgroups by race, disability, and socioeconomic status” (*No Child Left Behind Act of 2001*, 2020, para 2.).

The Missouri Assessment Program implemented grade-level assessments in reading and math in grades 3-8 and again in high school through End of Course Exams (EOCs) beginning in the 2008-2009 school year in the subjects of Algebra I, English Language Arts II, and Biology, with optional tests in Government, Algebra II, Geometry, and English Language Arts I offered the following year (Missouri Department of Elementary and Secondary Education, 2021b). Following NCLB policy, performance on these tests was disaggregated by subgroups, and scores were used to determine if schools had made Adequate Yearly Progress as a measure of success (*No Child Left Behind Act of 2001*, 2020). Currently, students are assessed in English Language Arts and mathematics in grades 3-8 and science in grades 5 and 8; prior to graduation, students are required to take End of Course Exams in the subjects of Algebra I, English Language Arts II, Biology, and Government (Missouri Department of Elementary and Secondary Education, 2021b).

Implications of Student Achievement on Standardized Tests

To hold Missouri public schools accountable for student success, the state implemented the Missouri School Improvement Program (MSIP) in 1990 and is currently entering its sixth cycle. When participating students took the MAP assessment in fifth grade, schools were held accountable under the MSIP 5 guidelines. The five performance standards schools were held accountable to under MSIP 5 are Academic Achievement, Subgroup Achievement, College and Career Readiness, Attendance Rate, and Graduation Rate. Connected to this study, schools were measured in Academic Achievement: "The district administers assessments required by the Missouri Assessment Program to measure academic achievement and demonstrates improvement in the performance of its students over time" (Missouri Department of Elementary and Secondary Education, 2017, p. 6), and Subgroup Achievement—"The district demonstrates required improvement in student performance for its subgroups" (Missouri Department of Elementary and Secondary Education, 2017, p. 6). Outlined in these measures, student scores, participation in testing, and growth data must meet or exceed the state standard. Schools are given an Annual Performance Report (APR) based on these criteria. The APR score determines the level of accreditation (accredited, provisional accredited, or unaccredited) that a district or school can receive (Missouri Department of Elementary and Secondary Education, 2017). The implications MAP scores have on the success, reputation, and funding of the school and district are paramount.

For individual students, the accountability level is low. In their study on the relationship between motivational prompts and standardized test results, Hawthorne et al. (2015) noted that "research that investigates the relationship between student motivation,

effort, and performance on low-stakes tests is warranted as these tests are increasingly being used to make judgments about the quality of student learning,” (p. 30). There are no state measures to reward or provide interventions for students based on their MAP scores at the elementary level. At the secondary level, the only requirement is for students applying for the A+ Scholarship, which is a scholarship awarded to students attending designated schools and meeting grade, attendance, testing, and community service requirements (*A+ Scholarship Program*, 2021). They must score Proficient on Algebra I or higher on a math EOC (Department of Higher Education and Workplace Development, 2021). However, because of the accountability the state places on standardized tests, schools and districts often go to great lengths to motivate students with their incentives, rewards, theme spirit weeks, and testing environments to try and motivate students to take the tests seriously and perform well (Hahn & Letsch, 2009).

Validity of Test Scores in Connection with Student Skill Level

Using standardized test scores to evaluate districts, schools, teachers, and students is common practice in the United States. However, the data is most meaningful if the tests accurately show what skills the students have mastered. Strauss (2018) cited educational psychologist David Berliner who found that standardized test scores are more connected to “out-of-school factors, including inadequate medical care, environmental pollutants, food insecurity, neighborhood characteristics, family relations, and family stress, all play a large part in creating existing achievement gaps and limit what schools can accomplish on their own,” (para.5). Student achievement may not always be clearly shown on a standardized test score when the student has outside school factors contributing to their focus when taking the test.

One of the complaints about standardized testing is the pressure it puts on teachers to "teach to the test" to ensure students are prepared to score well (Metcalf, 2005). However, if students are placed in an alternative setting, they may not receive the same level of preparation as students in the traditional setting. This discrepancy was noted in Metcalfe's (2005) study on how to best prepare alternative education students for standardized tests,

Additionally, while these students may require an alternative setting, their performance expectations remain identical to those of the general student population. Therefore, students who need a learning environment that falls outside the mainstream find it harder to be provided with services that adequately address their disabling conditions and, as a result, are faced with more significant educational challenges for success than their mainstream counterparts have. (pp. 3-4)

Students' lack of preparation for standardized tests in alternative education programs may not accurately show their knowledge but rather a lack of test-taking strategies and preparation for testing.

Some at-risk students have a higher number of disciplinary issues than students on the traditional path, and it might seem likely that students who have behavioral issues would not score as well on high-stakes testing due to missing content or missing test days due to disciplinary action that removes the student from the classroom. However, in a study on the impact of high-stakes testing on cortisol levels (an indication of stress levels) in students, Heissel et al. (2021) found that students were 26 percentage points less likely to get in trouble during a high-stakes testing week than other weeks during the year. The

study also found that students classified as disadvantaged had the highest increase in cortisol levels leading up to high-stakes testing. This increase in stress among socioeconomically disadvantaged students may impact their scores on the test.

