INVESTIGATING THE TRANSITION EXPERIENCES OF EARLY COLLEGE HIGH SCHOOL SENIORS TO COLLEGE STEMM MAJORS: A CASE STUDY

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INVESTIGATING THE TRANSITION EXPERIENCES OF EARLY COLLEGE HIGH SCHOOL SENIORS TO COLLEGE STEMM MAJORS: A CASE STUDY

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ABSTRACT

The Early College High School Initiative is a program that provides college access to first-generation, minority, low-income and other under-represented populations by allowing them to take college classes while in high school. The goal of The Early College High School Initiative is to ease the transition to college by allowing the students to earn an associate’s degree or up to two-years of college by the time they graduate high school.

This study explored the transition experience of a group of early college high school students pursuing STEMM majors at a large Mid-western public university. Interviews were conducted with seven senior STEMM majors at the beginning and end of their final semester in the program. Interviews were also conducted with two high school math teachers, two high school science teachers, three high school administrators and seven college professors to gain insight into the roles they saw they played in the students’ transition to college.

The following six categories emerged from the analysis of the interview transcripts (a) attitude toward STEMM majors, (b) motivation, (c) preparation, (d) support, (e) interaction and engagement in the college culture, and (f) academic identity. The results were compared with several transition theories including Van Gannep’s (1960) “Rites of Passage,” Tinto’s (1988) “Model of Institutional Departure” and Bridges’ (2003) “Managing Transitions.” Implications for universities, the early college
high school at which the study was conducted, and other early college high schools is provided along with recommendations for future research.
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CHAPTER I

INTRODUCTION

There are many approaches for introducing high school students to college. Advanced Placement, or AP, and honors classes have existed for decades and encourage “gifted” students to prepare for college. However, motivated and talented students who do not place into these advanced classes or who do not attend a school that offers them can miss out on this opportunity.

More recently dual enrollment programs have been developed to allow students to earn college credit while attending high school. Some of these programs focus on gifted students while others encourage underrepresented populations to consider attending and completing college. One such dual enrollment program is the Early College High School, initiated by the Bill and Melinda Gates foundation KnowledgeWorks, which targets first-generation and underprivileged students (“The Early College High School Initiative,” 2007). While there has been significant research on AP and gifted students preparation for and transition into college there is still little information available on how early college high school students transition into college, especially into math and science courses and STEMM (Science, Technology, Engineering, Math and Medicine) majors (Bressoud, 2007; Geiser & Santelices, 2006).
Motivation for the Study

The motivation for this study stems from multiple experiences. First, I am a community college math professor working primarily with first and second year Engineering Technology, Business Technology and Allied Health majors. I see firsthand how these students are often underprepared for college level mathematics and science courses. Second, I studied engineering and math in college and despite graduating from a fairly rigorous college prep high school and taking AP chemistry, physics and calculus, I still felt unprepared for the transition to college level math and science courses. However, I do not blame the middle and high schools for the lack of preparation of myself or my students. I have come to find that the issue lies more in the transition, or lack thereof, from the steady pace and regular schedule of high school to the increased pace and relaxed schedule in college.

Additionally, I have worked with the math faculty at the Large Metropolitan Urban (LMU) Early College High School. This collaboration has led to an inside view of how the Early College High School teachers work to prepare their students for college at a much earlier age and how they try to ease the transitional issues described above. Since the math and science courses often cause the most trouble for incoming college students, it made sense to observe how the early college high school students transition to these classes. Furthermore, first-generation students are traditionally less likely to pursue STEMM majors due to lack of encouragement and support (Chen & Carroll, 2005; Lam, Srivatsan, Doverspike, Vesalo, & Mawasha, 2005). Since the early college high school examined in this study is composed primarily of first-generation students and the program is supposed to provide additional support to these students in order to improve
their transition to college, it also made sense to examine how students planning to major in the STEMM fields felt about their transition and preparation for college math and science courses.

**Statement of the Problem**

The 2005 National Center for Educational Statistics (NCES) report on first-generation students in postsecondary education found that they were at a disadvantage in terms of their access to, persistence through, and completion of postsecondary education (Chen & Carroll, 2005). This may be attributed to certain family and background characteristics which are associated with attrition (Ishitani, 2003; Ishitani, 2006; Pearish, 2006; Tinto, 1975). Since many jobs are now requiring a college degree and employers are using education levels to sort employees, lack of a degree can keep many people from achieving the job they want (Arcidiacono, Bayer, & Hizmo, 2010). In turn, people who earn a college degree are more likely to attain better jobs, improve their socio-economic status, and contribute more to the economy. Since first-generation students are less likely to attend college or earn a degree, they are in turn limited in their job prospects.

Additionally, first-generation students are more likely to be placed in remedial courses, further hindering their chances of completing a college degree. In fact, 45% of first-generation students seeking a bachelor’s degree took remedial mathematics courses at the college level in 2000 compared to 21% of students whose parents hold some type of higher degree (Chen & Carroll, 2005). Placement in remedial courses, as well as other precollegiate factors, can keep first-generation students from entering the STEMM fields. In fact, only 8.5 percent of first-generation students pursue a STEMM majors compared
to 18.2 percent of college students whose parents earned a bachelor’s degree (Chen & Carroll, 2005).

One proposed solution to the problems of under-preparedness and recruitment of students into college is dual or concurrent enrollment. Such programs allow students to take college courses while in high school, ultimately introducing students to the college experience while cutting down on the amount of time it takes to earn a degree. The goal is to provide students with the motivation and challenge to stay engaged in their studies while easing the transition to college through supplementary support from the high school faculty. This study will focus on a specific group of early college high school students entering their senior year, which is comprised entirely of college courses. By using qualitative methods I will explore the transition of these early college high school students into STEMM majors at a large, urban university.

**Purpose of the Study**

The Early College High School Initiative has only existed within U.S. secondary education and post-secondary education for a short time. Accordingly, there is little data related to the positive and negative impacts of the school. Furthermore, the data that is available tends to focus more on the faculty and administrators’ roles in the schools (Aviles-Reyes, 2007). The studies that have focused on students tend to take a quantitative approach and look at how participation in dual enrollment, socio-economic status, gender, and ethnicity effect test scores and graduation rates (Bressoud, 2007; Chen & Carroll, 2005; Crockett-Bell, 2007). The few qualitative studies on the students at early college high schools examine why students chose to attend and how they view the program (Cravey, 2007; Valdez, 2009). The Early College High School Initiative stresses
that one of its main goals is to ease the transition from high school to college, however, there is minimal research on how these students experience the transition.

The purpose of this study is to use the case study approach (Yin 2009) to gather information on the preparation and transition of early college high school students for STEMM majors and to college life at a large, urban university. This research provides a snapshot of a group of students in their senior year of high school, which at the LMU Early College High School is comprised entirely of college courses. By examining students during this year I explored the transition of these first generation students into college STEMM majors.

**Research Questions**

This study employed a case study approach to explore the transition that the LMU Early College High School students make from taking high school classes on a college campus to taking actual college courses. This research is guided by the following two questions and their sub-questions:

1. How do early college high school students experience the academic, social and cultural transition from high school to college and, more specifically, into a STEMM major?

   a. What are the internal factors which contribute to their transition and how do these factors affect their transition?

   b. What are the non-school related external factors which contribute to their transition? How do these factors affect their transition?

   c. What types of school (high school and college) related supports do they receive, or wish they had received, and how do the supports, or lack of supports, affect their transition?
2. What factors contributed to these first-generation students initially choosing and continuing to pursue a STEMM major and how did the factors listed in research question one influence their choice?

It is critical to note that the hypothesis is not posed at the start of a qualitative research study (Denzin and Lincoln, 2008). Instead, the hypotheses and findings emerge through the process of analysis. The research questions listed above were used as preliminary guidelines for the study and were refined as the study unfolded resulting in the findings presented in Chapter V.

**Theoretical Framework**

While the physical sciences aim to explain the natural world, the social sciences seek to understand human action (Crotty, 1998; Schwandt, 2003). Interpretivist social science researchers seek the meaning that drives social action and maintain that humans must interpret human interactions in order to truly understand it (Schwandt, 1998). Interpretivists embrace the idea of *Verstehen*, the neo-Kantian belief that humans seek to understand their own actions as well as the actions of others and therefore social science research is inherent in human interaction (Schwandt, 2003). This study was conducted from an interpretivist perspective because it sought to understand the transition experience of a group of early college high school seniors pursuing STEMM majors.

Social science research often requires the interaction of the researcher with the participants and therefore, interpretivism holds that the researcher must be aware of the background they bring to the study and address how this will affect objectivity. However, interpretivists do not feel that this background limits a study’s objectivity. Schwandt (2003) notes that interpretivist researchers “argue that it is possible to understand the
subjective meaning of action (grasping the actor’s beliefs, desires and so on) yet do so in an objective manner” (p.298).

Interpretivism is a tradition informed by constructivism, a qualitative paradigm which holds that knowledge is constructed rather than revealed (Denzin & Lincoln, 2008). Constructivists work towards reconstructing events and believe that humans are active in the construction of, rather than passive recipients of knowledge (Denzin & Lincoln, 2008). Further, knowledge is constructed through the creation of concepts, models and schemes to make sense of experience which are continually tested and modified by the knower (Crotty, 1998; Schwandt, 2003). Through the process of refining our knowledge we develop more sophisticated constructs. Furthermore, a single construction is no more true than any other, only more informed (Denzin & Lincoln, 2008). Therefore, through the process of research, one develops and refines an understanding of the social action they investigate.

This study aims to explore the transition experience of the students at an early college high school. It was based on the idea that there are multiple approaches to interpreting the transition experience and that each individual’s perception of the transition is valid. Through the interview process, the students were asked about the transition experience itself while the high school teachers and college faculty were asked about how they saw themselves to be involved in the students’ transition. The process of gathering information from these individuals led them to reflect on the experience. Through reflection and dialogue, the findings were constructed to form a reality in which the participants viewed the experience. Through the interview process, transcription and thematic analysis, I worked to provide the most refined interpretation of the transition
experience they described. Further, viewing the transition from multiple perspectives provides a more informed construction of experience.

Theories of Transition

This study focused on the transition of seven early college high school students completing their senior year of high school. Therefore, transition theory will be used as a theoretical framework for this study. Others have examined the transition experiences of college freshman as a threshold experience or as a “rite of passage” (Hay, 2005; Terenzini et al., 1993; Tinto, 1975). This liminality is a time when people going through a transition are forced to reflect on the differences between their prior way of life and the new one into which they are entering. This study draws from the three transition theorists Van Gennep (1960), Tinto (1988), and Bridges (2003; 2004). Van Gennep (1960) explored transition from a sociological perspective by examining how various cultures signify and deal with transition between life stages, especially the transition from youth to adulthood.

Tinto (1988; 1993) took Van Gennep’s findings and applied them to college student transition with a primary focus on institutional policy. He writes extensively on student attrition, first-year experiences and the effectiveness of institutional policies implemented to improve student retention (Engle & Tinto, 2008; Tinto, 1993; Tinto, 1997). His “Model of Institutional Departure” focuses on transitional factors that lead to students choosing to leave college as well as ways for institutions to improve retention (Tinto, 1988; Tinto, 1993). Tinto’s model is effective in describing the stages through which these students pass as they complete the early college program. However, not all of his recommendations for institutional policies are effective for this group of students.
since they are not traditional college students. This will be explored in more detail in Chapter V.

Another theory of transition is Bridges’ (2003; 2004) work which provides a psychological counseling approach to exploring life’s transitions. Other studies have found Bridges’ theories helpful in describing the cycle students go through as they enter college (Hay, 2005; Howell, 2004). Bridges’ theory provides a helpful framework for understanding many of life’s transitions including the stages high school students experience as they transition to college.

