VIGNETTES OF SCHOLARS: A CASE STUDY OF BLACK MALE STUDENTS AT A STEM EARLY COLLEGE HIGH SCHOOL

by

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ABSTRACT

TEMPESTT RICHARDSON ADAMS. Vignettes of scholars: A case study of Black male students at a STEM early college high school. (Under the direction of DR. CHANCE LEWIS)

Ensuring students graduate high school ready to enter college or the workforce has become a prime focus within secondary education. High school graduates are often ill-prepared for college-level work and often have to register for remedial courses before they can take standard college level courses (Southern Regional Education Board, 2010). Serving as both a solution to this concern and an alternative to traditional high schools, early college high schools were created to focus on increasing the number of students graduating from high school and enrolling in college. Early college high schools seek to serve students who have traditionally underperformed in school and those who are underrepresented in higher education including students of color, first-generation college students, students from low socioeconomic backgrounds, and English language learners (Barnett, Bucceri, Hindo, Kim, 2013; "Overview & FAQS," 2013). In efforts to learn more about how early colleges are meeting the needs of students, this dissertation examines the experiences, identity construction, and perceptions of Black male students at a science, technology, engineering, and mathematics (STEM) based early college high school.

Using a qualitative case study design, participants were eight Black male upperclassmen enrolled in a STEM early college high school, located on the campus of a four-year university. Data was collected through focus groups and individual interviews and data was analyzed thematically. Findings suggest students in this study have largely

positive experiences at their early college high school. Despite some challenges, the early college high school environment helps facilitate scholar identities, and the STEM focus of the school helps students learn more about their strengths and weaknesses. The implications of the research, recommendations for educational stakeholders, and recommendations for future research are discussed.

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DEDICATION

This dissertation is dedicated to my brother, the late Jarshamel J. Cambridge. I love you and never imagined continuing this life without you. Like the participants in this study, you were a scholar whether you knew it or not. Keep running with Grandma.

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CHAPTER ONE: INTRODUCTION

College and Career Readiness: Challenges and Efforts

Research continues to illuminate the influx of students graduating from high school who are ill prepared for college and careers (ACT, 2014; Achieve, 2013; Radcliffe & Bos, 2013; Ramsey-White, 2012). A review of high school graduates who completed the ACT in 2014 shows only 26% of them met the college readiness benchmarks in Mathematics, Science, English, and Reading (ACT, 2014). The Southern Regional Education Board (SREB) identified a gap that exists between entering college and being prepared for college; while students may be eligible to attend college, nearly 60% of them find themselves in introductory courses because of the need for remediation (SREB, 2010). This gap in college readiness remains persistent and is credited to have a significant impact on low college graduation rates; students who are in remedial courses are unlikely to complete their degrees (SREB, 2010). While colleges may be attracting more students and increasing enrollment, graduation rates remain low (Bradley & Blanco, 2010). Bradley and Blanco (2010) explain that of first-time full-time college freshmen, less than one-third of them graduate within four years and on average it takes them six years to earn a bachelor's degree. These trends indicate a correlation between degree completion and student readiness for college (SREB, 2010). Poor college and career readiness is compounded by the lack access to postsecondary educational opportunities. Many students simply cannot afford college, and countless others do not

possess the "college knowledge" needed to navigate the process of applying for and entering college (Conley, 2009; Vargas, 2004).

Efforts to increase high school graduation rates are necessary as well. The National Center for Education Statistics (NCES) reports that in the 2011-2012 school year, 81% of high school students graduated on time (Kena et al., 2014). Data on subgroups were as follows: Asians/Pacific Islanders had the highest graduation rate at 93%, followed by Whites at 85%, Hispanics at 76%, and American Indians/Alaska Natives and Blacks each at 68% (Kena et al., 2014). Even more problematic is the suggestion that due to current societal demands, the traditional high school model is antiquated and cannot adequately meet the innovative and creative needs of today's workforce (McDonald & Farrell, 2012). A high school diploma appears to no longer be sufficient, and some postsecondary education or training is necessary for better economic outcomes. The United States Bureau of Labor Statistics (2013) reports that one third of jobs are in occupations that typically required postsecondary education and these jobs have higher salaries.

As a result, much emphasis has been placed on reforming and redesigning high schools to increase graduation rates and ensure preparation for postsecondary opportunities for all students (McDonald & Farrell, 2012). Early college high schools (ECHS) are one model that has been identified as an alternative to the traditional high school as it merges high school and college together (Fischetti, MacKain & Smith, 2011). This reform initiative addresses both the lack of preparation for college which plagues high school graduates and the belief that traditional high schools in the nation are utterly obsolete (Fischetti et al., 2011).

Early colleges reduce the amount of time it takes to complete high school and accelerate entry to college using a dual enrollment strategy; students are simultaneously enrolled in high school and college courses (McDonald & Farrell, 2012). Three different program implementation models exists for the ECHS: (1) four-year programs that allow students to earn up to 30 college credits before graduation; (2) five-year programs that enable students to gain up to 60 college credits by the end of that "thirteenth year"; and (3) schools with grades 6-12 that include access to two years of college credit (Hoffman, Vargas, & Santos, 2009). Even with this unique design, the signature of these schools is the targeted population: students who have traditionally underperformed in school or those who might be labeled at-risk of dropping out as well as those belonging to groups underrepresented in higher education such as students of color, first-generation college students, students from low socioeconomic backgrounds, and English language learners (Barnett et al., 2013; "Overview & FAQS," 2013). Hoffman et al. (2009) notes research suggests the provision of access to college-level rigor and credit in high school is likely to prepare students for success in college. This is particularly influential for those that may not be typically be considered or even consider themselves as college material (Hoffman et al., 2009).

This research study considers the experiences of Black males as a subgroup of the ECHS target population by examining their educational experiences in this context. Current comparative research on ECHS suggests early college students are earning college degrees at higher rates than other students at traditional high schools and that ECHS appear to be alleviating the common educational gaps found between economically advantaged and disadvantaged students (Berger, Turk-Bicakci, Garet,

Knudson, & Hoshen, 2014). Experimental research has demonstrated students at ECHS had better attendance, lower rates of suspension, and increased levels of engagement as compared to traditional high school students (Edmunds, Willse, Arshavsky, & Dallas, 2013). Despite these findings, there is still a dearth of research on ECHS and their effectiveness (Bernstein et al., 2010; Edmunds et al., 2012; Jacobson, 2005; Kaniuka & Vickers, 2010). Furthermore, minimal research has explored the experiences of Black students and Black males specifically in ECHS (Birks, 2013; Rutledge, 2010). It is suggested that lessons learned from the ECHS model can provide significant implications for secondary educational policy.

Statement of the Problem

While acknowledging the merger of multiple areas of inquiry in this research, Black males' educational outcomes, ECHS, STEM education and academic identity, at the heart of it is the educational plight of Black males across the P-20 educational pipeline. Often designated as an "achievement gap," Ford and Moore (2013) chronicled the plethora of poor educational outcomes faced by Black males in schools including high dropout rates, low test scores, low graduation rates, poor grade point averages and overrepresentation in special education. These outcomes dominate the research literature. Though the "achievement gap" discourse dominates the literature, it is more apropos to reference the gaps in opportunity when acknowledging the disparities in education (Milner, 2011). Educational opportunity gaps are the systems that support the creation of poor educational outcomes for students such as harsh discipline practices, limited access to experienced teachers, and minimal access to advanced coursework to name a few (Henfield, Washington, & Byrd, 2014). Black males are largely impacted by educational

gaps in opportunity and disparaging outcomes demonstrate that they are the most underserved population in the educational system on all levels (Harper, 2010a; Schott Foundation for Public Education, 2010). As compared to most of their peers, Black males are performing at lower rates on various indicators including readiness to learn, National Assessment of Education Progress (NAEP) scores, college and career preparedness, and postsecondary experiences (Lewis, Simon, Uzzell, Horwitz & Casserly, 2010). In 2013, NAEP math scores showed that only 18% of fourth grade Black boys were proficient and only 13% of eighth-grade Black boys were proficient. In regard to higher education attainment, Black males lag behind Black females and other groups in both enrollment and completion at four-year universities (Harper, 2012; Palmer & Maramba, 2011; Schott Foundation for Public Education, 2015). Most of all, meager educational outcomes and experiences can lead to poor economic outcomes and life chances given the correlation between educational attainment and earning potential (Strauss, 2011).

The scarcity of research noted by Edmunds et al. (2012) also presents a problem. Taking into account the ECHS model is serving academically disadvantaged students, reportedly having positive impacts on student's academic success and increasing the proportion of students progressing on a college preparatory pathway (Edmunds et al., 2013), it is imperative that both the effectiveness of the programs and student experiences be examined. With over 200 ECHS across the nation (see Appendix A for a detailed list of the number of schools in each state), North Carolina alone hosts nearly a third of these schools (North Carolina Department of Public Instruction, [NCDPI], 2010; North Carolina New Schools, 2013a).

Despite the increasing number of schools and their reported successes, in North

Carolina, enrollment numbers show Black males are participating in ECHS programs at lower rates compared to females (NCDPI, 2015a). Lastly, considering this research within a STEM context, such programs are essential to local, state and national economic growth and schools are tasked with finding ways to increase student interests in these fields. Despite increasing emphasis, STEM fields suffer from persistent underrepresentation of people of color and women (Landivar, 2013), which justifies the need to understand how they can be motivated and prepared to enter the pipeline.

Purpose of the Study and Research Questions

The purpose of this study is to investigate how Black males describe their ECHS experiences both academically and socially. In addition to their overall experiences, I am inquiring about how they negotiate and develop their identities as scholars in these particular settings. Early colleges are purposefully designed to meet the needs of traditionally underserved students focused on increasing college readiness and student achievement (Cravey, 2013; Locke, Stedrak & Eadens, 2014; Smith, Fischetti, Fort, Gurley & Kelly, 2012). With majority of the schools located on the campus of a two-year or four-year college or university, students go through rigorous coursework with exposure to college level work as early as ninth grade (Leonard, 2013). Focusing exclusively on Black male students, the research questions guiding this study include:

1. How do Black males describe their STEM early college high school experiences?
2. How do Black males construct their identities (academic and non-academic aspects) at a STEM early college high school?
3. How does a STEM early college high school impact Black males' perceptions of STEM subjects and STEM careers?

Theoretical Framework

The Scholar Identity Model (SIM) developed by Gilman Whiting (2006) is the theoretical framework which guides this study. Largely rooted in psychology, it directly supports the research questions being asked in the study. As asserted by Gee (2000), identity has become an important tool for analyzing and understanding how schools and society operate. In his research, Gee (2000) defines identity as being a "certain kind of person in a given context" (p. 99). This research is framed using one identity model created by Whiting (2006) that identifies students as being a scholar (certain kind of person) within STEM ECHS education settings (given context). Whiting's (2006) scholar identity model was designed to focus on academic identity construction in schools for males of color.

A scholar identity for students of color is defined as "one in which culturally diverse males view themselves as academicians, as studious, as competent and capable, and as intelligent or talented in school settings" (Whiting, 2006, p. 224). Whiting (2006) asserts because Black males can find self-efficacy in non-academic settings, they must begin to find their identities in school settings also. Whiting (2006) concludes that "Black males who have an underdeveloped sense of academic identity are less likely to persist in school, more likely to be identified as 'at risk', less likely to be high achievers, more likely to be in special education, and less likely to be identified as gifted" (p. 223).

When considering Black males specifically and their academic identities, Whiting's (2006) SIM can the help educators and researchers understand more about how Black males negotiate their identity development in schools. Whiting (2006) argues for promotion and nurturing of a scholar identity among Black males as early as possible

which can help Black males start to see themselves as scholars. In his research Whiting (2006) asked a series of questions including "why so few Black males find their identities, their self-efficacy, and sources of pride in academic settings" (p. 223) and "what can educators do to develop and nurture a scholar identity among these particular male students" (p. 224). My research inquires about how the ECHS and STEM ECHS nurtures a scholar identity.

Rooted in historical motivational and educational psychology theories, Whiting (2006) argues that Black males are more likely to be successful academically when they have established an identity as a scholar. From his research he suggests nine components are essential to this model: a) self-efficacy; b) future aspirations; c) willing to make sacrifices; d) internal locus of control; e) self-awareness; f) need for achievement being greater that the need for affiliation; g) academic self-confidence; h) racial identity and pride; and i) masculinity. The nine constructs that make up the model are supported by a student's family, community, mentors and school (Whiting, 2009b). It is plausible that ECHS could be a setting used to understand more about Black male scholar identity development to inform practices in other educational environments. Each of these elements will be explicated further in chapter two.

Context of the Study

The study took place at an ECHS located on the campus of a large engineering-intensive four-year university in the Southeast. This site was selected because it in its fifth year of operation and has students in grades 9-13. Many other sites are recent startups and therefore cannot provide an array of student experiences. Additionally, while many ECHS do not have partner schools to allow students to be able to participate in

athletics, this particular school does. This is significant because the majority of the ECHS models have few extracurricular activities causing students to have to forego these opportunities (Cravey, 2013). Furthermore, Black males participate in athletics at very high rates ("The Opportunity Agenda," n.d.). Lastly, this ECHS has a STEM focus, which can provide a unique aspect of student experiences given Black males underrepresentation in STEM careers.

Overview of Methods

Given the desire to capture the voices and experiences of these youth, this qualitative study utilizes a single case study design. As Merriam (2009) explains, qualitative researchers "are interested in understanding how people interpret their experiences, how they construct their worlds, and what meaning they attribute to their experiences" (p. 5). The voluntary participants in this study identify as Black males and be are in grades 11-13 at the ECHS research site. The primary source of data for this research study is individual interviews and focus groups. Data was analyzed using thematic analysis to find common themes across participants' experiences.

Significance of the Study

The intent of this study is to contribute to the body of knowledge on ECHS considering the limited amount of existing research. Furthermore, this research highlights the potential of this secondary school model as a space for positive experience for Black males. Harper (2010b) argues a large majority of empirical research magnifies failure among students of color instead of achievement, which presents a need for more anti-deficit research. Ultimately, the deficit narratives leave the stories of urban high schools and young men of color one-sided as it relates to their potential and educational outcomes

(Harper, 2015). While the aforementioned educational concerns facing Black males across P-20 education are indeed significant, this is not the singular story of all Black males in education. Framed within the scholarly identity model, this study answers the call for anti-deficit research. Lastly, this research is significant to the area of STEM learning and educational research because it is possible that the findings of the study will provide insight on ways to recruit and retain this population in STEM majors and careers beyond the ECHS context.

Definition of Terms

The following terms are used in this study:

Black males: Synonymous with African American, this term is used to describe males who identify as of descendants of continental Africa. Black and African American will be used interchangeably throughout.

Academic Identity: Used in this study, academic identity is how students view themselves academically (Beier & Rittmayer, 2008; Bong & Skaalvik, 2003; Lloyd, 2013).

Dual Enrollment Programs: These programs allow high school students to take postsecondary courses. Hoffman et al. (2009) note that other synonymous terms for dual enrollment programs include dual credit, concurrent enrollment, and joint enrollment.

Early College High School (ECHS): Early college high schools are small schools created to allow students to earn the equivalent of an associate's degree or up to two years of credit toward an undergraduate degree alongside their high school diploma ("Overview & FAQS", 2013).

First Generation College Student: Refers to undergraduate students whose parents never enrolled in postsecondary education (Nunez & Cuccaro-Alamin, 1998).

STEM Identity: How students see themselves as it relates to their proficiency, desire, and performance in science, technology, engineering and math subjects (Herrera, Hurtado, Garcia, & Gasiewski, 2012; Williams & George-Jackson, 2014).

STEM Pipeline: The pathway from early education, up through college, that ends with STEM employment (Lowell, Salzman, Bernstein & Henderson, 2009).

Super Senior: A super senior is a student enrolled in an additional year of high school at an ECHS. These students are in their 13th year and opt to put off graduation for one year to continue taking advantage of the access to college credit the ECHS provides.

Researcher's Positionality Statement on Language: In line with the anti-deficit perspective of this research, the term 'people of color' is used throughout the dissertation to refer to groups of people who are non-White. The term minority is not used because the researcher believes it is a term that suggests power and has an overall oppressive nature.

Limitations and Delimitations of the Study

With case studies such as this, and qualitative research, the goal is not to generalize. Though generalizability is limited, rich description is beneficial. Despite efforts to carefully design the study, limitations outside of the researcher's control are inevitable. Limitations include the use of one research site, its STEM focus, and small sample size. While the research site is a limitation of this study, it also serves as a delimitation considering feasibility. Secondly, considering the purpose of the research is to understand Black male experiences, this study is only investigating perspectives from

Black male students enrolled in a STEM ECHS program. Students in other demographic subgroups, though they may be enrolled in an ECHS program or other Black male students not enrolled in an ECHS program are purposely excluded.

Summary

This study is organized into five chapters. This first chapter provides an introduction to the topic and overview of its significance. Study details are outlined including the research questions to be addressed and limitations and delimitations of the study. The second chapter, the literature review, provides historical background on the development of the ECHS movement as well as a review of relevant literature that pertains directly to this study's research questions. Chapter three, the methodology chapter, discusses the research design and methods for data collection and analysis. The fourth chapter is a discussion of results, which details findings and outcomes from data analysis. The final chapter, chapter five, provides the closing discussion with conclusions that can be drawn from the results and suggestions for future research.

CHAPTER TWO: LITERATURE REVIEW

Overview

The purpose of this chapter is to provide a review of relevant literature that supports and helps conceptualize this research study. This research merges four larger areas of inquiry: educational outcomes for Black males, ECHS, STEM education, and academic identity. The first portion of this literature review is dedicated to an examination of Black males educational and societal outcomes. This discussion is extended to include research that overturns the more dominant deficit-oriented narrative by highlighting Black males' academic success.

The literature review then transitions from a focus on the population being examined (Black males) to the provision of an outline of the development and national movement towards ECHS. This segment focuses on historical context and the underlying rationale of the innovative approach to high schools. Included in this section is the positioning of ECHS as a type of high school reform and expansion of traditional dual enrollment programs. Also included are data results of academic outcomes and experiences of students attending ECHS. This conversation begins with a broad focus on ECHS nationally followed by a more state specific overview for North Carolina, the state in which serves a large number of students in its ECHS.

Next, the literature review focuses on the push towards STEM education in the nation. The literature reviewed includes information on the national focus on STEM

education and an overview of the creation of STEM high schools. Early college high schools are again included in this discussion because they serve as a type of STEM high school. Likewise, because the research examines Black males, a review of Black males' participation in STEM fields, in general, is provided as those findings support the need for this research. The final section reviews relevant literature on academic identity as an indicator of academic achievement. This presents the case for the need to focus on Black males' academic identity, more specifically subsets of academic identity- STEM identity and the scholar identity, because of the found correlation between academic identity and academic achievement.

African American Male Educational and Societal Outcomes

As members of a community that historically fought and died for the rights to education, African American males are continuously placed in discourse surrounding poor academic and social outcomes. In the 1980s work done by Gibbs (1984, 1988) African American males and Black youth as a group were labeled as an "endangered species." Using census population data, in 1980, Gibbs (1984) articulates that 50% of the entire Black population was made up of youth, ages 15-24. Once she assessed the progress from the 1960s to 1980, she concluded more Black youth were "unemployed, in the juvenile justice system, involved in substance abuse, having babies out-of-wedlock, and committing suicide" (p. 7) than in the 20 years prior. In Young, Black and Male in America: An Endangered Species, Gibbs' (1988) extended this argument by also addressing issues of high school dropout rates and incarceration. Considering recent events across the nation, the deaths of young Black males such as Michael Brown, Trayvon Martin, Tamir Rice, Jonathan Ferrell and Jordan Davis to name a few, it is

possible that one would see how the conclusion of Black males being an "endangered species" could be justified. As it relates to gun violence, in 2009, Black males between the age of 15 and 19 were more than eight times to be killed by a firearm (Children's Defense Fund, 2012). Nelson (2013) agrees arguing, "Black males typically rank at the top of most negative social, financial, health, and educational indicators known to man" (para. 1).

This conclusion is exacerbated by, as Alexander (2011) has demonstrated, the fact that the United States has one of the largest incarceration rates in the world and a significant portion of the incarcerated population is African American and male. The "school to prison pipeline" is a widely studied phenomenon, which has tracked the association between disciplinary practices in schools to rates of incarceration (Tuzzolo & Hewitt, 2007). People of color and students with disabilities are found to significantly make up the pipeline population (Elias, 2013). Fowler (2011) contends the greatest predictor of future involvement with the justice system is a student's record of disciplinary referrals at school. The Children's Defense Fund (CDF) has since expanded the concept of the school-to-prison pipeline and coined it as the Cradle-to-Prison Pipeline. This campaign acknowledges the increasing rates of incarceration among Black and Latino boys and girls and how they are impacted at younger ages. The goal of the campaign is to tackle the problem of increasing incarceration by focusing on early intervention and services such as early childhood education and healthcare (CDF, n.d.). Interestingly, state budgets show there is about three times more money spent per prisoner as compared to per pupil spending (CDF, n.d.).

Furthermore, educational research shows an overrepresentation of suspension and expulsion from school (CDF, 1975; Losen, 2014; Skiba, Michael, Nardo, & Peterson, 2000), overrepresentation in special education programs (Blachett, 2009; Kunjufu, 2005; Noguera, 2005; Toldson, 2011), and underrepresentation in gifted and talented programs and advanced placement courses (Ford, 1998; Ford & Moore, 2004; Glennon, 2002) for Black males. While much educational research and discussion is heralded around the topic of the academic "achievement gap" across racial and socioeconomic groups, one critical element of this disparity in academic achievement is the performance of Black males specifically (Lewis et al., 2010). The goal of enhancing academic achievement of Black males has become a national priority namely since the launching of President Obama's initiative, My Brother's Keeper in 2014. This initiative is strategically designed to improve educational and societal outcomes of boys and men of color including African Americans, Latino/Hispanic Americans, and Native Americans (The White House, 2014a). In a press release from The White House- Office of the Press Secretary (2014b) details the motivation behind the initiative:

> But there is more work to do, and for decades, opportunity has lagged behind for some, including millions of boys and young men of color. Boys of color are too often born into poverty and live with a single parent. And while their gains contributed to the national high school graduation rate reaching an all-time high, in some school districts dropout rates remain high. Too many of these boys and young men will have negative interactions with the juvenile and criminal justice system, and the dream of a college education is within grasp for too few. Our society can and will do more to help remove barriers to all young people's

> success, because America prospers not only when hard work and responsibility are rewarded but also when we all pull forward together (para. 1).

Jackson and Moore (2006) once posed a question asking whether or not African American males had truly become endangered or are they instead ignored in education. This question is pertinent because the problems consistently identified in the literature paint a picture of a crisis of males of color in education. Sealy-Ruiz, Lewis and Toldson (2014) proclaim "for Black Americans, the most pressing issues in education are the persistent achievement disparities between Black students and their peers from other racial groups… (p. xvii).

Abolishing the Single Story: Black Males Academic Success

While either answer to the Jackson and Moore's (2006) question could be sufficiently argued, it is important to tell the other side of the story; the opposite of the common narrative which shows that Black males are capable of achieving in academic spaces. Less research literature provides an understanding of how Black men succeed in schools including their engagement, academic success, college performance, and their acquiring of advanced degrees (Harper, 2012; Harper & Davis, 2012). In her 2009 TED talk novelist, Chimamanda Ngozi Adichie delivered a heartening message entitled "The Danger of a Single Story." Based on her experiences with others and their misunderstandings about her native land and culture, her message focused on the need to have a complete picture of people and cultures. In her talk she states: "the single story creates stereotypes, and the problem with stereotypes is not that they are untrue, but that they are incomplete. They make one story become the only story." This eloquent message significantly applies to the research literature on Black males.

Similarly, Harper (2012) advocates for a balanced argument under the firm belief that in efforts to understand how to improve educational outcomes for Black males, those answers and strategies require a look at successful Black males. The counternarratives can be found in the scholarship, but they do not in the least make up the overwhelming majority. Within the more affirming literature, stories of success can be found on Black males across the educational pipeline but because this research focuses on ECHS, the literature examined in this study examines evidence of success in high school and college.

Supporting his argument, Harper (2015) completed a research study on 325 high school juniors and seniors who were college-bound across 40 urban public schools in New York. Using critical race counterstorytelling and visual sociology, Harper (2015) provides a story of numerous Black males who are unequivocally successful in school despite being in some of the "unlikeliest of places" (p. 162). This research helps to counterbalance the narrative and abolish the single story of Black males in education.

Considering a different educational space, Hebert (2002) sought out to examine what factors can be attributed to the success of gifted black males attending a predominately white institution (PWI). Using a qualitative case study approach, emerging themes from his research illuminated the importance of the students believing in themselves, having their talents recognized by others, and the important role their mothers, teachers, and mentors played in their success. Additionally, these successful Black men were active in extracurricular activities, socially interacted with racially diverse groups, and found the strength to ignore the existence of racism at their

institution. Hebert's (2002) findings identify elements that should be understood and provided within the academic and social atmosphere for Black male's success.

Through content analysis of essays written by Black males who were college juniors applying for a preparation program for students interested in earning doctoral degrees in education, Harper and Davis (2012), sought to uncover which factors attributed to the level of care and concern these students displayed about their education despite statistics and the grand narrative. The researchers analyzed 304 essays finding three larger themes: 1) students were aware of the existence of inequities in education; 2) students prescribed to the belief that education was the "great equalizer"; and 3) students were interested in pursuing an advanced degree because they believed a level of educational attainment could help them accomplish certain goals. Altogether, this research contributes to overturn the stereotype that Black males do not care about education. One such academic space where Black males are finding success is in ECHS (Hoffman, 2015).

The Early College High School Movement

Early college high schools (ECHS) are small high schools that have been created in partnership with colleges and universities to allow students to take college courses while still enrolled in high school (Webb, 2004). Through the use of concurrent enrollment, the early college high school is designed to overall impact the number of students who graduate from high school ready for postsecondary education (Webb, 2004). Early colleges are small and autonomous schools typically located on a community college or university campus (Webb, 2004). Built under the notion that small school size correlates to positive student outcomes, it is expected this environment proves

conducive for personalized learning, teacher collaboration, more student support and more rigorous and relevant instruction (Edmunds et al., 2010). Upon graduation, students would have completed a rigorous course of study culminating in up to two years of college credits to transfer to a four-year university or an associate's degree- tuition free (North, 2011). Understanding postsecondary education as a requisite for success in today's market, ECHS were created as a radical, data-driven measure to increase the chances of low-income students and students of color gaining postsecondary credentials ("Overview & FAQS," 2013). The primary goal of ECHS is to increase both the number of graduates from both high school and college (Berstein et al., 2010).

Background on Early College High Schools

Prior to the development of the Early College High School Initiative, schools similar in nature operated as middle college high schools- a high school on a college campus (Lieberman, 2004). Conceived by Janet Lieberman, in 1974 she started the first school, Middle College High School, on the campus of LaGuardia Community College in New York (Lieberman, 2004; Ramsey-White, 2012). Middle College High School was designed to focus on meeting the needs of youth who were being underserved by schools (Middle College National Consortium, n.d.). The goals of this new approach to high school were to create smaller learning environments, to be sure that students understood college as an option for them post high school, and to encourage them to pursue a college education (Ramsey-White, 2012).

With purposeful intent, this new high school was designed to increase college completion rates while decreasing the rates of high school dropouts (Middle College National Consortium, n.d.). Lieberman and the principal of this high school began to

notice that 11th and 12th grade students were working swiftly through their school requirements and in less than the standard four year requirements and they "were ready, academically and emotionally, to 'go across the street' and take college courses" (Lieberman, 2004, p. 4). The Middle College High School achieved much success as evident through a decrease in dropout rates, increases in student attendance and course completion, and increases in high school graduation and college enrollment percentages (Middle College National Consortium, n.d.). With successful replication of the model and funding support, the middle colleges across the nation were able to form an informal network, the Middle College National Consortium, in 1993 (Middle College National Consortium, n.d.).

Though Jobs for the Future now runs the Early College High School Initiative, The Consortium originally launched it in 2002 (Middle College National Consortium, n.d.; Webb, 2004). In addition to the funding by the Bill and Melinda Gates Foundation, the Carnegie Corporation of New York, the W.K. Kellogg Foundation, and the Ford Foundation, also provided financial support (Middle College National Consortium, n.d.; Webb, 2004). This new initiative was set to take the middle college model and expand it using a different sequence of courses and an accelerated program allowing students to earn a two-year degree in a shortened period of time (Lieberman, 2004). The overarching goal for this new school model was to focus on underserved students, their college readiness and increasing their likelihood to complete college (Berger, Aldeman, & Cole, 2010). As listed below, the Early College High School Initiative operates under five core principles as identified by Early College High School Initiative (2010):

- Early colleges are committed to serve students underrepresented in higher education.
- Early colleges are created and sustained by a local education agency, a higher education institution, and the community, all of whom are jointly accountable for student success.
- Early colleges and their higher education partners and community jointly develop an integrated academic program so all students earn one or two years of transferable college credit leading to college completion.
- Early colleges engage all students in a comprehensive support system that develops academic and social skills, as well as the behaviors and conditions necessary for college completion.
- Early colleges and their higher education and community partners work with intermediaries to create conditions and advocate for supportive policies that advance the early college movement.