Summary

The priority for creating alternative education arose as it became clear that some students' needs were not being met in traditional school settings. This need for a different setting for struggling students has increased as district accountability has increased through higher graduation requirements and high-stakes testing. Students labeled at-risk and needing an alternative education placement often have several external and internal factors contributing to that need. While academic progress is one external factor, there are often more significant issues impacting their inability to be successful in the traditional setting. Alternative education graduates' perspectives after completing their education show that there is much to be learned about how students learn best in smaller class sizes with trusted and caring adults. The need to have a sense of belonging also contributes to students feeling like they want to finish their education in a traditional setting.

Chapter 3

Methods

The purpose of this study was to answer the stated research questions related to the relationship between fifth grade MAP scores and graduation route, as discussed in Chapter 1. The design and methodology to address the research questions and test the hypotheses are presented in this chapter. It is organized into the following sections: research design, selection of participants, measurement, data collection, data analysis and hypothesis testing, and limitations.

Research Design

According to Lunenburg & Irby (2008), a descriptive research design involves studying a basic phenomenon. This study involved a quantitative descriptive research design using archived data, in which the researcher sought to predict how students who graduate traditionally versus through an alternative route (HSAP) scored on their fifth grade English language arts and mathematics MAP test. The study used a chi-square test with two categorical variables to test the hypotheses. The independent variable is the MAP proficiency band (Below Basic, Basic, Proficient, and Advanced). The dependent variable is the graduation route (traditional, HSAP).

Selection of Participants

The participants in this study were students who graduated (traditionally and through HSAP) in the year 2018 from District X, a school district located in a suburb in the Midwest. Students who graduated from District X were selected using a purposive sampling procedure, which is defined as “selecting a sample based on the researcher’s

experience or knowledge of the group to be sampled” (Lunenburg & Irby, 2008, p. 175).

Students who met the following criteria were included in this study:

1. The students graduated from District X during the 2017-2018 school year with either a traditional or HSAP diploma.
2. The students were enrolled in a school in the state of Missouri during their fifth grade year and were administered the MAP test during the 2010-2011 school year.
3. The students received a valid score on the fifth grade English language arts and mathematics test in the Spring of the 2010-2011 school year.

Measurement

The first variables measured in this study were MAP English language arts and mathematics achievement levels (Below Basic, Basic, Proficient, and Advanced). The second variable was the graduation route (traditional or HSAP). Specifics regarding the measurement of each variable are outlined below.

MAP Test

Public and charter school students in the state of Missouri are required to take the MAP grade level test as designated in the required subjects noted in Chapter 2 (Missouri Department of Elementary and Secondary Education, 2010). If a student transfers from one school or district in Missouri to another at the high school level, the scores are included in the transfer record, so the new school has them readily accessible. This allows the new school to determine the instructional needs of the student and possible placement for support services (Missouri Department of Education, 2010). This also allows the new school to ensure that all required tests have been taken.

The MAP scores used in this study came from the test administration in the 2010-2011 school year. The *MAP Grade-Level Assessment Technical Report* for these scores only added amendments to certain aspects of the 2010 report, and so that report will be used to determine the test's validity and reliability. The Missouri Department of Elementary and Secondary Education (2010) stated the number of a student's correct responses is collected by the Data Recognition Corporation (DRC) and then transferred into a scaled score for each subject: English language arts, mathematics, and science. For English language arts, the scaled scores range between 160 and 650, and for mathematics they range between 185 and 660 (Missouri Department of Elementary and Secondary Education, 2010). These scaled scores were then categorized into one of the four achievement levels after panels made up of representatives from education, business, and other professional communities determined what the cut-off scores were for each level (Missouri Department of Elementary and Secondary Education, 2010). The cut-off scores for each level may vary slightly from year to year, but students and families are provided both the student's scaled score and achievement level to see a full picture of the student's achievement (Missouri Department of Elementary and Secondary Education, 2010).

Students receive subcategory scores within each subject of the MAP Test. The subcategories for English language arts in grade 5 are Reading Fiction/Poetry/Drama, Reading Nonfiction, Speaking/Writing Standard English, and Writing Formally and Informally. Students are not given performance levels in each subcategory, but students can still see their scores in each area (Missouri Department of Elementary and Secondary Education, 2010). Table 1 contains the Grade 5 Blueprint, which outlines the subcategories and points available per section for the MAP test in English Language Arts.

Table 1*Blueprint of Grade 5 English Language Arts MAP Assessment*

Reporting Category: Strand/Domain	Point Range	Range of Emphasis (%)
Reading Fiction/Poetry/Drama	23	37
Reading: Nonfiction	22	35
Speaking/Writing Standard English	15	24
Writing Formally and Informally	2	3
Total	62	100

Adapted from *MAP Grade-Level Assessment Technical Report 2011* by Missouri Department ofElementary and Secondary Education, 2011, p. 3 <https://dese.mo.gov/media/pdf/asmt-gl-2011-tech-report>

The subcategories for mathematics in grade 5 are Algebraic Relationships, Data and Probability, Geometric and Spatial Relationships, Measurement, and Number and Operations. As stated before, students are not given performance levels in each subcategory, but students can still see their score in each area (Missouri Department of Elementary and Secondary Education, 2010). Table 2 shows the Grade 5 Blueprint, which outlines the subcategories and points available per section, for the MAP test in the area of mathematics.