In summary, the transition theory framework provides a lens through which to examine the transition that early college high school students made to college. Furthermore, Tinto’s model offers insight into how research on transition can be translated into institutional policy in some cases. In cases where Tinto’s model does not apply, Van Gennep and Bridges provide additional frameworks upon which to build conclusions about the students’ transition experience. Therefore, all three theories of transition were useful tools for developing a deep understanding of the student’s perspective during their final year in the early college program.

**Foundations of the Early College High School**

Cravey (2007) notes that the Early College Initiative follows many of the principles espoused by Progressivism, especially the theories of Counts. It adheres to the ideas of social reform described by Counts (1932). The schools are also based on strong student-teacher interaction and foundational experiences. The Early College High School programs also parallel the Magnet school movements as they promote a specific goal for all students to reach (Eisner, 2002), that of completing up to two years of college credit
by high school graduation. Additionally, many of the schools provide special workshops designed to discuss the expectations and preparation required for attending college, what the opportunity means, and how to navigate the college system (Born, 2006). They boast individual programs based on the students interests. They have smaller high school classes which research has found to foster student-teacher interaction (Barton, 2003). The workshops they provide get students to think critically about their situation and how to achieve their goals.

Counts (1932) discussed social reform through education in much detail. He saw the school as a place where educators could teach students, not a particular political doctrine but, the ability to think critically and become social agents (Counts, 1932). He wished to overcome the class disparity he saw in this country and to get students to do more than just think about solutions to the problems of the world, he wanted them to act and create change (Counts, 1932). The Early College High School endeavors to make change in the world by providing low-income and underrepresented youth with an opportunity to attend college, expand their horizons, and increase diversity in higher education with the hope of narrowing the achievement gap found between these under represented populations and more prosperous young Americans.

**Definition of Terms**

For the purposes of this study the following definition of terms will be used throughout the text.

**Early College High School (ECHS):** The ECHS is a nation-wide collection of programs, sponsored by the Bill and Melinda Gate Foundation, that award an associate’s degree or up to two years of college credit for courses taken while in high school. Early
college high school’s have no more than 400 students (100 in each of four grades). Students enrolled in the program are often low-income youth, first-generation college goers, English language learners, students of color, and other young people underrepresented in higher education. Each early college high school has a theme. The theme of the ECHS in this study is first-generation college goers (“The Early College High School Initiative,” 2007).

**Concurrent Enrollment:** College courses in which a high school student is enrolled which may or may not be applied to the high school degree (Cravey, 2007).

**College Culture:** A set of common values, goals, attitudes and acquired knowledge used by a group college students, faculty and staff to interpret experiences and generate social behavior.

**Dual Enrollment:** Any scholastic program designed to allow students to earn both secondary (high school) and postsecondary (college or community college) credit.

**First-generation Students:** College students who are the first members of their family to enroll in and attend college or earn a college degree.

**Postsecondary:** Any institution of higher education such as a community college, college or university; or any course work taken at this level.

**STEMM:** Any postsecondary degrees involving Science, Technology, Engineering and Mathematics. Sometimes an additional M (STEMM) is added to include the Medical fields.

**Urban Students:** Students living and attending school in a higher population, inner-city environment.
Significance of the Study

One thing is certain: More students are attending college today than in previous decades. In fact, enrollment for students under 25 has had the largest growth in recent decades. According to the U.S. Department of Education’s Digest of Education Statistics (2001), enrollment among this population grew by 12 percent in the nineties and was projected to increase an additional 21 percent by 2010. This means that students who may have, in years past, directly entered the workforce after high school are now choosing to attend college for reasons including the anticipation of obtaining a higher paying job upon graduation. Many of these new students are the first in their family to attend college. With the growing desire to make higher education attainable to everyone, colleges are seeking and admitting students who may have limited support or may be underprepared for the content and rigor of university study.

At the same time there is a push in higher education to recruit and retain underrepresented populations, including women, minorities and first-generation students, to STEMM fields (Lam, Doverspike, & Mawasha, 1997; Lam et al., 2005; Yelamarthi & Mawasha, 2008). Since STEMM fields depend on student preparation for a rigorous math and science curriculum, several programs have been developed to encourage and support under represented populations to attend college and major in STEMM fields. Pre-engineering and STEMM pathways programs have been designed to specifically target middle and high school students who show interest in STEMM majors but may not consider attending college for nonacademic reasons. Many of these programs have proved fairly successful at recruiting and retaining such students (Bressoud, 2007; Lam et al., 1997; Lam et al., 2005). However, little research has been done on how non-STEMM
pathway programs, aimed at providing general support and increasing college access, impact STEMM majors.

The Middle and Early College movements are geared toward providing a pathway to earning a college degree for primarily first-generation or underprivileged students. How does this program impact students who are interested in STEMM majors? This study seeks to examine what factors contribute to these students choosing to pursue a STEMM major and then how early college high school students transition into STEMM majors and the college campus environment. This study also seeks to explore how these students fit into the bigger picture of first generation college students.

**Limitations of the Study**

This study is limited in several respects. First, this study only examined seven early college high school students so the findings are not transferable to all students. Second, the sample was chosen purposefully based on the criteria discussed in Chapter III. Since the participants were not chosen randomly, or to be proportionally representative of any given population, generalization to a larger population is not possible. These limitations do not trivialize the power of this study in identifying valid themes; they only limit the ability to determine the frequency of these themes in a larger population. Also, since interviews were only conducted by the researcher, there may be some limitations due to bias. These issues are further addressed in the subjectivity section found in Chapter III. Inclusion of my own subjectivities adds credibility to the study and allows me to frame my background and interest in the study (Creswell, 1994; Merriam, 1998).
Summary

The transition to college is difficult for traditional students who have completed 12 years of school, reached adulthood and graduated high school. This transition can be even more overwhelming for a 16 or 17 year old who has just passed the state standardized test claiming to have proficient mastery of the required content standards. First-generation students are faced with additional challenges such as lack of family guidance in the heuristic knowledge needed to navigate the system of higher education. Additionally, students planning to enter STEMM fields are often overwhelmed by the pace and rigor of the STEMM curriculum (Lara, 1992). However, ventures such as the Middle and Early College High Schools believe that enrolling students in college courses at an earlier age provides them with an opportunity to learn how to navigate the higher education system with a specialized support system to help them transition into college. In theory this program should allow students to satisfy requirements at both the high school and college level, complete a college degree faster, and provide the students with challenging motivation to excel (Born, 2006). A study of early college high school students, the motivating factors that lead some to choose STEMM majors, the level of support the STEMM students received for attending college, their emotional preparedness for college, and descriptions of their transition experiences can provide insight into what factors are important for college success for first-generation STEMM majors.
CHAPTER II

REVIEW OF THE LITERATURE

The end of World War II saw the first big wave of first-generation students entering college, mostly funded by the G.I. Bill of 1944 (Thelin, 2004). Decades later, in the 1980’s, higher education saw a new influx of first-generation students who were no longer able to get the same jobs their parents had obtained with a high school education (Engle & Tinto, 2008). As a result of this surge, attempts were made to examine first-generation college goers in order to improve retention among this demographic (Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996). However, limited research has been done recently to explore the effects of dynamic programs, such as the Early College High School, on the transition process. This study aims to add to this gap in the scholarly literature.

The second motivating factor for studying first-generation students is that of diversity and equity in higher education. Many schools believe that diversity in their student body is a goal worthy of attaining and therefore seek to recruit and retain first-generation college goers, minorities and other groups underrepresented in higher education (Armstrong & Thompson, 2003; Engle & Tinto, 2008; Lam et al., 1997; Padron, 1992). For that reason, several universities and community colleges have developed programs to recruit and retain first-generation and minority students in order to
increase diversity and equity at their respective institutions (Armstrong & Thompson, 2003; Engle & Tinto, 2008; Lam et al., 1997).

This chapter provides a review of the literature related to Early College High School students’ transition into college STEMM majors. It will begin by discussing the achievement gap, especially the information related to minority, low-income and first-generation students. It will detail how they are underrepresented in higher education, and discuss the research that has been conducted previously on these populations. A history of STEMM education in America as well as a discussion of the pertinent literature on the transitions made by and obstacles faced by STEMM majors, will be presented with a focus on underrepresented populations pursuing these majors. Additionally, it will summarize the history of The Early College High School Initiative and how it fits into the P-16 model and other dual enrollment programs available today. Finally, in-depth descriptions of Van Gennep’s, Tinto’s and Bridges’ theories of transition will be provided as a lens through which to examine the transition of the early college high school STEMM majors.

The Achievement Gap

Much discussion has been raised about the achievement gap between low-income and minority students compared to their middle or high income white peers. The achievement gap exists at each level of education from preschool to college. It is also present in every subject, but the largest gaps have been in math and reading skills (Rampey, Dion, & and Donahue, 2009).

This disparity has led educators and policy makers to express concern about widening gaps in academic achievement and graduation rates. Reforms were
implemented and significant gains were made during the 1970’s and 1980’s to narrow this gap (Haycock & Jerald, 2002; R. S. Johnson, 2002; Rampey et al., 2009). By the end of the 1980’s the gap between African American and white students had been cut in half (Haycock & Jerald, 2002). However, during the 1990’s the gap began to widen again and in the past decade the gap has narrowed slightly or remained relatively constant (Haycock & Jerald, 2002; R. S. Johnson, 2002; Rampey et al., 2009).

Furthermore, numerous suggestions have been made on how to improve student scores through educational reform and policy changes aimed at narrowing the gap. Some suggest that students need more time and instruction through after school programs at the elementary school level, longer school days for all students and a longer school year (Fisher, Frey, & Lapp, 2011; Haycock & Jerald, 2002). In some cases this has greatly improved the students’ scores but it is not always enough. Fisher, Frey and Lapp (2011) found that paying attention to student attendance and engagement provided the school an opportunity to discuss achievement with the students that were falling behind. By increasing the students’ attendance and improving their engagement, the school was able to make up the time with the students during the school day rather than taking additional time outside of the typical school day or year (Fisher et al., 2011). While these are valuable and effective suggestions, there are many other policies that have been enacted with the goal of improving student academic achievement.

Research has found that students from high minority and low-income schools are more likely to have teachers who do not meet the minimum requirements for teaching their subject area (Haycock & Jerald, 2002; Rampey et al., 2009). This is especially true for math teachers (Barton, 2003). These findings have led some to advocate for reforming
teacher training in order to improve the quality of instruction that all students receive (Barton, 2003; Haycock & Jerald, 2002; Richardson, 2010). Other programs have increased the amount of math and science that elementary teachers are required to complete in an attempt to improve their qualifications (Haycock & Jerald, 2002). To further enhance the qualifications of the teachers and thus improve student achievement, others have proposed that teachers either complete a minor or major in the subject they plan to teach (Haycock & Jerald, 2002; Miller-Whitehead, 1999).

Another issue is that there tends to be a higher turnover rate for teachers in low-income schools, as they tend to either burn-out or move on to higher paying jobs and higher income schools (Barton, 2003; Hall & Ushomirsky, 2010). Often, this leads to high-poverty and high-minority schools having teachers with little experience, a characteristic which is necessary for helping under-achieving students to be successful (Haycock & Jerald, 2002). To overcome the issue of pay differences, a Texas school district implemented policies that allowed low-income schools to have first preference of the upper-tier teachers (Ferguson, 1998). The results of this venture showed that the initially low-performing schools improved drastically when staffed by the upper-tier teachers showing that effective teachers can have a significant impact on improving academic achievement in low-performing schools (Ferguson, 1998; Haycock & Jerald, 2002).

The most controversial policy change enacted as an attempt to reduce the achievement gap is the implementation of academic standards and standardized tests. This reform has been revisited numerous times in the past century. However, many note that it has been discussed more since the enactment of the No Child Left Behind Act.
Proponents argue that standards hold schools accountable for covering specified content benchmarks each year (Haycock & Jerald, 2002). The intention is to ensure that all students are progressing toward a standard set of goals that policymakers feel all students should be able to reach. Those who challenge the push for standardized testing argue that the tests do not test deep learning, penalize students who are poor-test takers, result in teachers “teaching to the test,” and restrict teacher creativity in the classroom (Sunderman, Kim, & Orfield, 2005). Further, many worry that stripping control of curriculum from local districts and placing it in the hands of federal committees will hurt schools that do not fit well into the norm, such as urban and rural schools (Sunderman et al., 2005).