The ECHSI also emphasizes 3R's as a part of its ECHS model and design: rigor and relevance in instruction and personalized relationships between teachers and students (American Institute for Research & SRI International, 2013). The need for innovation and student success through 21st-century skills is the driving force behind ECHS. Given the increasing interconnectedness and competitiveness brought about through the globalized economy, students have to be more engaged, prepared, and connected to the workplace.

There is great variation in the implementation of ECHS. Beyond differences in the postsecondary partner location, some schools are chartered, some serve specific populations such as Native American students and others have specific thematic foci such

as science, technology, engineering and mathematics (STEM) and the arts ("Overview & FAQS," 2013). Furthermore, each school has its own entry requirements where many require student applications, essays and interviews. For example, one school in North Carolina, uses a rubric as a part of their admission process. The school scores students on a point scale giving students from lower socioeconomic backgrounds and students with average grades more points than those students with straight A's and more affluence (Granados, 2015).

Early College High Schools: An Approach to High School Redesign

The tide of American education was largely turned when the National Commission on Excellence in Education produced the landmark publication "A Nation at Risk: The Imperative for Educational Reform" in 1983. This labeled the nation as "at risk" because the education system was failing. The open letter documented the nation's educational inadequacies and reported statistics revealing a large number of illiterate adults and children and sizeable declines in test scores. Allegedly, the nation was at risk of losing its technological superiority to other industrialized nations (Graham, 2013). This report is credited towards a large movement of educational reformation and high school redesign.

High School Redesign- The Small School Movement. One of the most known approaches to high school redesign is the small school movement. While various reform initiatives often focus on altering student standards and increasing high-stakes testing, some emphasis began to be placed on the overall structure of schools. This led to redesigning large comprehensive high schools into smaller schools (Cleary & English, 2005). The movement towards small schools was also an element of the 2001 No Child

Left Behind Act (NCLB) where grant funds were provided to support the implementation and expansion of smaller learning communities within high schools with 1000 or more students (Cleary & English, 2005).

Historically, practices of small schools can be traced back to the early part of the twentieth century (Semel & Sadovnik, 2008). Mention of the small school movement is often said to have began with the use of alternative schooling in the 1960s and the introduction of small schools in urban areas in the 1980s (Semel & Sadovnik, 2008). This has been a particular approach to high school reform in urban areas under the contention that the impersonal nature and structure of large comprehensive high schools were correlated with the high dropout rates and low academic achievement in urban schools (Semel & Sadovnik, 2008). While many of the earliest small schools were for the elite, well-known reformers including the likes Theodore Sizer, Deborah Meier, and Ann Cook focused on the pedagogic needs of low-income students and students of color (Semel & Sadovnik, 2008).

Darling-Hammond, Alexander, and Price (2002) found that small schools are providing stronger academic achievement and more positive outcomes of other indicators of success including better attendance, less behavioral infractions, fewer dropouts, and greater participation in extracurricular activities for students. These results are considerably favorable for students of color and students from lower socioeconomic backgrounds (Darling-Hammond et al., 2002). In similar research, Darling-Hammond, Ancess, and Ort (2002) provided profiles of successful small schools. Specific characteristics of these successful small schools was derived from a combination of factors including carefully crafted curriculum, teachers skilled in pedagogy, effective

support systems for both students and teachers, and school-wide systems for assessing student performance (Darling-Hammond, et al., 2002). Early colleges are a component of the small school movement considering most schools only enroll about 100 students per grade level.

Early College High Schools Versus Dual Enrollment

Dual enrollment programs have been around for a long time and are sought after to increase college readiness (Giani, Alexander & Reyes, 2014). While ECHS are a distinct approach to secondary and postsecondary education, there is no denying the fact they are still understood as a form of dual enrollment or dual credit programs. More specifically, ECHS can be categorized as an "enhanced comprehensive" dual enrollment program (Bailey & Karp, 2003). One distinguishing factor is unlike traditional dual enrollment programs, ECHS do not have GPA requirements for admission (Community College Research Center, [CCRC], 2012). Furthermore, dual enrollment programs are usually an option for students within their traditional high school whereas ECHS operate as individual schools on college campuses. Research has shown promising outcomes for dual enrollment participants. Dual enrollment students are more likely, as compared to their peers who do not complete dual credit programs, to access, enroll in and persist in college (Giani et al., 2014; Hughes, Rodriguez, Edwards & Belfield, 2012). These students were also found to be less likely to take remedial coursework (Hughes et al., 2012). Notably, Hughes et al.'s (2012) work encompassed majority students of color and a quarter of them were from homes in which English was not the first language.

Results from three states, Florida, California, and New York, show there is a significant difference between students in dual enrollment programs and students not

enrolled in dual programs on indicators of postsecondary enrollment after high school, pursuing a bachelor's degree, persistence towards second semester in college, and towards the second year (CCRC, 2012). Lastly, some research suggests dual enrollment programs show evidence of positively impacting postsecondary outcomes for low-income students and male students in particular (CCRC, 2012; Karp, Calcagno, Hughes, Jeong, & Bailey, 2007).

While traditional dual enrollment programs have typically been designed for high performing students (James, Lefkowitz, & Hoffman, n.d.), the ECHS model is designed to strategically increase college access and equity in education (Howley, Howley, Howley, & Duncan, 2013). These models do not solely focus on students who would readily be described as high achieving students but instead focuses on students who are average performers or those who may be at risk of graduating high school. Yet, some of the criticism of the ECHS approach is similar to the literature on opposition to standard dual enrollment programs.

One such criticism is that the subject matter will be dumbed down to ensure accessibility to high school students (Zuidema & Eames, 2014). Another speculation is that advanced programs "could potentially discourage those students who are academically or emotionally unprepared to handle the demands of college" (Speroni, 2011, p. 1). Tynan-Wood (n.d.) provides three reasons for opposition to the ECHS model specifically: (1) students are too young to make the decision since they have to enroll in ECHS as freshman; (2) minimal 'high school' experience since many ECHS do not have access to a large number of extracurricular activities; and (3) there is a risk for exposure to "college life" too soon meaning there could be concern about exposure to some

elements of college that may not be age-appropriate for high school students. Despite opposition to the approach, as the research below suggests, the ECHS are showing impressive results for youth.

Early College High School Results

Known to "blur the lines" of high school and college (Williams and Southers, 2011), ECHS quickly expose and prepare high school students for college-level expectations on both academic and social levels (Healy, 2009). In a longitudinal study to assess the impacts ECHS across a sample of 10 schools, the American Institute for Research (AIR) and SRI International (2013) found that ECHS students were significantly more likely to graduate from high school, attend college, and complete college as compared to non-ECHS student attendees. These factors did not differ by student subgroups but some factors indicated stronger effects for: females versus males, students of color versus Whites, lower income students versus higher income students, and stronger for students who entered from middle school with higher academic achievement than those lower achieving students (AIR & SRI, 2013).

Nationally, ECHS boast impressive student outcomes and results. In 2009, 22% of early-college graduates earned both their high school diploma and an associate's degree and 86% of graduates went on to some form of postsecondary education in the fall of that same year (Seltzer, 2010). Jobs for the Future (n.d.b.) reports students from ECHS graduate high school and attend college at higher rates than traditional high school students. More specifically, 90% ECHS students graduated high school when the national high school graduation rate is 78%. Also, 71% of ECHS graduates immediately enroll in college the next semester compared to the national rate of 68%. Demographically, ECHS

across the nation serve 41% Latino, 27% White, 22.5% Black, 4.5% Asian, 3% Mixed Race/Other, and 2% Native American. Of enrollees, 61% of ECHS students are from low-income families and 56% would be classified as first-generation college students (JFF, n.d.b).

In a similar fashion, research done by Muñoz, Fischetti, and Prather (2014) quantitatively evaluated the effectiveness of an ECHS design on increasing student achievement within an urban, high-poverty school. The school in this research adopted the ECHS design model as a strategic effort to improve student achievement. During the time of the research, the school was only in the first year of implementation. Using both criterion-referenced and norm-referenced tests to compare ECHS students to two matched control schools, Muñoz et al. (2014) found ECHS student achievement was significantly greater on the criterion-referenced tests (state mandated grade level examinations) as compared to the control groups. However, the control groups for the norm-referenced tests (ACT) were ECHS students enrolled in college courses and those who were not. A statistically significant impact was evident for students enrolled in the college level courses. Both school attendance and suspensions were assessed as non-academic indicators and the results showed that while school attendance remained the same, ECHS students' rates of suspension decreased (Muñoz et al., 2014).

Smith et al. (2012) explains the ECHS model poses significant challenges for the traditional approach to high schools. The authors argue that lessons for traditional schools include the alignment of secondary and postsecondary curriculum, the impact smaller learning communities have on student academic performance, and the increased motivation supplying college credit gives to high school students. Smith et al. (2012)

strongly argue that current evidence from ECHS shows it is naïve to think the college environment is only conducive for students 18 and older.

Despite this, one may ask if students are ready for university coursework at or before the age of 16. McClarty (2015) shows in a comparative analysis of students who accelerate through school and those that do not, students who accelerate outperform their peers. This performance was based on standardized examinations including the ACT, PSAT, and SAT as well as grades earned in high school. Interestingly, however, McClarty (2015) found very little difference was evident as it relates to college aspirations and admissions. Accelerated students were more likely to be interested in graduate studies, but admission to more selective colleges was similar between the two groups.

In short, the ECHS model is both innovative and impactful in both its structure and outcomes. In the section that follows, a discussion is provided on the experiences ECHS students encounter. Those experiences are directly related to the school culture and relationships built as well as the challenges students endure and the increased responsibilities they have to take on.

Early College High School Student Experiences

Relationships and School Culture. Due to the ECHSI focus on relationships as a part of the effectiveness of its model, much of the research done has focused on the role of relationships for students and teachers. The theme of "family" is reoccurring in the literature as students have explained the small nature of the ECHS allows for close-knit relationships like families (Kaniuka & Vickers, 2010; Ongaga, 2010). In one research study, students emphasized the amount of respect evident in the school culture (Cravey,

2013). The students shared they learned how to deal with conflicts and they did not have physical fights at their school because of the close relationships built among peers (Cravey, 2013).

Across various qualitative research studies, ECHS students reported caring relationships among family members, peers, and faculty fostered within the ECHS attribute largely to their academic success (Cravey, 2013; Kaniuka & Vickers, 2010; Ongaga, 2010; Thompson & Ongaga, 2010; Woodcock & Olson-Beal, 2013). Alternatively, one research study found students struggled with relationships with their college instructors. Hall (2013) found a statistically significant difference in positive student responses towards their high school teachers as compared to faculty at the college in which they were simultaneously enrolled.

Safety emerged as an interesting theme in Cravey's (2013) ethnography of ECHS students as they shared the feeling of security was felt both in a physical sense and an academic one. Students felt they could be themselves academically and not pretend they were not smart due to negative peer pressure. Given the nature of ECHS being choice programs, Woodcock and Olson-Beal (2013) found students mention the sacrifice of having to leave old friends to attend the school but their ECHS environment made is easy to make new friends. They were also able to build positive relationships with college students at the partner institution thus adding to this notion of safety.

In addition to the benefits of relationships, students also acknowledge the benefits of high expectations teachers set with the rigorous coursework, having free access to college credit, the promotion of a college-going culture and having small and personable classes (Cravey, 2013; Locke et al., 2014; Woodcock & Beal, 2013). The level of

intimacy ECHS provides is evident for both students and teachers as many ECHS teachers can collaborate more and work in teams (Smith et al., 2012).

In research done by McDonald and Farrell (2012), the authors call the experiences of ECHS students "transformational." Their research focused mainly on the students' perceptions of their college readiness as a result of the ECHS environment. Findings from this research revealed students reported they were prepared for the college transition on three levels, academic, social and personal. Their academic readiness was predicated on the levels of discipline, responsibility and time management they learned from the nature of the ECHS. Students were college ready on a social level because of the acclimation to the college environment and the relationships they were able to build. Lastly, on a personal level, students developed an identity as a college student. As it relates to this research, they saw themselves as "scholars"- just as smart as the college students and capable of doing the work.

Challenges and Responsibilities. While ECHS student experiences appear to be overwhelmingly positive (Hall, 2013), the ECHS model does not come without challenges for both students and teachers. As a part of the program design, ECHS often have limited access to extracurricular activities. Woodcock and Olson-Beal (2013) found that students identified the "cost" of attending an ECHS included the unavailability of extracurricular activities or their inability to participate due to time constraints of the amount of studying demanded.

Early college students describe the amount of responsibility they have to take on as being considerably increased because they are on a college campus and because of the rigor of the courses (Cravey, 2013; Ongaga, 2010; Woodcock & Olson-Beal, 2013).

Many of the challenges students faced were with the course rigor, the lack of extracurricular activities, and an absence of social identity (Locke et al., 2014; Ongaga, 2010). Ongaga (2010) points out that many students were not immediately connecting with the culture of the school and with peers. One student in Ongaga's (2010) study in discussed the impact the rigor of the program had on their thoughts about dropping out of school. Discussions about teacher race were also an important element of Ongaga's (2010) study. African American students were found to be struggling with their sense of identity from a cultural standpoint because they had few African American teachers with whom they could identity.

Though focused on the Latina population specifically, Locke et al. (2014) found students not only felt unprepared for the rigor but they also felt the school model did not consider their home lives as it relates to their work and family obligations. The emphasis of ECHS is on college readiness and preparation but for these students, there was no college narrative at home (parents experience and knowledge was lacking), so it was challenging to experience a disconnection between home and school.

In addition to student challenges, it has become evident students are not alone as it relates to facing challenges within the ECHS program. Many of the ECHS are new and developing which bring on a unique set of pressures during the early stages (Ongaga, 2010). Ongaga (2010) found teachers struggled with the bureaucratic nature of ECHS because they are still required to focus on testing and test preparation, follow guidelines unique to the ECHS, and follow mandates by their district leaders. Unlike traditional high schools, teachers at ECHS are also subjected to the mandates of the college/university partners and other governing agencies (such as North Carolina New Schools for North

Carolina early colleges) (Ongaga, 2010). Despite the opposition and challenges that may be present, the ECHS model is showing signs of increasing equity in education since they serve mostly students of color and first generation college students (Weldon, 2009).

The Early College High School Movement in North Carolina

North Carolina serves as a national leader in the creation of and support for ECHS (NCDPI, 2010; NC New Schools, 2013a). The state opened 13 ECHS in 2005, and today there are nearly 80 throughout the state (NCDPI, 2010). North Carolina made a large investment in ECHS due to changes in the state's economy (Weldon, 2009). The state largely depended on the textiles, agricultural and manufacturing industries but these industries were declining (Weldon, 2009). This resulted in a need to focus on ensuring students would be prepared for an evolving economy and global marketplace.

In 2003, the North Carolina General Assembly passed Senate Bill 656 or the Innovative Education Initiatives Act (NCDPI, 2015b). This bill focused on the creation of "cooperative innovative high schools" which allow local districts to partner with their local colleges to provide cooperative programming to give students access to both high school and postsecondary learning opportunities simultaneously (NCDPI, n.d.; Weldon, 2009). The targeted group of students included first-generation college students, students who were at-risk of dropping out of high school, and/or students that would reap benefits of an accelerated learning program (NCDPI, n.d.; Weldon, 2009).

At the same time, the North Carolina Education Cabinet and then-Governor Mike Easley created North Carolina New Schools (formerly North Carolina New Schools Project) (Bernstein et al., 2010). Throughout the state, ECHS receive financial support from the state, the county/city school system where it is located, and from the Bill and

Melinda Gates Foundation (Parker, 2011). Early college high schools can be found on various community college and four-year institutions across the state. The schools are administered under the direction of NCDPI and the non-profit organization North Carolina New Schools (Bernstein et al., 2010). In addition to the support from NCDPI and NC New Schools, the University of North Carolina system, the NC Community College System, and the NC Independent Colleges and Universities network also serve in the partnership to support ECHS (NC New Schools, 2013a). Early colleges in North Carolina must adhere to North Carolina New School's design principles as identified by NC New Schools (2014):

- High standards and expectations that help ensure college readiness for all students.
- High-quality instruction that is rigorous and that promotes powerful teaching and learning.
- Personalized teaching that demonstrates teachers know their students and that they are relevant.
- Redefining professionalism with emphasis on all school personnel taking responsibility in and for student success.
- Purposeful design focusing on full use of resources and best practices.
- Shared leadership and collaboration.

Despite the growth and success North Carolina is having with their ECHS expansion, several barriers have been identified from leadership. Weldon (2009) notes problems facing the development of ECHS include getting colleges to allow the high schools to be on their campus. This issue is mostly fought with the impression that there

is not enough space on campus to house the high school students. An additional barrier as it relates to the college/university partnerships is there is often hesitation of college faculty to work with high school students. Lastly, North Carolina has several rural counties in which ECHS were being created yet many of the college campuses were not conveniently located in relation to the school for students to go take college classes. This created a need to rely on distance learning and as a result, many students miss out on the experiences that come from being connected to the college campus.

North Carolina Early College High School Outcomes

In 2013, 62 ECHS in North Carolina had 95% graduation rates and 25 had 100% graduation rate (NC New Schools, 2013a). With all North Carolina ECHS reporting a 95% or higher graduation rate, these rates were higher than the overall rate for traditional public schools (82.5%). More specifically by race and income status in ECHS, the state graduation rates were 78% for Blacks, 75% for Hispanics, 86% for Whites and 76% for low-income students (NC New Schools, 2013a). North Carolina New Schools (2013a) reports ECHS achievement results on end of course tests proficiency rates, 9th grade promotion rates and end of course composite pass rates (combination of pass rates for state exams in Biology, Algebra I and English 1) as compared to traditional public schools. Table 1 highlights schools with end of course proficiency in early college high schools as compared to traditional high schools on three different scales: 85% or greater proficiency, 95% or greater proficiency, and overall composite pass rates. Lastly, 97.5% of ninth graders in ECHS across the state were promoted from 9th grade compared to the 90.2% rate in the state (NC New Schools, 2013a).

Table 1: End of course proficiency in ECHS versus traditional schools

85% or Greater		95% or Greater		Composite Pass Rates	
ECHS	Traditional	ECHS	Traditional	ECHS	Traditional
92%	39.5%	74%	15.2%	96%	81.4%

Note: Adapted from "Changing the future through early college high schools," by North Carolina New Schools (2013). Retrieved from http://ncnewschools.org/changing-the-future-through-early-college-high-schools/

Several short reports have been released sharing preliminary findings regarding a five-year longitudinal research study (Edmunds, 2010; NC New Schools, 2013b). Of these, one study shows persuasive evidence that students attending ECHS are achieving at higher rates than students enrolled elsewhere (NC New Schools, 2013b). Students were more likely to be on track towards graduation and college readiness regarding courses passed, credits earned, and graduating, as compared to the control group of students enrolled in other high schools (NC New Schools, 2013b). Edmunds' (2010) findings reveal ECHS students have higher levels of academic achievement, more positive experiences in schools, fewer absences, and are less likely to be suspended. Notably, North Carolina's ECHS are boasting an 81.6% graduation rate for Black male participants as compared to the state's overall average of 68.1% (NC New Schools, 2013b).

In a mixed methods analysis done on four ECHS in the mountain region of North Carolina, Hall (2013) found students enrolled in the ECHS had a high retention rate (92.6%) and "B" grade point averages in both their high school and college averages. Interestingly, students boasted higher college GPAs (3.1-3.9) as compared to their high school GPAs (2.92-2.94). As it relates to student achievement on state tests, Kaniuka and Vickers (2010) found ECHS students had higher passing rates than students attending traditional high schools with a significant difference among Black students. These

research results show how ECHS are successfully impacting positive educational outcomes for Black students. Yet, as mentioned in chapter one, Black males are participating at lower rates as compared to females. Retrieved from the 2015 NCDPI's average daily membership (ADM) data, Figure 1 details the racial enrollment of all of the ECHS in the state. Figure 2 extends the data by race and gender.

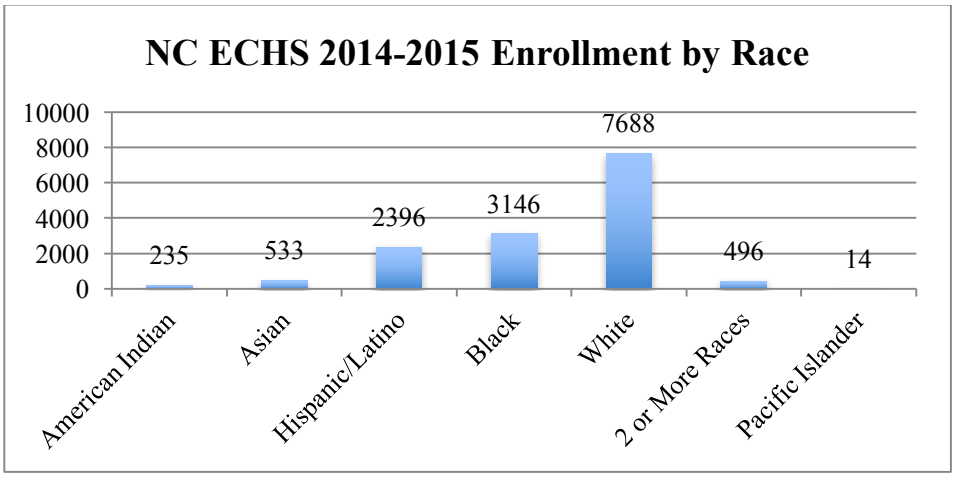

Figure 1. NC ECHS 2014-2015 enrollment by race. Adapted from Grade, race, sex: 2014-2015 by North Carolina Department of Public Instruction (2015). Retrieved from http://www.ncpublicschools.org/fbs/accounting/data/

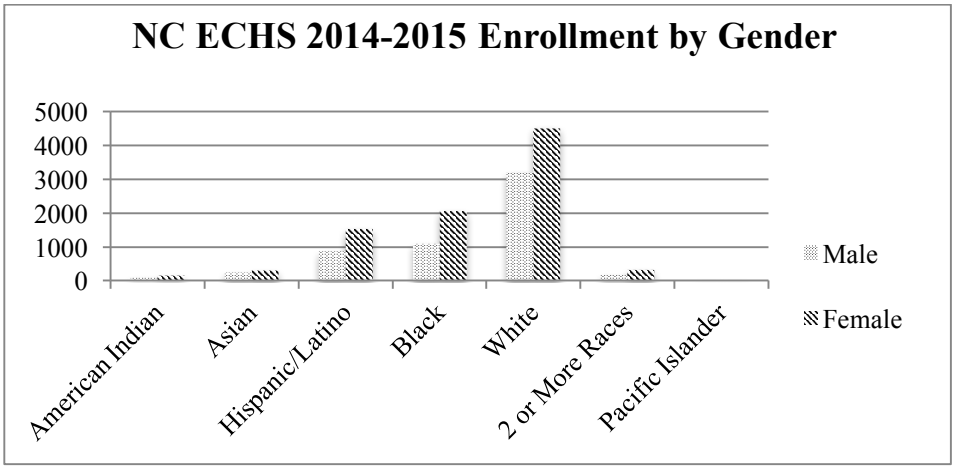

Figure 2. NC ECHS 2014-2015 enrollment by race. Adapted from Average daily membership: 2014-2015 by North Carolina Department of Public Instruction (2015). Retrieved from http://www.ncpublicschools.org/fbs/accounting/data/

The National Push for STEM Education

The nation's focus on STEM education is necessary for ensuring its citizens are prepared to live and compete in a global marketplace. Moreover, this focus is based on the nation's desire to remain a superpower. The insistency of a push on STEM education is evident through the numerous national reports and publications that consistently report the need for students to be competent in STEM subjects (Carnegie Institute for Advanced Study, 2009). Emphasis on equipping its citizens to be fully competent in STEM subjects and fields will lead to breakthroughs in societal and environmental issues as well as increase technological innovation (The President's Council of Advisors, 2010). In 2007, the National Science Foundation reported their concerns about the nation failing to meet the needs of students as it relates to STEM education. Stating specifically that this failure would impact both the nation's economy and its national security and without appropriate STEM education, Americans would not be fully capable to participate in the competitive global market (National Science Board, 2007). As a result, President Barack Obama has identified STEM education as a national priority to focus not only on increasing proficiency for students and teachers, but to also increase access and equity for students to have more STEM learning opportunities (United States Department of Education, n.d.)

A glance at 2012 Program for International Student Assessment (PISA) shows the United States ranks lower than other OECD (Organisation for Economic Co-operation and Development) nations average for mathematics (OECD, 2014). Average 12th grade NAEP scores remained unchanged from the year 2009 to 2013 (NCES, 2013). In both years, only 26% of students score at or above proficient in math and only 7% of Black students were proficient. In 2009, the most recent year for grade 12 science results shows

proficiency levels were at 21%. For both subjects in 2009, Black students were more likely to score below basic (63% in math and 71% in science) (NCES, 2009).

Of the fastest-growing jobs in the nation, 80% of them require math and science competency (Carvalho, 2015). The US Department of Education reports from 2010-2020 STEM jobs were expected to increase by 14%. More specifically, mathematics jobs are expected to increase by 16%, computer systems analyst careers by 22%, systems software developers by 32%, medical scientists by 36% and biomedical engineers by 62% (US Department of Education, n.d.). In efforts to impact students' interests in STEM fields or into the "STEM pipeline," initiatives have shifted focus from focusing on students once they reach the postsecondary level to focusing on them earlier in high school (Franco, Patel & Lindsey, 2012). Lowell et al. (2009) explains there are varying viewpoints of the best way to get students into the "stem pipeline." One prominently held view focuses on ensuring early exposure to fields so students are well prepared to enter STEM fields in college (Lowell et al., 2009). This is being accomplished through the creation of public high schools that specialize in STEM (Eisenhart et al., 2015; Subotnik, Tai, Rickoff, & Almarode, 2010). Franco et al. (2012) sought out to study the impact STEM schools have influencing students to pursue the sciences after high school. The authors, using data from skills and career intent assessments completed by participants, demonstrated some suggestive evidence that STEM schools impact students career intentions and those intentions are largely STEM-related.

STEM High Schools

Across the nation, STEM schools have been created in various ways including a residential style approach and schools-within-schools (Subotnik et al., 2010). For North

Carolina specifically, The School of Science and Math in Durham is a residential style school, and the four small schools which make up Charlotte's Olympic High School is an example of schools-within-schools. While such specialized schools have largely served students identified as educationally gifted and talented (Thomas & Williams, 2010), one additional approach to STEM specialty high schools is the ECHS. In the same way ECHS are working to increase access to and preparation for postsecondary education for underrepresented groups, they are also working to funnel such students into STEM-related majors and careers. This is being done through creating STEM-specific ECHS.

STEM Early College High Schools

STEM education has become popular in ECHS programs. North (2011) reports that of all of the ECHS in the nation, about a third of them utilize a STEM thematic focus. In the 2009-2010 school year of the nearly 1500 students graduating from 33 STEM ECHS 66% continued to four-year colleges and universities, 25% had already earned an Associate's degree, and 20% continued to two-year colleges (North, 2011). Even with completion reports on STEM ECHS, very few studies have reported the impact STEM specialty high schools have on STEM college graduates (Eisenhart et al., 2015; Franco et al., 2012; Subotnik et al., 2010). Considering this research concentrates on the experiences of Black males attending a STEM ECHS, it is necessary to understand the literature on Black males' current participation and outcomes in STEM fields.

Black Males Participation in STEM

Science, technology, engineering and math (STEM) programs are essential to local, state, and national economic growth and schools are tasked with finding ways to increase student interests in these fields. Despite increasing emphasis, STEM fields suffer

from persistent underrepresentation of people of color and women (Landivar, 2013). The STEM workforce, while overwhelmingly male, is also overwhelmingly White (May & Chubin, 2003). Literature on Black males in STEM is scant (Lundy-Wagner, 2013) but does reveal that of the Black males entering STEM fields, they do so largely because of the influence of historically Black colleges and universities (HBCUs) (May & Chubin, 2003). Historically Black colleges and universities are often the top producers of Black STEM graduates in the United States (Diverse Issues in Higher Education, n.d.). Thus, the United States is heavily focused on increasing diversity in STEM fields (Strayhorn, 2015). Museus and Liverman (2010) explain that people of color are underrepresented in STEM and earn STEM degrees at lower rates compared to their peers. Out of the underrepresented groups, Black males are one of the underrepresented subgroups (Bidwell, 2015).

Bidwell (2015) highlights that 6.1% of Black men earned STEM degrees in 2002 and 6.2% earned them in 2012. His review of the underrepresentation of African-Americans addresses various reasons attributing to this phenomenon including perceptions that the fields are difficult, stereotypes associated with those known to study these subjects, a lack of encouragement from others to pursue it, the financial investment it takes to pursue advanced degrees, and overall isolation in the field.

According to a report done by Ross et al. (2012) for the National Center for Education Statistics, more females earned a bachelor's degree or higher in 2010. The gender gap is apparent for Black males and females where only 15% of Black males earned a degree compared to 23% of Black females (Ross et al., 2012). As it relates to STEM fields, of all the bachelor's degrees earned in 2009, nearly 25% of them were

STEM related. The racial and gender breakdown of these degrees revealed more males earned STEM degrees than females but among all racial/ethnic groups Black males achieved STEM degrees at a lower rate (Ross et al., 2012). During the 2009-2010 school year, of STEM bachelor's degrees conferred, 22% were awarded to Black males (Ross, et al., 2012). Landivar (2013) highlights that Blacks only occupy 6% of STEM related jobs. Additionally, among males in all racial groups, median earnings for Blacks were less than Asian, White, Biracial and Hispanic males in STEM occupations (Ross et al., 2012).