Table 2*Blueprint of Grade 5 Mathematics MAP Assessment*

Reporting Category	Points Possible	Range of Emphasis (%)
Algebraic Relationships	14	20
Data and Probability	7	10
Geometric and Spatial Relationships	11	18
Measurement	14	20
Number and Operations	24	35
Total	69	100

Adapted from “MAP Grade-Level Assessment Technical Report 2010” by Missouri Department of Elementary and Secondary Education, 2010 c, p.28 <https://dese.mo.gov/media/pdf/asmt-gl-2010-tech-report>

Validity in quantitative research is defined as “the ability to make meaningful and helpful inferences from the scores gathered by the indicated instrument” (Creswell & Creswell, 2018, p. 153). According to their definition, there are three forms of validity:

- (a) content validity (Do the items measure the content they were intended to measure?) (b) predictive or concurrent validity (Do scores predict criterion measure? Do results correlate with other results?), and (c) construct validity (Do items measure the hypothetical constructs or concepts?). (p. 153)

The MAP test was created to measure to what degree students had mastered the Missouri Learning Standards at each grade level (Missouri Department of Elementary and Secondary Education, 2010). Questions were designed to align with specific learning targets outlined in English Language Arts and mathematics curricula implemented across

the state. The blueprints designed and referenced in Tables 1 and 2 have been created each year to guarantee that the standards are being assessed appropriately in the testing program (Missouri Department of Elementary and Secondary Education, 2021c). The validity of the test, as the result of the strong connection to the learning standards, allows the results to be trusted as an accurate measure of students' achievement in learning the content.

Lunenburg & Irby (2008) defined content validity as “the degree to which an instrument measures an intended content area” (p. 181). The blueprint of the MAP assessment breaks down the content of the assessment into categories aligned with each Missouri Learning Standard and groups it into the appropriate subcategory (Missouri Department of Elementary and Secondary Education, 2010). This intentional creation of assessments that align with content standards ensured that each instrument measured achievement in English language arts, mathematics, and science.

Reliability is defined as an instrument's ability to be administered repeatedly with the same results (Creswell & Creswell, 2018). The Missouri Assessment Program is administered every Spring in all Missouri public and charter schools in grades 3-8. The assessments are aligned to the same standards each year, and the test is administered under the same standardized conditions (Missouri Department of Elementary and Secondary Education, 2010). Schools are expected to have all proctors undergo standardized training on how to administer the test, access to give their students practice tests, and a window in which tests are to be administered to students (Missouri Department of Elementary and Secondary Education, 2010).

According to the MAP Grade-Level Assessment Technical Report of 2010, the reliability of the MAP test was determined using the Cronbach (1951) coefficient alpha. As the report indicated, the Cronbach coefficient alpha measures to what extent the questions measure the content and could do so as the test is repeatedly administered (Missouri Department of Elementary and Secondary Education, 2010). Coefficients that are equal to or greater than 0.8 are generally accepted as a reliable measure (Creswell & Creswell, 2018). The coefficient for fifth grade English language arts was measured at 0.91, and the coefficient for fifth grade mathematics was measured at 0.91, making these assessments reliable as indexed by Cronbach coefficient alpha (Missouri Department of Elementary and Secondary Education, 2010).

Graduation Route

There are two categories for the variable of high school graduation route in this study. Traditional route refers to completing the graduation requirements of the district and state through the comprehensive high school. Alternative route refers to the High School Alternative Program (HSAP), which at-risk students were placed in to ensure their graduation with an alternative diploma.

Data Collection Procedures

Prior to collecting the data, the superintendent of District X gave written consent for this study to be conducted with the condition of having the study approved by Baker University's Institutional Review Board (IRB). A consent form was signed by the Director of Data and Accountability for District X, who collected the archived test scores and graduation route data (see Appendix A). On July 25, 2022, a request for permission to conduct the study was submitted to the Baker University Institutional Review Board.

The request for the study was approved on September 8, 2022 (see Appendix B). Excel worksheets were sent to the researcher, and the data were coded to ensure the anonymity of the students. The worksheets were merged into one file and imported into IBM SPSS Statistics Base Pack 28 for Mac data analysis.

Data Analysis and Hypothesis Testing

Using 2010-2011 fifth grade MAP scores and the high school graduation routes, a chi-square test was conducted to address each of the research questions and test each of the hypotheses. This test was used to determine the nature of the relationship between the two categorical variables. Below are the research questions, hypotheses, and data analysis explanations.

RQ1

To what extent is there a statistically significant relationship between the level of fifth grade English language arts MAP scores and high school graduation route?

H1

There is a statistically significant relationship between the level of fifth grade MAP English language arts scores and the route of graduation.

A chi-square test of independence was conducted to address RQ1 because the relationship between two categorical variables was analyzed. A (4 rows x 2 columns) frequency table was constructed for the two categorical variables: fifth grade reading MAP scores and graduation route. The observed frequencies were compared to those expected by chance. The level of significance was set at .05. An effect size is reported when appropriate.

RQ2

To what extent is there a statistically significant relationship between the level of fifth grade mathematics MAP scores and high school graduation route?

H2

There is a statistically significant relationship between the level of fifth grade MAP mathematics scores and the route of graduation.

A chi-square test of independence was conducted to address RQ2 because the relationship between two categorical variables was analyzed. A (4 rows x 2 columns) frequency table was constructed for the two categorical variables: fifth grade mathematics MAP scores and graduation route. The observed frequencies were compared to those expected by chance. The level of significance was set at .05. An effect size is reported when appropriate.