The achievement gap is present at every level of education. In higher education minorities, first-generation students and students from low-income families are still the least represented and the least likely to complete their degree when they are enrolled (Aviles-Reyes, 2007). The Early College High School Initiative is a program designed to provide a challenging curriculum to first-generation, low-income and minority students. This type of program, while not widespread, aims to close the achievement gap for students who are typically under-represented in higher education. In the following sections I will examine how the achievement gap affects the individual groups that this study focused on, namely first-generation, minority and low income students. I will also discuss how The Early College High School Initiative works to bridge the gap for these students.
**First-generation Students**

First-generation college students, those whose parents did not attend college, are significantly impacted by the achievement gap. This group of students enters college with lower senior achievement scores and lower college entrance exam scores compared to students whose parents hold a bachelor’s degree or higher (Chen & Carroll, 2005). First-generation students tend to be more likely to enter college with weaker math, reading and critical thinking skills and are less likely to take math courses during their first year of college (Chen & Carroll, 2005; Terenzini et al., 1996). This can be especially detrimental to students interested in studying a STEMM fields. However, Terenzini (1996) found that despite entering college with weaker math skills, first-generation college students made equal gains in math and critical thinking skills during their first year of college compared to students whose parents held a college degree. Additionally, Chen (2005) notes that despite many of the barriers that first-generation students face, those who are successful early in their program, as demonstrated by high course completion and higher grades, were more likely to complete their degrees. These findings hold promise for programs like the Early College High School, which aim to provide successful experiences for the students first year of college. If Terenzini’s (1996) and Chen and Carroll’s (2005) findings hold true, then The Early College High School Initiative will help many students who would have otherwise never done so, earn a college degree.

In addition to the achievement gap, one of the main barriers to higher education for students whose parents did not attend college is the lack of guidance on how to navigate the system. Many first-generation students describe the intimidation and bewilderment of the educational system (Lara, 1992; Padron, 1992). They don’t know
when the system is flexible or rigid, when makeup work is allowable and when missing class is unacceptable (Padron, 1992). Some community colleges have developed programs and supports for such students and have found that first-generation students are more successful when they have frequent updates and feedback from teachers such as progress reports and midterm grades summaries (Jordan, Cavalluzzo, & Corallo, 2006; Padron, 1992). Middle and Early College High Schools also work to ease the struggles that first-generation students have with deciphering the rules of higher education by introducing them to the process while students are still in high school and still have the support of high school counselors and teachers (Aviles-Reyes, 2007; Born, 2006).

Lack of familial and peer support can be another obstacle for many first-generation students to overcome. This leads to first-generation students often needing more guidance, both academic and personal, than students whose parents attended college (Lara, 1992; Padron, 1992; Terenzini et al., 1996). In fact, some first-generation students actually face animosity from family that interpret the students attempts to further their education as putting on airs or leaving behind their heritage (Padron, 1992). However, this is not always the case. Some first-generation and minority students acknowledge a push from family to better themselves by attending college (Hicks, 2009). The Early College High School at LMU University seeks students with this strong home support, whether it is from parents, grandparents or other guardians. When it is identified that this support is not available the school steps in with a surrogate faculty member to provide the additional support the student will need through the course of the program.

Several studies were conducted in the 1980’s and 1990’s in an attempt to describe and understand the transition that the growing population of first-generation students
made from high school to college (Lara, 1992; London, 1989; Rendon, Hope, & Associates, 1996; Terenzini et al., 1996). These studies on first-generation college students can be sorted into the three stages of the college experience (Terenzini et al., 1996). The first set discusses life before college including college preparation, expectations, planning, and the process of choosing a college and major (Engle & Tinto, 2008; Inman & Mayes, 1999; London, 1989; Terenzini et al., 1996). The second group attempts to explain the transition process of students to college and work (Inkelas, Daver, Vogt, & Leonard, 2007; Lara, 1992; Padron, 1992; Rendon et al., 1996). The final set describes the college experience itself and the factors contributing to attrition or persistence through college (Born, 2006; Ishitani, 2003; Ishitani, 2006; Rood, 2009).

Based on the recommendations made by these studies, programs such as learning communities and first year experience courses were implemented for first-generation college students to provide support, improve their transition and ultimately increase retention (Born, 2006; Chaffee, 1992; Christie & Dinham, 1991; Padron, 1992; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Priebe, Ross, & Low, 2008; Tinto, 1997). However, newer programs designed to provide support to these students and aid in their transitions, like the Early College High School, are just beginning to be studied (Aviles-Reyes, 2007). This study aims to contribute to the literature in this area by describing the supports and barriers faced by early college high school students pursuing STEMM majors.

The present research seeks to investigate how a particular group of students, enrolled in an innovative school structure, transition to college as a whole and in particular to STEMM majors. Further, it attempts to describe the experiences these
students encounter in their first year as official college students in STEMM majors, why they have chosen to pursue such a degree and whether they persevere. The following sections examine the current research on minorities and students from low socio-economic status (SES) households. This provides additional information on the sample being studied as they are all urban, first-generation college students and many are minorities and come from low-income families.

**Minority Students**

Although being a first-generation college student brings added barriers and complications to the transition experience, it is not the sole contributing factor. Race is another aspect found in the literature to impact the achievement gap and college student transition. A high percentage of first-generation students are minorities, most often Hispanic or African American (Chen & Carroll, 2005; Terenzini et al., 1996). Cultural factors contribute additional dynamics to the process of choosing a major and transitioning to college. Since these demographics are so closely linked, it is necessary to review race and culture issues which influence student transition.

A major issue in today’s education system is the achievement gap between minority and non-minority students (Aviles-Reyes, 2007). College readiness rates for Whites (40%) are nearly double those of black (23%) and Hispanic (20%) students (Greene & Winters, 2005). Schwartz (2001) states that the achievement gap is affected at each level of education. State and district policies at the top, as well as local issues in the school or at home, can contribute to maintaining or even widening the gap (Schwartz, 2001). For this reason, Cooper and Jordan (2003) believe that this achievement gap must be overcome by making changes at all levels of education. Further, Futrell, Gomez, and
Bedden (2003) concluded that reform must include collaboration with universities to develop effective programs that enrich the educational environment. One of the motivating factors for the development of the Middle and Early College High Schools was to do just this, to build collaboration between high schools and colleges and to address the perceived disconnect between *quality* secondary education leading to higher education and further leading to a rewarding and profitable career (Cravey, 2007). Another reason was to overcome poor achievement by students of color at the high school and college level.

Another issue faced by minorities in higher education is the feeling of racial isolation due to an absence of minority mentors, particularly in predominately White institutions (Eimers & Pike, 1997; Padilla, Trevino, Gonzalez, & Trevino, 1997). In addition to other factors, the lack of a role model can drive a minority student away from college. Some students choose to seek mentorship outside of the college which can be beneficial but may not provide enough guidance and support for academic endeavors (Johnson, 2007). Others seek nurturing non-minorities within the academic community for support or build networks of fellow students thereby fostering relationships and gathering heuristic knowledge about college expectations (Padilla et al., 1997). Regardless of the form, whether they are minority or non-minority, on campus or external to the school, minority students need a support system to help them navigate and complete college (Eimers & Pike, 1997).

On the other end of the spectrum some researchers have been investigating the characteristics and heuristic knowledge that minority students consider to be successful strategies leading to college graduation (Padilla et al., 1997; Rendon et al., 1996).
According to Padilla, Trevino, Gonzalez and Trevino (1997), minority students who get involved in ethnic student organizations and participate in ethnic activities on campus are more culturally grounded and therefore more likely to feel like they belong to part of the campus community. These findings differ from Tinto’s (1993) model in which students must break ties with the culture from which they came in order to be incorporated into the new college culture. These student’s still undergo a transition stage, but it is more about finding a way to merge the cultures rather than separating them and moving on.

In order to increase diversity in higher education, many community colleges and universities have begun recruiting first-generation and minority students through programs such as Jumpstart or summer study and college preparation camps in order to increase their diversity (Lam et al., 1997; Lam et al., 2005; Yelamarthi & Mawasha, 2008). Others, such as the Miami-Dade Community College provide special training programs for high school guidance counselors to learn more about how to steer first-generation and minority students into college (Padron, 1992). While recruiting is helpful for increasing the number first-generation students enrolled in college, it cannot solve the problem of preparation for college. Policies and programs must be put in place to better prepare students academically before they enter college and to provide support and mentorship once they are enrolled.

**Students from Low-income Backgrounds**

Students from low-income or low socio-economic families are also at a disadvantage when transitioning to college. According to Fulton (1996) and Lee (2002), students from low-income families are more likely to receive lower quality early education experiences which can lead to lower rates of high school graduation, lower
rates of postsecondary attendance, higher special education placements and lower employment rates as teens and young adults. Quality academic preparation for college is another goal of the Early College High School which aims to accomplish with smaller class sizes and recruitment of highly qualified instructors.

Furthermore, students from low-income families are at a disadvantage at all levels of education. In their early years, high-income children have a 60% higher average cognitive score than low-income children (Lee & Burkam, 2002). The lack of achievement continues through elementary school with lower scores on standard assessments from students in low-income schools (Valdez, 2009). This leads to disparity in opportunities for higher education as well, with students from the top quarter income level being seven times as likely to earn a bachelor’s degree as students from families in the bottom income quartile (Rampey et al., 2009).

Some researchers believe that students from low-income communities are penalized by hidden funding gaps in the education system (Hall & Ushomirsky, 2010). Often high-poverty schools with smaller budgets cannot afford to employ more expensive teachers with more experience and education (Hall & Ushomirsky, 2010). These high-quality teachers are often attracted to low-poverty schools offering higher salaries. Moreover, studies have found that students from poor school districts are more likely to have teachers that do not have a strong background in the subject they are teaching (Barton, 2003; “What matters most,” 1996). Haycock and Jerald (2002) make the following comment about the importance of having highly qualified teachers in the classroom, especially for students that need additional support,

A decade ago, […]. we believed that what students learned was largely a factor of their family income or parental education, not of what schools did. But recent
research has turned these assumptions upside down. What schools do matters enormously. And what matters most is good teaching. (p. 10)

Therefore, this disparity in highly qualified educators can stifle the potential of capable students that have the unfortunate fate of being at a low-income school.

Furthermore, studies have found that students from low-income schools are provided with a less challenging curriculum than students at middle or high-income schools which further inhibits low-income students from reaching higher levels of academic achievement (Barton, 2003; Haycock & Jerald, 2002). Haycock and Jerald (2002) suggest several ways that schools can improve the academic achievement of students from low-income schools. One recommendation is to provide a more challenging curriculum for these students in order to increase motivation (Barton, 2003; Haycock & Jerald, 2002). Providing a challenging college preparatory curriculum, along with enrollment in actual college courses throughout the program is the mission of the Early College High School Initiative. The added challenge of these courses could be exactly what the students need to stay interested in their education. The added motivation of earning college credit could further motivate students in this school where over eighty percent of the students are from low-income families (“The Early College High School Initiative,” 2007). It should also be noted that this added challenge may also deter some students who are not ready for the rigor and pace of college courses (Bressoud, 2007).

The achievement gap is still present between students from low-income families and other American youth (Chen & Carroll, 2005; Terenzini et al., 1996). It is also present between minorities and white students regardless of income level. Low-income, graduation from an urban high school, and lack of peer and family support can all hinder a student’s access to higher education let alone their completion of a degree (Chen &
Carroll, 2005; Terenzini et al., 1996). Nevertheless, some students with these background characteristics still persist and are successful in attaining this goal (Lara, 1992; Padron, 1992). However, the ones who do pursue college are less likely to take upper level math and science courses and even less likely to choose a STEMM major (Committee on Prospering in the Global Economy of the 21st Century, National Academy of Sciences, & National Academy of Engineering, Institute of Medicine, 2007; George, Neale, Van Horne, & Malcom, 2001; Lam et al., 1997). The next section will discuss some of the supports and barriers that these students encounter within the STEMM fields.