In an analysis done to examine rates of attrition in STEM fields, Chen (2013) found students who entered college as STEM majors that were male or from a lower socioeconomic status were more likely to drop out of college than females and more affluent students. While many have assumed African American students enter STEM majors in college at lower rates than their counterparts, Anderson and Kim (2006) contend the data instead shows that the aspirations in STEM fields are the same but persistence through the programs is where the disparities lie.

Taking a qualitative approach in efforts to understand Black males' participation in STEM fields, Moore (2006) researched factors that contribute to Black males entering engineering at the undergraduate level. Thematically, this research revealed that Black males pursuing engineering degrees had received substantial support from their families, teachers and counselors to explore the fields, performed well in math and science, were exposed to and participated in STEM related opportunities throughout their K-12 experiences, and showed overall high interest in the fields.

Overall, stark outcomes for Black males in STEM at the postsecondary level call into question Black male participation, access and exposure to STEM preparation at the

K-12 levels. Wang's (2013) research reveals the decision to study STEM in college is highly correlated to math achievement in high school. Similarly, in a study to assess the correlation between high school STEM course taking and future STEM degree attainment, Tyson, Lee, Borman, and Hanson (2007) found that when Black and Hispanic students complete higher level coursework in high school, they are just as likely as White students to pursue degrees in STEM fields. Yet the racial disparities are persistent because these students are often found to be unprepared for STEM subjects during their high school tenure (Tyson et al. 2007).

As May and Chubin (2003) point out, pre-college preparation is a key element to increasing representation of people of color in STEM fields. Yet there is a resource gap in urban areas where a majority of African American students attend school (May & Chubin, 2003). Evident through the Office of Civil Rights (2012; 2014) data collection, schools and districts with large populations of Black and Hispanic students are less likely to offer advanced course work such as Algebra II, Chemistry, Calculus, and Physics. Many of these courses are often organized as advanced placement (AP) courses yet only 27% of Black and Hispanic students were enrolled in at least one AP course. Of those students enrolled, only 18% received a score of 3 or more on the AP exam. These percentages are less than the Black and Latino student enrollment; Black and Latino students make up 37% of the high school population (2014). Furthermore, students in more high poverty areas are least likely to have experienced and highly qualified teachers in math and science subjects that could help impact their interests in the fields (May & Chubin, 2003; OCR, 2014).

In her book The Flat World and Education: How America's Commitment to Equity Will Determine Our Future, Darling-Hammond (2010) addresses a national crisis the United States faces regarding its ability to provide equitable and high-quality education to all students considering students are being outperformed by other high-achieving nations such as Finland, Japan, and Singapore. The central argument of the text is the nation has failed to commit to improving schools and teacher quality for the most neglected students- students from urban and rural neighborhoods, low income students, students of color, and immigrant populations.

The facts reported here intensify the circumstances of educational opportunities for Black students, and Black males, in particular, require more attention in efforts to see desirable increases in their STEM participation. As the US population experiences an increase in people of color, the nation is shifting the focus more on Black males and other underrepresented populations in STEM. This becomes increasingly important if there is a strong concern for increasing STEM participation among underrepresented groups. Considering dismal educational and societal outcomes of Black males, much attention must turn towards their overall success within the public education system because it will ultimately impact their ability to be a part of STEM fields.

Academic Identity and Academic Achievement

Identities are fluid and as Gee (2000) states, "all people have multiple identities connected not to their 'internal states' but to their performances in society" (p. 99). As it relates to this research, a student's academic identity or academic self-concept is considered. Generally speaking, they are both very similar: academic identity is who students see themselves as academically and academic self-concept is how one views

their academic capabilities (Beier & Rittmayer, 2008; Bong & Skaalvik, 2003; Lloyd, 2013). For purposes of this research, academic identity or academic self-concept is categorized as an element of the multidimensional concept of identity.

Academic self-concept is heavily researched in both educational and psychological research and results have largely demonstrated a positive correlation between academic self-concept and academic achievement (Guay, Larose, & Bolvin, 2004; Huang, 2011; Marsh, Trautwein, Ldtke, Kller, & Baumert, 2005; Marsh & Craven, 2006; Marsh, & O'Mara, 2008; Marsh & Martin, 2011). Guay et al.'s (2004) research in particular extends the early literature on academic self-concept by employing a longitudinal research study with elementary age students to see if self-concept is a predictor of educational attainment while controlling for other known influential factors such as academic achievement, family structure and socioeconomic status. Using structural equation modeling and regression, their research suggests a strong relationship between academic self-concept and educational attainment. Similarly, Valentine, DuBois and Cooper (2004) performed a meta-analysis of longitudinal studies, published between 1978 and 2001 that examined self-beliefs and achievement. Findings across studies are consistent regarding the positive relationship but the overall effect size is small. Yet, effects are found to be higher when the self-concept is related to the specific subject area (e.g. STEM self-concept affects STEM subjects).

When examining the relationship between academic self-concept and academic achievement, Lyon's (1993) research suggests academic self-concept and academic achievement are highly correlated. Using a sample of middle school students, the researcher collected existing data from student's standardized achievement tests to serve

as criterion variables and then administered five questionnaires measuring noncognitive factors (one for locus of control, two for self-concept, one for motivation, and one for classroom behavior) to the participants. This research shows academic self-concept contributes largely to academic achievement scores and proves to be a more powerful predictor of academic achievement. Similarly, DeFreitas and Rinn (2013) examined the role of academic self-concept among first generation college students. Studying their verbal and math self-concepts specifically, they found a relationship: students with lower GPAs were found to have lower academic self-concepts in the subjects.

Through an extensive review on the relationship between academic self-concept and academic achievement, Huang (2011) highlighted four varying positions in the larger literature: (a) the skills based analysis which says academic achievement impacts self-concept but self-concept does not impact academic achievement; (b) the empowerment analysis which articulates the relationship that self-concept determines academic achievement, thus to improve academic achievement would require emphasis on positively impacting self-concept; (c) the relationship between the two is reciprocal- as academic self-concept increases so will academic achievement so improving one improves the other; and (d) there is no relationship between the two. However, this last proposition is not heavily supported in the literature (Huang, 2011).

In research done on African Americans specifically, Witherspoon, Speight and Thomas (1997) added the element of racial identity to the discussion on academic self-concept and academic achievement. Using four different scale instruments to gather the information on student's self-concept and racial identity, the researchers found there was no correlation between racial identity and self-concept, but academic self-concept is

positively related to student's GPA. However, Hatcher, Stiff-Williams, and Hanes (2015) completed a mixed-methods analysis of African American males using a survey and interviews and found a statistically significant relationship between ethnic identity development and high school GPA as well as practical significance given the medium effect size.

Adding gender as a variable, Cokley, McClain, Jones, and Johnson (2012) examined factors that impact academic achievement and found the relationship between academic self-concept and GPA for African American males to be weaker than the relationship for African American females. Despite this, academic self-concept was still reported as the strongest predictor of GPA (Cokley et al., 2012). Ford and Harris' (1997) research was a bit more expansive given their focus on the relationship between racial identity and academic achievement by specifically assessing gender differences between Black males and females. The researchers found females, high achievers and gifted students to have more positive racial identities than males and underachievers. In this study, the population consisted of 152 Black students, with 42 identified as gifted and 62 identified as underachievers. The underachievers were largely male. Also, the females had higher grade point averages (3.2) than the males (2.9) (Ford & Harris, 1997).

Taken together, this evidence provides support for the value of focusing on academic self-concept or academic identity. The larger literature has emphasized the importance of context and subject area when considering the impact of academic self-concept. That said, in efforts to increase STEM participation for Black males, there is a need to focus on their STEM self-concept or STEM identity. This is pressing given the fact that much of the research continues to focus on the absence of African American

males in STEM fields (Washington, 2011). Arguably research that focuses on understanding student's entry and persistence in STEM may lie in understanding their identity development, both their "STEM identity" and their identity as "scholars."

STEM Identity

Hughes, Nzekwe, and Molyneaux (2013) define STEM identity as one's "ability to see themselves as the kind of people who could be legitimate participants in STEM through their interest, abilities, race, gender and culture" (p. 1980). Yet, much of the research done on STEM identity is rooted in work on science identity (Brickhouse & Potter, 2001; Carlone & Johnson, 2007); university organizational culture (Callahan, Pyke, Landrum, & Shadle, 2014); on undergraduate and graduate students (Craig, 2013; Herrera et al., 2012; Wade, 2012); and on women (Hughes et al., 2013; Jackson, Starobin, & Laanan, 2013; Ramsey, Betz, & Sekaquaptewa, 2013; Rosenthal, London, Levy, & Lobel, 2011).

Carlone and Johnson (2007) provide a science identity framework that is readily transferable to the larger concept of STEM identity, where there has to be a compilation of competence, performance, and recognition by oneself and by others (Carlone & Johnson, 2007). Jackson et al. (2013) assert that because of the need for more women and other underrepresented groups in STEM fields, emphasis on impacting their STEM identity is needed. They articulate STEM identity is important because "when students are able to view themselves as a member of the STEM enterprise, they are able to commit to the challenges and obstacles that are presented as a result of their identification within the field" (Jackson et al., 2013, p. 74).

Herrera et al. (2012) created a detailed framework for STEM identity allowing for both the identification for and flexibility to include identities with each of the subjects. Additionally, they, like other researchers (Hazari, Sadler, & Sonnert, 2013; O'Brien, Martinez-Pons, & Kopala, 1999) the authors' focus on the fact that the various aspects of one's identity (race, gender, culture, etc.) influence their overall STEM identity. Some research has shown increasing student's STEM identity can impact an increase in motivation and persistence in STEM fields (Ramsey et al., 2013).

Scholar Identity

Like overall identity, academic self-concept, and STEM identity, Black males must begin to see themselves as successful in school and as scholars. As mentioned in chapter one, the guiding theoretical framework for this research is Whiting's (2006) scholar identity model, which is comprised of nine different components that all contribute to one's identity as a "scholar." The elements of the model are built upon more seminal research literature, and each is discussed below. Figure 3 is a visual composite of the scholar identity model (SIM) (Whiting, 2009a).

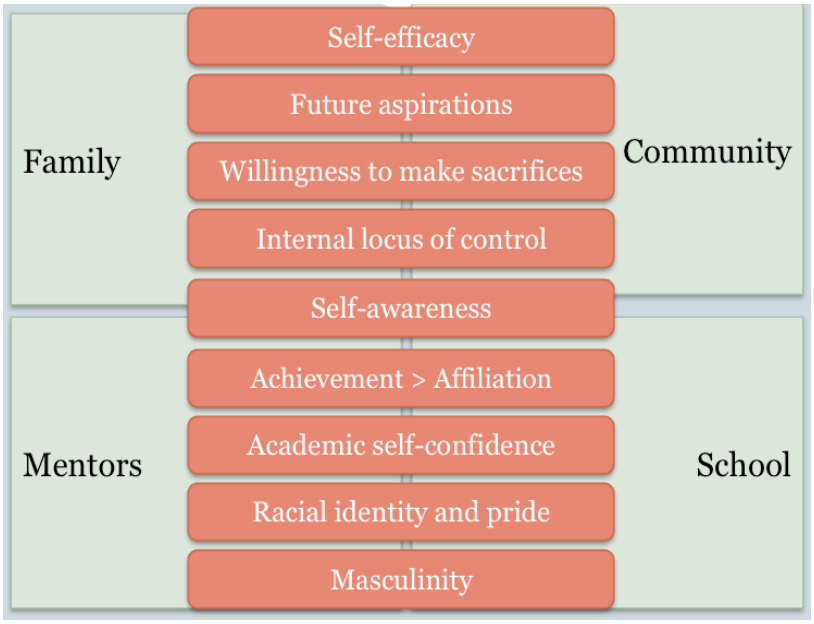

Figure 3: Scholar identity model. Adapted from " Gifted Black males: Understanding and decreasing barriers to achievement and identity," by G. Whiting, 2009, Qualitative Research in Psychology Roeper Review, 31(4), 224-233.

Self-Efficacy. Self-efficacy, identified by Bandura (1977), is defined as an individual's belief in his or her own capabilities to achieve desired outcomes. Situated in Bandura's theory of self-efficacy, Whiting (2009a) asserts that Black males must see themselves as capable and believe they can achieve in order to be successful. Having a high level of self-efficacy is a key element of the model and serves as the foundation for the other components (Whiting, 2009b). Bandura, Barbaranelli, Caprara, and Pastorelli (2001) assert "unless people believe they can produce desired outcomes by their actions, they have little incentive to act or to persevere in the face of difficulties" (p. 187). In concordance with Bandura's (1977) conceptualization that the stronger the perceived self-efficacy, the more active the efforts, Whiting (2009a, 2009b) argues that Black males possessing a scholar identity will not succumb to challenges and be more resilient working with an "I can" attitude.

Future Aspirations. An element of motivational theory, students develop more of a scholarly identity when they are future oriented (Whiting, 2009a, 2009b). Thinking about and preparing for the future, understanding delayed gratification, and knowing the importance of setting long-term goals is essential to maintaining such identity (Whiting, 2009a, 2009b). In addition to self-efficacy, this component of the framework also encompasses other motivational psychology theories such as expectancy-value theory (Atkinson, 1957). Expectancy-value theory focuses on behavior and how much value one places on a particular outcome and the level of expectancy one has that they will achieve the desired outcome as a result of particular behaviors (Shunck, 2008). Focused more on

intrinsic motivation, this research supports Whiting's (2006, 2009a, 2009b) inclusion of the need for scholars to be mindful of, focused on, and motivated for their future aspirations.

Willingness to Make Sacrifices. As difficult as it often is, sacrifices are commonplace on the journey towards success. Students who possess this willingness, are likely to identify and be perceived as "scholars." Whiting (2009a, 2009b) notes Black males who possess the scholar identity understand that some sacrifice will be necessary for them to achieve something they desire. These sacrifices are likely to be either personal or social in nature including but not limited to extracurricular activities and not hanging out with friends because of study requirements (Whiting 2009a, 2009b).

Internal Locus of Control. Whiting's (2006) focus on internal locus of control stems from the work of Rotter's (1966) social learning theory. Rotter (1966) defines locus of control as:

> the degree to which the individual perceives that the reward follows from, or is contingent upon, his own behavior or attributes versus the degree to which he feels the reward is controlled by forces outside of himself and may occur independently of his own actions (p. 1).

Rotter's work precedes attribution theory, a largely applied theory in educational research (Weiner, 1986). Both theories assess how and where attribution for a specific outcome are placed. As explicated in the definition, the locus of control is either internal or external. Whiting's (2006) model focuses on internal locus of control arguing scholars focus on themselves and what they do, and attribute their outcomes to their actions. Levels of responsibility are high and levels of blame are low for students who possess a

stronger internal locus of control and who could be classified as scholars (Whiting, 2006, 2009a, 2009b).

Self-Awareness. Silvia and Duval (2001) cite one of the earliest theories on self-awareness to be objective self-awareness (OSA) by Duval and Wickland (1972). Whiting (2006, 2009b) uses this same work to explain the significance of self-awareness. Silvia and Duval (2001) simply describe self-awareness as "self-focused attention" (p. 230) and Whiting (2009a, 2009b) explains that scholars fully understand their strengths and weaknesses. Furthermore, through the development of high levels of self-awareness, scholars are able to provide an honest review of oneself.

Need for Achievement > Need for Affiliation. Using American Psychologist McClelland's (1961) Need to Achieve Theory, Whiting (2006, 2009a, 2009b) argues scholars desire for achievement must be stronger than their desire for social affiliation. This motivational achievement perspective within this framework contends "African American males with a strong need for achievement understand that high academic achievement will take them farther in life than being social or popular" (Whiting, 2009b, p. 229). For scholars, education becomes a top priority (Whiting, 2006).

Academic Self-Confidence. Research has found confidence to be a vital mental construct (Stankov, Lee, Luo, & Hogan, 2012) and student's academic self-concept has been found to be a predictor of academic achievement (House, 2000). Positioned within similar literature (Dweck, 1999), Whiting (2006, 2009b) articulates that scholars willingly except challenges in school, they are confident in their academic abilities and settings, and have a strong work ethic. With higher levels of academic self-confidence, it becomes apparent, that scholars are also willing to take risks to be successful.

Racial Identity and Pride. Helms (1990) defined racial identity as "a sense of group or collective identity based on one's perception that he or she shares a common racial heritage with a particular racial group" (p. 3). Understanding Black identity has been largely explicated using Cross' (1971) Nigrescence Model. This theory explains the stages (pre-encounter, encounter, immersion-emersion, and internalization) that Black people go through a process of becoming and identifying as Black (Cross, 1971, 1978; Goodstein & Ponterotto, 1997). Whiting (2006, 2009b) cites the early research of "the doll tests" (Clark & Clark, 1939) as Black identity research, which shed light on Black student's racial self-esteem.

As it relates to Black racial identity, the oppositional cultural theory has been used as one explanation for poor educational outcomes for African American students (Wiggan, 2008). The idea is that Black students develop an oppositional identity under the notion that schools and education is not for them and that they may be seen as "acting White" (Fordham & Ogbu, 1986). Branch (2014) explains that within the larger research, teacher educators and psychologists agree that ethnic identification is critical to one's overall psychological well-being and that positive development in this area promotes academic achievement. Taken together, Whiting's (2006) scholar identity model posits that scholars do not attribute academic success to "acting White" and that they are comfortable and proud identifying as Black.

Masculinity. The final tier in the SIM is masculinity, to which Whiting (2006, 2009a) focuses on the notion that scholars do not equate being intelligent with being unmanly. Issues of masculinity differ across race (hooks, 2004; Whiting, 2006). A complex attribute, masculinity typically focuses on characteristics that are associated

with men. Schnyder (2012) has explained that for Black men, in particular, masculinity as a construct socializes and demands them to be "specific type of men" (2012). There is a particularly concerning depiction of what Black masculinity is because of how it is portrayed and received through popular culture (Staples, 2008). Within the SIM, there is no withdrawal or fear of success because scholars do not believe that achieving detracts from their manhood (Whiting, 2006, 2009b).

Taken together these nine constructs form the SIM. As clarified by Whiting (2009b), the constructs of this model are "generic or neutral relative to race and gender; however, the model becomes race specific and gender specific when the last two characteristics (racial identity and masculinity) are included" (p. 228). This theoretical framework is used as a lens to analyze the findings in this study.

Summary

This literature review has focused on several areas relevant to the larger researcher study. The first section concentrated on literature, which explains larger educational and societal outcomes Black males face. This information directly supports why unique approaches are needed to meet the needs of the population. To counterbalance the narrative, literature that supports Black males as capable of achieving success was provided as well.

The review of literature then transitioned to cover the movement towards ECHS by providing historical context of how the initiative was started and how it fits into the larger small school movement and high school reform. Connected to this section, research was reviewed which detail the positive outcomes ECHS are producing including student experiences. Focusing on a state with great momentum in the ECHS movement, a

section was dedicated to reviewing the ECHS outcomes in North Carolina. The following section began to bridge the concept of ECHS to that of national focus on STEM education and how ECHS are working to funnel more underrepresented groups into the STEM pipeline.

The next section focused on Black males, as the population within this research, and their participation within STEM fields. This information is relevant as it helps paint a picture for understanding how ECHS can impact Black males entering the STEM pipeline. Finally, the last section of the literature review focuses on identity development, or academic self-concept, and the role that it plays in achieving academic success. First a brief discussion is provided on STEM identity since the research questions inquire about the role the ECHS plays in having Black males think about themselves as learners and doers of STEM. This is followed by a more thorough overview of the larger framework guiding the study, Whiting's (2006) scholar identity model. In the chapter that follows, the methodology used to carry out the research is presented. Chapter three explains the way data was collected and analyzed.

CHAPTER THREE: METHODOLOGY

Overview

The purpose of this study was to investigate how Black males describe their experiences at a STEM focused ECHS. In addition to investigating the students' academic and social experiences, the research examined the role this schooling structure plays in shaping their identity development. This study uses a qualitative case study design. Choosing to use a qualitative approach for this research was significant for several reasons. As Creswell (2013) explains, qualitative research should be conducted when exploration is needed; in this case, the experiences of Black males in a STEM ECHS setting. Furthermore, qualitative research has been often described as a tool for empowerment because it "gives voice" (Bade, Eckert, Niesz, Koch, & Rumrill, 2008). The students' voices in this study were heard and shared. Merriam (2009) describes qualitative researchers as being interested in "understanding how people interpret their experiences, how they construct their worlds, and what meaning they attribute to their experiences" (p. 5). Above all, this approach would help lead to answers to the research questions. These justifications provided by both Creswell (2013) and Merriam (2009) help position both the necessity and potential influence of this research. This chapter provides the specifics of the research study and how it was carried out. As a result, this chapter is organized into the following sections: (a) research questions, (b) research design overview, (c) underlying philosophical perspective, (d) research site, (e)

participant selection, (f) recruitment strategy (g) data collection methods, (h) data analysis, (i) ethical considerations, and (j) pilot study.

Research Questions

Merriam (2009) describes qualitative researchers as "being interested in understanding how people interpret their experience, how they construct their worlds, and what meaning they attribute to their experiences (p. 5). Using a single case study design, the guiding research questions were:

1. How do Black males describe their STEM early college high school experiences?
2. How do Black males construct their identities (academic and non-academic aspects) at a STEM early college high school?
3. How does a STEM early college high school impact Black males' perceptions of STEM subjects and STEM careers?

Research Design: Case Study

A case study is "an in-depth description and analysis of a bounded system" (Merriam, 2009, p. 40). The case is the group of Black male students bounded by the STEM ECHS program. Yin (2003) provides a typology for when a case study methodology is most appropriate: (a) the focus of the study is to answer "how" and "why" questions; (b) you cannot manipulate the behavior of those involved in the study; (c) you want to cover contextual conditions because you believe they are relevant to the phenomenon under study; or (d) the boundaries are not clear between the phenomenon and context. The case study approach was most appropriate for this study because all of the aforementioned characteristics are applicable. Creswell (2013) identifies case study research as a methodology and asserts that the researcher "explores a real-life

contemporary case…through detailed, in-depth data collection involving multiple sources of information" (p. 97). Case study research happens within the natural context of the phenomenon under investigation (Yin, 2003); thus the research happened within the Murphy STEM (pseudonym) environment.

Underpinning Epistemology for this Research

As a philosophical assumption, an epistemology explains "a way of understanding and explaining how we know what we know" (Crotty, 1998, p. 3). Stressing the plurality of meaning, this research utilized constructivism as its epistemological assumption. Constructivism recognizes "truth" as relative, dependent on individual perspective, and socially constructed (Baxter & Jack, 2008; Merriam, 2009). Within qualitative research, Creswell (2013) explains researchers rely heavily on participant's perspectives. Used interchangeably with interpretivism, constructivists claim multiple realities exist and are "constructed" by people. Simply stated, meaning is not discovered but constructed. When using a constructivist epistemological perspective, the purpose of the research is to "describe, understand and interpret" (Merriam, 2009, p.11). This epistemology is central to this research because not only are the participants sharing their "truth" but these truths are presented in their own words.

Research Site

This research study took place at Murphy STEM ECHS, which is located on the campus of a four-year university in the Southeast. As a STEM specific ECHS, all of the courses offered are directly connected to this thematic scope and non-related courses such as the arts, are excluded from course offerings. Murphy STEM was designed to be a five-

year program to allow students to take advantage of free access to college courses as long as possible, but students are allowed to graduate after four years if they so choose.

The United States Census Bureau reports that for the city in which the school is located, the 2010 population was just over 400,000 people. In 2015-2016, the school district served 157,180 students. Table 2 provides the racial demographics for both the city and district.

Table 2: Research site demographics

	White	Black	Hispanic/ Latino	Asian	American Indian/ Alaska Native	Two or More Races	Hawaiian/ Pacific Islander
City	57.5%	29.3%	11.4%	4.3%	0.5%	-	-
2014-2015 School Year School District	48.1%	24.2%	16.4%	7.1%	0.3%	3.8%	0.1%

Note: Adapted from "State and county quick facts," by U.S. Census Bureau (2010) and "Murphy STEM Early College High School," by County Data (2015).

When the school opened during the 2011-2012 school year, they began with 55 students. As of the 2015-2016 school year, they had 249 students, 13 teachers, 2 administrators, and three support staff members. By grade, the school was comprised of 54 freshmen, 53 sophomores, 52 juniors, 54 seniors and 36 super seniors (super seniors are students who stay for the fifth year of the program, delaying high school graduation to earn more free college credit). Student racial and gender composition can be found in Table 3. The program is designed so students can take the majority of the courses required for high school graduation within the first two years of the program. Access to college courses begins during the students' junior year. The site's purposeful design to

offer grades 9-13 provides an array of experiences to this research study newer ECHS cannot offer. Students have the option of graduating at the end of their senior year but for those who stay, they are required to complete an internship which counts as their high school credit. Lastly, most of the literature about ECHS discusses the sacrifices students have to make to participate in ECHS, most notably is participation in most extracurricular activities and athletics. Murphy STEM, however, per a new county policy, allows students to participate in sports and clubs with a local traditional partner school. Murphy STEM also has several clubs onsite including robotics, yearbook, and student council.

Table 3: Murphy STEM racial and gender composition

Race	White		Black		Hispanic/ Latino		Asian		American Indian/ Alaska Native		Two or More Races		Hawaiian/ Pacific Islander	
Gender	M	F	M	F	M	F	M	F	M	F	M	F	M	F
	75	38	27	38	14	16	24	10	-	-	4	3	-	-
Total	113		65		30		34		-		7		-	

Note: Adapted from "Grade, race, sex: 2014-2015 [table]," by State Department of Public Instruction (2015).

Participant Selection

Purposive sampling was used to select participants. Purposive sampling or judgment sampling, is a sampling technique used when trying to secure specific qualities or characteristics, and selection of participants is deliberate (Gay, Mills, & Airasian, 2012). For this study, students had to identify as African American/Black and male, be enrolled in Murphy STEM ECHS, and be classified as a junior, senior or super senior. I desired to work with a group of older students who have, because of their grade level,

demonstrated persistence throughout the program. It was desired that the participants represented a variety of profiles including ability levels and post-secondary plans.

Recruitment Strategy

Prior to formal recruitment, I visited the school a few times getting the lay of the land, building relationships with the school administration and doing some preliminary observations. Then, with help from the school principal, a list of eligible and suggested participants was generated. These students were contacted by the principal via email encouraging them to participate along with a brief overview of the study and how they could potentially help. In that email, students were provided with a cover letter (Appendix B) about the study and consent/assent forms (Appendices C and D) needed to submit back to the researcher. The students were provided with my contact information and instructed to contact me if they were interested in participating.

In a later meeting with the principal to discuss use of school space and appropriate meeting times, the principal discussed the complexity of student schedules which would inhibit desired observations. Due to the complexity of student schedules, the principal suggested I follow up his email with a Google Form to allow students to provide their availability. Eighteen students were contacted from the principal's list and nine agreed to participate in the study and completed the Google Form. An additional participant that was not originally on the principal's contact list was recruited upon an introduction at the school's internship fair, for a total of 10 participants. All of the students under 18 were required to return both an assent and consent form signed by their parents/guardians and themselves to be eligible to participate. Students that were 18 (mostly super seniors) submitted completed consent forms before data collection began.

Data Collection Methods

After obtaining approval from the Institutional Review Board at my institution and obtaining external research approval from the school district, data collection began. As a preliminary form of data collection, a brief questionnaire was used to collect demographic data on each participant. The questionnaire included: grade level, age, GPA, parent/guardian(s) highest level of education, and postsecondary plans (Appendix E). As an additional component to the demographic questionnaire, participants were asked to complete a brief satisfaction survey, which supplemented discussion during the individual interviews. This survey gauged student's satisfaction with the ECHS program and its design. Primary data collection for this research study included the use of focus group interviews and in-depth individual interviewing. Procedurally, focus groups occurred first, followed by individual interviews.

Focus Groups

Simply defined, focus groups are group interviews. Marshall and Rossman (2006) explain focus groups are beneficial because of its underlying assumption that "an individual's attitudes and beliefs do not form in a vacuum: people often need to listen to others' opinions and understandings to form their own" (p. 114). Focus groups have a history of being used in marketing research but as Basch (1987) explains, they are helpful for learning about the population and their "conscious, semi-conscious, and unconscious psychological and sociocultural characteristics and processes" (p. 411). Morgan and Spanish (1984) explain that focus groups could be used in conjunction with other qualitative methods to increase effectiveness.

Process. For this study, focus groups were the first form of data collection and two focus groups were organized, one for junior/senior students and one for super-senior students. After reviewing individual student schedules, focus groups were scheduled on the university reading day because the students did not have any college classes. Two students did not show up for the focus groups leaving four students in one session and four students in the other. These focus groups began with a review of the research study, a review of the signed consent/assent forms, and they took time to complete the demographic questionnaires.