Limitations

According to Lunenburg and Irby (2008), “Limitations are factors that may have an effect on the interpretation of the findings or on the generalizability of the results” (p. 133). Stating limitations can aid in ensuring that misunderstandings about the study or results do not occur while acknowledging that the researcher cannot control them (Lunenburg & Irby, 2008). Limitations of this study included:

1. Students may have received different qualities of educational experiences prior to the MAP test in fifth grade.
2. Administration of the assessment may vary from school to school or teacher to teacher depending on incentives provided, emphasis in the building, and facility to administer the test in an adequate testing environment.

3. Students may have had life experiences later in their educational career that impacted their need for an alternative graduation, including health issues, transiency, and discipline issues.
4. Factors that impact student achievement may exist, including motivation and attendance.

Summary

This chapter restated the purpose of the study and defined the research design as quantitative and descriptive. Participants were selected using a purposive sampling method that met a defined set of criteria detailed in that section. The blueprint of the English language arts and mathematics MAP test was described and presented in Tables 1 and 2. The validity and reliability of the MAP test were addressed. The Cronbach coefficient alpha results were also presented to show the reliability of the MAP test. The data collection procedures were also outlined in this chapter. Finally, the methods for analyzing the data for each research question were discussed. The results are presented in the following chapter.

Chapter 4

Results

The overall purpose of this study was to determine if there was a relationship between fifth grade MAP scores of students enrolled during the 2010-2011 school year and whether they graduated traditionally or through HSAP in 2018. The intention was to determine if data supported the idea that mastery of English language arts and mathematics skills prior to entering middle school is related to a student's graduation route. To address the purpose of this study, two research questions were posed, and two hypotheses were tested. The results of this hypothesis testing are included in this chapter.

Descriptive Statistics

This study included the 1449 students in the graduating class of 2018 in District X. Table 3 provides the breakdown of students who graduated traditionally and through HSAP. As noted in the table, 10.4% of the graduating class received a diploma through the alternative route of HSAP.

Table 3

Graduation Route Frequency

Graduation Route	<i>N</i>	%
HSAP	150	10.4
Traditional	1299	89.6
Total	1449	100.0

When the fifth grade MAP scores of 2018 graduates were examined, an interesting result developed. A high number of graduates, in fact, the highest percentage, did not have a MAP score in English language arts from 2010-2011. Table 4 shows the frequencies of each proficiency level for all graduates. The N/A row indicates the number of students who did not have a score.

Table 4

English Language Arts Proficiency Level Frequencies

Proficiency Levels	<i>N</i>	%
N/A	535	36.9
Below basic	55	3.8
Basic	331	22.8
Proficient	329	22.7
Advanced	199	13.7
Total	1449	100.0

Similarly, a high number of 2018 graduates did not have a mathematics MAP score in 2010-2011. Table 5 shows the frequencies of each proficiency level for all graduates. The N/A row indicates the number of students who did not have a score. Again, the highest percentage of graduates did not have a mathematics score.

Table 5*Mathematics Proficiency Level Frequencies*

Proficiency Levels	<i>N</i>	%
N/A	535	36.9
Below basic	37	2.6
Basic	316	21.8
Proficient	370	25.5
Advanced	191	13.2
Total	1449	100.0

The high number of students missing fifth grade MAP scores in both English language arts and mathematics required further investigation with respect to the accuracy of the data. The director of data and assessment explained that this discrepancy was not alarming given the transiency of the student population (director of data and assessment, personal communication, September 29, 2022). He noted that elementary MAP scores are not recorded at the district level when a student transfers between school districts. Therefore, the data in this study only includes scores of students who took the test while attending District X in fifth grade (director of data and assessment, personal communication, September 29, 2022). The director also mentioned that absenteeism could be a contributing factor to the missing data as well. While schools are encouraged to have students make up missed MAP tests, the state prescribes a testing window in which the assessments must be given. If students were absent on the day of the test and did not return in time to make up the test, their scores would be missing (director of data

and assessment, personal communication, September 29, 2022). The data analyzed to test the hypotheses for this study were limited to students who were present and earned fifth grade MAP scores and graduated from District X. The analysis of students who did not receive a fifth grade MAP score while attending District X will be presented in the additional analysis section.

The examination of the English language arts data showed a low sample size for some of the disaggregated data, which would have made the hypothesis tests difficult to perform. In order to analyze the data for the hypothesis tests, it was necessary to recode the data to combine proficiency levels. Table 6 shows the result of recoding that data.

Table 6

English Language Arts Recode of Proficiency Levels

Proficiency Level	<i>N</i>	%
Original		
Below basic	55	3.8
Basic	331	22.8
Proficient	329	22.7
Advanced	199	13.7
Recoded		
Basic and below	386	42.2
Proficient and above	528	57.8

The examination of the mathematics data also showed a low sample size for some of the disaggregated data which would have made the hypothesis tests difficult to perform. In order to analyze the data, it was necessary to recode the data to combine proficiency levels and omit the students who did not have a score. Table 7 shows the result of recoding that data.

Table 7

Mathematics Recode of Proficiency Levels

Proficiency Level	<i>N</i>	%
Original		
Below basic	37	2.6
Basic	316	21.8
Proficient	370	25.5
Advanced	191	13.2
Recoded		
Basic and below	353	24.4
Proficient and above	561	38.7

Hypothesis Testing

RQ1

To what extent is there a statistically significant relationship between the level of fifth grade English language arts MAP scores and high school graduation route?

H1

There is a statistically significant relationship between the level of fifth grade MAP English language arts scores and the route of graduation.