**STEMM Education**

There are numerous reasons to increase the number of minorities and underrepresented populations in the STEMM fields. Some argue that recruiting and retaining minorities, first-generation students and women in STEMM fields is the only way to stay competitive in a globalized market (Committee on Prospering in the Global Economy of the 21st Century: An Agenda for American Science and Technology et al., 2007; Friedman, 2005). Others approach the issue based on improving access to marginalized populations (Armstrong & Thompson, 2003; Wahl & Blackhurst, 2000). Still others believe that increasing the number of underrepresented populations can bring diversity and new perspectives to the innovative fields of science and technology (George et al., 2001; Lam et al., 1997; Rendon et al., 1996). However, before discussing the reasons for increasing the number of minorities in STEMM fields, it is necessary to place STEMM education in its historical context.
The History of STEMM Education in the United States

STEM education is defined as Science, Technology, Engineering and Mathematics. More recently it has grown to also include medicine as an additional M. The history of STEM education goes back the beginning of organized education but this brief review will only focus on the history since the late 1800’s.

Mathematics, or at least arithmetic, had been a part of the standard American curriculum since the first schools were founded. However, science and technology had to fight to hold a place in the standard K-12 and college curriculum at the end of the nineteenth century (DeBoer, 1991). According to DeBoer (1991) the sciences had to compete not only with the classical studies which had long been thought of as the only way to discipline the mind, but also with other modern studies such as U.S. History and English literature. Many critics of teaching science in high school felt that it was too utilitarian and did not discipline the mind in the way that Greek and Latin could. Proponents of science education argued that science used a broader range of mental skills and therefore was a superior method of disciplining the mind. Others believed that the usefulness of science in everyday life made science more appealing to students (DeBoer, 1991). Ultimately, nineteenth-century educators such as Charles Elliot as well as the Committee of Ten helped science earn a place in college entrance requirements.

As the twentieth century began, there was a dramatic shift in the focus of high school education in an attempt to keep pace with the changing society. STEM education underwent reorganization in order to make college preparation and acceptance easier. Additional changes, such as creating laboratory lessons as well as science and math courses for everyday application, were made to make science and math more applicable
to students’ lives for those who may not attend college. The committee’s work ultimately lead to a shift in the argument for science in school which was no longer about “science’s ability to develop one’s intellectual skills, especially the ability to observe accurately and reason inductively on the basis of evidence, to one based on science’s ability to develop an individual who would be a happy and contributing member of society” (DeBoer, 1991, p. 70). The inclusion and exclusion of certain STEM topics remained in debate for many years.

Both World Wars saw an increased demand for those with scientific and technological skills to improve weapons, communications and national security. In the late 1950’s STEM education was reinvigorated when the Russians launched Sputnik causing Americans to panic at the thought of falling behind in the space race (Friedman, 2005). The call to improve STEM education was based on concern that the nation would fall behind in technical and manufacturing jobs (Friedman, 2005). This plea has been made by policy makers several times since the space race. In 1983, A Nation at Risk once again called for education reform, especially in the STEM fields, in order to maintain our place in the world economy. In the 1990’s the results of the Trends in International Mathematics and Science Study (TIMMS) showed that the United States scored below many other nations in math and science thus causing additional fear that the nation was losing its ability to stay competitive in the increasingly technological world economy. Nearly 20 years after A Nation at Risk (1983), the No Child Left Behind Act (2002) once again called for reform and accountability of the K-12 education system. This led to standardized testing in all core subject areas and placed a heavy emphasis on math competence. The trend of politicians, economists and educational policy makers calling
for improved STEM education continues as employers demand employees with technology skills and as the global economy demands more technological innovators (Friedman, 2005).

**Recruiting and Retaining Underrepresented Populations in STEMM Fields**

In recent years the U.S. has been fighting a battle to attract and retain students in STEMM fields (Bressoud, 2009; Seymour & Hewitt, 1997). American educators and business leaders believe that increasing the number of STEMM graduates is necessary to keep competitive in an increasingly technological global economy (Committee on Prospering in the Global Economy of the 21st Century: An Agenda for American Science and Technology et al., 2007). In Ohio specifically, the goal has been set to double the number of STEMM graduates between 2007 and 2017 (Fingerhut, 2008). In order for the United States to maintain its status as a global leader in science and technology we can no longer rely on the primarily White, male pool that has been traditionally drawn from for these positions (George et al., 2001). We must determine effective ways of recruiting and retaining minority students into the STEMM fields.

At the end of the twentieth century a study group was formed by the American Association for the Advancement of Science Directorate for Education and Human Resources Programs to review the current literature on STEMM education and determine how to increase the number of underrepresented minorities in STEMM majors (George et al., 2001). This group found that factors limiting underrepresented populations from attaining STEMM degrees are inadequate undergraduate mentoring, poor preparation in math and science, and low intensity STEMM curriculum at the undergraduate level (George et al., 2001). Similar findings can be found throughout the literature. Theil
(2008) notes that a contributing factor to the underrepresentation may be the fact that this population suffers disproportionately in terms of weak math skills. Additionally, first-generation students are less likely to enroll in math and science courses, and those who do enroll tend to take fewer credits than students whose parents were college graduates (Chen & Carroll, 2005). Ultimately, students from underrepresented populations such as first-generation college goers and minorities must be encouraged to take high-intensity and high-quality math and science courses in high school and be provided with quality mentoring at the undergraduate level in order to improve their chances of entering the STEMM fields and earning a degree (George et al., 2001).

Lara (1992) reflects on her own experiences of feeling ill-prepared for the competitive and intense rigor of her college STEMM curriculum. She was a first-generation Hispanic minority who hoped to become a doctor, but quickly learned that her precollege preparation did not adequately prepare her for even her freshman level science and math courses (Lara, 1992). She also describes the competition she encountered from her white classmates and the hurt she felt after being mocked and ridiculed by a peer in her study group. The math and science faculty at LMU’s Early College High School provide mentorship and advanced preparation for students early in their high school experience with the hope of preparing students for their college classes.

**Attempts to Increase STEMM Majors**

One method of increasing the number of minority students enrolling as STEMM majors is the development of feeder programs at the middle and high school level. Programs such as Wright State University’s the Wright Science Technology and Engineering Preparatory Program (STEPP) and The University of Akron’s Increasing
Diversity in Engineering Academics (IDEAS) have been developed to assist minorities in the transition to undergraduate engineering programs (Lam et al., 1997; Yelamarthi & Mawasha, 2008). Other programs such as the high school pre-engineering program, “Project Lead the Way,” and the middle school summer workshop, “HealthCare in Progress,” introduce students to the STEMM fields while they are in middle and high school in the hope of encouraging students to pursue college degrees in such fields. These programs seek to convince students that science and technology can contribute to their career and life goals, which Lewis and Collins (2001) believe can be a determining factor in a student’s decision to pursue and complete a science degree.

Most of the current literature on STEMM education deals either with discussion of pre-engineering and pre-medicine programs or provides statistics on the lack of students enrolling in STEMM majors. However, far less research has been done describing the students’ experiences in these fields, the supports and barriers they face, and their transition from high school to college STEMM majors.

**P-16 Education Model**

Historically, education has been broken down into three levels: early learning, K – 12 and post-secondary. Often K-12 is further broken down into elementary, middle school and junior high school. With a few exceptions, these levels have existed in relative isolation from one another. However, P-16 education endeavors to provide a seamless schooling experience for students from preschool through college. Proponents of P-16 education believe that a more effective system can be produced by aligning the curriculum in the lower grades with expectations set by college educators and employers (“Aligning P-12 and postsecondary education,” 2010).
There are a variety of new pressures faced by the current system of education and a single instructional model of education, especially one that views students as passive recipients of knowledge, can never serve every student. We need diverse instructional models to meet the needs of the changing national demographics (Chen & Carroll, 2005). P-16 is a holistic model aimed at reaching students who are not thriving in the current educational system. According to Valdez (2009) “P-16 is a powerful framework for citizens and policymakers to use to improve teaching and learning and thus better prepare students for living, learning, and working in a changing world” (p. 1).

Many P-16 programs are aimed at students traditionally underrepresented in higher education such as minorities, students from low income families, first-generation students and other groups historically underrepresented in higher education (Valdez, 2009). However, these programs also aim to increase college readiness for all students, especially those who are not being served well by the current system of education.

Various P-16 initiatives have been developed to increase student preparedness for college (Hebel, 2003). Tech Prep initiatives aim to provide students with vocational skills in order for them to be able to enter the workforce or continue post-secondary education upon high school graduation (“Ohio College Tech Prep,” 2010). Project Graduation Really Achieves Dreams (GRAD) strives to encourage low-income youth to attend college by improving academic achievement through participation in summer camps on college campuses (“Project GRAD USA,” 2010). Dual and concurrent enrollment programs allow students to earn college credit while in high school (Watson, 2000). The following sections elaborate on some of the P-16 initiatives available including the Early College High School Initiative.
Dual, concurrent, or postsecondary option enrollment

Dual, concurrent and postsecondary enrollment programs play a vital role in the P-16 education models. These programs are designed to allow students to experience college and earn credit while still in high school. The intent is to provide motivation for students to pursue increased intensity curriculum, while helping students make the psychological transition from high school to college (Crockett-Bell, 2007; Watson, 2000). Since many stop-out students often cite non-academic factors such as unrealistic expectations of what college is, lack of focus, or inability to “fit in” as the cause of why they did not persist, dual enrollment can help students avoid these hurdles by providing them with a supported college experience (Noel, Levitz, & Saluri, 1986).

Several dual enrollment programs have developed in the last few decades. These programs offer courses which are either taught on university or community college campuses or at the high school with college approved curriculum. Some researchers believe that community colleges are better at serving student needs than larger universities because they teach classes with fewer students and have a stronger sense of being student oriented (Pearish, 2006).

There are those who are hesitant to accept dual enrollment programs as purely beneficial. Some math educators worry about the accountability of dual enrollment programs not taught on college campuses and their ability to truly prepare students for math intensive STEMM fields (Bressoud, 2007). This is why concurrent enrollment programs utilizing college classes and professors are considered to be stronger than those held exclusively at high school campuses (Bressoud, 2007). Despite some of the reported drawbacks, these dual enrollment programs are becoming so popular that they have
“grown exponentially in the past few years” (Cheifetz & Schmierer, 2007). One such program that is becoming increasingly popular is the Early College High School Initiative.

**Middle and Early College High Schools**

The concept for the Early College High School grew out of a similar concept called the Middle College, which began in 1974 at LaGuardia Community College (Born, 2006). The Middle College recruited underprivileged and urban students to attend high school on the college campus to gain exposure to college life and begin taking courses at the postsecondary level (“Middle College National Consortium,” 2009; Born, 2006). The goal of this initial program was to encourage students to continue their schooling and provide a bridge to college (“Middle College National Consortium,” 2009; Born, 2006). In 2002, The Bill and Melinda Gate Foundation provided funding to allow The Early College High School Initiative (ECHS) to take this idea a step further by adding the incentive that students could earn a high school diploma and an associate’s degree in four or five years (“The Early College High School Initiative,” 2007; “Middle College National Consortium,” 2009). Upon its inception in 2002, the Early College High School incorporated the existing twelve Middle College High Schools and added seven new schools to the program. As of 2010 there were over 130 Early College High Schools in 24 states, with the ultimate goal of opening 250 schools to provide services for 100,000 students nationwide (“The Early College High School Initiative,” 2007).