The focus groups were guided by a semi-structured interview protocol (see Appendix F) designed to organize the conversation but also to leave room for open conversation. Sessions were held in an available classroom on the college campus in the morning. In research done on African American recruitment, retention and participation, Loftin, Barnett, Bunn, and Sullivan (2005) found that research studies must include "culturally competent approaches; caring, trusting relationships; incentives; and follow-up" (p.252). Taking this advice, refreshments were provided for participants during focus groups and time was spent building rapport. Each focus group lasted for about one hour. These focus groups provided insight for all research questions. Morgan and Spanish (1984) explain that focus groups could be used before individual interviewing to help create the interview guide and would allow the research to pursue topics in deeper detail once they reach the one-on-one conversation. This same rationale applied to this study. A draft of the individual interview protocol was already created but edited based on focus group data analysis. From the focus groups, individual students were invited to participate in in-depth individual interviews.

Individual Interviews

Interviews are a prime source for data collection in qualitative research. Formally defined, DeMarris (2004) explains an interview as "a process in which a researcher and participant engage in a conversation focused on questions related to a research study" (p. 55). Holstein and Gubrium (1995) describe interviewing as "active" because of the meaning making involved and the relationship between both the researcher and participant as equal partners in constructing knowledge. The purpose of interviews is to construct and produce knowledge and Kvale and Brinkman (2008) clarify the interview as the inter view, defining it as "the inter-change of views between two persons conversing about a theme of mutual interest" (p. 2). Interviews for qualitative research can be approached as a craft, as a knowledge-producing activity and as a social practice (Kvale & Brinkman, 2008). It is important to note that in order for interviews to render successful they must be conversational, have careful consideration of questioning, require active listening skills, and require considerable preparation. All research questions in this study were suitable to interviewing. As posited by Kvale and Brinkman (2008), the purpose of research interviews is to obtain "descriptions of the life world of the interviewee in order to interpret the meaning of the described phenomena."

Process. Students were invited to participate in one-on-one semi-structured interviews at the conclusion of the focus groups. All eight of the students volunteered and signed up to participate in an individual interview based on their availability. Of the eight students that volunteered, seven students followed through. Individual interviews were conducted in the African American cultural center on the college campus. Using a semi-structured approach, interviews ranged from 35-120 minutes (Appendix G). Transcription

was done by a professional transcription company (rev.com) and reviewed for accuracy by the researcher immediately upon receipt from the professionals. Due to confidentiality concerns, a non-disclosure agreement was provided by the company.

Data Collection Phase

Data collection was done from November to December, ending just as the students were finishing their semester and leaving for the winter break. As noted earlier, procedurally, the focus groups were held first for a few reasons. This was important because I believed this would help students feel more comfortable if they were amongst peers and it would enable them to talk informally before meeting one-on-one. After each focus group, volunteers signed up for days and times that matched their schedule via a sign-up sheet.

Data Analysis

Thematic analysis was the method for data analysis for the entire research study. Braun and Clark (2006) define thematic analysis as "a method for identifying, analyzing and reporting patterns (themes) within data" (p.6). Further explained, thematic analysis "minimally organizes and describes your data set in (rich) detail" (Braun & Clark, 2006, p. 6). Figure 4 reviews the six phases of thematic analysis as explained by Braun and Clark (2006):

Figure 4: Description of thematic analysis. Adapted from "Using thematic analysis in psychology," by V. Braun and V, Clarke, 2006, Qualitative Research in Psychology, 3(2), 77-101.

Saldana (2013) explains themes are “an extended phrase or sentence that identifies what a unit of data is about and/or what it means” (p.267). Theming the data creates a “coherent narrative” and is found to be appropriate for all approaches to

qualitative research, especially "those exploring a participant's psychological world of beliefs, constructs, identity development, and emotional experiences" (Saldana, 2013, p. 267). Following these steps for the thematic analysis helped formulate and present themes. Using Braun and Clarke's (2006) description of thematic analysis, the coding was done by hand. First line by line for initial codes. From there, codes were collapsed, reviewed and finalized.

To visually support the thematic analysis process, concept mapping was also used. Visual images in qualitative research can be used as a method of data analysis. For purposes of a formal definition, "a concept map is a schematic device for representing a set of concept meanings embedded in a framework of propositions" (Novak & Gowin, 1984 as cited in Daley, 2004). Daley (2004) explains that concept maps can be used to plan or frame research projects, reduce data, analyze themes, and/or present findings. In the same way that concept maps are used in classrooms to help students understand the content, concept mapping is used in qualitative research. In this study, concept maps are used to help present findings.

Lastly, the framework guiding this study, Whiting's Scholar Identity Model, served as a lens to inform the analysis. This framework provided an overview of specific information that should be looked for within the data. This information includes the nine components of the the Scholar Identity Model (Whiting, 2006, 2009) and the outside pillars of support.

Risks, Benefits, and Ethical Considerations

A discussion of ethical issues likely to arise during a research study is crucial to its success (Gay, Mills, Airasian, 2012). There were no foreseeable risks involved in the

study. For this study, no information was intentionally held from participants beginning with absolute details about the study and the informed assent and consent documents. A key element of qualitative research that presents major ethical concerns is the processes of data collection (Merriam, 2009). This study used in-depth interviewing, so it was understood that it could possibly have some unanticipated effects. As the researcher, I had to be cognizant of not influencing participant answers or altering their perceptions by remaining neutral. "The best a researcher can do is to be conscious of the ethical issues that pervade the research process and to examine his or her own philosophical orientation vis-à-vis these issues" (Merriam, 2009, p. 235).

Confidentiality was one of the largest concerns during the duration of the study. To ensure participant confidentiality, several precautions were taken. Interviews were audio recorded using a digital recorder (two digital recorders were used in case of technical difficulty or failure). All digital files were uploaded to a secure drive and transcribed professionally. Likewise, focus group interviews were video and audio recorded and transcribed from the audio files. The video files were used to finalize audio transcripts to ensure thoughts were properly attributed to the correct speaker. Some participants selected pseudonyms and others were assigned, and personally identifiable data was redacted in transcript files. Additional non-electronic files, such as demographic data and researcher notes, were stored in a locked closet. Audio recordings were not shared, and final transcripts were not shared beyond member checking.

Strategies for Quality

Trustworthiness in research involves ensuring "that there has been some rigor in carrying out the study" (Merriam, 2009). Criteria for establishing the trustworthiness of a

study include credibility, transferability, and dependability (Lincoln & Guba, 1985). To ensure credibility for this study, I used triangulation, member checks, and peer reviews. I used methods triangulation through the use of multiple methods to collect data. Member checks allowed me to be sure that I had not misinterpreted participant's ideas. For this process, participants were asked to review their interview transcripts prior to data analysis to ensure accuracy. Lastly, peer reviews involve soliciting the help to discuss emerging themes and interpretations. These critical conversations helped add assurance of themes. The last two criteria were ensured by the use of an audit trail throughout the entire research process to certify dependability and the use of thick rich description to certify transferability.

Pilot Study

In efforts to increase the trustworthiness of this study, I elected to complete a pilot phase. Pilots, or feasibility studies, are small trial runs of a larger research study (Fain, 2010). As Kim (2010) explains, the main benefit of conducting a pilot phase is to allow the researcher to edit and make improvements for the main study. Furthermore, novice researchers can benefit greatly from conducting a pilot study (Kim, 2010). Though less common in qualitative research, pilot studies allow researchers to evaluate the usefulness of research protocols (Kim, 2010). It was my expectation to use the time during the pilot phase to refine my protocols and also to increase my level of comfort working in the field. Lessons learned from the pilot phase helped prohibit any issues that could have otherwise obstructed my project. In this pilot phase, I sought to learn more about the ECHS environment and to verify the initial interview protocols. In the section that follows, details of the pilot study that took place are discussed including the location,

participants, and procedures.

Location and Participants

My research study was designed to explore the experiences of Black males within a STEM ECHS. I was interested in both academic and social experiences and how this environment contributes to their identity as scholars. To pilot this study, I used an alternate STEM ECHS, not the expected research site. This ECHS was fairly new and only had students in grades 9 and 10. Participants for the pilot study had to identify as Black and male.

Pilot Procedures

This pilot was designed to test the effectiveness of the focus group protocol. While this study used both focus groups and individual interviews, the protocol for the individual interviews could not be finalized until the focus group data was gathered and analyzed. To effectively initiate this pilot, the following steps took place:

Step 1: Developed a focus group protocol.

Step 2: Initiated contact with gatekeepers at the desired pilot site (counselor, principal) and asked for permission to come in for some preliminary research.

Step 3: Successfully defended the dissertation proposal, which served as permission to conduct the pilot.

Step 4: Worked with school gatekeepers to identify 3-5 students from 10th grade to conduct a focus group with.

Step 5: Secured necessary permissions to talk with students.

Step 6: Scheduled mutual dates and times to run the focus groups at the school.

Step 7: Conducted the focus group with three Black male students for about 45 minutes.

The focus group was expected to last about one hour, and lasted about 45 minutes. I followed the created protocol and audio recorded the discussion. At the conclusion of the focus group, student participants were given a chance to ask questions and were asked to provide feedback on how the protocol could be improved as well as feedback on how to improve the focus group environment. Students agreed the questions and interview environment were adequate. Once the focus groups were completed, data was transcribed and analyzed. Following, the draft of the individual interview protocol was edited. While individual interviews with the pilot student participants were desired, the permission to go to the research site was granted and the principal scheduled a meeting to start the process before I could go back to pilot site to test the individual protocol. It is important to note that no data gained from the pilot study was incorporated into the larger research study. At the conclusion of data collection from the pilot study, all protocols were edited accordingly before data collection began at the actual research site.

Researcher Positionality

Acknowledging who I am in relationship to what I am studying is important. I approached this topic as a previous high school teacher who was consistently troubled by the difficulties I noticed African American males in my schools were having. I watched too many of them drop out, get expelled or pushed out, and never make it to graduation. I was always a firm believer in and supported the necessity for students to leave high school prepared for college regardless of what their next step was going to be. This was important to me because I saw too Black males, including my younger brother, that decided they wanted to go to college only to realize they had not taken the necessary course work in the previous years to be able to apply. When I first heard about ECHS, I

gravitated towards their mission and goals and initially believed this was a way to ensure students would be "college and career ready." Yet, I questioned recruitment efforts and student participation given the lack of sports, small school sizes, the thematic focus and the extended high school timeline. This left me wanting to identify what it was about these schools or about the specific students, that they would make a conscious decision to forgo having a traditional high school experience.

Benefits to Participants and Stakeholders

This research study was designed to provide a better understanding of how the STEM ECHS environment impacts Black male's achievement, success and identity development. The benefit for the participants was their ability to share their stories and have their voices heard. This research adds to the field providing valuable information about the unique experiences of Black male students at ECHS as well as what traditional school settings could learn about effectively serving this population. This information is most valuable to school leadership, teachers, and teacher educators as they work to prepare the teaching workforce to be able to reach and teach all types of learners. Whether the experiences are positive, negative, or neutral, this information could be used to share with program leaders what elements of the program must be either sustained and/or replicated as well as those that may need to be addressed to ensure success for the overall Black male student population.

Summary

This chapter provided an overview of the research design and methods for data collection and data analysis. Using a case study method, this research used focus groups and individual interviews to answer three key questions about the experiences that Black

male students have at a STEM ECHS. Chapter three also included the ethical considerations, information about the initial pilot study, and researcher positionality. As detailed above, data analysis was done thematically through the entire case. In the following chapter, the findings from the research study are presented.

CHAPTER FOUR: FINDINGS

Overview

This chapter will report the major findings of the study. Organized into two sections, the first section provides context of each participant in the research study. These profiles were built from their demographic questionnaires as well as interaction with the participants through the data collection process. Table 4 includes and overview of each participant. Results from the satisfaction survey are presented here also. The second section presents the themes that emerged from their interviews and focus groups. Findings are organized by research question.

Part I. Participants

Marc

Marc is a super senior at Murphy STEM who is preparing to enter college in the fall. He plans to double major in Communications and Theatre. Marc moved to the research city about eight years ago, after his parents divorced. He lives with his mother and younger sister. This change in the family dynamic placed increased responsibility on Marc, and he shared that he had "become the adult in the household." Given numerous personal issues and stress endured at home, Marc defined the stress as having an impact on his school performance but details his adamancy in staying at Murphy and doing well. He explains that what he likes most about Murphy is the opportunities that the school provides. He describes those opportunities as "unique and exclusive." Marc's favorite

subject is English, he works part-time in retail and enjoys participating in local theater. When Marc graduates, he expects to have obtained about 20 college credits.

John

John is a super senior at Murphy STEM who is currently applying to start college in the fall. Working on his second college application, he is interested in majoring in English, and he particularly enjoys creative writing. John lives with his mom and stepdad. John is self-described as being a procrastinator and not having the "best" work habits as it relates to school. He shared that he did not originally want to come to Murphy because his friends were going elsewhere but he was forced into it by his mother. He does, however, acknowledge there is no regret regarding her making that decision for him because of the free college. John loves to draw and has a part-time job working at a local grocery store. He will graduate from Murphy STEM with about 56 college credits.

Alex

Alex is a super senior at Murphy STEM who is preparing to enter college in the fall. Alex will graduate from Murphy STEM in the spring as class valedictorian and is planning to major in Computer Science upon college entry. He has only applied to one school, the partner university, and explains that he has always wanted to attend that school. As a first-generation college student, Alex lives with his mother and brother. He explained that he likes to stay busy so when he is not doing school work and not working at his part-time job, he is spending time volunteering with a local program which works to enhance citizens' digital literacy. Alex's favorite subjects are math and computer programming. When he graduates from Murphy, he would have accumulated nearly 60 college credits.

Bryce

Bryce is a super senior at Murphy STEM who shared that he was interested in going to college, and he would have been a first-generation college student. Murphy STEM was most appealing to him because of the opportunity to get a "jump start" on college, which is why he elected to stay for his fifth year. Bryce recently changed his mind about college and has decided to join the military (Air Force). His favorite subject is science.

George

George is a senior excited about graduating in the spring. He has applied to over 20 colleges and universities including Harvard, Fordham, Duke and Notre Dame and plans to major in neuroscience to eventually become a doctor. Given that some private schools will only allow no more than 12 college credits to be transferred over, and he has already acquired more than that (almost 18), staying for the fifth year does not fit his college plans. George shared that he grew up with a single mother and as an only child before his mom remarried. He moved to the United States from Kenya when he was a young child and explained that his transition was "rough" because he was shy and did not speak English. His parents did not go to a four-year college, but they have some vocational school training. George enjoys all types of science courses and was involved in the robotics club at Murphy STEM. He shared that he used to play violin and piano as well as soccer and rugby. His favorite aspect about Murphy STEM are the small class sizes.

Jamelson

Jamelson is a senior at Murphy STEM whose favorite subject is biology. He lives with his mother and father and is a first-generation college student who is active in both the chess and anime clubs. He shares that having the opportunity to network with businesses is what he likes most about Murphy STEM. Jamelson explained that he loves to draw and create artwork. He hopes to apply that passion in college as he plans to major in business management with a minor in graphic design. Jamelson plans to stay at Murphy for the fifth year.

David

David is a senior at Murphy STEM and is a first generation college student. He moved with his mom, dad and younger sister to the United States in 2008 from a small country in West Africa and has lived in the area of the school since then. He is a member of the Green Club and loves to play soccer. When asked what he liked most about the school he said it is the opportunity for college experiences. His favorite subject is History, and he explains that he enjoys working with his hands and finding ways to improve products. He wishes to attend college and major in Material Engineering with hopes of eventually becoming an inventor. David has acquired 17 college credits and plans to stay at Murphy STEM for the fifth year of the program.

Jay

Jay is a junior at Murphy STEM whose favorite subject is math. Jay plays football for the partner school and is interested in attending Texas A&M University to major in Aerospace Engineering. Jay lives with his mother and father. He shared that the thing he likes most about attending Murphy STEM is having the opportunity to take college

classes. As a junior, Jay was completing his first college course, Introduction to College Studies. He expects to stay at Murphy STEM through the fifth year of the program to obtain more free college credits.

Table 4: Participant profiles

Pseudonym	Grade	Age	Self-Disclosed GPA	Postsecondary Aspiration
Marc	13	18	2.5	Attend college: Double major in Communications (media) & Theatre
John	13	18	3.5	Attend college: Major in English
Alex	13	18	4.0	Attend college: Major in Computer Science
Bryce	13	18	2.5	Enlist in the Air Force: Study Information Technology
George	12	17	3.4	Attend college: Major in Neuroscience then enter medical school
Jamelson	12	18	-	Attend college: Major in Business Management/Graphic Design Minor
David	12	17	-	Attend college: Major in Material Engineering
Jay	11	16	2.6	Attend college: Major in Aerospace Engineering

Satisfaction Survey Results

As stated in the previous chapter, students completed a satisfaction survey that was included in their demographic questionnaire. This was designed to help facilitate

early discussion during the interviews. This survey gauged student's satisfaction with the ECHS program and its design. The five questions that students were asked are listed below. Participants responded by choosing from five options on a Likert scale ranging from strongly agree (5) to strongly disagree (1).

From the survey prompt, "I have had a pleasurable experience here at Murphy STEM ECHS," of the eight (8) participants, six (6) participants (75%) strongly agreed that their experience at Murphy has been pleasurable, and two (2) other respondents (25%) agreed that their experience at Murphy has been pleasurable. Overall, as shown in Figure 5, it can be concluded that all of the respondents (100%) have had a pleasurable experience as a student at Murphy STEM.

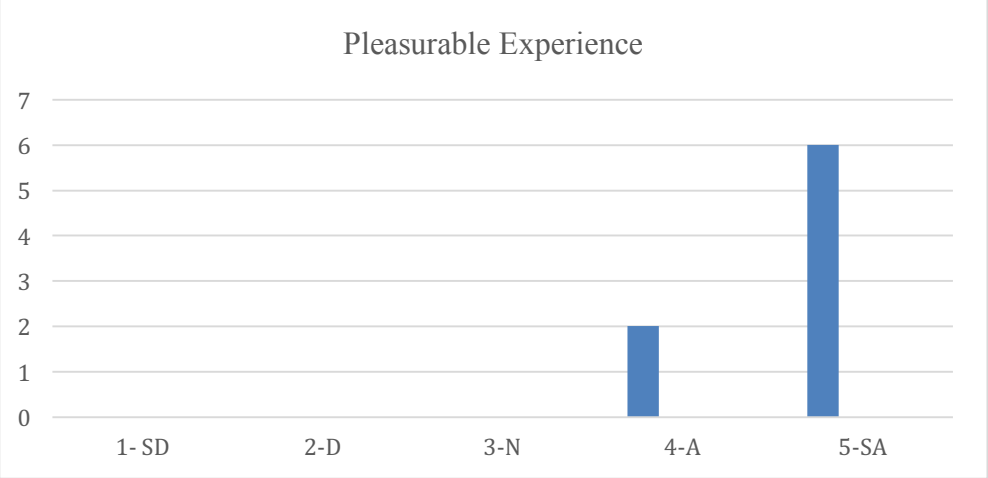

Figure 5: Pleasurable experience

Marc agreed that he had a pleasurable experience but ranked that agreement at a four particularly because during his time at Murphy, he dealt with a lot of personal issues outside of school. He explains:

> It was really hard to focus on school all the time, and sometimes my personal issues from outside of school bled into school or vice versa. It made it difficult for

me to continue to do work and be serious about the work, or to be taken seriously. It really tested my patience.

From the survey prompt, "Murphy STEM ECHS has helped me think about and prepare for college/career," of the eight (8) participants, seven (7) participants (87.5%) strongly agreed that Murphy has helped them think about and prepare for college and careers. One (1) respondent (12.5%) agreed Murphy has helped them think about and prepare for college and careers. Overall, as shown in Figure 6, it can be concluded that all of the respondents (100%) agree that Murphy has helped them think about and prepare for college and careers.

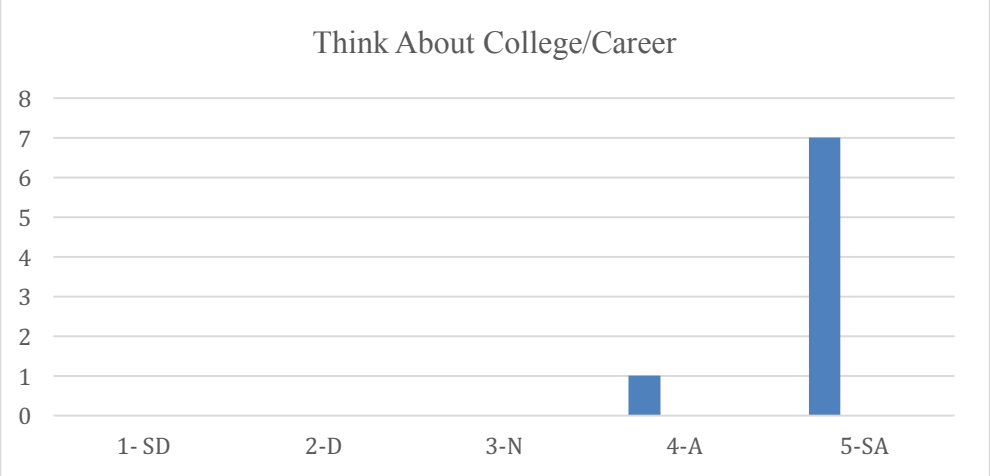

Figure 6: Think about college/career

Strongly agreeing with this statement, Alex highlighted Murphy's ability to help him think more about college specifically stating:

In terms of college preparation, our high school classes teach us about the value of the engineering process and how to apply our knowledge in creative/real-world forms in the form of project-based learning, which is used in college classes as

well. Taking classes on campus also prepares us for the actual college setting, allowing us to experience the structures and difficulties of college courses.

From the survey prompt, "The teachers and staff here at Murphy STEM ECHS genuinely care about us," of the eight (8) participants, seven (7) participants (87.5%) strongly agreed that the teachers and staff at Murphy genuinely care for students. One (1) respondent (12.5%) agreed the teachers and staff at Murphy genuinely care for students. Overall, as shown in Figure 7, it can be concluded that all of the respondents (100%) agree that the teachers and staff at Murphy genuinely care for students.

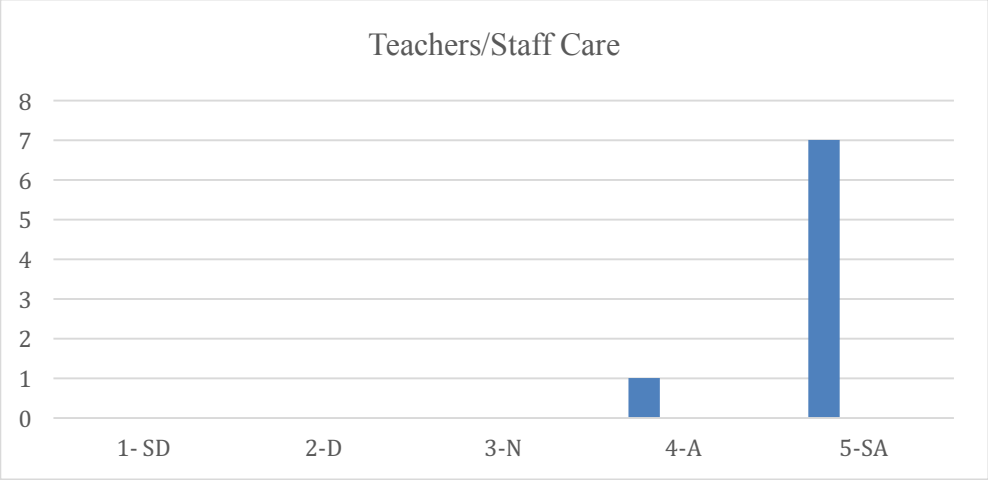

Figure 7: Teachers/Staff care

George explains:

The teachers genuinely know and care, so they're more interested in helping you out whether it's in school… I've gotten advice, and I know of people that have got advice from teachers on stuff not related to school as well.

Marc provided an analogy to support his believe that the teachers and staff care for students:

It's like they [teachers] really care about your day to day. Our relationship with our

> teachers tend to differ from our relationship with our advisors. I think a weird way that I think about it sometimes, or I've thought about it before, was like [staff at the partner university] kind of reminds me of the dad side of the family and [Murphy] was like the mom side of the family. They're essentially nurturing and they're there for you on the daily.

From the survey prompt, "I feel connected to the school community here at Murphy STEM ECHS," of the eight (8) participants, five (5) participants (62.5%) strongly agreed that they felt connected to the school community at Murphy. Two (2) respondents (25%) agreed they felt connected to the school community at Murphy, and one (1) participant (12.5%) was neutral to the prompt, neither agreeing nor disagreeing. Overall, as shown in Figure 8, it can be concluded that majority of the participants (87.5%) feel connected to the school community at Murphy.

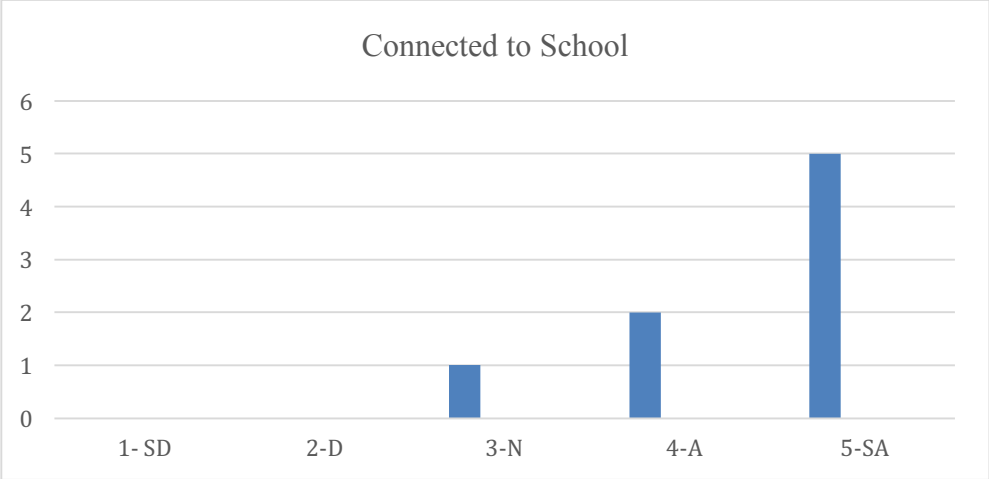

Figure 8: Connected to school

John slightly agreed that he felt connected to the community at Murphy. He explained that the community connection was strong but elaborates the justification for his ranking of a four:

> … I guess it's much less so now just because I'm never actually at the building where the high school is set up. I'm always over here… I guess the fact that since we don't really get to see much of the staff much anymore, for most of us now we hardly see each other because we don't have class together. I guess that community can actually kind of faded.

As super senior like John, Alex explained his feeling of the community connection and his ranking of a five:

> Despite not going to the school as much anymore, due to being a super senior, I still see many of my friends from the school in lower grades. I see them on campus and occasionally at the school's building when I do go there. I am frequently invited by my Principal and other staff members to come back to view/give presentations, attend school dances/gatherings, and join student-run clubs. While many of these are entirely optional, I still feel like a part of [Murphy] just because of the interactions and invitations I get to school-related activities.

From the survey prompt, "I would recommend other students to come to Murphy STEM," of the eight (8) participants, six (6) participants (75%) strongly agreed that they would recommend other students to come to Murphy. Two (2) respondents (25%) agreed they would recommend other students come to Murphy STEM. Overall, as shown in Figure 9, it can be concluded that all of the respondents (100%) agree that they would recommend other students come to Murphy STEM.

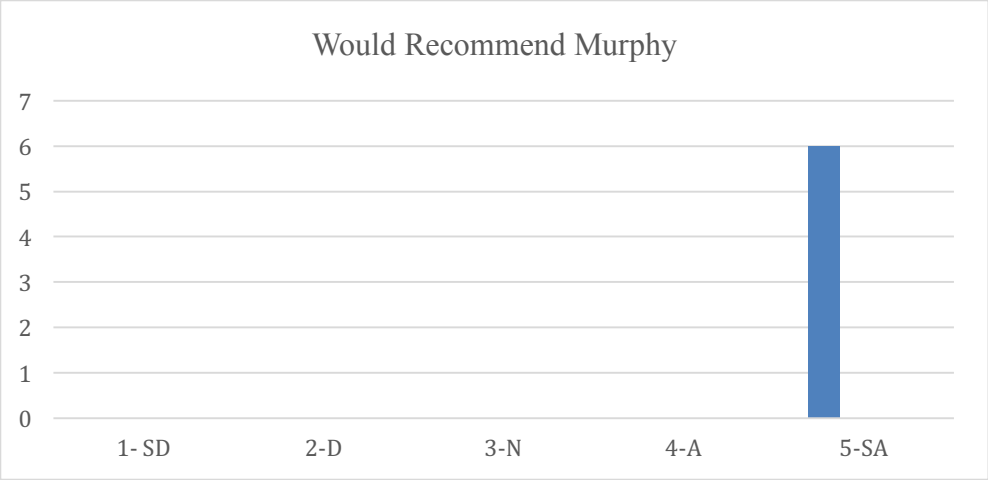

Figure 9: Would recommend Murphy

Jamelson slightly agreed with the statement that he would recommend other students to attend Murphy. He explains:

> The reason I put a four is because I can't recommend everybody to come here. Some people just wouldn't, it just wouldn't be the place for them. I'm not saying that they couldn't do the work, but it's just not for them. It's definitely something that they would have to choose themselves. I wouldn't want to send anybody here, and then they get here and they're miserable. That's something I would hate to put on somebody. They're here, and now they have to stay here, because their parents want them to stay here. I'm more or less, if you come here, you come here because you want to. You have goals you want to achieve.