A chi-square test of independence was conducted to address RQ1 because the relationship between two categorical variables was analyzed. A (2 rows x 2 columns) frequency table was constructed for the two categorical variables: fifth grade English language arts MAP levels (Basic and below or Proficient and above) and graduation route (traditional or HSAP). The observed frequencies were compared to those expected by chance. The level of significance was set at .05. An effect size is reported, when appropriate.

The results of the chi-square test of independence indicated a statistically significant difference between the observed and expected values, $\chi^2(1) = 17.541$, $p = .000$, Cramer's $V = .139$. See Table 8 for the observed and expected frequencies. The observed frequency for the students who scored basic and below and graduated from HSAP ($n = 37$) was higher than the expected frequency for that group ($n = 22.4$). The observed frequency for the students who scored proficient and above and graduated traditionally ($n = 512$) was higher than the expected frequency for that group ($n = 497.4$). H1 was supported. Students who scored higher on the MAP English language arts test tended to graduate traditionally, while students who scored lower tended to graduate through HSAP. The effect size indicated a medium effect.

Table 8*Observed and Expected Frequencies for H1*

Proficiency Level	Graduation Route	f_{observed}	f_{expected}
Basic and below	HSAP	37	22.4
	Traditional	349	363.6
Proficient and above	HSAP	16	30.6
	Traditional	512	497.4

RQ2

To what extent is there a statistically significant relationship in the level of fifth grade mathematics MAP scores and high school graduation route?

H2

There is a statistically significant relationship between the level of fifth grade MAP mathematics scores and the route of graduation.

A chi-square test of independence was conducted to address RQ2 because the relationship between two categorical variables was analyzed. A (2 rows x 2 columns) frequency table was constructed for the two categorical variables: fifth grade mathematics MAP levels and graduation route. The observed frequencies were compared to those expected by chance. The level of significance was set at .05. An effect size is reported, when appropriate.

The results of the chi-square test of independence indicated a statistically significant difference between the observed and expected values, $\chi^2(1) = 29.014$, $p = .000$, Cramer's $V = .178$. See Table 9 for the observed and expected frequencies. The observed frequency for the students who scored basic and below and graduated from HSAP ($n = 39$) was higher than the expected frequency for that group ($n = 20.5$). The observed frequency for the students who scored proficient and above and graduated traditionally ($n = 547$) was higher than the expected frequency for the that group ($n = 528.5$). H2 was supported. Students who scored higher on the MAP mathematics test tended to graduate traditionally, while students who scored lower tended to graduate through HSAP. The effect size indicated a medium effect.

Table 9

Observed and Expected Frequencies for H2

Proficiency Level	Graduation Route	f_{observed}	f_{expected}
Basic and below	HSAP	39	20.5
	Traditional	314	332.5
Proficient and above	HSAP	14	32.5
	Traditional	547	528.5

Additional Analyses

After conducting the initial data analysis, the researcher analyzed the data further. Because the number of 2018 HSAP graduates who did not have a fifth grade MAP score from District X was so high, an additional analysis was conducted to determine if there was a statistically significant relationship between students' District X MAP test status and their graduation route. The numbers of students in the data set who did take the test were the exact same as students who did not take the test for both the English language arts MAP test and the mathematics MAP test, which allowed the researcher to presume that the students were probably not attending fifth grade in District X for either test instead of being absent for one test and present to take the other.

A chi-square test of independence was conducted to evaluate the relationship between students' District X testing status (did, did not take) and their graduation route (HSAP, traditional). This test was used because the relationship between two categorical variables was analyzed. A (2 rows x 2 columns) frequency table was constructed for the two categorical variables: English language arts and mathematics MAP test (did and did not take), and graduation route (HSAP or traditional). The observed frequencies were compared to those expected by chance. The level of significance was set at .05. An effect size is reported, when appropriate.

The results of the chi-square test of independence indicated a statistically significant difference between the observed and expected values, $\chi^2(1) = 55.303$, $p = .000$, Cramer's $V = .195$. See Table 10 for the observed and expected frequencies. The observed frequency for the students who did not take the MAP tests in District X and graduated from HSAP ($n = 97$) was higher than the expected frequency for that group

($n = 55.4$). The observed frequency for the students who did take the MAP tests in District X and graduated traditionally ($n = 861$) was higher than the expected frequency for the that group ($n = 819.4$). Students who did take the fifth grade MAP test in English language arts and mathematics arts while attending District X tended to graduate traditionally, while students who did not take the tests while attending District X tended to graduate through HSAP. The effect size indicated a medium effect.

Table 10

Observed and Expected Frequencies for Taking the Fifth Grade MAP Test in District X

Took Math and ELA MAP Test	Graduation Route	f_{observed}	f_{expected}
Did	HSAP	53	94.6
	Traditional	861	819.4
Did not	HSAP	97	55.4
	Traditional	438	479.6

Summary

This chapter presented the descriptive statistics for the two research questions and the associated two hypotheses. It also presented additional analysis for the students who did not take the MAP test in fifth grade in District X and their graduation route. Chapter 5 presents a summary of the study, findings related to the literature, and a conclusion.

Chapter 5

Interpretation and Recommendations

The focus of this study was to determine if there is a connection between fifth grade MAP English language arts and mathematics levels and high school graduation route. The study involved the review of students from the graduating class of 2018 and their fifth-grade proficiency levels from the 2010-2011 school year. This chapter is divided into three main sections: the study summary, findings related to the literature, and the conclusion.