One of the main differences between dual enrollment programs and The Early College High School Initiative is that a majority of the Early College programs are located directly on university, college and community college campuses while a few have
their own facilities specifically designated for ECHS. At the Large Midwestern Urban University (LMU) which the study will be conducted, the Early College High School is housed in the community and technical college on campus. Students in the Early College High School program are chosen from within the LMU school district and surrounding area. They are required to complete an application process before being admitted to the high school. On average, 350 to 400 students apply for admission to the Early College High School at LMU University. However, only 100 students are accepted into each freshman class.

The program targets at-risk students specifically “low-income youth, first-generation college goers, English language learners, students of color, and other young people underrepresented in higher education” (“The Early College High School Initiative,” 2007). The purpose of the initiative is to expose these at-risk students to the rigor and accelerated pace required by college courses by enrolling them in actual college courses on a college campus while providing them with a support system through the high school that will allow them to succeed (Born, 2006; Trevino & Mayes, 2006; U.S. Department of Education: Office of Vocational and Adult Education, 2004). Studies supporting dual enrollment have found that average students who may be considering college but not taking Advanced Placement course are more likely to graduate high school with better academic preparation and have an easier transition into college if attending such a dual enrollment program (Hebel, 2003; Hugo, 2001; McRobbie, 2001).

There are three main differences between dual enrollment and the Early College High School; namely location, size and type of instructor. While dual enrollment programs are held at the high school, early college high schools are located in their own
building and usually on a college or community college campus (“The Early College High School Initiative,” 2007). Each early college high school has a partner institution where it is housed (“The Early College High School Initiative,” 2007). During the first two years of high school the students take typical high school course and in addition they take a workshop that provides dialogue on study skills, what it means to be a college student, and what their goals are for attending and graduating from college (“The Early College High School Initiative,” 2007). They may also take a class or two each semester at the college. In their third and fourth year the students take mostly college courses, similar to the post-secondary option described above, with students enrolled in classes based on their intended major (Aviles-Reyes, 2007). This setup is designed to gradually expose the students to the content and rigor of college while providing additional support through the availability of the high school faculty and staff (Born, 2006).

The second difference between dual enrollment and the Early College High School is the size of the school and the classes. In dual enrollment and AP programs, all courses are taught at the high school, so students attend the larger high school based on the district to which they normally belong, but take a few courses which are more advanced than the traditional curriculum (Geiser & Santelices, 2006). On the other hand, the early college high schools are much smaller. They are each limited to 100 students per grade for a total of no more than 400 students per school, so classes are smaller and students receive more individual attention from their teachers (“The Early College High School Initiative,” 2007). Research has shown that smaller class sizes can improve student academic achievement in certain cases (Barton, 2003). At the Early College High
School the small class size is intended to provide additional support for students who may be underprepared to directly enter college.

The third difference between an Early College High School and an AP or dual enrollment course is the teacher. Most AP or dual enrollment courses are taught by high school teachers with little or no training on how to teach the course at the college level (Bressoud, 2007). However, students in early college high schools attend actual college courses starting in their freshman year (“The Early College High School Initiative,” 2007). This distinction can mean the difference of acceptance of the course for college credit and degree completion (Bressoud, 2007; Hoffman, Vargas, & Santos, 2009). This is imperative since the Early College High School aims to provide underrepresented students with the opportunity to earn up to two years of college credit or an associate’s degree upon graduation from high school.

There are also drawbacks to the Early College High School program. First, the program requires that students choose a major as early as age fourteen. This focus on a specialized major or area of concentration too early was critiqued by Dewey (1916) as it could inhibit the growth of the child. He felt that this type of schooling would cause teachers and students to focus too much on the future rather than the present experience (Dewey, 1916). Another drawback for this particular early college high school is the lack of sports teams and other extracurricular activities which are important for social growth and team building. The school has developed several student groups with varying levels of success. They have also focused on holding traditional high school activities such as prom and academic awards ceremonies. A final drawback is the experience itself. Some students, no matter how well prepared, are not ready for the pace and rigor of college
classes when they are fifteen or sixteen. Since this program enrolls the students in actual college courses during their sophomore year, some students may not be ready to make the transition to this type of learning environment.

**Previous Studies on the Early College High School**

Since the Early College High School Initiative is relatively new, there have been limited studies describing its outcomes. Several articles were published describing various aspects of the program such as the small class size and mentoring portions of the program (Born, 2006; Slade, 2006). A few articles discuss the administrative and faculty professional development associated with the programs and its implications for other schools (Robertson, 2009). Other articles contain short inserts on the program as one of several other bridge programs to college (Bressoud, 2007; Hoffman et al., 2009).

Some of the current studies that specifically discuss the Early College High School look at why students choose to attend the school (Cravey, 2007), the students’ perceptions of the school’s mission (Valdez, 2009) and how the high school teachers and administration work within the model. Others have explored the effect of exposure to Early College High School on community college students’ academic and social integration (Pollock, 2009). I will now turn to the theories of transition that served as a framework for this study.

**Theories of Transition**

The process of change can be both frightening and exhilarating (Bridges, 2003). Some people are quick to adapt to a new environment or status while others fight to avoid the change (Bridges, 2003). Theories of transition have been developed to aid in our
understanding of how humans cope with major life changes and how cultural “rites of passage” can ultimately help people through tumultuous times in their lives.

Several similar theories of transition have surfaced in anthropology, psychology and education throughout the early twentieth century. The theories that will be used as lenses for this study all follow a three stage process of transition. Each views the stage from a slightly different perspective but all start with some type of leaving or breaking away followed by a time of limbo and ending with integration into the new environment or position. Van Gennep (1960) provides an anthropological view of transition and how it affects cultures. Tinto (1988; 1993) adapted Van Gennep’s model and applied it to the transition of social groups into college. He also looked at how the transition process can lead to certain social groups, such as minorities and first-generation students, to drop out or stop out (Tinto, 1993). Bridges (2003; 2004) provides a psychological perspective on how major changes in an individual’s life follow the three stages of transition and how to make a psychologically healthy transition between stages of life.

The purpose of describing these theories of transition is to provide a framework in which to observe the longitudinal course that students make as they enter college. Most college freshmen are making a major life transition by leaving behind their family and friends to enter a new academic realm. As Tinto (1988) notes “In attempting to make such transitions, they too are likely to encounter difficulties that are as much a reflection of the problems inherent in shifts of community membership as they are either of the personality of individuals or of the institution in which membership is sought” (p. 442).
Van Gennep’s Rites of Passage

The German Born, French anthropologist Arnold Van Gennep (1960) studied tribal societies of Africa and Oceana, examining their “rites of passage” in order to more fully develop a theory on the process of transition and how ceremonies and rituals were used by certain cultures to provide stability in times of change. Van Gennep was especially interested in the stages that emerged when observing the rituals associated with the progression of individuals from youth to adulthood (Tinto, 1988). He argued that life changes and transmission of social relationships, such as becoming an adult or taking over leadership roles, were marked by three phases: separation, transition and incorporation (Van Gennep, 1960).

The first and last phases are typically apparent in the transition process. During the separation phase an individual disconnects from his or her original peer group and is later inducted into the new social group (Van Gennep, 1960). For instance, in some cultures young men are removed from their peers and sent to spend time in the wilderness alone. When they return there is a ceremony inducting them into the adult group and they are expected to part ways with their former life and begin a new life as an adult. Entrance into the adult circle is the incorporation phase. Similarly, students graduating from high school and entering college are often forced to leave their school and social group behind as they begin a new phase of their education.

The middle stage, known as liminality, was a concept which Van Gennep introduced to the study of cultural rituals and transition. From the Latin word limen, meaning threshold, he described this intermediary stage as one characterized by ambiguity and openness (Van Gennep, 1960). He believed it gave individuals time to
explore their own self understanding and relieved the pressure of entering a new role or social status (Van Gennep, 1960). He saw this phase as critical to ensuring that the value of the individual not be lost to that of the collective group.

**Tinto’s Theory of Student Departure**

Vincent Tinto built a theory of student transition on the writings of Van Gennep. Tinto, a Professor of Education at Syracuse University, focused his research on student success and retention. Tinto (1988) believes that since students are making a major cultural transition by entering college, they will also follow a three stage transition as they either persist or eventually leave higher education. His theory is explicitly based on the work of Van Gennep.

Tinto begins by explaining how the separation phase of leaving behind family, friends and community can be disorienting or painful to new freshman, especially those who choose to move a far distance to attend college (Tinto, 1988). He also points out that this may not apply to students who continue to live at home with their parents while attending college, which is the case for students in the current study. Tinto notes, however, that those who remain at home during college may miss out on some of the social and scholastic advantages of being immersed in a completely new academic community.

During the intermediate, or transition, phase students must negotiate the terms of their new environment and learn the norms and behaviors necessary to succeed in college (Tinto, 1988). Essentially, during this period students develop the heuristic knowledge required to navigate the system of higher education. Tinto (1993) states that this is the stage when students are most likely to give up and leave college. However, this decision
is dependent on what type of transition the student experiences and how much stress he or she are willing to put up with. He notes that “some students will ‘stick it out’ even under the most severe conditions whereas others will withdraw even under minimal stress” (Tinto, 1988, p. 444).

The incorporation phase can also be a point of departure for students who are unable to make the necessary connections with peers and faculty during the transition phase or find their place in the institution (Tinto, 1993). Tinto (1988) argues that unlike other societal transitions, students entering college are not provided with rituals for building supportive contact within the college environment. One may argue that high school graduation, college convocation and new-student orientation are ritual separation and incorporation phases, but they are short lived and may not provide enough guidance within the ceremony for students to become fully incorporated in the academic community (Tinto, 1988).

Tinto’s model has been used mostly to examine students at four-year institutions (Burnett, 1996). Tinto and others conducted research on the integration of freshman into college and found that those who are more involved are less likely to withdraw (Christie & Dinham, 1991; Tinto, 1993; Tinto, 1997). After almost forty years of research on student retention, Tinto (2006) now argues that although transition is vital to persistence, the success of student transition lies not in what the student needs to become but how the institution can aid in getting the student integrated, especially with regard to low-income students. This is a point that the Early College High School aims to address by exposing students to the college culture while in high school with the goal of easing the transition for these students.
Borglum and Kubala (2000) took a slightly different approach by using Tinto’s model to examine the academic and social integration of two-year rather than four-year college students. They found that social involvement and time spent on campus were of little importance to community college students and that there was no statistically significant correlation between involvement and persistence in school (Borglum & Kubala, 2000). They concluded that community colleges should not spend money and resources on trying to get students to get involved with campus activities and should instead spend it on student support services (Borglum & Kubala, 2000). There are also those who disagree with Tinto’s model, claiming that it may be valid for traditional, middle-class, non-minority, four-year college students but lacks applicability to minority groups who often hold on to their cultural community while attending college (Padilla et al., 1997). Rather than placing the fault of student departure on poor transition, Padilla et al. (1997) argue that a lack of heuristic knowledge may be the contributing factor to minority students leaving college.

**Bridges “Managing Transitions”**

Bridges (2003) claims that “It isn’t the changes that do you in, it’s the transitions … the psychological process people go through to come to terms with a new situation” (p. 1). Essentially, if someone does not make a successful transition, they may revert back to where they started, resist their new environment or quit all together.

Bridges’ (2003; 2004) theory derives from his experience as a therapist. For decades he counseled those going through life changes, such as beginning a new career, the death of a family member, or leaving home. He found through his years of counseling and advising that predictable stages emerged in each individual’s transition process.
Bridges (2003) believes that people can make the most out of a transitional experience by focusing on each stage and accepting what that stage means to the individual. He argues that if a stage is skipped or ignored then a proper transition cannot be accomplished (Bridges, 2004).

Similar to Van Gennep and Tinto, Bridges (Bridges, 2004) also follows a three stage model of transition but provides different names for the stages. He refers to the initial stage as the “ending” then discusses what he calls the “neutral zone,” and concludes with “new beginnings” (Bridges, 2004).