Alex agreed that he would recommend students to come to Murphy saying:

> I would have to recommend it over base school because the population is a lot smaller and it's less, I don't want to say violent, but perhaps more cultured, than the base high school, because most of the people who apply had that good intention of learning and getting a higher education, as opposed to a base school. There's a

> significant amount of people who don't necessarily care about stuff like that, so they might act up and stuff. The environment is definitely a good proponent that I like. Also, the teachers, they're really nice to you. Not just nice, but they know you. It's such a small class size that they have no choice but to get to know you. They get to analyze your strengths and weaknesses, help you find job opportunities and search internship opportunities based on what you like, not just general ones. Also, the free college, getting college experience is something you just really can't beat, in most cases.

Results from this satisfaction survey preface the themes embedded in the research. These questions served as points of conversation during the interviews and shed some light on the student experiences and thoughts and feelings about being in this particular educational space.

Part II. Themes

This second section of chapter four discusses the themes that emerged from the data. Interview questions (Appendices E and F) were designed to understand more about student experiences at the ECHS, how they have constructed their identity as a result of attending the ECHS, their thoughts about the school's STEM thematic focus, and designed to get at the essences of the components of the theoretical framework. As described in chapter three, thematic analysis was used to create themes to represent the essence of students experiences and identity construction. Data analysis led to the organization of nine superordinate themes, three per research question as shown in Table 5.

Table 5: Research question and thematic alignment

Research Question	Theme
How do Black males describe their STEM early college high school experiences?	• Description of Learning Environment: "It's like a family" • Benefits of Learning Environment: "That's the point of going to an early college " • Challenges of Learning Environment: "Murphy is your life"
How do Black males construct their identities (academic and non-academic aspects) at a STEM early college high school?	• A Look in the Mirror: "Murphy has changed me" • A Look out the Window: "Coming here made me realize this is exactly what I want to do" • A Look through the Magnifying Glass: “What it means in society”
How does a STEM early college high school impact Black males’ perceptions of STEM subjects and STEM careers?	• STEM Image: "The Way of the Future" • Studying STEM: “Learned what it is” • STEM Nuances: “It’s important to have diversity in every field”

The focus group and interview protocols were organized by research question which helped guide the conversation in a particular order. This strategy supported the data analysis process because as codes were identified and collapsed by commonality, they were naturally organized by research question. All of the themes are named and have subheadings that are direct student quotes. These direct quotes are from interviews and holistically captured a majority, if not all of the student experiences. As can be found in Appendix H, a codebook was maintained for fidelity. The concept maps that are included helped with the organization of data and provide a visual representation of

findings. In what follows, the themes are presented by the concept map first and are then explained in rich detail.

Research Question One

The first research question asked: how do Black males describe their STEM early college high school experiences? Three superordinate themes emerged from the data capturing students' description of their learning environment and their perceived benefits and challenges, as shown in Figure 10.

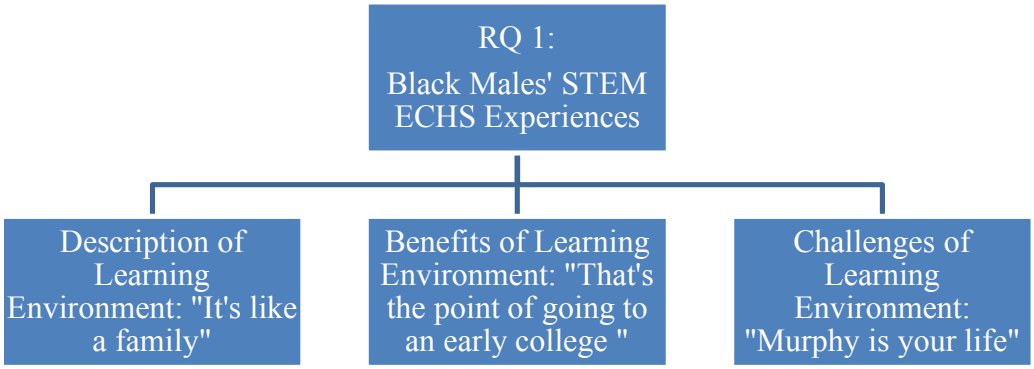

Figure 10: Themes for research question one

Description of the Learning Environment: "It's like a family." The theme of family was immediately evident across the data. In the focus groups and the individual interviews when students were asked to describe the school, share their likes and dislikes, and their existing relationships with peers, faculty and administration, Jamelson's response captured the core of students' thoughts and feelings:

> …You can go talk to your teachers or to your friends. It's more or less like a family than a STEM school. Although we do learn, it's not like we just play all

> day but we do learn and what not, but it's more togetherness than I would probably expect from a regular high school.

This theme was evident through language students used such as "bond," "teachers care," and "small community." The relationships students were able to build appear to play a major role in students' satisfaction and overall experiences with the program. These integral relationships were formed with peers and with teachers. Alex explained: "for the most part we're all pretty supportive of each other. Like what they said in the other focus group. We're kind of like a small family, but like little chunks." The "little chunks" Alex referenced are the individual grades or cohorts that entered the school together. Jamelson expounds on this notion saying: "It's more like each grade level has a peer group they can consider family or like very close friends. Either you feel like you're very close friends or you're more close to family with some of your peers."

The relationships with teachers were similarly strong as Marc indicates:

> It's like a big family, and I love the small feel of it, it's not huge. I agree with John, most of the teachers that were with us both freshman year and sophomore year, they stayed with us, continued onto the next year with us. We kept growing that relationship, that family bond.

John agreed stating,

> Our teachers, they were, for the most part, pretty down to earth with us. We were all pretty respectful to each other, and they had a good understanding of our strengths and weaknesses as individual students, which I really liked about them.

When asked if students had a good relationship with the school administrator, they all responded affirmatively. The current principal is not the school's founding principal but

the students appeared to be quite fond of him. Marc stated, “I think when he came in, he was really adamant about getting a relationship with the older students just as much as the younger students.”

An added element to students feeling like their school was an extension of their family was their positive description of the learning environment, particularly it being “drama free.” Alex expounded:

> I'd say the social environment is also a big plus here at this school. I kind of consider our school, even though we're a public school, it's kind of like a public private school because you still have to apply to get in. We really don't have bad kids like no one gets into fights, there's not any big scandals, relatively drama-free, no fight school.

John echoed those words describing the school environment saying, “for the most part everybody knew each other. Everybody was familiar with each other. There wasn't really a whole lot of drama going on campus. All in all, it's pretty nice.” While each of the students described the family structure differently, the familial sentiment, both with peers and staff, was the same. While this family feel is an obvious advantage to the small ECHS environment, students were vocal about specific benefits they felt they gained which they saw as inherent in the structure of the schooling model. Those thoughts are organized in the second theme, Benefits of the Learning Environment: “That’s the point of going to an early college.”

Benefits of the Learning Environment: “That’s the point of going to an early college.” In addition to this familial feeling, students identified a number of additional benefits that they felt enhanced their educational experience. As students conversed about

their experiences, they enthusiastically raved about what they saw as benefits of attending an ECHS. These benefits, according to participants, include free college and preparation for college, careers, and the real world. Alex's statement, while specific to the college savings, "free college is the number one point of going to an early college," encompasses these views completely.

Free College. As it relates to the college savings, the participants not only saw this from a financial standpoint but also and as a time saving. In the focus group John stated,

> I like the free college. Since I'm already taking it here, I've knocked out a lot of my gen-ed credits, so when I actually start going to college and seeking my degree, I can just jump right into it instead of having to waste time taking calculus.

In a separate conversation, John mentioned his family's decision for him to come to the ECHS and said "my mom does not want to pay that much money for me to go to college. I don't want her to do that either." David also mentions the cost savings, but he also identifies being able to take college classes as "the most important thing." He even branded that as a source of motivation saying,

> That's the one thing that I had to look for whenever I think about quitting or not wanting to go. I think about the money that it saves my parents, and going to take college class at this time of my life before I actually get to college, I think that's the most benefit that I get out of it, so that's the good thing about it that I like.

Alex discussed how the free college was his reason for staying for the fifth year saying, "I know most if not all of my credits are going to transfer, so it just makes sense for me to stay this fifth year and go ahead ride out the free college ride while I can." Later

in the conversation, Alex shared that his parents were also captivated by the notion of free college. He said, “free college is a pretty good aspect that my parents jumped on pretty easily” and that free college is “something you just can’t beat.” George’s words resonate with John’s as he talks about the dual savings declaring, “it saves my family money and saves me time at the end of the day.” Other students said that they were staying for the fifth year for the free college with David stating, “I'm getting these free college classes, and I have to make the most of it.” The acquisition of free college credit also came with overall preparation for their postsecondary plans as shown below in the second component of this larger theme.

College, Career, and Real World Preparation. College and career readiness is the crux of the ECHS model. The participants in this research study were well aware of this component and distinctly shared that the level of preparation they were receiving was a principal benefit of attending Murphy. John explained that he felt “the school taught me a lot about what the real world is really like.” Of the students, Marc was able to vocalize this thought at a few different points in the conversation saying in the focus group:

> We had no choice but to work together and learn what your strengths were in a group, like what you're bringing to the group, what people are not bringing to the group in order to be successful, which helps you strategize, okay, if I were to get a job, this is what I can do. If I was an intern, this is what I can do, this is what I can't do. It really prepares you to be career-minded.

He echoed this statement with a comparison of the ECHS and a traditional high school:

> What they learn in high school hasn't prepared them at all for what they want to do in their careers. They still don't know what they want to study in college.

> Everything they learned in high school, they're not going to use, but what we learned in [Murphy] we're definitely going to use at some point.

John shared that what he learned at Murphy is “what's going to be needed for going out in the real world. I've learned a lot about just what it takes to actually be a college student.” In a similar fashion, Alex explained that he particularly felt prepared for college because he was immersed in the college environment already. He explained:

> I don't think I would be as mature or ready for college classes as I am right now coming to college because I've had experience in the classroom. I know how they work. I notice a lot of freshmen, they're like "Oh this is so hard. I'm not used to this." I'm kind of sitting there thinking like "I've been doing this for like three years, so I know how it goes.”

Marc created a connection between the relationships they were able to create in the ECHS and how they translate into college and career readiness. In his example, he explained that the support the students gave to each other is directly connected to a needed skill of being able to work together with others. He stated:

> One person might be really skilled in a math area that you are not, or you're really skilled in an English area where they are not, so you use your skills together to help each other understand and low-key help each other do each other's work. That's a part of real world work.

Marc continued labeling the learning environment as “work-centric” and “career-centric.” He provided a hypothetical contrast between ECHS and traditional high schools as it relates to college and career readiness noting,

> If you want to get an internship at a big business that students have worked at over the past summer, it would be a lot tougher if you were at another high school. You're not going to be taken that seriously because those businesses know that you haven't been taught the same skills that [Murphy] students have. The work-centric, career-centric environment that they have created at [Murphy] is not the same at a regular high school.

David's thoughts surrounded the idea of early exposure to college, essentially saying that you get to practice before time. He says,

> Right now, if I hadn't gotten out of a regular high school and just got into college, I would be better off to have certain experiences like I am having right now. Right now it's the time to learn from your mistakes. When it's appropriate to get into college, you can have those experiences and not mess up. Here, you can mess up now and fix it later. It's not that I'm saying that I want to mess up, but I'm just saying that you get that opportunity to know what you should do before you get there.

In addition to free college and preparation, students listed additional benefits which aided their experiences. These opportunities came largely from the involvement of their business advisory board and their direct connection to the partner university. In Jamelson's response to identifying the pros and cons of the school, he states:

> Yeah, I think one of the other biggest benefits, as far as from my standpoint, it's not so much what you know, it's who you know. When you come to this school you get a lot of chances to meet and talk with our business advisory board, and that has a lot of like big businesses and people that have a say in the world's

> economy and people that do things that are important, and that involve making money, and that are outside of the school environment. So when you get to know people like that you have these network options and these people that can offer you a job and already have an eye on you to see if they want to hire you later on in life. So that's pretty important to me.

Marc shared:

> One thing would be I got really involved in the university theater. I wouldn't have been able to do that as a regular high school student because you can only participate if you are a student. Because we are deemed as non-degree seeking students, we're able to have a lot of the same, or most of the same privileges as any other student would, so I was able to participate in theater and take classes here. Because of those classes, I got to find out exactly what I was interested in.

The certainty participants had in gaining college, career and real world preparation evolved as a thematic subcomponent of the overall benefits students felt they were receiving. Yet with those benefits, on the converse, there were challenges as highlighted in the following subcomponent, Challenges of the Learning Environment: "Murphy is your life."

Challenges of the Learning Environment: "Murphy is your life." Like a coin, there are two sides and in this case, the participants' experiences are no different. Students were equally vocal about both the pros and the cons of attending the ECHS. These challenges they faced manifested largely from the students being a part of a start-up program, the sacrifices they had to make in choosing the ECHS, and because of the rigid structure of the program.

In the words of the super senior students, they considered themselves to be "guinea pigs." They spoke about challenges they endured as being the first graduating class of the school. Marc initiated the use of the analogy saying "they create their own curriculum at this school, and I'm part of the "guinea pig" class, so that means things change quickly over short periods time. What we did is completely different than what they do now." Alex explains more:

> I've noticed a lot of things; they would try out new things. Sometimes they wouldn't work. The thing about that is it would help the school prepare for the next grade like they would know what to do to make it work. For example, we did a couple projects, one of them we did like a giant science project in groups, and then at the end of the year, we would present. It really didn't work out well because it wasn't structured that well. Then the next grade did it, and it worked well, and then I think they eventually scraped it and started doing something else. My point is as guinea pigs, we sometimes took the test, like the new things, I've noticed the lower grades, they're doing either something like that better, or they're doing something even completely different.

Marc connected the "guinea pig" attribute to what he noticed with the teachers at the school:

> Most of them left. I think we all can agree, they left because they weren't getting what they wanted out of the program as teachers, as faculty. Maybe their expectations of what they wanted just weren't being met. Again, I think that goes with they were guinea pigs just as much as we were guinea pigs. They were

> basically, I know freshman year and sophomore year, they were just making up curriculum every day. Making stuff up as they go, the stuff didn't even exist yet.

Though a senior, Jamelson reflected on this same thought and the challenge of being a part of a new school. Though he affirms the challenge as since been solved, he noted it was originally a trial:

> It's not a problem now but it was once a problem, I think we solved that through years of generations of more students. It's probably the organization of classes and the way the classes were structured, but I think it was because we were such a new school and we'd get new teachers that people just had to figure out how they wanted to structure class and what things work and what things didn't.

That "guinea pig" feeling extended to the innate rigid structure of the school. Alex mentioned,

> In our freshman year, they didn't allow us to play sports at all. Eventually, a couple of us that were really interested in sports protested that, so then they got an agreement with [the partner high school] where we could play sports with them, and we can still do clubs with [the partner high school], too. That was a big sacrifice, at first coming and not being able to do sports or have the same clubs you would in normal high school. Like I said, we're the guinea pigs, so it's hard to change that.

Sports is not a part of the inherent structure of ECHS, and George, Jamelson, and Jay all noted the sports sacrifice. George explained:

> I stopped a lot of the extracurricular stuff I was doing. I was doing the orchestra, I had to stop that, mainly because they didn't have an orchestra here and the amount

> of time it would take for me to be with the travel symphony it was too much. I also stopped playing sports until like, what was it, last year or the year before?

Jay shared:

> Basically I had the same lifestyle, playing sports, because of the time... Before I came to school I was playing basketball for so many years, and then I had to stop, and also football. Then, had to give up one so when it came tenth grade after I knew the workload, I just played football.

Jamelson talked about his previous participation in sports but given workload and rigor, he made a decision to sacrifice that:

> I was playing sports, and I was avid in them. I was hoping I could go to high school and do those things and get into a bigger team and be a part of a bigger team and a more funded type of team. I was hoping that I could do that, but when I came here I was like, I probably shouldn't put more into sports. I mean I was always a great student, and I always made good grades, but that was with regular classes, and I knew coming here it was going to have all honors classes. We just took AP US History, and that was, that was something big. I just had to let go of something.

While other students identified extracurricular sacrifice, John explained that his sacrifice was social:

> I definitely had to sacrifice all these people that I knew in middle school because a lot of them were actually going to go to that high school that I was originally supposed to go to. That ended up not working out because I went here.

Friends and relationships were a similar sacrifice for Alex:

> The biggest sacrifice was, losing my friends, not losing all my friends but not being able to see the same people every day because my middle school and my high school are down the street from each other. So if I went to my base high school, I'd be seeing the exact same people I saw all three years of middle school.

Further connected to the rigid school structure, students spoke about the workload difficulty at their school. Alex recounted:

> I remember at one of the orientations for the school, they stressed the three R's [rigor, relevance, relationships] …They really stressed how it was going to be more difficult than the standard school, so that's what I expected. It's going to be harder; they'll grade more strictly. That's kind of what it was.

Students were extremely vocal about this exact point throughout the interviews. Bryce added,

> I was going to middle school, you go to school, breathe, get an A. Then here it's like you've got to do, especially it being an early college, you have to do breathing 10 times more to get an A.

Marc agreed and expounded:

> In middle school, again, I didn't have to try very hard to pass. You literally just write anything, and the teachers will love it. If you put in the effort, or any effort, you're going to get an A. It's not hard to pass. Then coming straight from middle school into this program, we put in a lot, a lot of effort. We put in, I would say 10 times the effort as the freshman do now. The projects that we did, the assignments we did, the expectations that they had of us were a lot higher. The stakes were a lot higher. They had a lot more to lose with us than they do now.

John concurred,

> Like they said, for me, I also just breezed through school for before this. Then, coming here, it was a real shock for me to find out I actually had to do work, which I never really had to do before. Because of that, because it took me a little while to actually get in the habit of it, my GPA kind of struggled at first. It was nothing bad, it just wasn't where it should have been.

In Jamelson's words, he exclaimed, "the coursework comes on heavy" and described it as an adjustment saying:

> It might be a little frightening if you're not used to it. If you come in and don't know what's going on, it's definitely going to take some getting adjusted to. It's something that you have to build up to, honestly. Once you get past freshman year, everything isn't as bad as it was when you first began.

Given the perceived level of difficulty of the school work, Marc and Jay discussed the internal battles they faced in deciding whether or not to actually endure. Jay stated,

> It was these teachers, my Humanities teacher, World History, English, and it was just like they was just throwing work at us. I was just like, "That's just too much at this moment. We already got a project and you giving us more."

Marc specifically described the workload challenge saying it could be difficult to "keep the faith":

> It was really easy to be like you know what, forget this. I'm not about to do all this work. It's really easy to be like I'm not going to write this paper, I'm not going to do this project, than to actually put in the time and effort.

The level of rigor and amount of work students had to do significantly impacted their free time. Students identified this as a sacrifice. Marc termed the school's effect on free time as "having no life":

> There is no social life at [Murphy]. [Murphy] is your life and once you come… Once you become a [Murphy] student, you are not going to have a social life outside of [Murphy]. There is no life outside of school.

Alex explained, "since it's more work, you have to spend more time doing homework and studying." David described himself as having to learn the skill of time management in order to be successful asserting "you have to manage time with the amount of work you have." As students worked to adjust to the workload, Marc spoke about it impacting other responsibilities:

> The responsibilities I had at home, I couldn't do anymore because I had no time from all the school work that we had, especially in the first beginning years. Changing over to getting more adjusted to what the [Murphy] life actually was in the first year. Parents were definitely almost just as stressed as we were because I remember having conversations with other students like my mom's upset because I can't do my chores, and I'm like I don't have time, I've got to study. I've got to do this project.

Jay mentioned that going to this school and adjusting to its workload impacted some of his friendships with old friends from his middle school stating "our times wasn't the same. I was busy with school, workload was a lot, and we just stopped communicating." Lastly, Jamelson articulated an assumption that his peers would suggest that workload is a challenge they face within the school but spun it in a positive manner saying,

> I would say we need to keep workload and whatnot because it's preparation. It might not be as obvious when you first start taking college courses, but when you start getting into college courses and you're taking more than one college course, and you have to keep up with your high school course, it becomes a lot of work, and it becomes a bombardment of like stuff that you have to complete on time. You have deadlines.

A final challenge and significant point, though addressed only by the super seniors in the focus group, was the absence of Black teachers at the school. Marc initiated the thought saying:

> Junior year, it was brought up by our biology teacher, he's also White if that's important, but he brought up that there are not a lot of Black teachers at our school; at early colleges in general. A part of people of color getting the opportunities in these STEM schools, at early colleges is getting that support from Black teachers who can understand what they are going through, understand culturally, I think we only had two Black teachers and one of them left.

He identified one of those two Black teachers as having a significant impact saying, "I don't know what our experience would have been like without [teacher]. Like she had a great impact on everybody." In his individual interview, Alex revisited the point of not having a lot of Black teachers at Murphy STEM:

> I think that's an important point that's been brought up because if you have someone who comes from a similar socioeconomic or race as you, then I feel you can relate to them more, because they might know what kind of struggles you go through or what you believe in, for example. It is true. Most of those teachers at

> STEM are White. There are two Black teachers, [teacher name], who left, and [teacher name], who's there but I don't know him that well. We have a couple of Black admins like [admin name]. Definitely having someone of a similar race as you, you can relate to them more, and I feel like subconsciously there is a greater attraction to them. You'll want to get close to them, just because you can identify with them more. Having that close relationship with a teacher is kind of different than having a relationship with a teacher who is of a completely different class and race than you.

The conversations with students proved to be very informative on their experiences at the ECHS including those aspects they deemed as challenges within the learning environment.

Research Question Two

Research question two was: how do Black males construct their identities (both academic and non-academic aspects) at a STEM early college high school? Discussions with the students and the data revealed students' thoughts can be best explained and understood metaphorically. Students talked in a manner where they were "looking" either at themselves (mirror), to the future at their success (window), and at the pressures of the larger society (magnifying glass). Overall, their conversation was very self-reflective which led to the "looking" metaphor. This metaphor was selected because it best encapsulates the commonality of how they described themselves. The metaphor helped create commonality within the uniqueness of each individual participant. Across this thematic discussion, the themes and detail alternates between academic and nonacademic

factors. Their self-assessments and observations are best explained in the four themes found in Figure 11.

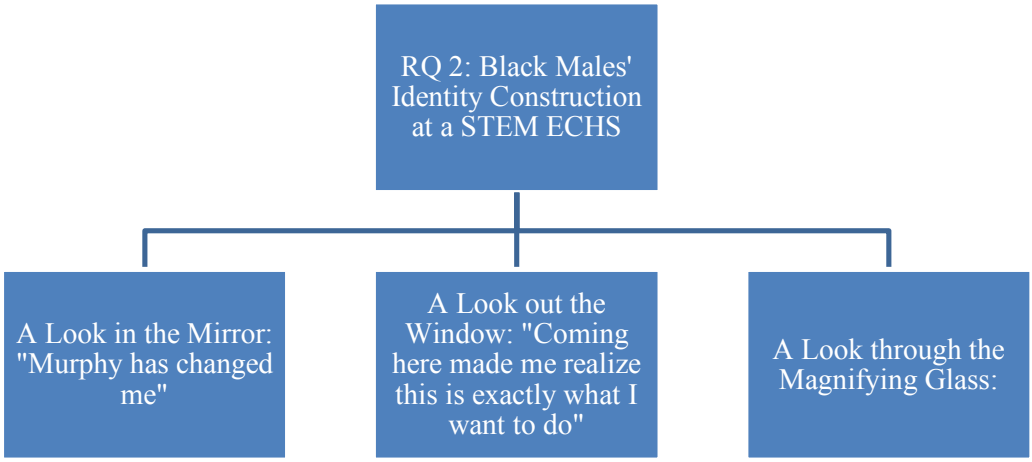

Figure 11: Themes for research question two

A Look in the Mirror: "Murphy has changed me." During the focus groups and individual interviews, students spent time self-reflecting and discussing how the school impacted who they are. When asked, "how have you grown or how have you changed as a result of attending this school?" The students spent time discussing aspects of themselves they believed had flourished more. John explained his growth and development from a social standpoint, saying:

> I would say I'm a lot more open to talk to people now. Starting with freshman year, I kind of just kept myself most of the time. I didn't really talk to anyone unless I had to. Since then, I've kind of just opened up a bit more. I'm a lot more easygoing than I used to be. A lot more willing to talk to people.

Marc stated, "I've just grown so much as a person over the past five years that I've completely transformed from freshman year to now." His words highlight the name of

this theme as his explanation revealed that his personal development and boost in overall confidence flowed over into other areas. He says,

> [Murphy] has completely changed my life both personally and because if [Murphy] hadn't changed my life personally it wouldn't have, it absolutely wouldn't have happened academically, or career wise and for me to even have the idea that I can have a future without [Murphy], it wouldn't have even happened if I hadn't been able to have the opportunity to build confidence while I was in [Murphy].

Similarly, George described an increase in confidence as a result of being a student at the school. He connected that to a personal side of his life explaining,

> As a performer I've learned to not really fidget on stage, I'm not really afraid of doing things in front of people now. So I'm more confident in that aspect of things. I'm definitely a better public speaker than I would have been if I didn't go here.

George extended this conversation and explained there was an element of growing up and becoming mature that took place for students at Murphy, "there was also the maturity aspect of it where I'm kind of forced to grow up, forced to become more mature.' Alex's comment echoes George as he describes the setting as mature and how that impacts him:

> I feel like it's a much more mature setting than being in a classroom at a normal high school because most people are pretty well behaved at [the college]. Being around the college students helps you want to be more mature.

Lastly, Jamelson clarified that he was able to figure himself out and given space to explore:

> I think this school has shown me who I am as a person and what I want to be. I think that's what high school is, basically your teenage years is figuring out who you are and who you want to be. I think that's really important to be able to come to a place like this and figure that out pretty quickly.

For these students, the ECHS provided a space for them to grow and develop various social and personal aspects of themselves or their identities.

Beyond the student chronicles of social and personal development, there were also factors that related directly to how they see themselves as students and how much time they invest in being academically successful. Given the use of the framework to influence the protocol questions, students were asked to define what they thought it meant to be a scholar and whether or not they would classify themselves as a scholar. Overwhelmingly, students explained that a scholar is a person that works hard in school, scholars set goals and meets them, scholars are thinkers and questioners, and scholars excel in their field. Based on their personal definitions, five of the seven students said they would self-identify as a scholar. Alex explained why he saw himself as a scholar saying:

> For one, I try pretty hard in school whenever I get an assignment or a project I usually put my all into it. I do have good grades too. That's sort of a superficial component to being a scholar. I feel like I put my talents to use whenever we have a school assignment or project to work on.

While Alex noted grades as “a superficial component,” David connected his identification specifically to his academic performance:

> A scholar would be in my opinion somebody that takes school materials and all that seriously. A scholar would be somebody that excels in school or tries to excel at least. One of my teachers, he likes the people that actually put effort in doing things. I think that's great because I don't consider myself a really smart guy, but because I try it makes me feel like I'm smart. When I get those good grades, I feel better about myself. In a way I can describe myself as a scholar person.

Marc addressed the relationship between a thinker and being a scholar:

> Being an analytical person, I'm always thinking about something. I'm always learning as well, so whatever I'm learning about, I always think about, "How does that reflect on me? How does it reflect on the real world? How does that reflect on others? How are we all affected?" I was thinking about the connections between those things… That's something I'm able to do really easily, so I think that's pretty scholarly, to use my education in the real world. That's what I think being scholarly is, and I definitely think I do that all the time.

Of the remaining two students, George was hesitant to say he felt he was a scholar, while John said no. George explained "I guess so… because I've always been told that… [by] mainly teachers in the past, friends, people just walking around the school observing." John's choice to not identify as a scholar was based on an assessment of himself:

> For the most part, I know the material, but my work habits aren't the best just because I procrastinate a lot. That's not really something I would expect from a scholar. I look at my older sister and whenever she, even when she's home she's always working at least for a couple of hours each day.

Beyond self-identification as a scholar, student participants also deliberated why it was important for them to be successful in academic spaces. Alex justified the need to be academically successful stating:

> It would lead to a lot of great opportunities in the future whether it's like a business opportunity or mainly educational, like getting into college. Having good grades and stuff, that's definitely like a really good component to look at when you apply for college or even in business. Out of college, if you're at the top of your class or have a high GPA, they're going to look at stuff like that. Or if they see that you graduated from college with decent grades, they're going to look at stuff like that. It'll give you a higher chance of getting a job in most fields.

As articulated by Alex, their desire for academic success as an element of their identity construction was also evident in their calculation of the amount of time they invest in studying and methods used. Marc said on average he probably spends at least 6 hours a day studying or doing work for school but “not all at once.” John’s responded:

> I would say it's anywhere between 4 to 6 hours depending on how much work I have to do. Although on the weeks where it's really busy like last week when I was hurrying, trying to finish up papers, I spent probably like let's say 20 hours doing work.