Study Summary

This section includes a summary of the study that contains an overview of the problem and a discussion of the relationship between fifth grade English language arts and mathematics MAP scores and graduation route. This section also includes the purpose and research questions. Finally, this section presents a review of the methodology and the major findings.

Overview of the Problem

The final step in a student's K-12 educational experience is to graduate from high school with a diploma that allows them to pursue their post-secondary goals and become a contributing member of society. For students to reach that goal, they are taught basic reading and mathematics skills in their early years of education. If students do not master those skills, they can begin to show signs of being at-risk for graduation. Researchers have noted that the sooner schools can identify students beginning to show signs of dropping out of high school, the sooner interventions can be implemented to help them avoid that route (Block-Pedego, 1990). The identification of at-risk students in need of an alternative route in the participating district in this study is often made at the junior or senior level, when there may not be enough time to reteach skills and content, with the

focus often shifting to credit recovery (HSAP principal, personal communication, July 30, 2021). It would be helpful to establish a solid connection between early skill deficiency identification coupled with multiple opportunities for effective and focused interventions prior to high school to decrease the need for alternative graduation programs, which can limit opportunities for college and universities. Current research primarily credits factors outside of the classroom as indicators for alternative graduation routes, but those factors are often outside of the education system's realm of control. Determining if there is a connection between academic skills before leaving elementary school and graduation route could provide time for schools to help reteach concepts necessary to assist students in recouping necessary skills.

Purpose Statement and Research Questions

The purpose of this quantitative study was to determine if there is a connection between English language arts student levels (Below Basic, Basic, Proficient, and Advanced) in fifth grade, as determined on the MAP tests, and students' need for an alternative program placement in order to graduate from high school. The researcher also sought to determine if there is a connection between low mathematics student levels in fifth grade, as determined on the MAP tests, and students' needs for an alternative program placement in order to graduate from high school. To address the purposes of this study, two research questions were posed and two hypotheses were tested.

Review of the Methodology

This study involved a quantitative descriptive research design using archived data. The independent variables were the student's levels on the MAP English language arts and mathematics tests in fifth grade (Below Basic, Basic, Proficient, or Advanced, which

were then recoded to Basic and below and Proficient and above), and the dependent variable was their graduation route (traditional or HSAP). The analysis involved the use of a chi-square test of independence to test each of the hypotheses. The participants in this study were students who graduated (traditionally or through HSAP) in the year 2018 from District X and took the MAP test in English language arts and mathematics as fifth graders during the 2010-2011 school year. Additional analysis was conducted using the chi-square test of independence to determine the relationship between students with no scores from District X and graduation route.

Major Findings

The researcher used fifth grade MAP level scores from 2010-2011 and the graduation routes of the class of 2018 to determine if there was a connection between English language arts and mathematics skills and graduating traditionally or through HSAP. This section discusses the major findings of the English language arts MAP level relationship to graduation route and mathematics MAP level relationship to graduation route. It also includes the findings from the additional analysis of MAP testing status in District X and graduation route.

The results of the analysis of the English language arts levels and graduation route indicated a statistically significant relationship between the number of students who graduated through HSAP and scored basic and below on the MAP test in fifth grade. This analysis indicated that a student's English language arts proficiency could potentially be a component in their ability to graduate traditionally. The analysis of mathematics levels also indicated a statistically significant relationship between the number of students who graduated through HSAP and scored basic and below on the MAP test in fifth grade. This

analysis showed that a student's basic math skills could be used as an early predictive factor in determining if a student is at-risk for graduating through HSAP. The additional analysis of the relationship between students' testing status in District X and graduation route found a high percentage of students who graduated from District X in 2018 transferred into the district sometime after fifth grade. This analysis showed that transiency could also be used as an early predictive factor in determining graduation route. This finding raises recommendations for further research, which are outlined later in this chapter.

Findings Related to the Literature

The results of this study support many previous research results in the literature presented in Chapter 2. The results and literature show that academic struggles early in a student's education can predict the need for an alternative graduation route. Results of prior research also indicated that being identified as at-risk can happen as early as elementary school (National Research Council, 2001), which is supported by the results of this study in that elementary score levels can be used to identify a student's graduation route. The studies reviewed in Chapter 2 also point to transiency as an indicator of the need for an alternative graduation route, which turned out to be of interest with regard to graduation route in this study. This section provides specific connections between this study and prior research.

Hanover Research found in their 2016 study, *Early Skills and Predictors of Academic Success*, that the mastery of reading and math skills at the early grade levels was the most significant factor in predicting future academic success. The researchers found that providing math and reading interventions as soon as a deficiency is discovered

is crucial to helping students be successful (Hanover Research, 2016). This researcher found that English language arts and math skills were strong predictors of a student's ability to graduate traditionally. As Hanover Research (2016) noted, providing early interventions for students who did not score proficient and above on the fifth grade MAP test in the areas of English language arts and mathematics could be the key to helping students avoid graduating through HSAP.

In the Hickman et al. 2017 study, "Predicting High School Freshmen Dropout Through Attentional Biases and Initial Grade Point Average," the researchers found that freshmen who were able to raise their GPA by one unit increased their likelihood of graduating by 8%. These researchers also found that students' GPAs at the end of their freshmen year were usually the same when they graduated (Hickman et al., 2017). This suggests that a student's academic mastery is unlikely to improve without interventions outside of classroom instruction; therefore, students at-risk as freshmen will still be at-risk as upperclassmen. The results of the current study also indicated that students who were academically behind in fifth grade tended to graduate through an alternative route at a higher rate than those who were scoring higher, which supports the previous studies.