In the ending phase a person must let go of the status or existence to which he or she belonged. He includes examples of changing jobs or moving to a new location. For most high school students this would be graduation, as they leave their school of four or more years and move on to college or a career. For the Early College High School students this is a little different as most of them complete their high school requirements in their junior year. Their transition begins earlier and with different supports provided by the high school and college faculty and staff. This also means that they do not experience a clearly defined ending stage since they begin their transition during their sophomore, junior or senior year of high school.

The final stage, which Bridges refers to as a new beginning, is intended to be one of relief and comfort. While Van Gennep saw this as a stage of complete integration into the new social order, Bridges (2004) believes that a person can begin anew by coming to terms with his or her loss or departure from his or her former way of life. He sees the final stage as a time of setting new goals and reinventing oneself (Bridges, 2004).
would culminate when the early college high school students graduate from the high school program and begin setting goals for their final degree completion and future lives.

This study primarily focused on the middle stage or neutral zone. Here the person experiencing the transition must come to terms with the ending of his or her previous title or world-view and the beginning of a new one (Bridges, 2004). The neutral zone is of importance to this study as these students will be neither completely high school nor college students but will be in some limbo between the two worlds. These students need to negotiate a new self-image possibly casting off old behaviors and activities and replacing them with new ways of being. They will build new relationships with peers, college faculty and support staff. Bridges (2003; 2004) points out that a person must have a purpose for making the transition in order for it to be successful. This may be an extrinsic factor, such as being placed in a class with no other high school students, or from intrinsic motivation such as wanting to be a college student and earn college credit before high school graduation. Ultimately, the process is one of aligning one’s personal perspective and attitude with the new environment (Bridges, 2003; Bridges, 2004).

Other studies utilizing Bridges theory as a framework for college student transition include Howell (2004) and Hay (2005). Howell (2004) found Bridges’ work on transition to be a helpful framework for investigating the transition of how traditional high school students perceive their transition into college. Hay (2005) studied the transition of recent high school graduates into a small, rural community college. She found that guidance provided by family and high school staff was the strongest contributors to successful transition of the fifteen students she interviewed (Hay, 2005).
College Student Transition and First Year Experience

In 2007, undergraduate enrollment was over 15 million students (National Center for Educational Statistics [NCES], 2008). Of these, almost 34% dropped out in the first year and only 23% were considered “college ready” (NCES, 2008; ACT news: Facts about the ACT, 2009). Reasons stated for leaving included over confidence in their ability to succeed in college, under-preparedness for college level courses and lack of realistic expectations about college (ACT news: Facts about the ACT, 2009).

One way to ease the transition and increase retention is to increase student investment in the institution they attend. According to Astin (1985; 1993), students learn when they become invested and involved. Involvement keeps students on task and helps build connections. Astin (1985) hypothesized that involvement required both physical and psychological energy in people and tasks leading to a connection and investment in those “objects.” He also believed that involvement could be thought of as a continuum, with students investing varying degrees of energy in different activities and that the level of involvement could be both qualitative and quantitative (Astin, 1985; Astin, 1993).

Another interesting claim made by Astin (1985) was that the amount of student development is directly proportional to the amount and quality of the involvement. Similar to Astin’s theories, Pace (1984) discusses “quality of effort” in regard to student learning and argues that the quality of effort, rather than the amount of time, expended on an activity will lead to a quality experience. The Early College High School Initiative follows these models as it works to provide quality student involvement in the college experience with the goal of easing transition and increasing learning.
Terenzini et al.’s (1993) found that the transition experience is full of diverse stories and there is much to explore in the field of high school student transition to college. Students from various backgrounds and levels of preparation enter college each year. Some make the transition with ease, but many others are faced with academic, social, cultural and financial barriers. These can range from lack of preparation for college level content, to uncertainty of major or direction in life, to unawareness of what a chosen major requires, to homesickness, to limited exposure to diverse groups of people, to being a minority or first-generation student (Terenzini et al., 1993).

**Summary**

Fields such as STEMM, that draw on and benefit from diverse perspectives and backgrounds, must work hard to recruit and retain underrepresented students such as first-generation college goers and minorities (Yelamarthi & Mawasha, 2008). However, minorities and first-generation college goers continue to be underrepresented among graduates in math, science, and engineering. Their transition into college is an area of concern. Many first-generation students face obstacles all along the journey that students whose parents attended college will not. They may feel disoriented, underprepared and unwelcome. It is the goal of the Early College High School Initiative is to help first-generation and minority students address and overcome these barriers in order to make a successful transition into higher education.
CHAPTER III

METHODOLOGY

This case study describes the transition of seven first-generation early college high school students as they complete their senior year, a year which is composed entirely of college courses. This study investigated the early college high school’s impact, as well as some internal and external student factors’, impact on the transition of these students to STEMM majors. Chapter III will introduce the design used to address the problem, purpose and question posed in Chapter I. The proposed population and setting will be described, as well as the procedure which was used to gain access to the site, develop rapport with the participants and obtain appropriate consent and assent. The methods for collecting, managing, organizing and analyzing data will be discussed in detail. Finally, issues related to subjectivity, validity and reliability will be addressed.

Design of the Study

Qualitative methods situate the researcher within the world rather than as an outside observer (Denzin & Lincoln, 2008). Qualitative research helps unveil the world through interpretive and transformative practices (Denzin & Lincoln, 2008). The research questions identified in this study required the use of qualitative methods and the interpretivist paradigm (Crotty, 1998; Schwandt, 2003) to explore the transition experience of a group of early college high school seniors. Some preliminary quantitative
data was also gathered to describe the accessible population from which the sample was
drawn and to narrow in on the attributes of interest for this study.

The case study approach of qualitative research was employed to conduct this
study. The case study approach allowed me to probe deeper into the thoughts and feelings
of the early college high school students providing a rich story of their transition
(Merriam, 1998; Stake, 1995; Yin, 2009). Yin (2009) states that “the more that [a]
question seeks to explain some present circumstances (e.g. ‘how’ or ‘why’ some social
phenomenon works), the more that the case study method will be relevant” (p. 4). Since
the research questions seek to explore how the current issue of Early College High School
students’ transition to college, the case study method is appropriate for the study.

The research questions for this study are:

1. How do early college high school students experience the academic, social and cultural
transition from high school to college and, more specifically, into a STEMM major?
   a. What are the internal factors which contribute to their transition? How do these
      factors affect their transition?
   b. What are the non-school related external factors which contribute to their
      transition? How do these factors affect their transition?
   c. What types of school (high school and college) related support do they receive and
      how does this support affect their transition?

2. What factors contributed to these first-generation students initially choosing and
continuing to pursue a STEMM major and how did the factors listed in the first research
question influence their choice?
The senior class at the LMU Early College High School graduated 62 students. Of these, 18 had listed a STEMM major as their chosen field of study. In May of 2011, 16 out of 62 students graduated with an associate’s degree, with 10 - 15 others scheduled to complete their associate’s by the following December.

In the fall 2010 semester, the Early College High School guidance counselor was contacted and asked to supply the names of six to eight STEMM majors who she felt would provide detailed and accurate information on their transition experience. She provided the names and contact information for seven students, four pursuing nursing or medicine and three pursuing engineering. Consent and assent letters were mailed to the students’ parents in October 2011. One student responded and returned the forms agreeing to participate in the study. Reminder emails were sent to the students in November, December and January. Three students responded to the follow-up emails agreeing to participate in the study. The week prior to the spring semester, the school held a meeting for all seniors. At this meeting the researcher opened the invitation for participation in the study to any STEMM majors present at the meeting. Three additional students, not originally invited to participate, agreed to participate resulting in a total of seven participants.

In addition to interviews, the consent forms asked for permission to view the students’ application to the school as well as their high school and college transcripts. The application, transcript and survey data aided in forming a better understanding of the students’ backgrounds and their transition since gaining multiple forms of data can provide a more extensive picture of a situation (Creswell, 1994).
Once the sample was selected, the case study approach was employed to more fully describe the transition that these students undergo as they enter their first year as full-time college students. This method enhanced the study since descriptive case studies usually provide a thick description of the phenomenon being observed (Gall, Joyce. P., Gall, M. D. & Borg, Walter R., 2005; Stake, 1995; Yin, 2009).

The Site

The research study was conducted at the LMU Early College High School campus. The LMU is a large, Midwestern, urban, public university serving over 25,000 students. LMU is located in a large downtown metropolitan Midwestern city. The Early College High School is housed directly on the LMU campus which sets it apart from all of the other early college high schools in the area that locate their early college high school in a separate building or at one of the local high schools.

The university offers over 280 certificates, associate degrees, bachelor degrees, and graduate degrees. The university employs an average of 1700 instructors, 760 of whom are full-time faculty members. In addition to the instructional staff, the college employs support staff who work in admissions, advising, counseling, tutoring, student accessibility, computer labs, testing services, financial aid, and library services. These staff members serve an average of 25,000 full and part-time students.

The Early College High School Initiative is a nationwide collection of programs, sponsored by The Bill & Melinda Gates Foundation, that award up to two years of college credit for courses taken while in high school. Early College campuses are opening on two and four-year college as well as high school campuses all over the country. According to The Early College High School Initiative website (2007), the schools are
designed to provide low-income youth, first-generation college goers, English language learners, students of color, and other young people underrepresented in higher education with college credit and possibly an associate degree by the time they graduate from high school. The total enrollment for each high school is low, in order to promote student–teacher interaction and increased access to student support. No Early College High School is to exceed 400 students, 100 in each grade. The LMU Early College High School is the largest in the state with 100 students admitted to the freshman class each year.

In the fall of 2007 The LMU University welcomed its first class of 100 early college high school freshmen to the campus, providing a collaborative opportunity for the LMU Community College and the Early College faculty to foster successful college study skills and increase preparedness for college courses. Several classrooms were set up for the high school teachers and students in three buildings on the LMU campus. In the first year the school hired four core content teachers (math, science, Language Arts and social studies). During the second year it hired an additional six teachers to teach the upper level courses.

Gaining access

Gaining access to a site is a vital initial step in conducting a research study. If a school or district is not approached properly and trust is not established, then it can be the downfall of a good project (Stake, 1995; Yin, 2009). As a faculty member at the LMU Community College, I have built a working relationship with the principal, guidance counselor and several of the teachers from the Early College High School. My office is located in the same building where most of the LMU Early College High School classes
are held and I have met with some of the students over the past four years to discuss their experiences of participating in a poster session project held in conjunction with the math department. I have completed observations in several of the classes while gathering data for a pilot study of this project. I have also had several early college students in my math courses. These relationships and my presence at the school have allowed me to gain access to the site and aided in my ability to set up interviews and develop a rapport with all parties.

Participants

All of the students in the LMU Early College High School are recruited from the local public school system. Each spring a team of LMU Early College High School faculty and staff hold informational sessions at the LMU School district’s junior high schools and distribute informational packets and application forms. Students’ parents or guardians are required to submit a full application. The first class’ application requested information detailing the student’s school performance, parents’ educational background, and motivation for wanting to be admitted to the program. Since the first class was accepted, additional criteria have been added to the application. Students are now required to submit attendance and discipline records as well as recommendations from their principal and all four core content classroom teachers. Typically, 150 to 300 students apply to the program each year.

From the large pool of applicants, the LMU ECHS accepts 100 new students into the program as freshman each year. However, not all students choose to remain in the program for all four years. From the inaugural class at LMU, which entered the program in the fall of 2007, 62 graduated. Those who left the LMU ECHS have done so for
various reasons, such as a desire to attend a school that their friends attended, lagging grades, or desire to return to their designated public school.

Roughly 80 percent of the students at the LMU Early College High School are first-generation students because neither of their parents attended college. The remaining 20 percent either have parents who attended some college but did not graduate or have only one parent that attended college. Additionally, 80 percent of the seats are initially reserved for students from the school district in which the LMU ECHS is located, while 20 percent are for students from outside the district.