Alex described his time, “in a week I'd say maybe 25 or 30, but often times more, depending on if I have a project. I'd say it averages around like 30 to 35 a week.” While other students provided blanket statements about the time they spent studying, other students talked about how their day works and strategies they used to elaborate on the amount of time they study. Jay went into detail:

> In a whole week, I would say probably about 10, 12 hours, not in a whole day, but two hours a day because I got two hours in the morning and then two hours in probably afternoon. I been going to the library because I know if I go home I ain't going to do no work, so I go to the library, at least, get something done before I go home, start on something, study something. Then when I come back to Witherspoon the next day, since I don't got no college classes, I can use that time for studying, catch up on some work

David explained that while he could do anything during his breaks between classes, he opts to dedicate that time to some studying and schoolwork:

> The way my scheduling works, I have free time between let's say 10:30 to 12. I can do anything that I want, but I stay at the library because I have to go back to another class. I spend about 2 hours doing some work there. Then usually, my scheduling is I get home because I always take naps when I get home. Usually after naps, around 9 to ... I take naps in order to stay focused during the night because that's when I usually work best and stay focused. I can spend whenever. I can stay up the whole day until I go back to school because I feel like if I can relax, my mind is calm; I can spend whenever I can spend doing any kind of work. That's usually when I work. It varies sometimes because sometimes I work and I can go to sleep. To put it in numbers, I'd say at least three hours every night, plus the two that I get from school.

Lastly, students reflected and evaluated their academic success. John affirmed that he felt like he was “definitely” academically successful at Murphy detailing, “not even

just counting grades. It's counting all the people I've met. The connections I've made." George recounted:

> School was never very hard for me. I've always been able to just kind of get the grade I wanted. In middle school I kind of just got the grade I wanted and then instead, I actually started thinking, hey I should probably try harder and see how much farther I could go. Going here, my academic success, I guess it's okay. I've kind of just been focusing on improving and improving how I learn rather than just the numbers I get as a result.

In talking about his academic success, David explained that he has a heavy reliance on self. He said, "having those expectations for myself makes me strive for better things." As demonstrated in student narratives above, students reflected on themselves as it relates to the ECHS school context. Those student responses are just one element of identity construction. As evident by the metaphoric description, this theme encompassed students' self-reflections. In the second theme, students look externally to other factors that influence who they are and what they want for their futures.

A Look out the Window: "Coming here made me realize this is exactly what I want to do." The window metaphor captures student discussion surrounding their future plans and the role the school played in helping them to be able to express those desires. All of the students in the study were able to articulate their postsecondary plans identifying institutions, majors and minors, and even careers as mentioned in their participant profiles. Using Jamelson's words, he exclaimed: "coming here made me realize this is exactly what I want to do." That belief surfaced as a commonality across student participants.

Speaking with students about their future plans included a conversation on how they explored and decided on those paths. Alex shared:

> Ever since from a young age, me and my Dad and most of my family has been interested in technology. So I've always been on computers and using them. Then I figured out I like how this works, and so I started to be interested in programming. Even then, it was kind of a superficial interest, but I started taking actual computer sciences classes at my high school. Then that's when I really started to get interested.

Marc described his journey on deciding on his future sharing "I 'changed majors' 3 times from architectural engineering to psychology to what I'm interested in now. It's a double major in Communications with a focus in Media and Theater." David explained that he had never really thought about engineering before coming to Murphy. Though struggling in some of the STEM courses, he explained,

> I keep trying to picture myself in an area where I can fit the most. I picked an inventor or material engineering because I think they do cool things. One of the reasons why I picked that is I saw this picture of a backpack with a hoodie on top of it. I thought it was really cool that people actually think about ways to being creative. I thought it was pretty nice. That's why I'm trying to pursue that kind of career. I'm trying hard to pass those classes. If I could have that confidence that I could do all the things, as in I could actually pass, I could have that confidence build up to my career path.

The coursework influenced John's career aspirations. He shared:

> First, I wanted to go into film because we started doing projects involved in making videos in sophomore year. Then we had a lot more in junior year. I really enjoyed doing that and it kind of just stuck with me after a while… I also realized that I enjoy writing papers on the occasions where I don't sit there and wait until the day before. I realized I was good at it because my English teachers from before they've said, they've always enjoyed reading my papers. I thought that was maybe something I could turn into a career. I thought about it, and I really enjoyed doing it. I especially like creative writing because we had a couple of projects like that last semester with our English four teacher. That's what really made me want to consider going into college for that. I also wanted to minor in graphic design because that's initially what I wanted to do before I came here. I still have an interest in it.

Similarly, Jay shared that he learned about his chosen career path at school but there was also family and peer influence:

> Basically, because my uncle, he's an industrial engineer and he used to work at Boeing. He worked at Boeing for at least six years. He was the head manager of the plant. Then when I learned about Boeing, about planes, and then my friend, she wants to be a pilot. I didn't want to be no pilot, but I want to go to a similar field with her, and then learn about different types of planes. I was just like I want to build planes. I want to be an aerospace engineer. I think this is my path.

George explained that he always knew he wanted to be a doctor. He shared a personal experience, the death of a family member from cancer, as playing an integral role in that decision. However, the school did impact his approach to entering the medical field:

> For me, it was kind of, I've always wanted to be a doctor for as long as I can remember, and I want to be a surgeon. The only thing that's really changed is my undergraduate major and coming here did affect that because in classes I saw what it was like and I talked to ... I got the opportunity to talk to students that were taking the major that I wanted to do and it made me decide that it wasn't something I really wanted to do because it's known as a ... It's one of the harder majors. You can burn out and a lot of the people planning on going to medical school and are going to do biomedical engineering just end up not going to med school because they're burnt out.

Students were able to clearly articulate their future plans and an important element that was the overall decision to come to Murphy. As evident by the metaphoric description, this theme encompassed students' future direction. While the previous theme exemplified how students look outward to their future, the next theme addresses how the understand themselves within the larger society.

A Look in the Magnifying Glass: "What it means in society." Given the population under study, Black males, it was advantageous to address race and gender as components of their identity. In the discussion students addressed race and masculinity in various ways including how they experience it, their meaning making of the constructs, and what they have observed on a larger societal scale. Answering questions such as "what does it mean to be Black?" and "how do you define masculinity?" students discussed Blackness, stereotypes about Black males, and the vagueness of masculinity as an identifier.

Blackness. Alex discussed why his identification as African-American was important:

> I feel like race is an important part of your culture and who you are and where you came from, not necessarily as an individual, but as a people. I feel like when I'm overcoming a lot of these obstacles, I just feel really proud that I can do this. I've had this opportunity to do this, and a lot of Black people, regardless of their time period, didn't have such opportunities.

John's response was nearly the same. He said "identifying as Black is more like connecting yourself with those cultural backgrounds." George, being from Africa, expressed his experiences with his identification as Black:

> In middle school I had a talk with one of the teachers who was trying to tell if I was actually African, who's asking "oh are you actually African or African-American" and I didn't really quite grasp what the difference because I wasn't really used to being asked that question. I said what do you mean what is the difference between African and African-American. He said well most African-American ancestors were brought here on a ship, and I would say, no I came here on a plane. And the teacher kind of just stared at me, so I didn't really think about race until middle school because in elementary school we just played. That's all we really did, we played. I went to a Montessori school so our teaching tools were essentially like toys but they were very effective at teaching us. In middle school it became as a Black student there's certain things they are expected, like that you have to be careful of because you're statistically more likely to be pulled aside for something that if it was a White student. I wasn't really mindful of the things I

> have to be careful of because I didn't see the difference until probably seventh or eighth grade.

Marc was extremely passionate about the conversation of race. He, like George, experienced seminal moments surrounding his "Blackness."

> Blackness is beautiful. Blackness is everything. I am Black. I gladly would have said, in third grade I said I was from Africa. I loved being Black so much. I didn't really understand what race was because I hadn't combated racism because I went to private school. I didn't know what racism was. Surprisingly a lot of people think that most private schools would be mostly White but the majority of my private school was Black. Most of my environment had been Black in school which was my whole social life as a kid at that point so when I got into public schools, into more White spaces where I was more competitive and I was just as, I don't know, I guess you could say competitive, as my White counterparts, they didn't expect that from a Black student, a young Black male. I was already advanced because the curriculum in private school and public school is different so I already blew out the waters in some of the subjects in public school but other subjects where they think that it's necessary, where the government or whatever thinks it's necessary, I hadn't learned about so otherwise I was ill prepared and I was unaware, I was behind.

Marc recounted how his experiences in public school impacted how he saw himself:

> After combating the little microaggressions I had in public school, if you're behind, the expectation of what being Black was, being behind, being dumb, or what I thought Blackness was. All the stereotypes, it started to break down my

> spirit of Blackness and my pride in being Black. I started disassociating myself with that, and I started to try to become, it's like impossible, but I tried to become racially ambiguous, I was like, at the time, I wore my hair a lot longer than it is now. I tried to be more racially ambiguous but probably it was in middle school like I stopped, I'd spend like hours combing through curls just so they would stop being curly. It was so stupid all the things I was doing.

Marc's story is particularly unique as he continued to elaborate on the evolution of his identity as a Black male. He shared that he would have not only been described as an "oreo" but would have also self-described that way:

> Like middle school, like the term "Oreo" had become really popular in the media. Films like, Bring It On, there's a token Black person, she's an Oreo because she's "White" on the inside, with the definition of Whiteness being like smart and intelligent, having "good hair," a certain style of dress, all of these little microaggressions and stereotypes that define what Whiteness versus what Blackness was. A "hood" mentality, what hood was and why being hood was bad. The term ghetto also had become a really popular word that was used in the media. Again, learning what I thought Blackness was and learning what Blackness is really, it's hard to define because there's so many different types of Black people. When you see just BET, that's really all you know about what Black people are and then the idea of perpetuating the idea that Black people are ghetto.

Marc explained that being at Murphy and particularly the school laptop he was able to use heavily influenced him coming back into his "Blackness:

> Over the past three or four years, I started getting back to my Blackness especially with events like Trayvon Martin or Michael Brown where I learned about Blackness and learned about systematic racism and about the school to prison pipeline. That there, especially in the media and online that I learned there are so many different definitions of what a Black person can be and the potential of a Black person. Because of [Murphy] I had the opportunity to have a laptop and have internet access and learn about events like Michael Brown, Trayvon Martin and because of those events learn about what Blackness was.

Jamelson approached his definition of what it means to be Black from a standpoint where because he is Black, there is a heightened need for awareness:

> What it means to be Black, to me, specifically, is you always have to be focused. You have to be well-aware of your surroundings. Everything that you do as a Black male can either make or break you as a person, especially in the United States where racism isn't out in the open, but it's still there, and you know it's there.

Jamelson's perspective is directly connected to what other student participants were noticing about the larger society. Students shared that Murphy gave them as space to talk about race and gender especially hearing about events in the media and researching various racial factors in their classes. Bryce explained in the focus group that in his English and Civics class there was a discussion about race and gender including the relationship between educational funding and race and wages and gender. Marc explained these activities more:

> During a mock congress, we had to find an issue and bring it to congress like this is a law that should get passed or this is something that should get passed. In my group, we had two. One was education, funding for education, we all had our own departments and whatnot, and Mississippi was one of the least funded ones, and the population there was really Black. We all know about the Black, systematic, I'm trying to find the words…. system from school to prison, the school to prison pipeline or whatever it is. We brought that up in the mock congress, and we went on for like a whole day just on that same topic.

John elaborated, "senior year when all of the stuff down in Ferguson was happening. After that, the conversation sparked up a lot. In my civics class, they started allowing little extra presentations that people could do for some free points."

As a group, the super seniors and seniors diverged on their views of race. In the focus group with the super seniors, students were very vocal about the influence of race. Alex shared:

> A lot of people are racially minded, whether it's conscious or subconscious. Everyone has race in mind, and they have preconceptions about different things about race. Some people may assume things about a black person and something else about a white person. The media plays a lot into that too. Regardless, almost everyone has subconscious or conscious racist assumptions.

Marc mentioned his experiences with a network school where his bus stop connection was:

> The opportunities that we get as black people in [Murphy] and the experience we get is different than what we'd get at [neighboring high school]. Every time we'd

> go there there'd be a fight. There was a lot of gang talk. We couldn't wear bandannas. What privileges we are allowed here are not allowed at [neighboring high school]. The issues that are apparent at [neighboring high school] are not apparent here. I remember we would have, what are the days we have wacky tacky day? Spirit week. A lot of people wear bandannas on wacky tacky day. You can't wear bandannas at [neighboring high school] because it's related to gang culture. It was kind of like we were being thrown back into the same type of system; I could really see the school to prison pipeline. They have police officers there. We don't have any police officers here at [Murphy]. I don't know; I feel like that's important.

In contrast, the seniors approached the conversation surrounding race from a minimalist perspective. George described race as "artificial":

> Well at least for me and some of my friends, we've kind of thought that it was a bit more artificial, if race was a little more artificial and fake because it's kind of… You're lumped together kind of because you look like that, you look alike, but you may not all be the same, and even then you still have similarities across groups so why does it even matter? So race became less of a factor in us talking to each other than it became ... Basically we talk more about race when we're criticizing how society treats different races or when we're talking about social injustice related topics, but when we're interacting with each other race means next to nothing.

Jamelson added how he sees race in relation to his peers:

> I think here in this school, being that we're so diverse, and we don't only have Black, we have White people… we have White people, we have Hispanic people, we have Arabian people, and we have Indian people. It's very, very much a melting pot at this school and we have so many different races I think race becomes less of an issue, and less of something to look at as something that defines you as a person.

George expounded more describing students in the school as being more distinguishable by nationality. He furthered his thoughts on race saying:

> I think it's, not de-constructive, but it's, what's the word…It hinders us from a lot of progression having to categorize people because I see nationality and ethnicity are far more honest ways of doing that. Where you could say that there actually are some maybe serious cultural differences as a result of you being from this particular culture or you being from this particular country. Versus you just saying like having Caucasian friends that they are all lumped together as Caucasian but some are German, I have some Finnish friends, I have some Italian friends. I have some friends that are from different areas of the world, but they are just lumped together. They have their own differences and I growing up being an African kid in a public school I was lumped together with African-American students but like, in all honesty, the most bullying that I ever got from any particular group was from African-American students for being African.

He expounded further:

> There's nothing fundamentally to do with our appearance who decides who we are as people and that's why I kind of find race as a construct, a de-constructive.

> Because it doesn't really define ... there could be cultural boundaries between a race. If you're trying to honestly divide people by what they have in common, it doesn't make sense to define by race because as far as we know it's just basically the skin color.

George had another experience that he described as it relates to his identification as an African-American:

> One thing that singled me out from most Black students is because I spoke differently from most of them because in middle school I kind of spoke a weird proper English that I was taught because that's what my mom taught me. That's the way my mom learned, that's how they teach English in Kenya and how they teach English in a lot of European countries or for people taking it as a second language you're expected to have a particular proper type of English. Then other Black students would speak a different way, and I'd be called out. I was once told I speak like a White person. I said I don't really see what that means, but okay.

He was not alone in his feelings as it relates to the notion of how one speaks or acts being indicative to the White race. Alex explained:

> That's pretty much the story of my life. People always say I act White. In recent years, I've really started to take offense to that, because then I ask them "What does it mean to act White?" Just because I'm smart, I may talk in a polite or grammatically correct manner, I don't believe that's how all White people talk, or I don't think it should be tied to a race. When people say that, I get a little upset. I can see a lot of people assume ... White people talk correctly, and they assume they're smart. On the converse side, people may assume Black people aren't smart

> or that they talk a certain way. People say I always act White because I act the way that they think White people act or they notice White people act.

In response to being accused of "acting White," student participants were adamant about refuting any belief that their demeanor or being smart was based on racial identification. Jamelson called such attitudes as "dumbfounding":

> There are smart African-American people. They may not get the spotlight or the limelight, but there are smart African-American people. There are smart Arab people. There are smart Mexicans. There are just smart people in the world. Just because most of our scholars and people we look up to, like Aristotle, come from Greece and the Roman Empire doesn't mean that that's the only creed or race in the world that was smart. That just means they were at that level of advancement where they could produce that knowledge. I think it has to do with some social hierarchy that's still evident. People see White people as a dominant figure, as somebody that is smart, that has a lot of money, that has wealth, and has family and has nice things. For an African-American male or female, for that matter, to want those things, or to be able to produce those things by themselves, people may see that as being something that you're not.

John responded:

> I don't really talk to people who share that mindset. It's like I don't know. I don't like that thought process. It's just so negative because you're essentially saying that for me to be akin to my race, I have to be stupid. I feel like saying something like that. You're just insulting every other black person that's out there like, "Why do we have to be dumb? Why can't we strive for something?"

Students thoughts surrounding race were often specific to their experiences. but there was obvious overlap. Their intersectionality, Black and male, also led to a conversation surrounding stereotypes being a Black male.

Stereotypes about Black Males. In addition to their outlook surrounding their racial identification, students acknowledged that being a Black male came with certain stereotypes. Regarding the origination of said stereotypes, all the students said that stereotypes have some truth to them and have been created for a reason. Alex explained:

> I feel like stereotypes exist for a reason, but that doesn't mean they're always right. If someone wears glasses, it's a pretty common stereotype that they're smart or, I'm trying to think of another one. I don't know a lot of stereotypes, but I try to ignore them. I feel like they're inevitable, because no matter what you do, you're always going to have that background knowledge of what you've heard or what you've seen or what you've experienced. There's really no way to get around stereotypes because you're always going to have that notion in the back of your head until something overrides it.

Stereotypes that students identified as being attributed to Black males included the assumption they are from a low-income neighborhood, that they play basketball, or that Black males are criminals and drug users. David identified stereotypes saying:

> Since I'm Black, people wouldn't think that ... Sometimes I think I'm smart, but they wouldn't think that. Also, for example, I'm not sure if this happens but my ninth grade year; we get an opportunity to pick groups. I'm not sure, but I think they wouldn't pick me because especially when you deal with something that you're not good at then you don't want to pick somebody that you think might not

> be good at it. I might not get picked for a math project or something like that. You think about with the stereotypes; you hear that Asians are really good at math, so they're more likely to pick somebody that's Asian to work on their project or to work with. That might be the reason why. Plus, most people when I tell them I play a sport they don't guess that I play soccer. They think that I play basketball or football, which is one of the stereotypes.

Jamelson addressed the stereotype of criminality from a personal perspective:

> Stereotypes that I see constantly are that Black male equals, sometimes people see us, and they see "criminal." One time, I was walking around Target, and a security guard followed me all the way through the store. I was just kind of appalled by the fact that he was following me. Sometimes, people see Black people, and they see gangsters, or thugs, or whatever, which is not necessarily true all the time.

Extending the conversation, Alex's positioning as Valedictorian manifested other thoughts about race, particularly the responses that he receives from others:

> If you think about it, not a lot of Black students, in general, get the educational opportunities that I'm getting. If you think about it, really, a lot of people don't of any race, but I feel really proud to be a Black male at such a high standing in the school. A lot of people, when I tell them I'm Valedictorian, they seem kind of surprised. I'm not sure if it's because of my age or maybe because I'm Black, but a lot of people are also really proud of me, because if you look at statistics, not too many Black males are at such a high standing in academics. Being at that standing and at that school, it gives me a lot of pride and a lot of honor. Whenever people find out that I'm smart or that I'm capable, I can kind of sense that they're a little

> surprised. I think that might be a subconscious racist thing. Not all people are surprised when I tell them that, but maybe it's just the notion of Valedictorian, I mean, I don't know that many Valedictorians. So like hearing it, in general, might just be surprising. I will definitely say there is a little bit of a shock factor when people see a Black male as Valedictorian. That just may be because of the history. Black people were slaves and were suppressed and even though it's lessening, it still comes as a surprise to see them moving up.

Taken together, student conversations helped provide insight on how they construct their identities as Black men. The next subcomponent, masculinity, is directly related to their gender identification as male.

Masculinity. The conversation surrounding masculinity was initiated by students being asked to define and describe it. Using one-word answers, students responded using language such as "fragile," "controversial," "absurd," and "vague." Overwhelmingly students found it difficult to discuss masculinity outside of imagery and how the larger society defines it. Bryce the vagueness of the term:

> To me, I don't feel like there's a definite definition of masculinity or femininity. There is an official definition, but I don't feel like that's the 'set in stone'… this is cut and dry what the definition is for masculinity, femininity or anything to do with that.

Alex extended this thought:

> I think that's a really loose, that's a vague word, because what's masculine to one person or in one culture could be completely different to what masculine means in

> a different culture or to another person. It's just so hard to answer that question because it's different for everybody.

David's thoughts of masculinity included roles. He said "I think that a man can cook, a man can sweep, a man can fix cars and all that… with me, you can be masculine by doing the things that women do." He explained that there can be conversion of these roles but with limitation:

> I think that to be masculine most people think of it as doing what men have been doing from history. Ever since history. I believe that men can do what women do and a woman can do what men do, but if you just plainly just give up what men have been doing all the time in history and you just leave all that and just do what women used to be doing the whole time, then that's when I believe that you lose the masculine part of yourself. I think you can mix them both, with a woman job and what the woman ... I'm not saying that there's women job and a man's job, but what the woman used to do back then and what the men, you can mix them up now but you can't just leave all what men does and just focus on what women are doing.

Marc's description of the term was "fragile." He explained:

> The media has really perpetuated the idea that masculinity can only be exclusive to certain things like feelings like you don't feel, and what is style and whatnot. Certain conceptions of having an identity or what makes someone who they are is attached to your gender.

This notion of the attachment of gender to identity is further extended in George's thoughts:

> As a concept, I find it makes sense in a way because students do exhibit gender dimorphism, so there is a certain amount of stuff that's expected to be related to males versus related to females. Then there's also the fact that we're extremely plastic in our ways of thinking and in our brains so that it's entirely possible for someone to adopt attitudes that were traditionally believed to be male or traditionally believed to be female. Such as being the person taking care of the household, traditionally that's expected to be the woman's work but I also have friends ... I know people that are stay at home husbands.

George continues, making the language connection to masculinity and attitudes:

> In languages, there's also the kind of weird thing where a table is masculine, but a bed, is feminine. Those kinds of thing where if it's masculine it's expected to be kind of harder or more brutal in a way. Like sports is seen as the more masculine attitude. Whereas arts, crafts, cleaning, cooking are expected to be more feminine.

Extending George's thoughts about attitudes towards masculinity, John explained that masculinity is a quality of "expectations." Marc's thoughts were similar. He indicated there was difficulty in being able to define masculinity apart from "the social definitions of what it means in society, how it's used and what it could be, it's potential." It is his words that depict this overall theme. He continued stating its hard to talk about masculinity without gendering it, but it was just as hard to discuss what is masculine without addressing what is feminine. Using the yin-and-yang analogy, he concluded:

> I think that they are not separated. Masculinity would be the yang of that and femininity would be the yin. They are not separate. Everyone has, I think what I was trying to get at was women can be masculine. Men can be feminine, but that

> doesn't mean that I would like to disassociate that as the way that we deal with society. Potentially masculinity could be...We often define it as one thing, as physique and strength and power but women can also be powerful, and those two things together, the yin and the yang together is what makes the entire being. Thinking about yang as itself, and yin as itself, power, you could be masculine, just that physique of it is often what we could be described as masculine but that doesn't mean that it's separate from the being. You can be a strong physical person, have a strong physique, but that doesn't mean you don't have a feminine side.

Overall, students' conversation around masculinity illuminated the natural complexity of the social construct. As evident by the metaphoric description, this theme encompassed students' review of themselves in relationship to constructs and norms created and maintained by the larger society.

Research Question Three

The third and final research question was: how does a STEM early college high school impact Black males' perceptions of STEM subjects and STEM careers? It was important to inquire about how being in a STEM immersive environment influenced students. Data analysis for this question uncovered students' strong beliefs about STEM subjects and careers. The data highlighted what they learned about themselves studying STEM, the benefits of STEM subjects and a STEM career, and the distinctions they noticed in the STEM fields. As shown in Figure 12 there are three themes which underscore student perceptions.

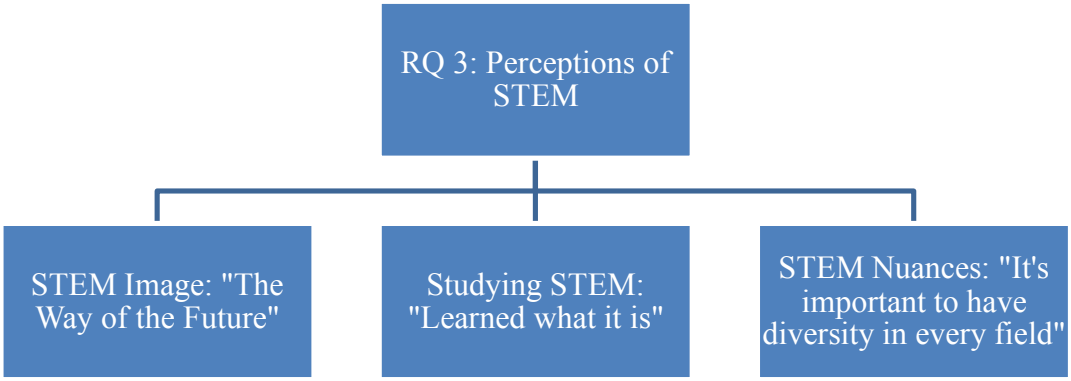

Figure 12: Themes for research question three

STEM Image: “The way of the future.” Quoting Alex, students in the study discussed what they understood about STEM in relation to the market. Alex explained:

> You can see all around us technology is growing. It's been like that for years. I don't know if it's just because in middle school we didn't notice it, or if it's starting around that time, that's when people started to take notice, but I really like that we have such a STEM and technology-focused school because that's pretty much the future. Almost every field is going to use something like that. It's a way to encourage job security. If we go into STEM careers, there's almost no doubt we're going to have a job. Not saying if you go into something else, you're not going to have a job. It's just one path, but it's one path you know is going to be needed in the future.

Marc addressed his connection to wanting to come to a STEM school because of its image as encompassing higher paying career fields. Given his personal issues at that time, he felt that choosing a STEM career path would offer a sense of security. He shared:

> I don't know, so I connected with that STEM focus and definitely with the economy at the time, I was worried about, even as an 8th grader. I was like, "I have to get into a career," because a part of my identity was I wanted to escape. I wanted to leave my current conditions and get out of here and go travel the world and whatnot. I was so sick of my experience at the time, and if I made enough money I would be able to do that. Engineering is where the money's at, and that's what everyone was saying, like, "That's where the money is. Go there. Do this." Everyone's like, "STEM? Oh, it's not only an early college but STEM. Go to [Murphy].

In George's interview, he highlighted a similar point as Marc identifying STEM fields as being "high paying." He explained this as a benefit to studying STEM:

> STEM fields tend to be really high paying by comparison to a lot of other fields, and they're also rapidly growing, so it's not like you're being shoved into a school where you're kind of just expected to take these general classes and then take on some electives and do whatever. You kind of come here, your curriculum's already structured. You come already, pretty much knowing what to expect. You know that you're going to the STEM school, that your classes are going to be mainly focused around STEM subjects and then, later on, you'll get a bit more leeway later on in college classes.

In addition to the students understanding of how STEM fields are positioned within the larger economy, they also shared what they learned at their school about the STEM subjects particularly subject intensity as shown in the following theme.

Studying STEM: “Learned what it is.” Being in an ECHS with a STEM thematic focus, Jay explained that he “learned what it is” speaking specifically about engineering and aerospace engineering as a result of attending the school. Under this same thought of “learning what it is” one element of the students’ understanding of STEM required a discussion about their comfort with the subjects themselves. Several of the students identified the STEM subjects as being their favorites while others acknowledged that being in a STEM immersive environment helped them learn more about their strengths and weaknesses with the subjects.

Both Jamelson and George identified sciences as being their favorite subject. George explained he likes all the sciences because “I've always been really curious so it's more about I learn how things work and I just like being able to do that.” Jamelson detailed why he enjoyed science saying:

> I just took Biology, and I found that it was really interesting. I've always been good at Math. That's just one of my stronger subjects, and I've always been a good reader and a good writer, comprehensively. Biology just stood out to me as one of those things that I could sit back and study.

Alex responded that his favorite subjects were math and computer science and “I like programming. I've always been interested in technology. So having a school based on technology is something I really looked forward to.” Like Alex, Jay’s favorite subject was math. When asked why he recounted how he realized his enjoyment for math:

> I knew math was my favorite subject when I first passed my EOG, my math EOG with a three, a high three. I was just like, "I know this." I just kept passing my

> EOGs with a three, and I was doing good in math. I was like, "Yeah, I'm strong in math."

Despite those students who found great enjoyment in the STEM subjects, there were those students that acknowledged their struggles that came with those subjects. Marc explained that while he was originally interested in architectural engineering but "once I started taking math classes and more science classes, and engineering focused class at our high school, I decided I wasn't as interested in it." He described himself as a "very weak math student" and shared that he even failed a math course at the high school. David articulated his uncertainty with engineering, "I'm still not quite sure about engineering because it requires a lot of math and science which, like I said before was not the things that I like the most." John spewed off his dislike for the STEM subjects in detail:

> I used to love math but then they added letters to it. That kind of just got on my nerves. I mean, I still did decent in it. After junior year, that was the last time I had to take a math class. That was I think it was trigonometry and pre-calc I believe. I have not taken a math class since then. I got a B+ in that. I was happy as I could be. Then for science, I won't say I dislike science. That's not really where my interests lie. Especially like there's just so many different fields to cover. There's not a particular one that I'm interested in. Also chemistry, it was terrible. Just based off that, I kind of lost my interest in that one. Acing a class in high school and nearly failing the college version of it is surprisingly pretty demoralizing. I bombed the first exam, then studied for the next in didn't do much

> better. After that, I pretty much just quit and took whatever I got on the rest of the exams. I still made it out with a C, though.