In the 2001 study, *Understanding Dropouts: Statistics, Strategies, and High-Stakes Testing*, conducted by the National Research Council, a major finding was that the studied at-risk factors could be identified in the student in elementary school. The researchers noted that being at-risk was most often not a single event that happened during the student's high school career, but it was more often a combination of factors that could be traced back to the student's early education years (National Research Council, 2001). The results of the current study also confirm that the academic factor of

being labeled at-risk can be traced back to fifth grade. This study and prior research show that high school graduation route is not determined solely in a student's high school career.

Lane et al. (2019) also found in their study, "Predictive Validity of Student Risk Screening Scale for Internalizing and Externalizing Scores in Secondary Schools," that academic success was the second highest predictor of a student needing to graduate through an alternative route. They suggested the only predictive factor that ranked higher than academic success was peer rejection. The results of the current study support the previous research that reflected the connection between students scoring low on a fifth grade MAP test and graduating through HSAP.

Several studies reviewed in Chapter 2 presented transiency and absenteeism as predictive factors for a student needing an alternative graduation route (Coleman et al., 2019; Hickman et al., 2017; Kilgus et al., 2017; Tsang, 2004). Likewise, *The Glossary of Education Reform* (2013) found that a student's attendance in school impacted the likelihood of being identified as at-risk. The additional analyses completed to examine the relationship in this study also showed a high number of students who graduated from HSAP without MAP scores, which would indicate that the students had transferred into District X after fifth grade. Prior research and this study show transiency or being present to take the test to be a predictive factor for needing an alternative graduation route.

Conclusions

The conclusions about the connection between fifth grade MAP English language arts and mathematics levels and graduation route are presented in this section. It also includes findings from the additional analyses. This section includes implications for

further actions and recommendations for further research. This section culminates with concluding thoughts from the researcher.

Implications for Actions

The information from this study can be used by District X as a tool to help students avoid needing to graduate through HSAP. Outlined in this section is the need for more support in English language arts and mathematics for students who have not mastered the skills upon leaving fifth grade. The need for a transition plan from fifth to sixth grade, sixth grade to seventh grade, and eighth grade to ninth grade is also presented. These recommendations are designed to help students not only graduate traditionally but find success in their courses at each grade level.

Based on the results of this study, it is recommended that district leadership increase the level of literacy support at the secondary levels, as well as continue providing support to students struggling to master reading skills in elementary school. Students who enter sixth grade scoring basic and below in English language arts should be provided literacy support in all classes to help them achieve proficiency in this area. The earlier that interventions and supports can be put into place the better, but these must be continued in high school if the student is not progressing. Hiring a reading specialist to work with high school teachers, providing professional development focused on teaching literacy skills, and providing staffing to aid in reading intervention are steps that can be taken to give students the literacy skills needed to graduate traditionally.

Additionally, providing mathematics support at the secondary level is another recommendation based on the results of this study. Students must earn four credits of math in order to graduate, with Algebra I, Geometry, and Algebra II being required

courses. Providing an additional course at the freshman level, such as targeted mathematics support, that allows students in need of intervention with another year of scaffolding could increase the likelihood of their success in those courses while helping them to stay on track to graduate traditionally. As support for basic mathematics skills that have not been mastered improves, so will future mathematics scores and coursework.

Finally, it is recommended that district administration take this information and provide time for educators to map out transition plans for students as they transition between buildings (elementary to middle school, middle to high school). In District X, students spend one year in the sixth-grade center, then spend seventh and eighth grade in a middle school before entering high school in ninth grade. When students transition from fifth to sixth grade, having a plan in place to provide interventions for students to regain skills identified as lower on the MAP test can help close the gap in a timely manner. If more time is needed, another plan can be put into place as those students move on to middle school. If skills are still deficient, a transitional plan can be put into place as they enter high school as well. This plan can include remediation courses, support during Multi-Tiered Systems of Support (MTSS time), or other tiered support to help students recoup those skills. The communication between schools regarding the student's current level of understanding can help ensure that as they advance closer to graduation, students are attaining the skills needed to graduate traditionally.

Recommendations for Future Research

This researcher sought to determine if student scores on the fifth grade MAP tests were connected to the graduation route of the class of 2018. This information alone can allow schools and districts to provide early interventions to students who score basic and

below in order to provide them a higher likelihood of graduating traditionally. The recommendations for future research are explained in this section.

The first recommendation for future studies is to examine the causes for such high levels of transiency in the state, as well as how that impacts the graduation route of students. Studying if students who move from one district to another are at a statistically significant higher chance of graduating through HSAP would help to make decisions to support those students. If educators know that students who move from district to district are more likely to graduate through an alternative program than those who remain in the same district, then interventions and supports can be put into place to help students master skills that were not learned as a result of their transiency.

The next recommendation for further study is to examine the correlation between attendance and MAP scores. Elementary students who have low attendance and low test scores as a result of missing essential teaching content could further heighten awareness of the critical relationship between elementary absenteeism and high school graduation route. While the importance of attendance and academic achievement is not new to elementary educators, knowing that the impact reaches as far as influencing graduation routes could increase the urgency to address it. This would allow elementary schools to ensure that the foundational academic skills are developed in time to give students a greater chance of graduating traditionally.