In their junior year students take at least one and at most three courses from their high school teachers. All students are required to take English at the high school and have the option of taking social studies at the high school or college. Juniors may also be required to take Algebra II with Trigonometry if they have not taken it during their sophomore year. All remaining courses are taken through the university. The students’ senior year is designed to be composed entirely of college courses. However, they have the option to take Economics and/or U.S. Government at the high school if they wish. For this study I interviewed six students who were only enrolled in college courses and one who had opted to take Economics at the high school. One of the six students who was enrolled only in college courses had dropped his university U.S. Government and World Politics course. He opted to take U.S. Government as an independent study through the high school to complete the requirement.

All LMU ECHS students pursuing STEMM majors in their senior year during the 2010 – 2011 academic year were invited to participate. Seven accepted. Four of the students were working on a nursing or medical degree, two were studying engineering
technology, and one was planning to continue on to a four year degree in middle school science education. These students were given a short survey (see Appendix A) to complete before the first interview about their education background and experiences.

The sample size of seven students provided ample opportunities to observe an overlap of experiences between students. The additional information collected from the high school math and science teachers and a sample of college professors offered further insight into each person’s role in the transition process and provided perspective on the various lenses through which the transition can be viewed. Furthermore, it demonstrated how presenting multiple views of an experience can uncover different interpretations of the participants actions and interactions.

**Building rapport**

Developing and keeping rapport with participants is essential to qualitative research (Glesne & Peshkin, 1999). Good rapport can grant a researcher access to information that participants may not normally reveal to a stranger (Glesne & Peshkin, 1999). I built rapport with the students during the first interview by showing genuine interest in their stories and by informing them that this research will help me, and their early college high school, to better understand how the program impacts the transition of first-generation students, a subculture to which they belong. I have completed observations in several of the high school math classes, so some of the students may have known me from those visits. I also had two of the students as students in previous semesters. I wanted to make sure that the students felt comfortable discussing their transition with me (Glesne & Peshkin, 1999). I took precautions to keep my own subjective opinions at bay as not to introduce experimenter expectancy effects or bias.
For example, several themes that emerged were surprising to me, especially when many of the students discussed how they no longer felt like they were a part of the high school.

The student interviews were held in my office due to lack of space at the LMU ECHS offices or other classrooms that had noise or other distractions. All students were asked if they wished to hold the interview in a different location to feel more comfortable, and all of the students said they were comfortable meeting in my office. All of the high school teachers and college professors were interviewed in their own offices or classrooms.

**Data Collection**

Yin (2009) states that a good case study employs multiple, complementary data sources. This study utilized multiple data collection methods including a brief introductory survey, multiple interviews, student records and optional participant journals. Application information and student transcripts were requested from the school guidance counselor at the beginning of the fall semester of the students’ senior year. Surveys were also sent with consent and assent forms to the students in the fall, requesting relevant information such as their study habits and social characteristics; such factors will not be found in their transcripts or application. This information was used as a basis for the initial interview.

The researcher was the primary data collection instrument for this study. Semi-structured interviews were conducted during the first 3 weeks of the spring 2011 semester which was the students’ senior year. This was done to get the students’ impressions of their senior year and transition to only college courses. It also served as a baseline for a subsequent interview and journal prompt. The protocol (Appendix B) for the first
interview is based on recurring themes found in the literature, including the factors that influence first-generation students’ decisions and barriers to pursuing STEMM majors, their transition to college and their persistence in college and STEMM majors.

The initial interviews were transcribed throughout the spring semester and notes were made on questions to follow up on for each student. Analytic notes were also made with regard to additional questions that should be asked of all the students. At the conclusion of the participants’ senior year, an exit interview was conducted (see Appendix C) to investigate their impression of the year, how they feel about their major and what they planned on doing after graduation from high school. These interviews were conducted between the tenth and thirteenth week of the fifteen week semester. The students were also asked to expand on any points of interest found during the transcription of the initial interview. This “member checking” helped triangulate my perspective and interpretation of the student’s intention (Stake, 1995). All of the student interviews lasted between 40 and 75 minutes, were voice recorded, and transcribed for analysis.

As Glesne (1999) suggests, the process of daily reflection should be a time to “write down feelings, work out problems, jot down ideas and impressions, clarify earlier interpretations, speculate what’s going on, and make flexible short- and long-term plans for the days to come” (p. 53). For this study time was taken at the end of each data collection day to review field notes and written comments and to summarize the interview. The daily reflections were typed and added to the transcription file for future review.
During the transcription process descriptive, personal and analytic notes were made. The descriptive notes were limited to notes made about the setting and the interviewees’ body language. Personal notes were used to keep researcher subjectivity in check (Eisner, 1998). Finally, analytic notes aided in identifying patterns and overlapping categories as well as providing fodder for the second round of interview questions and journal prompts.

At the initial interview the students were informed that they would be contacted about a journal prompt (see Appendix D) to be submitted halfway through the semester. One student opted not to participate in the journaling. The remaining six were contacted during the fifth week of the semester and asked to submit their responses by the end of the seventh week. Reminder emails were sent to the students every week about these journal prompts. Only three of the students (Gwendolyn, Neo and Zakiya) submitted the journal prompt.

Short interviews were also conducted with the high school (see Appendix E for interview protocol) and college math and science teachers (see Appendix G for interview protocol) to discern how they understand the Early College High School program and their role in the student's transition. The high school principal and guidance counselor were also interviewed (see Appendix F for protocol). The high school teacher, administrator and college professor interviews lasted between 25 minutes and an hour. Additionally, the LMU Assistant to the Dean, who was heavily involved in founding the LMU Early College High School and maintaining relations between the university and high school, was interviewed. All of this information further triangulated the data.
received from the students and provided deeper insight into the role of teachers in the transition process.

**Consent Procedures**

Prior to beginning the study, necessary paperwork was filed to obtain approval from the University Institutional Review Board (IRB) and the LMU public school system’s Research Review Panel. This insured protection of all involved parties (Hatch, 2002). Each student participant was asked to have his or her parent or guardian complete the consent form (see Appendix H) in order to participate in the study. Prior to gathering any data, letters were sent out detailing the scope of the project, the time commitment required of the students during the course of the study and that participation was completely voluntary. Each level of participation in the study (i.e. initial survey, interviews, journaling, access to transcripts and application) was itemized so that parents/guardians could specify in which parts of the study they would allow their student to be involved. The letter also assured the participants and parents or guardians that all information was to be kept confidential at all times.

Upon consent of all parents or guardians, the students were presented with forms of assent (see Appendix H) before beginning the interview process. These also included an itemized checkbox list of their willingness to participate in each part of the study. Prior to each interview and journal prompt, the students were reminded that their participation in the study was voluntary and that all information was to be kept confidential. The high school teachers, guidance counselor and principal as well as the college professors and Assistant to the Dean were also presented with consent forms (see
Appendix H) detailing their participation in the study through a semi-structured interview.

All participants received a pseudonym in order to maintain anonymity. Participants were informed that any identifying information would be kept in a locked file cabinet in a locked office or some other secure location.

**Research Bias and Subjectivity**

Qualitative research relies on the researcher bringing his or her past experiences into context while remaining unbiased during the data collection, analysis and reporting procedures (Eisner, 1998; Yin, 2009). Although a researcher’s past experience and background in a field of study can contribute to a thorough understanding of the questions he or she seeks to investigate, a researcher must always make sure to put his or her bias aside and report the stories of the participants as they intended (Eisner, 1998; Glesne & Peshkin, 1999; Yin, 2009). Consequently, I worked hard to report all evidence fairly and confront my biases by keeping a notebook of personal thoughts and insights while gathering and analyzing the data. I also made personal and analytic notes as I transcribed the interviews and analyzed the transcriptions.

I come to this study with a background in the STEMM majors and in higher education. My STEMM undergraduate and graduate experiences were ones of collaboration and faculty support. However, not all programs are the same, many are extremely competitive. I did not initially know into which culture the students I interviewed would be thrust, so I made sure to keep my experiences separate from those that the students encountered and described. To monitor this potential bias I kept personal and reflective notes on the issues I encountered. Many researchers recommend this...
technique to reduce bias and put subjectivity in perspective (Eisner, 1998; Glesne & Peshkin, 1999).

Qualitative research acknowledges that experiments cannot be conducted in isolation and that by asking questions of participants we are engaging their mind to consider ideas that they may not have otherwise considered (Schwandt, 2003). The interview dialogue allows the researcher to gather information but also engages the participants to reflect on the ideas associated with the question and how it applies to their own situation (Schwandt, 2003). This reflection may not otherwise have taken place without the asking of the question. The semi-structured interviews conducted in this study required such reflection.

As a college faculty member, teaching freshman level math and student success courses, I am accustomed to providing guidance on college related matters, especially those pertaining to first year issues and transition. As a participant-observer I was allowed to answer questions that the students had related to college resources. For instance, one of the students was unsure as to why she was working towards an associate’s degree when she wanted to earn a four-year nursing degree. As a faculty member I was able to explain the benefit that continuing on after a two-year degree with all of her general education requirements completed was easier than trying to transfer courses individually without the degree. I also felt an ethical obligation to assist the students with issues they presented. When students expressed concern about a certain course or teacher, I asked them more detailed questions about the issue and provided insight when possible or guided them to other resources that would help.
Additionally, Bob and Simon were two of my former students. I had witnessed academic and social preparation while they were in my calculus course the spring prior to the study. Bob was a student who handed in every assignment and received almost perfect scores. Simon did not always complete assignments and often drew doodles on his homework. Simon was also very inquisitive and had no inhibitions about asking questions until he understood the concept being discussed. I found both young men to be very intelligent and they both received very high scores in the class. Being their former instructor allowed me to have an initial rapport that I did not have with the other participants. It also gave me an additional bias to keep in check as I felt that both were intelligent and highly capable. For instance, Simon mentioned doing poorly in his physics class, which I found surprising because of how well he had done in calculus. My initial impression of Simon’s aptitude led me to ask additional questions about why he felt so uncomfortable in the class and ultimately determine that it was not all physics that he struggled with, just electro-magnetism. None of the other students were former students. However, I had met Gwendolyn and Nicole previously while doing observations in their classes for a pilot study.

I also had previous work experience with some of the high school teachers and college faculty. I have worked with Evelyn and Sophie on aligning the high school and college math curriculum and on a previous research project. I had limited or no previous relationship with Cecelia, Josephine, Lily, Mariana, or Olivia. With regard to the college faculty, I have worked closely with Professors Beryl, Florence and Tobias for several years. I trust their feedback and I asked them to participate because I knew that they had...
had several early college high school students in their classes. I had limited or no
previous relationship with Chantal, Dorian, Helene or Neko.

Data management

There was a large volume of data collected during this project so an organized and
secure method of managing the data was implemented. Each transcribed interview and
journal prompt was assigned page numbers and labeled with an identifying notation
based on the student’s pseudonym and the date the information was collected. This
established an audit trail (Creswell, 1994), thus contributing to the reliability of the study.
For identification purposes the following abbreviations will be used when referring to the
interview transcripts and journal prompt responses.

J-Name: Journal prompt with student name following it. For instance, J-Neo
would denote the journal response from Neo.

#Name#: Student interview transcript with the page number following it. For
instance, 1Gwendolyn6 would be from the 1st interview transcript of
Gwendolyn and the quote is found on page six of the transcript.

Name#: High school teacher, high school administrator or college faculty
interview transcript with page number following it. For instance,
Tobias4 would be from the interview transcript of Tobias and the
quote is found on page four of the transcript.

Throughout the transcription process descriptive, analytic and personal notes were
made. Descriptive notes were put in parentheses, analytic notes were bolded and
personal notes were italicized. Personal notes were used to keep subjectivity in check.
The analytic notes were used to affirm a priori codes and develop emergent ones.
Codes established from the data and were operationalized, and organized in the tree structure provided by the Weft QDA software. Significant observations, quotes and notes were compiled in an electronic data file for each refined data code which aided in identifying key categories and themes.

For security purposes all hard copy data was stored in a locked file cabinet in my office and all electronic files were stored on a password protected computer to which only I had access. Electronic files were backed up on a university password protected network.