Bryce described how studying STEM has allowed him to “explore”:

> When I first started, I wanted to do computer engineering, but then a couple of us that were interested in engineering took an engineering class. We also took another engineering class; they weren't really together. In the one engineering class, I was like I was thinking of doing computer science, but I was like I don't feel like it anymore because basically I don't feel like dealing with a whole bunch of math because I suck at math. She [the teacher] was like well, you can do IT, which is basically a step down from computer science, it's not as much math, it's not the same thing, but they're similar. I looked into that, and I was like yeah, that could do. I feel like coming over here, taking classes, talking with professors, teachers, our advisor. He has given us the chance to explore.

Like Bryce, George felt the school’s focus on STEM was meaningful because it helps students learn more about what they do and do want to do later in life. He explained:

> That's useful for finding out what you do like, but it's also as important to know what you don't like. I came in thinking I wanted to do biomedical engineering, found out that I more than likely wouldn't like it because of the kind of workload it was. It was very kind of like more thinking than it was actually doing things in some ways. So I shifted more towards neuroscience because I learned that because of ... I learned through the classes I was taking that, "Yeah, I probably wouldn't like doing this for too long."

In addition to a discussion of STEM subjects and their intensity, student participants noted the ability that STEM subjects have to enforce 21st-century skills. John shared:

> Although they don't need this to have a STEM focus, that focus on STEM it kind of helped facilitate us to learn those 21st-century skills because we had a lot of group work. We even sometimes had to communicate with a bunch of people outside of this school and get around. I'd say they did a really good job with that.

Marc's thoughts enhance John's point:

> So I got to learn that I'm not as interested in STEM or the STEM field as I thought I was. I can still use a lot of the same skills that I learned in the school to do what I want to do with communications.

From the interviews with participants, they highlighted what they learned about STEM and about themselves studying STEM. Being in the STEM environment, however, showed students some of the challenges with representation in the STEM fields as shown in the theme that follows.

STEM Nuances: "It's important to have diversity in every field." Using Alex's language, the students discussed observations they made in their STEM environment. In their environment, students noticed racial and gender disparities. George explains his observations from a gender perspective:

> Engineering jobs and STEM careers were always seen as more masculine while teaching and secretary work and more humanities oriented tasks were seen as more feminine. We can kind of see by looking at the gender gap in some of the grades that there are either more guys that are interested in it or more guys that

> were told to do it or more girls that shied away from it or were told to shy away from attending the school.

While uncertain of the reasoning behind the gender gap and the gender assignments to various fields, George noted that there was a visible disparity in the male to female ratio at the school.

Alex talked about his internship experience and how he observed the presence or lack thereof of racial groups and genders. He described this experience as support for his understanding of the underrepresentation of Black males in STEM. In addition to the internship experience, he discussed what he observed being on the partner university's campus.

> It's rather low [presence of Black males], but it's also rising at the same time. I worked at [name of business] over the summer, and if you go there it's mostly White males or Indian males or females or Asians, but not a lot of Black people in general. I definitely noticed there is a rise in it at schools and in the workforce too. It's mostly White people. When I'm on the main campus, it's mainly White males and females. I see a decent amount of Black people, because the Black population at [partner university] is not super-small, but when I go on the engineering side, there's like scarce Black people. It's mostly Indians, Asians or White people. So I feel like while I'm on the engineering side, I can really see how few people there are in that engineering field of [partner university].

Alex extended his thoughts on the lack of diversity in STEM by describing some research he has completed:

> I feel like technology... I do a lot of research and investigations, like digital inclusion and how technology can affect urban populations. I'm sure you do with your topic too, but I kind of feel like the interest in technology stems from having access to technology. From a young age, I've been blessed to have computers and video games my whole life. That's kind of what I've been into. I mean, if you're like kind of on the impoverished side of the social ladder, you might not have a computer. You might not have a cell phone. You might not have video games and all that stuff. So you just may not be interested in it. If you're going to college and you've never been a big proponent of that stuff, you just might not be interested in it.

Alex continued to discuss the disparities he witnessed in STEM and asserted the need for diversity:

> I think it's important to have diversity in every field because with different colors you get different views and backgrounds on whatever it may be. Even if it's like a technology company, someone of a different culture than you can offer different opinions on what the software can do or who it will impact and how it will impact those people.

Marc mentioned a similar thought, discussing the importance of representation and how it can impact him and other people of color:

> Me as a Black person, having that representation is a gain for me because if the White traditional media, the White people who have the power see that this Black person can do it, I will have a chance of having the same job, or have a chance at doing a job like theirs.

As shown in these student narratives, students detailed examples of them not seeing obvious diversity in the STEM fields alongside their desire to see an increase.

Summary

Chapter four highlighted the emergent themes from the data collection. Findings were presented for the three research questions guiding the study: (1) How do Black males describe their STEM early college high school experiences? (2) How do Black males construct their identities (academic and non-academic aspects) at a STEM early college high school? And (3) How does a STEM early college high school impact Black males' perceptions of STEM subjects and STEM careers? Organized into two sections, part one reviewed participant profiles of the eight participants and part two provided the thematic overview of the nine themes which developed from focus groups and interviews with participants. The main themes that surfaced from the data for research question one ("It's like a family"; "That's the point of going to an early college "; and "Murphy is your life"), research question two ("Murphy has changed me"; "Coming here made me realize this is exactly what I want to do"; and "What it means in society" and research question three ("The Way of the Future"; "Learned what it is"; and "It's important to have diversity in every field") were exemplified in great detail. The following and final chapter provides a discussion of the findings.

CHAPTER FIVE: DISCUSSION

Overview

The information presented in this final chapter focuses on providing a summative discussion of the three research questions. More specifically, this chapter is organized by research question and individual themes; the findings are summarized, connected to the broader literature, and positioned within the theoretical framework that guided the research. In the final section, implications and recommendations for educational stakeholders are made as well as recommendations for future research.

Review of the Study

The purpose of this study was to investigate how Black males describe their ECHS experiences. As components of their broader experiences within the school, the study was purposed to learn more about how Black males negotiate and develop their identities as scholars in these particular settings and how they were influenced by the STEM thematic focus of the school. Focusing exclusively on Black male students and using a single case study design, the guiding research questions were:

1. How do Black males describe their STEM early college high school experiences?
2. How do Black males construct their identities (academic and non-academic aspects) at a STEM early college high school?
3. How does a STEM early college high school impact Black males' perceptions of STEM subjects and STEM careers?

Research Question One

Providing an understanding of student experiences at a STEM ECHS, three themes that materialized for the first research question. They were: "It's like a family" (A Description of Learning Environment), "That's the point of going to an early college" (The Benefits of Learning Environment), and "Murphy is your life" (The Challenges of Learning Environment). Each theme is revisited below.

Theme One: A Description of the Learning Environment: "It's like a family."

A significant component of the student narratives as they described their learning environment was the existence of a family unit within the school. Students discussed their closeness with peers as well as the support they received from each other. This support was not limited to the peer-to-peer relationships as they also richly described the teachers as being caring and concerned. Participants noted the school's size as a large contributor to the family feeling as evident in Marc's description: "the small community of students helps us build relationships with each other."

The notion of family within the ECHS environment is not a surprising phenomenon. As demonstrated in previous studies by Kaniuka and Vickers (2010) and Ongaga (2010), students have explained that the small nature of the ECHS allows for close-knit relationships like families. Woodcock and Olson-Beal's (2013) findings highlighted the positive peer relationships that their participants were able to forge at the ECHS. These peer relationships had a significant impact on the students' overall experiences. Similarly, in an examination of ECHS student experiences done by Saenz and Combs (2015), the importance of a positive school environment was a significant theme. This theme encompassed students' thoughts and feelings about the school which

included a family-feel, the absence of violence, and an overall friendly place. This dissertation corroborates these findings.

As it relates to the theoretical framework, the notion of family directly connects to the outside pillars (family, school, community, and mentors) that provide support for scholar identity construction. These pillars are core influences and sources of support for students. School is a significant pillar of the scholar identity model (SIM) because it is a space where students spend a substantial portion of their day (Whiting, 2014). The family feel within the school highlights the role of the school as a crucial element of their positive experiences and overall contributor to their identity formation.

Theme Two: The Benefits of the Learning Environment: "That's the point of going to an early college."

Data analysis highlighted two main benefits they gained as a result of choosing to attend the ECHS: (a) access to free college credits and (b) preparation for their future as it relates to college, careers and what they called "the real world." During the conversation, Alex blatantly stated: "free college is the number one point of going to an early college." From the students' perspectives, access to college credits while still in high school helped them not only save money but also save time. Many of the students will enter college already classified as sophomores or juniors because of the number of college credits accumulated. In addition to being able to save time and money because of the opportunity to obtain college credit, this theme includes students' descriptions of their preparation for college. Participants shared that the structure and rigor of the program helped prepare them for college-level work as well as learning the skill of being able to work well with others. Students believed the ability to collaborate with others is necessary for the "real

world." As shown in the student profiles, numerous students decided to or were planning to stay at the ECHS through their fifth year to take advantage of a jumpstart on college. This college preparation was evident through their ability to accumulate college credits which for these participants ranged from 17 to 60 credits. Lastly, as an extension of their "real world" preparation, students explained the ECHS provided networking opportunities. They described the school having a strong connection to the business community through its business alliance and students perceived those relationships as beneficial; namely for internships and future employment.

Connecting to the larger literature, in Woodcock and Olson-Beal's (2013) work, student narratives highlighted having access to college credit as being a crucial benefit of students attending their ECHS. This in turn positively impacted their perceptions of their academic preparation and increased their confidence in their ability to go to and complete college. McDonald and Farrell (2012) examined students' perceptions of their college readiness as a result of the ECHS environment. Their research participants shared that they felt ready on academic (discipline and time management), social (acclimation to the college environment), and personal (identity as a college student) levels (McDonald & Farrell, 2012). The participants in this study spoke in a similar fashion. The findings from this study showed that students at Murphy STEM also learned time management and experienced a space where lines were "blurred" because they identified as both high school and college students equally. As an approach to high school reform, ECHS are purposed to focus on underserved students, their college readiness and increasing their likelihood to complete college (Berger, Aldeman, & Cole, 2010). It is apparent from this theme, this ECHS focused heavily on this very mission.

Positioned within the scholar identity model, the benefits of free college and preparation for their lives after high school are directly connected to the outside pillars of community and mentors, self-efficacy and academic self-confidence aspects of the framework. A few students mentioned having the opportunity to network and build relationships with the partner university faculty as a benefit of the school. In this case, the business alliance organization for Murphy STEM as a community group was a beneficial relationship for the students. In fact, many of the super seniors were able to secure their internships through the companies that are a part of that alliance. George, in particular, noted that some of his college faculty were mentoring him in science and research. Students in this study embodied self-efficacy and academic self-confidence because they spoke in a manner that they believed Murphy STEM was a place where they were successful and being prepared for what lies ahead. As Whiting (2006, 2009) explained, scholars are students that are confident in their academic abilities and settings, and these students were indeed. Future orientation is also apparent through this theme. As explained, all the student participants were able to articulate their future plans and how the ECHS fit into those plans; particularly the decision on whether or not to stay for the fifth year of the program. Lastly, family as an outside pillar of the SIM was evident as students explained the benefits they receive from Murphy STEM. Almost all of the students identified their families as being influential and supportive of their decision to attend the ECHS, being a source of support and encouragement for their academic success, and a source of encouragement to pursue the fifth year so they could take advantage of the free college.

Theme Three: The Challenges of the Learning Environment: "Murphy is your life."

As laid out in chapter four, the students at Murphy STEM identified challenges that arose as a result of attending an ECHS. These challenges students faced included sacrificing extracurricular activities, balancing a rigorous course load, and being a part of a start-up program. Student participants shared they either stopped participating in extracurricular activities because of workload or sacrificed the opportunity to do so because Murphy STEM had limited opportunities. In addition to sacrificing extracurricular activities, students explained the amount of work they were receiving was shocking and an overall adjustment. An additional challenge was being a part of a new school and participants recounted how things were ever evolving. Their challenges and experiences were also extended to teachers as they witnessed teacher turnover. They labeled themselves and their teachers as "guinea pigs."

Limited extracurricular activities are a distinction of the ECHS model (Cravey, 2013). As shown in Woodcock and Olson-Beal's (2013) work, ECHS students cited the unavailability of extracurricular activities or their inability to participate due to time constraints from studying demands as a challenge within the ECHS program. Another element of the program model is having students go through rigorous coursework with early exposure to college-level work (Leonard, 2013). The emphasis on rigorous instruction within the ECHS model is based on the belief that rigor positively impacts students learning habits and facilitates their content knowledge development (American Institute for Research & SRI International, 2013).

The findings from Ongaga's (2010) study are directly connected to the findings from this study. The feeling of being "guinea pigs" because of the newness of the school

also manifested itself in her research as she noted the newness of the ECHS movement. She states in early stages of development of the programs comes various pressures. While Ongaga's (2010) study spoke of teacher pressures specifically, it is evident that at Murphy STEM, the students felt this start-up pressure just the same. A key finding from this dissertation was students' concern with a lack of Black teachers at the school. This thought is also directly connected to Ongaga's (2010) study where the importance of teacher race was a significant finding. The African American students in her study were found to be struggling with their sense of identity because they had few African American teachers with whom they could identify. As mentioned in chapter four, Alex explained that having teachers of similar race and background eases identification and relationship building because of commonalities.

Within the theoretical framework, the challenges students identified are directly connected to the willingness to make sacrifices. The participants in this study understood delayed gratification and necessity of sacrifice in efforts to get one's desired results. Whiting (2009a, 2009b) identified that when scholars make sacrifices, such sacrifices could include extracurricular activities or not hanging out with friends because of schoolwork demands. As in the case of these research participants, the students' decision to attend an ECHS resulted in sacrificing their middle school friends and extracurricular activities. This same sacrifice also relates to the need for achievement being greater than the need for affiliation in the model. Whiting (2014) explains that when the need for achievement is high, school and learning are a higher priority than students' social lives and popularity. The students were deciding not to let their friendships determine their school choice which is an example of their need for achievement.

Summary

Table 6: Review of research question one

Theme	Description	Framework Components
"It's like a family"	• Small school • Bond • Teachers care • Peer support • Strong relationships	• Outside Pillar (school)
"That's the point of going to an early college"	• Free college • Saves time • Saves money • College, career, and real world experience	• Outside Pillars • Self-Efficacy • Academic Self-Confidence • Future Orientation
"Murphy is your life"	• No free time • "Guinea pigs" • Limited extra-curricular • Parted from friends • No Black teachers	• Willingness to make sacrifices • Need for achievement being greater than the need for affiliation

Three themes manifested from the first research question providing further insight on Black males' experiences at a STEM ECHS. Table 6 provides an overview of each of the themes. To describe their experiences, students explained the school environment was analogous to a family. They also felt they were receiving various benefits including free college and networking opportunities. Yet with those benefits, students experienced challenges which were mostly attributed to being a part of a new school. These findings largely corroborate existing research. Positioned within the theoretical framework, these findings highlight students' willingness to sacrifice and the need for achievement being higher than the need for affiliation.

Research Question Two

Three themes that emerged for research question two which provided insight on students' identity construction. They were: "Murphy has changed me" (A Look in the Mirror), "Coming here made me realize this is exactly what I want to do" (A Look out the Window), and "What it means in society" (A Look through the Magnifying Glass). Each theme is revisited below.

Theme Four: A Look in the Mirror: "Murphy has changed me."

The metaphor of the mirror captures how students spent time reflecting on how they were individually impacted, both personally and socially, as a result of their decision to attend Murphy STEM. As explained in chapter four, students shared there had been an increase in confidence, maturity, and social development. In addition to these personal changes, students provided academic self-evaluations. Participants believed themselves to be successful academically within the ECHS environment and discussed why this success was important. Project-based learning, the small community, and learning time management are elements of the school that were attributed to their success. A large factor in the building of this theme was students' ability to self-assess and explain whether or not they see themselves as scholars.

These findings correlate with Saenz and Combs' (2015) work. Early college students in their study displayed an increase in self-awareness which manifested through students highlighting how the school increased their confidence and changed them a person overall. McDonald and Farrell's (2012) work addresses the exact maturity aspect my research participants discussed. In McDonald and Farrell's (2012) work, participants discussed the need to be more mature because of their interaction with college students.

From this study, George explained this saying, “in our math class the average age is like 19, 20, and I'm sitting in there being 17, and most of the people don't realize that. It's kind of a bit of keeping up appearances and also being mature.” Lastly, on a personal level, students had developed an identity as a college student similar to a finding from McDonald and Farrell (2012). Their ECHS students had developed an identity as a college student; they saw themselves as being just as smart as the college students and capable of doing the work.

The student narratives highlight, in relation to the theoretical framework, their self-awareness. To be self-aware, one must be able to self-assess and provide an honest account of how they see themselves. Self-awareness requires introspection and in the accounts provided by students, they were highly conscious of the influence their school had on their lives. Whiting (2014) explains self-awareness also extends to having a “realistic grasp on those areas in need of work” (p. 95). Prime examples of students exhibiting self-awareness include John admitting that his “work habits are not the best” and David seeking out a tutor in his math class because he “struggles with math.”

In addition to self-awareness, the participants in this study demonstrated high levels of internal locus of control. Their locus of control, or where they place blame and responsibility, was internal because they addressed the active role they play in their educational outcomes. Whiting (2014) identifies four factors that influence high internal locus of control for Black males:

> These males believe they can do well because they: (a) believe they can, (b) planned for the difficult (time consuming) work, (c) made the time to study and prepare for the examination, and (d) when not sure, they are willing to ask for

help (p. 95).

As evident from student interviews, these students meet these criteria. For example, Alex was discussing his physics final:

> That's the one that's really kicking my butt. It's actually like a really difficult kind of weed-out course at [the partner university], so I'm having a lot of trouble with that. We have finals coming up. I'm pretty confident about the final.

Planning for the work and studying was evident on the part of the participants as they discussed their study habits and quantified the amount of time they spend doing school work and studying during a given week. Lastly, their ability to ask for help was evident as they explained their relationships with teachers and peers and how they work together. For example, David shared, “when we have tests, we meet up on Sundays to study before the test and all that.”

Theme Five: A Look out the Window: "Coming here made me realize this is exactly what I want to do."

As explained in chapter four, the use of a window metaphor represents the students looking ahead to their futures. All of the students were able to discuss their future plans with certainty and depth including colleges they wanted to attend, majors they were interested in and why, and career paths they wished to pursue. The coursework, access to college students and faculty, and the heavy engineering emphasis of the school all played a role in the students’ current decisions. The participants in this study explained their ECHS experience did directly impact their postsecondary plans.

To examine the impact STEM schools have on influencing students to pursue the sciences after high school, Franco et al.’s (2012) results show some evidence that STEM

schools impact students' career intentions and that those intentions are largely STEM-related. As evident from this study, of the eight participants, five had postsecondary plans that directly align with the STEM fields. This finding supports the overall goal of STEM high schools to funnel students into the "STEM pipeline." Even for students that realized STEM was not for them, they still connected to the benefits they were able to receive from being a part of an intensive STEM environment which largely included 21st-century skills, a known benefit of STEM high schools (Haynie, 2014).

From the theoretical framework, this theme directly connects to academic self-confidence, self-awareness, future orientation, and self-efficacy. Students narratives exemplified confidence and comfort as they discussed what subjects they perform well in and enjoy and how that performance and enjoyment, in turn, influenced their future plans. Whether or not the students decided to or were deciding to stay for the fifth year of the program or pursuing STEM fields, the forethought that was required to make the decision illuminates their future orientation. It is evident the students' future orientation required goal setting and motivation.

Theme Six: A Look through the Magnifying Glass: "What it means in society."

The magnifying glass metaphor represents how students examined themselves in relation to societal expectations. More specifically, their racial and gender identities were discussed. This theme captures the participants' thoughts on race as a construct and the importance of culture. Students explained the various opportunities they were given in their classes to discuss race and gender inequities. While many of the students explained that their identification as Black or African American was a significant part of their identity, some others believed that race was less of an issue because of the diversity of

both their school and the partner university. In addition to their personal identification, students discussed stereotypes that are often attributed to them as Black men which included being linked to sports, lower socioeconomic backgrounds, and criminal activity. A final aspect of this theme was the discussion of masculinity. All the students in the study explained that masculinity is a construct based on expectation and because of that, it is difficult to define. Many of the students' responses reflected both personal experiences and perspectives perpetuated by the media.

School has been identified as a specific space where students' identities not only flourish but are influenced (Davidson, 1996). In the case of the Murphy STEM students, their opportunity to be in a diverse and unique learning environment supporting the discussion of race and gender in the classroom as well as allowing access to information through the provision of technology helped students learn more about themselves in relationship to their surroundings. Given the positive perspectives that students had on race and gender constructs, their identity formation did not align with the literature on oppositional culture theory (Fordham & Ogbu, 1986). Instead, their views were more aligned with the perspective of Smalls, White, Chavous and Sellers' (2007) who identified what they called "racial-identity-as promotive." This perspective involves students' understanding that the African American community has not always had access to educational opportunity and mobility and that being academically successful is highly valued in their community (Small et al., 2007). The promotive perspective is strongly represented in Alex's response as to why his racial identification is important to him:

> I feel like when I'm overcoming a lot of these obstacles, I just feel really proud that I can do this. I've had this opportunity to do this, and a lot of Black people,

> regardless of their time period, didn't have such opportunities. So I'm just real thankful that I'm having this opportunity as a Black male over a White male who have may have had this opportunity and stuff like this for a long time, from a long time ago.

Whiting (2014) explains the relationship between a scholar identity and racial identity and pride asserting "for Black males, possessing race and a scholar identity has high salience; they are comfortable being Black boys or men" (p. 98). He continues "these young men refuse to be constrained by social injustices based on gender, socioeconomic status, and race or ethnicity" (Whiting, 2014, p. 98). Based on this understanding, this theme captured students positive and progressive views on racial identity and pride. Students in this study were adamantly against any association of them being smart to be an unlikely attribute of their race. They were just as adamant about not being subjected to stereotypes. They are indeed comfortable as Black men, as John explained, "I'm happy as I am."

As the creator of the scholar identity model, Whiting (2014) helps to ensure an understanding of the necessity of the role of masculinity in the model. He explains:

> …Black males with a scholar identity do not equate hard work, the pursuit of high academic ranking, intelligence, and studiousness with being unmanly. Moreover, they do not equate success with selling out or acting White. Rather, being a scholar is taught and celebrated as an integral part of a self-possessed masculinity. Such students do not feel the need to belittle and resist learning opportunities; in fact, students with a scholar identity feel empowered as young men in that they

> are able to access knowledge that will add to their future goals and expectations (Whiting, 2014, p. 99).

At no point in the conversations with participants did they equate being successful in school as being a quality that men did not possess. Instead, many of them defined manliness as being able to take care of their families, provide for themselves and help others. George explained masculinity as the creation of a "box" that men were required to sit in but he, like others, did not feel subjected to that "box." He ultimately defined masculinity as "having the courage to do whatever it is that you do." The students exhibited positive perceptions of masculinity but also highlighted the difficulty in defining and describing it.

Summary

Table 7: Review of research question two

Theme	Description	Framework Components
"Murphy has changed me"	• Confidence • Maturity • Discipline • Social growth	• Self-Awareness • Internal Locus of Control
"Coming here made me realize this is exactly what I want to do"	• Future plans/major • Exploration • Course/School influence	• Academic Self-Confidence • Self-Awareness • Future Orientation • Self-Efficacy
"What it means in society"	• Blackness • Stereotypes about Black males • Vagueness of masculinity	• Racial Identity and Pride • Masculinity

The second research question was answered metaphorically. Table 7 provides an overview of each of the themes. Three themes- looking in the mirror, looking out the

window, and looking through the magnifying glass provided insight on how Black males construct their identities within a STEM ECHS. The mirror signified how students examined themselves and how they changed as a result of attending Murphy. The window represents how students positioned themselves for the futures they desired regarding their postsecondary and career plans. Lastly, the magnifying glass symbolizes students' discussion of the societal perceptions of Black men. Taken together, these themes correlate with the broader educational research including ECHS literature, research on STEM schools, as well as ethnic identity research. Overall, these findings illuminated students' high levels of self-efficacy, self-awareness, future orientation, and academic self-confidence as well as their positive perceptions of racial identity and masculinity.

Research Question Three

The final research question has three themes which revealed how the ECHS environment shaped students' perceptions of STEM subjects and STEM careers. They were: "The Way of the Future" (STEM Image), "Learned what it is" (Studying STEM), and "It's important to have diversity in every field" (STEM Nuances). Each is revisited below.

Theme Seven: The STEM Image: "The Way of the Future."

Identifying STEM as "the way of the future" showed the students had an understanding of how STEM is positioned within the economy. Students explained that technology is ever-present and has a great influence in our lives. The findings highlighted students perceived STEM careers to be higher paying and rapidly growing. Also because of the rapid growth, and technological advances, participants perceived careers in STEM

to be able to offer job security.

The students' understanding of how the STEM fields are growing is directly evident within the larger literature. The US Department of Education (n.d.) reports, from 2010-2020 STEM jobs are expected to increase by 14%. Also, of the fastest-growing jobs in the nation, 80% of them require math and science competency (Carvalho, 2015). The President's Council of Advisors on Science and Technology (2010) explains there is a needed emphasis on building competence in the STEM subjects to help drive technological, societal and environmental innovation.

Due to the students' understanding of STEM in relation to the market and the growing need for STEM competencies, students exhibited high levels of future orientation and self-efficacy. Students mentioned high salaries and job security as key characteristics of the fields which show foresight and future orientation as they consider what is important to them down the road. Self-efficacy also manifested because students that were choosing STEM fields based on this understanding proved that they believe in themselves and their ability to be a part of their chosen STEM fields.

Theme Eight: Studying STEM: "Learned what it is."

Being immersed in a STEM environment, students explained they were able to learn exactly what STEM was and all it entails. A large component of this was learning about themselves and their strengths, weaknesses, and personal enjoyment with the STEM subjects. While some students identified the STEM subjects as being their favorites, other students learned from the intensity of some of the subjects their interests lie elsewhere. In addition to learning more about the subjects themselves, students learned more about STEM majors and careers (different types of engineering

specifically). It was clear being in a STEM-focused school was beneficial for students because it helped them learn more about themselves and their future plans.

To no surprise, STEM schools, like Murphy, are designed to funnel students into STEM-related majors and careers. Lowell et al. (2009) asserts the need for students to be exposed to STEM as early as possible if they are going to be well prepared to enter STEM fields in college. For Black males in particular, pursuing STEM fields is largely impacted by the support they receive from their families, teachers, and counselors to explore the fields as well as their exposure and ability to participate in STEM related opportunities throughout their K-12 experiences (Moore, 2006). In this case, the students were being immersed in STEM which gave them a chance to decide where they fit in relationship to the sciences, technology, engineering, and mathematics.

From the theoretical framework, self-awareness, academic self-confidence, and future orientation are embedded in this theme. Students were very self-aware regarding their strengths and weaknesses with various subjects. Many of them were able to explain how they had developed in the subjects and for some that included when some of the subjects began to increase in complexity. Whiting (2014) explains that Black males with high academic self-confidence "do not feel inferior in school, and they do not feel the need to negate, deny or minimize their academic abilities and skills" (p. 97). In this study, the students did not minimize their skills, but they offered critical reflection on their strengths and weaknesses. Lastly, their future orientation was evident because their outlook on their futures included their analysis of how they do or do not fit in the STEM movement.

Theme Nine: STEM Nuances: “It’s important to have diversity in every field.”

This final theme incorporates student observations of racial and gender representations in STEM. Through informal observations on their campus, participants noticed more males than females enrolled in their high school and college classes. One participant, George, highlighted a common perception of STEM fields being seen as more masculine. Their overall understanding and perception was that Blacks were participating in STEM fields at a lower rate, but it was rising. Alex particularly noticed this through his internship experience. Nevertheless, the students believed diversity and representation of different groups in all fields is necessary.

What the students were witnessing is consistent with data on the presence of both women and Black men in STEM (Landivar, 2013). May and Chubin (2003) explained the STEM workforce is overwhelmingly male but also overwhelmingly White. While more males are earning STEM degrees among all racial groups than females, Black males earn STEM degrees at lower rates (Ross et al., 2012). The notion that STEM is perceived to be more masculine may directly be related to the large presence of males, but the students in this study are not alone in their association of the subjects and careers to masculinity. Research has shown women themselves perceive STEM fields to be masculine (Ordaz, 2014).

In relation to the theoretical framework, racial identity and pride and masculinity support the construction of this theme. The students’ emphasis on the need for diversity and increased representation in the fields highlights their desire to see themselves reflected in more spaces. This desire is connected to them having pride in their racial

group. Furthermore, the desire to see equity in gender representation highlights their expansive and nonrestrictive views on masculinity.