Additionally, a study on the connection between students who have an Individualized Education Plan (IEP) and their need for HSAP as a graduation route would be beneficial. While students with an IEP should be getting the interventions and supports needed to master English language arts and mathematics skills, it would be

important to determine if those interventions are effective and help students already at an academic disadvantage to graduate traditionally. If the support they are receiving are keeping them from graduating through HSAP, then there may be significance to providing similar levels of support to students without an IEP but not mastering English language arts and mathematics upon leaving elementary school.

The final recommendation for further research is to identify what interventions can be put in place at the middle school level to help students who did not score proficient or above. Because the data reflects that there is a statistically significant relationship between students' MAP performance levels in English language arts and mathematics and their graduation route, research should be conducted as to what types of middle school interventions are the most successful at closing the academic gaps that keep students from graduating traditionally. Likewise, research on the success of interventions put in place at the freshmen and sophomore grade levels could also help students recoup the deficient skills that impede their ability to graduate traditionally.

Concluding Remarks

The researcher for this study sought to identify if there is a correlation between academic mastery at the fifth-grade level and a student's high school graduation route. Previous research notes other factors as predictors for alternative graduation routes, as outlined in Chapter 2. Educators are most likely to have control over the factors in the classroom, such as curriculum, instruction, and reteaching. The importance of teachers focusing on the skills needed for a student to be proficient in English language arts and mathematics before leaving elementary school appears to be key to giving students the greatest chance of graduating traditionally. As educators become more aware of the long-

term implications of students falling behind in English language arts and mathematics, the focus on helping students master skills should become paramount.

Likewise, as middle and high schools enroll new students, school administration should utilize MAP scores to determine placement in remediation or supportive services. While there are other data points to take into consideration when making decisions on interventions and course placement, fifth grade MAP scores can serve as an additional indicator to monitor in order to help each student be successful. The success of students in reaching their post-secondary goals begins in elementary school, and steps should be taken to ensure no student leaves fifth grade already at-risk due to academic skill deficits. Graduating traditionally should be a possibility for each student served by a school district, and educators should continue to seek ways to aid in the skill mastery to make that possibility a reality.

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Appendices

Appendix A. Consent to Conduct Research

Request to Conduct Research with the [REDACTED]

Please read and follow the directions in this document.

A copy of this form must be returned to [REDACTED] Director of Data and Accountability with the necessary signatures BEFORE approval can be granted to conduct research. Please include your last name as you save your document e.g. [REDACTED] Research Request.

Name of Applicant: Jackie Gosney

Employee of [REDACTED] Yes ☒ No ☐

If YES, location of building and your position with the [REDACTED]

Is the research in fulfillment of a graduate program requirement and/or in partnership with an external organization? Yes ☒ No ☐

If YES, what is the name of external organization and lead contact person?

External Organization: Baker University

Lead Contact Person and Position: Dr. Denis Yoder, Advisor

Briefly describe the purpose of the research: The research I am conducting for my dissertation is to determine if 5th grade reading and math MAP scores have any connection to students needing to graduate through the HSAP program. The purpose is to determine if the academic skill level of students when they leave elementary school is a predictive factor of their ability to graduate traditionally. The identity of the students, their home high school, and elementary school will all be protected. This study is looking only at scores, and it not comparing schools any other demographic data.

Submission Requirements – please mark check boxes as appropriate

1. A copy of the complete application submitted for formal approval by a human subjects review board. This application should include, at a minimum:
 - a. A brief summary of the purpose and scope of the research including:
 - ☐ The extent to which the research addresses and/or aligns with the goals of the school district
 - ☐ Potential benefit of the research to positively impact district, building, or classroom practice
 - b. A brief summary of the research methods including:
 - ☐ Participants
 - ☐ Selection process
 - ☐ Remuneration procedures (if applicable)
 - ☐ Assurance of confidentiality of participant identification
 - ☐ Consent and assent procedures and documents
 - ☐ Activities related to the research, including proposed survey, interview, and/or questions/instruments
 - ☐ Extent of intrusiveness/disruption regarding classroom instruction
 - ☐ Time/effort requirements of participants
2. ☐ Evidence that the proposed research has been formally approved through a review board for protection of human subjects.
3. ☐ Assurance from the researcher that building principals, teachers, students and/or their parents may opt out of participation without consequence even with approval by the district team.
4. **Signature of Principal(s)** of building(s) impacted by research study before approval.

[REDACTED]

Signature of Director of Data and Accountability: [REDACTED]

Team Review Date: July 25, 2022

Approved: ☒ Not Approved: ☐

Appendix B. Institutional Review Board Approval



Baker University Institutional Review Board

September 8th, 2022

Dear Jackie Gosney and Denis Yoder,

The Baker University IRB has reviewed your project application and approved this project under Exempt Status Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

Please be aware of the following:

1. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
2. Notify the IRB about any new investigators not named in original application.
3. When signed consent documents are required, the primary investigator must retain the signed consent documents of the research activity.
4. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.
5. If the results of the research are used to prepare papers for publication or oral presentation at professional conferences, manuscripts or abstracts are requested for IRB as part of the project record.
6. If this project is not completed within a year, you must renew IRB approval.

If you have any questions, please contact me at npoell@bakeru.edu or 785.594.4582.

Sincerely,

Nathan Poell, MLS
Chair, Baker University IRB

Baker University IRB Committee
Tim Buzzell, PhD
Nick Harris, MS
Scott Kimball, PhD
Susan Rogers, PhD