Summary

Table 8: Review of research question three

Theme	Description	Framework Components
"The way of the future"	• Growing emphasis • More money • Job security	• Future Orientation • Self-Efficacy
"Learned what it is"	• 21st-century skills • Likes and dislikes • Strengths/ Weaknesses	• Self-Awareness • Academic Self-Confidence • Future Orientation
"It's important to have diversity in every field"	• Seen as more masculine • Gender gaps in grades • Racial differences on campus	• Racial Identity and Pride • Masculinity

To understand how the ECHS impacted Black males' perceptions of STEM subjects and careers, three themes emerged. Table 8 provides an overview of each of the themes. Those three themes included their understanding of STEM as "the way of the future", learning exactly what STEM entailed, and learning more about the need for more diversity in the STEM fields. Students explained the need for emphasis on STEM because of technological advances. Additionally, the school's focus on STEM allowed them to learn more about the demands of STEM and assess their strengths, weaknesses and overall interests in relationship to STEM. Lastly, students discussed their observations of racial and gender disparities at their school which evoked a conversation on the need to increase equitable representation in STEM fields. These findings were connected to existing research which has documented the growing need for more STEM

jobs and the underrepresentation of women and people of color in STEM fields. Furthermore, in relationship to the scholar identity model, participants' positive understandings and attributions of racial identity, masculinity, self-efficacy, and self-awareness evolved from this theme.

Implications

The findings of this study reveal that overall, Black males have largely positive experiences at this STEM ECHS. The ECHSI seeks to replace the traditional 3R's in education (reading, writing, and arithmetic) with rigorous instruction, supportive relationships, and real world relevance. The student narratives reveal that Murphy STEM does indeed utilize the 3R's and the students largely benefit from them. From this study, we learn students are in a supportive and nurturing learning environment and are receiving, as they describe, an "exclusive opportunity" since they are enrolled simultaneously in high school and college. The access to free college is a benefit the students and their families took full advantage of which helps combat excessive student loan debt. Research shows Black students tend to need to borrow more money to pay for their education and these loans come with higher interest rates compared to other groups (Mulesman, 2015). Taken together, the research findings add to the body of knowledge on ECHS in terms of student experiences, the impact of a thematic focus at an ECHS, and how students negotiate their identities within the academic space.

Additionally, this research helps counter the largely deficit-oriented narratives and research provided on African American male students in education. These findings show that Black males can, do, and wish to succeed academically. The STEM thematic focus, while it did not influence all participants to pursue STEM, it did positively impact

students' ability to assess their strengths and weaknesses, and develop necessary 21st-century skills including collaboration and teamwork, creativity, and critical thinking. Yet, because every student does not have the opportunity to attend an ECHS, a STEM specific school, or a small school in general, educational stakeholders must consider how other academic spaces can learn from this school model. Suggestions include increasing access to college credit for high school students, implementing the 3R's in other academic spaces, and attending to positive identity development. Specific recommendations for various educational stakeholders are made below.

Recommendations for Education Practitioners

While the students in this study exhibited a scholar identity, it is imperative that school practitioners understand the scholar identity model and the role they play in helping facilitate scholarly identity construction. This model serves as one example of how we can create more victorious and affirmative perspectives for this population of students. It is recommended that professional development is provided for both pre-service and in-service teachers and administrators on the SIM and how they, as key players in students lives, help shape and facilitate scholar identities.

Moreover, professional development is needed for the 3R's- rigor, relationships, and relevance. Students identified this as being an extremely valuable component of their ECHS experience, but this experience should not be exclusive to ECHS. Every student should be exposed to rigorous and relevant course work where they can attribute its utility to their lives. Furthermore, as a key element of the scholar identity model, strong and supportive relationships with teachers is necessary to help students be successful in school. Lesson planning professional development would be a great start to help teachers

begin to see how the rigor and relevance, in particular, can become imbedded in their lessons.

Recommendations for Early College High School Programs

The findings of this research study highlight the need for the following recommendations: (a) establish mentoring programs for students, (b) increase the presence of teachers of color, (c) be aware of "pushing out," and (d) establish partnerships with surrounding high schools for extracurricular activities. Each of these recommendations are detailed below.

Establish mentoring programs. As an outside pillar of the scholar identity model, Whiting (2014) explains that having a mentor provides guidance and support for Black males. Many of the students did not mention the presence of mentors in their lives when asked specifically about systems of support. Mentoring programs for Black males are particularly beneficial because it allows them to model positive behaviors and increases their likelihood to pursue more advanced and positive experiences (Grantham, 2004). Given the existence of business alliances, those committee members could help initiate a mentoring program. Additionally, being partnered with a university, ECHS could pursue near-peer mentoring programs which are programs that utilize mentors who are close to mentees in social, professional, and age levels (Singh, 2010). In this case, ECHS could pursue university students and partner them ECHS students. It would be especially meaningful if the college students were majoring in fields relative to the school's thematic focus. In addition to utilizing business alliance members and college students, upperclassmen in the early college could also mentor underclassmen. Taking a three-tiered approach to a mentoring program (tier one- upperclassmen, grades 11-13

mentoring underclassmen; tier two- college students mentoring high school students grades 11; and tier three-business alliance members mentoring upperclassmen grades 12-13) would allow students to be flow through a pipeline of mentoring that as they progress through the program. While mentoring programs are beneficial for Black males, it is recommended that an adopted mentoring program such as this be implemented school wide.

Increase the presence of teachers of color. A significant finding from this study was the students' desire to have more teachers of color present in the school. Students explained that having teachers they can relate to both culturally and socioeconomically was important for relationship building. Furthermore, considering the specific population ECHS target (students who are underrepresented in higher education such as students of color, first-generation college students, students from low socioeconomic backgrounds, English language learners, and other underrepresented groups), it is highly plausible that teachers of color are more likely to be able to relate to students because of these shared cultural backgrounds. This cultural connection or harmony is what Irvine (1991) calls cultural synchronization. While it is not safe to assume that all teachers of color will be able to be in sync with students from a cultural standpoint, the possibility should not be overlooked. Early college high schools must consider being more intentional in their hiring and retention practices of teachers of colors to meet the needs of students. One way that early colleges could be more intentional in their hiring and recruitment practices, is by creating purposeful partnerships with colleges of education associated with or surrounding their schools. Partnerships with historically Black colleges and universities (HBCUs) for recruitment initiatives could help early college administrators become

affiliated with diverse teacher candidates. When considering mentoring and hiring practices as mentioned in the previous recommendations, it is important to note the overall notion of representative bureaucracy which considers the ability of one to represent and reflect those they serve across multiple common identifiers including gender, race, and ethnicity (Bradbury and Kellough, 2011). Culturally responsiveness must trump the matching of phenotype for teachers and mentors. Practices must be put in place to train and access the cultural competence of the active adults in the lives of students.

Be aware of "pushing out." Though it was the experience of a single student in the study, it was an important point of conversation during data collection. This student detailed his account and feelings when he was encouraged to leave the EHCS and instead attend a traditional high school. It was suggested he could potentially be more successful in the traditional school environment. It became clear the counselor making the recommendation never inquired about his personal situation at home and its impact on his academic experience. This student's experience is antithetical to the population that ECHS seek to serve. Lee and Burkam (2003) explain that schools sometimes play an active role in pushing students out which is a perspective opposite of much of the literature on student dropouts. While this student in particular did not drop out and found the strength to persist, it is recommended that ECHS be aware of the active role they play in student attrition. Intervention programs are necessary to provide additional support for students who find the ECHS environment challenging. It is recommended that early colleges create detailed protocols for response to intervention plans to intervene when it is evident that students may be struggling both academically and socially.

Establish partnerships with surrounding high schools for extracurricular activities. Many participants in this study and in ECHS in general make the decision to attend this type of school knowing they will have to sacrifice participating in extracurricular activities. This decision is largely impacted by the fact that ECHS offer minimal opportunities. Murphy STEM ECHS is particularly unique because they have a partnership with a neighboring traditional high school. Students at Murphy can participate in all sports and clubs at this neighboring high school if they so choose. Other ECHS programs should consider a similar approach because extracurricular activity participation has been shown to improve students' nonacademic identity development, school connection, and enhance their sense of belonging (Brown & Evans, 2002). Early college high schools would have to consider and negotiate schedule differences and transportation policies that may impede students' participation.

Recommendations for Policy

It is recommended that educational policymakers consider the role they can play in enhancing the presence of teachers of color in education. While a significant finding for this particular study, it is common knowledge that teachers of color are underrepresented in all levels of education. Policy makers must consider programmatic initiatives and incentives they could create and support to influence an increase in teachers of color in the classroom whether they be traditional pre-service programs or nontraditional teacher preparation programs. A prime example is the Call Me MISTER program offered at numerous universities. While designed for African American males specifically, the program provides tuition support as well as academic and social support for students in the program. Targeted programs like this could help increase the talent

pool of teachers of color so they can serve the increasingly diverse student population.

Additionally, policymakers must begin to address ways that high school students can obtain college credit while still in high school. Most traditional programs such as advanced placement courses and dual enrollment programs are reserved for students who traditionally perform well in school. Other programs such as North Carolina's Learn and Earn program have minimum GPA requirements for students to be able to participate. More programmatic initiatives are needed because these programs created for high achievers overlook a large number of students that could be motivated to pursue postsecondary opportunities if given the opportunity to obtain college credit while in high school.

Recommendations for Future Research

This study was bound by Black male upperclassmen at one ECHS with a STEM focus. Given the exclusivity of the group and the setting, the following recommendations are made for future research:

1. Investigate Black girls' STEM ECHS experiences. The students in this research study observed gender gaps in their high school and engineering college classes. It is necessary to examine the experiences that Black girls are having in STEM schools such as Murphy and beyond. These examinations into the experiences and perspectives of Black girls must uncover why they do or do not wish to pursue STEM fields given their increasing necessity in the 21st century alongside what factors influence their decision making.
2. Conduct comparative research on students' learning experiences and identity development at ECHS and traditional high schools. Students in the study spoke in

a very hypothetical manner insinuating that from their perspective, their educational experiences were very different from what students at, what they called “regular high schools” were receiving. A comparative analysis could provide further understanding of how the learning environments are indeed different and how those environments directly impact identity development for all students.

3. Pursue longitudinal research examining students’ ECHS entry, exit, and college completion. In this study, students mentioned classmates who decided to leave the ECHS to attend their traditional high school. The reasons for those students were unknown, but research that tracks students throughout the process would provide a deeper understanding of their overall ECHS experiences. Additionally, for STEM ECHS specifically, current data only provides completion or graduation reports, but very few studies have reported the impact these schools have on students completing college (Eisenhart et al., 2015; Franco et al., 2012; Subotnik et al., 2010). Longitudinal research would provide an understanding of how the ECHS experience impacts college experiences, performance, and completion.
4. Examine the role of the site partner in students’ ECHS experiences. In this study, the students were on the campus of large STEM-intensive four-year university. Students identified their connectedness to the partner university as being a benefit to their overall experience. However, ECHS are connected to both four-year universities as well as community colleges. The four-year ECHS partners are both predominately White universities as well as historically Black colleges and universities (HBCUs). Notably, HBCUs are known to play a prominent role in

increasing Black males' participation in STEM (May & Chubin, 2003). Therefore, an examination of the role and influence of the site partners could provide a greater understanding of the similarities, differences, and overall utility of these various site partnerships.

5. Examine early college high school teacher perspectives. As evident from the findings of this research study, students were able to create strong relationships with their teachers. It would be beneficial to conduct qualitative research with teachers in early college high schools to learn more about their overall experiences as it relates to working in this type of school.
6. Examine and assess the rigor of early college programs. As an integral component of the early college model, rigor was also mentioned by the students during conversation. However, this rigor was never explicitly defined or explained. Research designed to examine and assess the rigor of various early college programs would provide a deeper understanding of what constitutes rigor in these programs.

Summary and Conclusion

This qualitative inquiry was designed to examine the educational and social experiences of Black males attending a STEM ECHS. In addition to their experiences, the research study also purposed to investigate how this unique academic space helps facilitate their identity construction both academically and socially. Given the school's thematic focus on STEM, it was equally important to inquire about students' perceptions of STEM subjects and careers. Through focus groups and individual interviews with participants, findings from this study reveal that students have highly positive

experiences in the ECHS environment though some challenges were present. The learning environment also had a positive impact on their identity construction as well as their STEM perspectives.

In closing, this study sought to add to the body of knowledge on ECHS as well as provide insight on the benefits of having a STEM immersive experience for high school students. Above all, the use of the scholar identity model and purposeful designation of the research as being anti-deficit, this research and these vignettes of the scholars, provide counterstories of Black males in education shattering the common narrative. Altogether, these findings and recommendations can help forge a path towards better educational outcomes for Black males.

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APPENDIX A: NATIONAL EARLY COLLEGE LIST

National Early College Listing by State

Alaska: 1
Arizona: 2
California: 40
Colorado: 4
Connecticut: 1
District of Columbia: 2
Florida: 1
Georgia: 13
Illinois: 1
Indiana: 1
Iowa: 1
Kentucky: 2
Maryland: 1
Massachusetts: 5
Michigan: 3
Mississippi: 1
Missouri: 3
Nebraska: 1
New Jersey: 3
New Mexico: 1
New York: 16
North Carolina: 70*
Ohio: 11
Oregon: 4
Pennsylvania: 3
South Carolina: 3
Tennessee: 2
Texas: 47
Utah: 6
Washington: 10
Wisconsin: 1

Source: North Carolina Department of Public Instruction. (2010). NC leads nation in number of early college high schools [News release]. Retrieved from http://www.ncpublicschools.org/newsroom/news/2009-10/20100503-01; Jobs for the Future. (n.d.a.). Schools. Retrieved from http://www.jff.org/initiatives/early-college-designs/schools

Note: There are early college high schools unaccounted for in this list because they are not a direct partner under the ECHSI umbrella. To dates, North Carolina has approximately 78 in partnership with North Carolina New Schools.

APPENDIX B: COVER LETTER

Black Male Experiences at a STEM Early College High School Cover Letter

Dear [insert name],

My name is Tempestt Adams and I am a student from the Education department at the University of North Carolina at Charlotte. You are being invited to participate in a research study about the experiences of Black males who attend a STEM early college high school. Participating in this research study is a great opportunity because it allows your voice to be heard! We want to know about your experiences in this school including why you came, what benefits you gained from attending and how you feel about STEM subjects and careers. This information is valuable as we learn more about how to create better school environments for students as well as creating more early college high schools.

If you decide to participate in this study, you will participate in interviews (one group interview and one individual). With the principal's permission, you will be receiving a follow-up email that will provide you access to the Google sign-up form in you are interested.

Remember, this is completely voluntary; you can choose to be in the study or not. If you'd like to participate, please return the signature forms to the principal. If you are under the age of 18, you must obtain parent/guardian signatures on the consent form and you must sign the assent form. If you are 18 or older, you only need to return the consent form with your signature.

If you have any questions about the study, please email tadams51@uncc.edu.

Thank you very much.

Sincerely,

Tempestt R. Adams

APPENDIX C: INFORMED CONSENT

Vignettes of Scholars: A Case Study of Black Male Students at a STEM Early College High School
(Students in Grade 11, 12, 13)

What is the purpose of this study?
Your child is invited to participate in a research study to learn more about how Black males describe their STEM early college high school experiences both academically and socially. This study seeks to understand how the early college model serves this population of students and how the program culture aids students in their identity construction.

Who are the researchers working on this study?
Tempestt R Adams, is a PhD student in Urban Education at UNC Charlotte. Dr. Chance Lewis, the Director of the Urban Education doctoral program is serving as my advisor and responsible faculty on this project.

How will my child be involved in this study?
The researcher will interview students within focus groups and individually. Students will only participate in one focus group. Investigators will only interview students who agree to participate. Focus group interviews will be audio taped and video taped to ease the transcription (properly label student statements). Volunteers will be requested for participation in individual interviews. Interviews will be audio taped using a digital recorder and then transcribed after the interview. This data will be kept on a secure, password protected computer. Participant names will not be included in transcripts. After the interviews are transcribed, the audio and video data will be destroyed. Participants will be observed throughout the school day.

We will make sure that your child's answers are kept completely confidential. The researcher will keep a list of all children who are in the study, but no names will be used in any shared information. Instead, a pseudonym (false name) will be selected.

Prior to the interview, the researcher will ask students to complete a demographic questionnaire to gather information about their background (middle school attended, favorite subject, extracurricular activities, etc.) and future educational plans that will be useful in the study.

What are the risks and benefits of my child participating in this study?
There is no known risk of harm to your child. Participation involves answering interview questions. By participating in this study, your child will help inform educational practices. Information from this study may be shared in research reports, at educational

conference or articles published in educational journals. In these publications and reports, no information about your child that can identify the (such as their name) will be used.

What will happen if my child is injured while participating in the study?
Since this study only asks that your child complete the interview, there is no known risk of injury. Nonetheless, if your child is hurt during the study, we will make sure he or she gets the medical treatment he or she needs for the injuries. However, the University of North Carolina at Charlotte will not pay for the medical treatment or repay you for those expenses.

Is my child required to participate in this study?
Your child is a volunteer. The decision to participate in the study is completely up to you and your child. If you and your child agree to be in the study, you and your child may stop at any time. If you or your child decides not to participate in the study or to stop once the study has begun, your child will not be treated differently.

What is the University of North Carolina at Charlotte role in the project?
UNC Charlotte wants to make sure that you are treated in a fair and respectful manner. Contact the University's Research Compliance Officer (704-687-1871) if you have questions about how you or your child is treated as a study participant. If you have any questions about the actual project or study, please contact Tempestt R. Adams (tadams51@uncc.edu or 919-559-4313). Dr. Chance Lewis can be reached at chance.lewis@uncc.edu.

Parental Consent
I have read the information on this consent form. I have had the chance to ask questions about this study and about my child's participation in the study. My questions have been answered to my satisfaction. I am at least 18 years of age, and I agree to allow my child to participate in this research project. I understand that I will receive a copy of this form after I have signed it along with the principal investigator of this research study.

_____
Your Child's Name (PLEASE PRINT)

_____
Parent/Legal Guardian Name (PLEASE PRINT)

_____ _____
Parent/Legal Guardian Signature DATE

_____ _____
Investigator Signature DATE

APPENDIX D: INFORMED ASSENT

Vignettes of Scholars: A Case Study of Black Male Students at a STEM Early College High School
(Students in Grade 11, 12, 13)

What is the purpose of this study?
You are invited to participate in a research study to learn more about how Black males describe their STEM early college high school experiences both academically and socially. This study seeks to understand how the early college model serves this population of students and how the program culture aids students in their identity construction.

Who are the researchers working on this study?
Tempestt R Adams, is a PhD student in Urban Education at UNC Charlotte.

How will I be involved in this study?
The researcher will interview you within focus groups and individually. You will only participate in one focus group. Investigators will only interview students who agree to participate. Focus group interviews will be audio taped and video taped to ease the transcription (properly label student statements).

Following the focus groups, if you volunteer for an individual interview, interviews will be audio taped using a digital recorder and then transcribed after the interview. This data will be kept on a secure, password protected computer. Your name will not be included in transcripts. After the interviews are transcribed, the audio and video data will be destroyed. Students who participate in the individual interviews will also be observed throughout the school day.

We will make sure that your answers are kept completely confidential. The researcher will keep a list of all students who are in the study, but no names will be used in any shared information. Instead, a pseudonym (false name) will be selected for you.

Prior to the interview, the researcher will ask you to complete a demographic questionnaire to gather information about your background (middle school attended, favorite subject, extracurricular activities, etc.) and future educational plans that will be useful in the study.

What are the risks and benefits of me participating in this study?
There is no known risk of harm to you. Participation involves answering interview questions. However, should you experience any distress or anxiety, the researcher will be available to assist you. By participating in this study, you will help inform educational practices. Information from this study may be shared in research reports, at educational

conference or articles published in educational journals. In these publications and reports, no information about you that can identify the (such as your name) will be used.

What will happen if I am injured while participating in the study?
Since this study only asks that you complete the interview, there is no known risk of injury. Nonetheless, if you are hurt during the study, we will make sure you get the medical treatment needed for the injuries. However, the University of North Carolina at Charlotte will not pay for the medical treatment or repay you for those expenses.

Am I required to participate in this study?
You are a volunteer. The decision to participate in the study is completely up to you and your parent/guardian. If you and your parent/guardian agree to be in the study, you may stop at any time. If you or your parent/guardian decides not to participate in the study or to stop once the study has begun, you child will not be treated differently.

What is the University of North Carolina at Charlotte role in the project?
UNC Charlotte wants to make sure that you are treated in a fair and respectful manner. Contact the University's Research Compliance Officer (704-687-3309) if you have questions about how you or your child is treated as a study participant. If you have any questions about the actual project or study, please contact Tempestt R. Adams (tadams51@uncc.edu or 919-559-4313).

Student Assent
I have read the information on this assent form. I have had the chance to ask questions about this study. My questions have been answered to my satisfaction and I agree to allow participate in this research project. I understand that I will receive a copy of this form after I have signed it along with the principal investigator of this research study.

_____
Your Name (PLEASE PRINT)

_____ _____
Your Signature DATE

_____ _____
Investigator Signature DATE

APPENDIX E: DEMOGRAPHIC QUESTIONNAIRE

DEMOGRAPHIC QUESTIONNAIRE & SATISFACTION SURVEY

This questionnaire is designed for you to provide some basic background information about yourself and your experiences here at the early college. It will help me get to know more about you and the information will not be shared with anyone else.

Demographic Information

Name:
_____

Pseudonym:
_____

Grade: _____ Age: _____GPA: _____

Email Address:
_____

Educational Background

What extra-curricular activities are you involved in? If none, write N/A.

What is your favorite subject?

What do you like most about this school?

What are your plans after graduation? If college, identify where you would like to go and what you would like to major in.

Did your parents/guardians attend college (2 yr or 4 yr)? _____

Did your parents/guardians graduate college? (2 yr or 4 yr) _____

Who inspires you to be successful and why?

* continues on back

Murphy STEM Satisfaction Survey

Question	Agree	Slightly Agree	Neither Agree Nor Disagree	Slightly Disagree	Disagree
I have had a pleasurable experience here at Murphy STEM early college high school.	5	4	3	2	1
Murphy STEM early college high school has helped me think about and prepare for college/career.	5	4	3	2	1
The teachers and staff here at Murphy STEM high school genuinely care about us.	5	4	3	2	1
I feel connected to the school community here at Murphy STEM.	5	4	3	2	1
I would recommend other students come to Murphy STEM early college high school.	5	4	3	2	1

APPENDIX F: FOCUS GROUP INTERVIEW PROTOCOL

Black Male Experiences at a STEM Early College High School
Focus Group Interview Protocol

Introduction & Overview: Notes to Researcher

- Express appreciation for student's being there and their willingness to participate.
- Overview of the study, review of assent forms again. Provide students with copies of their signed forms.
- Express confidentiality again. Though real names may be used throughout the discussion, all real names will be replaced with pseudonyms.
- Review of audio and video tapping for later transcription.
- Take questions from the group.

Warming Up Questions

1. Everyone take a few minutes to introduce yourself to the group. Tell us your name, grade level, any additional information you would like us to know (favorite subject, extra curricular activities, etc.) and tell us what made you want to come to this school.

Research Question 1: How do Black males describe their STEM early college high school experiences?

1. What do you like most about this school?
2. What do you dislike about this school, if anything?
3. If you could change one thing about the school, what would it be?
4. Discuss the overall pros and cons of attending an early college high school; this early college high school.
5. How would you describe your relationships- with teachers, administrators, and other students?
6. What do you think the main differences are between this school and a traditional high school?
7. What are your thoughts and feelings about the school being focused on STEM?
8. What factors influenced your decision to come to this school? Have any of you every thought about leaving? What influenced you to stay? What made you want to stay for the 5th year? (are juniors and seniors planning to pursue the 5th year)
9. How would you describe your time here at this school?

Research Question 2: How do Black males construct their identities as scholars at A STEM early college high school?

1. Would agree that it is a sacrifice choosing to come to this school? Why or why not? If so, what sacrifices have been made and why did you make them?
2. How do you define the word scholar? What characteristics do you think make up a scholar?

Research Question 3: How does the STEM early college high school environment impact Black males' non-academic aspects of their identity?

1. In what ways do you think you have changed or grown since attending this school?
2. How do you think your experiences, as Black and male, may be different from other students here at this school?

Research Question 4: How does the STEM early college high school environment impact Black males' interests in STEM subjects and STEM careers?

1. What are your thoughts and feelings about the school being focused on STEM?
2. How did you feel about STEM before coming to this school? How do you feel about these subjects now?
3. Are you planning to pursue STEM majors/careers? What and why exactly?

Conclusion

1. Is there anything else you would like to add?
2. Do you have any questions?
3. Who would like to continue the conversation and volunteer for an individual interview?

APPENDIX G: INDIVIDUAL INTERVIEW PROTOCOL

Black Male Experiences at a STEM Early College High School
Individual Interview Protocol

Introduction & Overview: Notes to Researcher

- Express appreciation for student's being there and their willingness to participate.
- Overview of the study, review of assent forms again. Provide students with copies of their signed forms.
- Express confidentiality again. Though real names may be used throughout the discussion, all real names will be replaced with pseudonyms.
- Review of audio tapping for later transcription.
- Take questions.

Warming Up Questions

1. Recall information from focus group obtained about the participant. Ask them to tell me more about themselves.

Research Question 1: How do Black males describe their STEM early college high school experiences?

1. Talk to me a little bit about your relationships with your peers and the faculty at the school.
2. Talk to me about how you got here, how was the decision made for you to attend this school.

Research Question 2: How do Black males construct their identities as scholars at A STEM early college high school?

1. How much time do you spend studying?
2. What do you plan to do after high school?
3. How have you changed as a student since attending this school?
4. Have you ever heard someone say, "being smart is acting White". Tell me your thoughts and feelings about this.

Research Question 3: How does the STEM early college high school environment impact Black males' non-academic aspects of their identity?

1. In what ways do you think you have changed or grown since attending this school?
2. How do you think your experiences, as Black and male, may be different from other students here at this school?

Research Question 4: How does the STEM early college high school environment impact Black males' interests in STEM subjects and STEM careers?

1. Would you have attended this school even if it did not focus on the STEM subjects heavily?
2. What are your thoughts and feelings about the school being focused on STEM?

3. How did you feel about STEM before coming to this school? How do you feel about these subjects now?
4. Are you planning to pursue STEM majors/careers? What and why exactly?

Conclusion

1. Is there anything else you would like to add?
2. Do you have any questions?
3. Who would like to continue the conversation and volunteer for an individual interview?

APPENDIX H: THEMATIC ANALYSIS CODEBOOK

RQ 1: How do Black males describe their STEM early college high school experiences?

Family
Peer support
Heavy workload
Preparation for college, career, real world
Opportunity
Guinea pigs
Small community
Relationships
Public-private school
Freedom
Sacrificed free time
"STEM" life
a chance to explore, figure out who you are
drama free
cool, exclusive
free college
networking opportunities
teacher relationships
teachers care
bond
big family

Collapsed

Relationships	Benefits	Challenges
Small community Bond Big family Teachers care Peer support Kind, loving environment	Opportunities Experience Saves money Connections/networking Saves time Drama free Free college Freedom Learned time management College/career/real world prep Exploration/what you like Drama free Cool, exclusive, public-private Structured curriculum Says something about you Learned discipline	Guinea pig class Friends going elsewhere Limited classes No free time No sports/clubs initially or on-site Had to stop extra-curricular Heavy workload Need more Black teachers

RQ 2: How do Black males construct their identities (academic and non-academic) at a STEM early college high school?

confidence
Time spent studying
Support from peers
Support from family
Support from teachers
Smartness is not akin to race
More open to talk to people, opened up, more easygoing
Figured self out
Social growth
Personal growth
Maturity
Sacrifice
Seeing self as a scholar
Post secondary plans defined
Self-assessment
Racial pride
Stereotypes
Colorblindness fallacy
Culture
Challenges being a Black male
Not impacted here by race
Social expectations
masculinity is vague
role model vs inspiration
role model danger
racial inequality
media influence on race and masculinity
growth
change
parental force
gains outweigh sacrifices
schools impact on future
race is a part of identity
belongingness
need to be aware because I am black
language and masculinity association
heavy reliance on self
importance of being confident
masculinity has a gender assignment
not stuck in masculinity box
discipline
not a statistic
the school is a test
family influence
teacher influence

Codes Collapsed				
Academic				Non-academic
Self	Success	Social Constructs	Support	
Seeing self as a scholar importance of being confident not a statistic Time spent studying Discipline Heavy reliance on self Self-assessment Subject strength	gains outweigh sacrifices schools impact on future Post secondary plans defined Sacrifice	race is a part of identity belongingness need to be aware because I am black racial inequality media influence on race Smartness is not akin to race Racial pride Stereotypes Colorblindness fallacy Culture Not impacted here by race Pride	Support from peers Support from family Support from teachers parental force Family influence Teacher influence role model vs inspiration role model danger	More open to talk to people opened up more easygoing Figured self out Social growth Personal growth growth change confidence Maturity
		language and masculinity association masculinity has a gender assignment not stuck in masculinity box Social expectations media influence on race and masculinity masculinity is vague Challenges being a Black male		

RQ 3: How does a STEM early college high school impact Black males' perceptions of STEM subjects and STEM careers?

STEM helps facilitate 21st century skills
Money
The way of the future
Love math
Math is difficult
Don't like science
Don't like math anymore
Diversity in STEM
Job security
Intense math
Seen as more masculine
Rise of Black men
Underrepresentation
Use the skills
Learned what STEM is
Gender gaps in grades

Collapsed		
What I think	What it entails	What I noticed
Job security Money The way of the future	Intense math STEM helps facilitate 21st century skills Love math Math is difficult Don't like science Use the skills Learned what STEM is Don't like math anymore	Diversity in STEM Seen as more masculine Gender gaps in grades Rise of Black men Underrepresentation