**Data Analysis**

Analysis can be thought of as a process of interpreting and synthesizing first impressions with final thoughts (Stake, 1995). With that in mind, classifying and coding data should be a natural extension of collecting it (Merriam, 1998; Stake, 1995). Data analysis began with an *a priori* code list based on themes found in the literature and drawn from the theoretical underpinnings that inspired this study. Yin (2003) points out that such a theoretical basis can help guide case study research. Since this study seeks to explore the transition of early college high school students into college STEM majors, the theme of transition influenced the development of the interview protocol (see Appendices 2 and 3). The theme of transition also guided my observation and initial coding. Interview transcripts and journal entries were also examined for themes related to internal, home, school and peer group influences on their transition in addition to student preparation and student motivation.

As the data analysis continued, constant comparisons and frequent reading of the notes helped me seek the codes emerging from the data in order to revise and refine the *a*
priori codes as well as identify emergent categories and themes. Throughout the interview, transcription and coding process, several other categories emerged including the students’ sense of identity with relation to the high school, their engagement and interaction in the college culture, and how they viewed the program as an opportunity in several respects.

I used the Weft QDA software to organize, code, and group common responses found in the transcribed interviews and journal responses. I also looked for holes in the data by identify things that I expected students to say but were missing. I read and re-read the data to affirm my code list. A total of 87 codes were used to code the data. Throughout the coding process I grouped similar codes into common categories and looked for emergent themes and patterns. Upon review and revision the codes were grouped into six categories. Data belonging to established categories were then compiled in a word processed document and formed the basis of my analysis.

**Validity and Reliability**

I was the primary data collection instrument in this research project. Therefore, I employed trustworthy data collection and analysis procedures to improve the study’s validity (Gall, Joyce. P., Gall, M. D. & Borg, Walter R., 2005; Stake, 1995; Yin, 2009). Validity in qualitative research pertains to the identification of proper operational measures for the concept being investigated and defining a proper domain to which the findings can be generalized (Yin, 2009). I utilized multiple data sources, including student and teacher interviews as well as student journal responses. As I collected the data I carefully coded each item and created an audit trail. Prolonged-engagement for long-term data collection further enhanced the validity of the study. Finally, during the
data collection and analysis process I engaged in self-reflection to attend to my own biases and predispositions.

I was able to triangulate certain themes by cross-referencing within each participant interview, the teacher interviews, journal prompts, student grade transcripts and student applications to the school. I was also able to find contrasting opinions on certain aspects of the students’ transition experiences. The biggest discrepancies appeared between the high school students’ descriptions of their preparation and transition experience and those described by the college professors. For instance, the issue of academic identity was a category across all of the data. The students all noted that they considered themselves to be college students and no longer high school students. A similar sentiment was noted by the high school teachers who felt that they had difficulty drawing the seniors back in to school activities. However, several of the college professors stated that they felt the early college students did not fit into the college classes because they thought the students still considered themselves to be high school students and did not want to conform to the college culture.

For a study to be reliable, the researcher must provide enough information for later researchers to replicate the research with the same or a similar case (Gall, Joyce. P., Gall, M. D. & Borg, Walter R., 2005; Yin, 2009). Reliability in this study came from a clear description of data collection and interview protocol, (see Appendices 2 and 3), the use of an organized data management system and establishing a clear audit trail. As many steps as possible were operationalized so that others can review and understand the steps taken to complete this research. During the writing process I made every effort to make clear connections between the data and any inferences made about it.
Generalization

Case study research is often seen as a poor basis for generalization since only one or a few cases are being examined, but these studies produce a wealth of information as they are conducted at length and in great detail (Stake, 1995). Stake (1995) also notes that case study research should be conducted to find “particularization, not generalization” (p. 8) and the understanding should be of the case itself, not in how it is different from other cases. Through my experience working with first-year students at the college level I have developed ideas about how they learn and adapt to college life. By conducting research projects, such as this one, I refine these ideas. Additionally, the reader of this study will be responsible for confirming whether the research findings fit amongst his or her own generalizations about this population.

Summary

This study explored the transition of a group of first-generation college goers into full-time college life. The early college high school students share common characteristics and experiences, which makes the single case study an appropriate method of collecting and analyzing the data (Yin, 2009). Using a sample of the early college high school students attending a community college housed in a large, Midwestern, urban university, I gathered and analyzed qualitative data to explore the academic preparation and transition experiences of the students as they entered into their first full year of college courses.
CHAPTER IV
FINDINGS

This chapter presents the results of the analysis of the interviews of 21 participants conducted for this research project. There were seven students, four high school teachers, three high school administrators and seven part-time or full-time college faculty members interviewed for this study which resulted in a total of 20 hours of transcribed interviews. A brief biography of each participant is given followed by the categories and themes that emerged through analysis of the interview transcripts. The results were used to answer the following research questions:

1. How do early college high school students experience the academic, social and cultural transition from high school to college and, more specifically, into a STEMM major?
   a. What are the internal factors which contribute to their transition and how do these factors affect their transition?
   b. What are the non-school related external factors which contribute to their transition? How do these factors affect their transition?
   c. What types of school (high school and college) related supports do they receive, or wish they had received, and how do the supports, or lack of supports, affect their transition?
2. What factors contributed to these first-generation students initially choosing and continuing to pursue a STEMM major and how did the factors listed in the first research question influence their choice?

**Participants**

The participants for this study consisted of seven early college high school seniors majoring in a STEMM field, the two early college high school math teachers, the two early college high school science teachers, the high school guidance counselor, the high school principal, the Assistant to the Dean of the college, two part-time college instructors and five full-time college professors. Demographic information about the students was gathered from their application to the program and student majors were self-identified. Demographic information for the high school teachers and staff as well as the college faculty was self-identified.

**High School Student Profiles**

Eight students selected by the high school guidance counselor were mailed invitations to participate in the study during the fall semester of their senior year. Four of these students agreed to participate (Bob, Gwendolyn, Nicole and Simon). A general invitation was then made during the students’ senior meeting before the beginning of the spring semester. From this meeting, an additional three students agreed to participate for a total of seven students. Two of the male students were majoring in engineering technology, one male student was majoring in middle school science education and all four female students were majoring in a medical field.

Each student participated in two interviews and an optional journal reflection. The first interview was conducted within the first three weeks of the spring semester of the
students’ senior year. Between weeks six and eight of the semester the students were asked to respond to four journal prompts. Only three of the students (Gwendolyn, Neo and Zakiya) responded to the journal prompts. Each student was interviewed again between the tenth and thirteenth weeks of the fifteen week semester. Students who did not respond to the journal prompts were asked the questions during the second interview. The student interviews lasted between 25 minutes and 1 hour 15 minutes for a total of 11 hours and 15 minutes.

Bob is an 18-year-old bi-racial male majoring in Engineering Technology. He is a quiet individual who describes himself as kind and considerate because he feels “that’s just how you’re supposed to treat other people” (Bob2). He has a younger sister and a younger female cousin who stays with his family. Bob took high school level math courses in middle school and was in the gifted and talented program at his junior high school. He was encouraged to attend the early college high school by his junior high math teacher and applied because he did not want to go to his designated public high school. Bob is one of my former students and did exceptionally well in the calculus course he took with me. Bob received his Associate of Applied Science in Engineering Technology the week after graduating in the top five of his high school class. He does not plan to pursue a four-year degree in the near future.

Gwendolyn is a 17-year-old African American female planning to major in pre-med. She hopes to attend medical school and become a psychologist and to work in juvenile corrections to help break the prison cycle for young people. She was introduced to the medical field at a young age because her father has many health issues including diabetes and kidney failure. Gwendolyn has two younger brothers and a younger sister.
Her parents are divorced and she lives with her father to help take care of him. She considers her father to be her role model because he is able to maintain a positive attitude in spite of his health issues. Her interest in the medical field led her to attend the Healthcare in Progress (HIP) camp during junior high school. During this camp she realized that she was a bit squeamish and did not want to be a doctor. However, she considers herself to be a logical thinker and developed an interest in how people think which led her to want to major in psychology or psychiatry. Gwendolyn did not do well academically in eighth grade because of personal issues. She mentions that she only applied for the early college high school because her friends did but ended up being the only one of her friends accepted to the program. She is glad that she attended the school because it is smaller and she feels more supported than she would have had she gone to her designated public high school. She notes that she likes to talk and engage her friends in debate for fun. Gwendolyn received her Associate of Arts degree one week after graduating from high school. She plans to attend a new university in the fall, major in pre-med and then continue on to medical school.

Joanna is a 17-year-old African American planning to major in nursing. She plans to become a neonatal nurse because she enjoys working with infants. She became interested in nursing because many of her relatives are in healthcare and her mother is going to school to become a nurse. Joanna also attended the HIP camp because of her interest in the healthcare fields. She is the oldest child in her family and has three younger sisters and a younger brother. She is quiet and enjoys cooking and singing. Joanna graduated with an Associate of Arts degree one week after high school.
graduation. She plans to transfer to a historically black college in the fall and continue her nursing degree.

Neo is a 17-year-old Caucasian male majoring in middle school science education. He was indifferent as to which high school he attended when he applied to the school but is now happy that he was accepted to the program. He has a younger sister who also attends the early college high school. Neo is very energetic and insightful. He discusses how he chose to skip class when he was a junior and this led to poor grades. He also discusses how he does not want to admit he is intelligent because then he will be held responsible for getting good grades. However, during his second interview he explains how skipping class and not studying were irresponsible and that he has since improved his attendance with the hope of increasing his GPA. Neo did not pursue an associate’s degree. He is slightly unsure of his plans for the next year but notes that he intends to transfer to the College of Education at LMU in the fall or spring and continue his degree in middle school science education.

Nicole is a 17-year-old Caucasian female majoring in nursing. She was very excited to apply for the early college high school. She has a younger brother and often discusses how her family is very close and supportive. She even notes that her friends are surprised by the fact that her family has dinner together every night. She is good friends with Neo and used to be close with Gwendolyn. Nicole is driven to succeed and discusses how she is disappointed that she is not ranked first in her senior class, although she is still in the top five. She originally planned to pursue an associate’s degree in Medical Technology but her admission to the program was revoked because she was under the age
Nicole graduated with an Associate of Arts and was directly admitted to the LMU College of Nursing.

Simon is an 18-year-old Caucasian male majoring in Construction Engineering Technology. He went to junior high school with Bob and was also encouraged to attend the early college high school by his junior high math teacher. Simon was interested in attending the school because he thought it was a school for “smart kids” and he considered himself a smart kid. Simon is also one of my former students. He took calculus with Bob and also did very well. He is good friends with Neo and used to be close with Bob. Simon has a 2-year-old daughter who he is helping to raise with his girlfriend. He is the only student interviewed who is working a part-time job while attending the school. He notes that he has a hard time fitting everything into his schedule between working at a local restaurant, seeing his daughter on a regular basis and finishing his degree. Simon has many interests and is not completely set on working in construction. He thinks that he may return to earn a degree in architecture, art or psychology. Simon graduates high school with only a few classes left to complete his Associate of Applied Science in Construction Engineering Technology. He was unable to get into all of his required classes because of scheduling issues but plans to complete the few remaining courses in the fall and spring and graduate with his associate’s degree in the spring of 2012. He also plans to continue on for his four-year degree after completing his associate’s degree.

Zakiya is an 18-year-old African American female majoring in nursing with the hopes of one day becoming a nurse practitioner. She has a much older brother who she does not see very often and an older sister who she looks up to for being independent and
on her own living in Atlanta. She also has a younger sister who lives with her and her parents. Zakiya applied to the early college high school because she wanted to get a head start on college and get done with college quickly. She also did not want to attend her designated public high school. She is very involved in community service projects and local organizations. She was encouraged to attend college by her grandfather and some community members in her church. She sees herself as a role model for other young girls. Zakiya did not pursue an associate degree and instead transferred to a four-year degree in Nursing and Dietetics from LMU. She hopes to complete both degrees in two or three years and then go to graduate school to become a nurse practitioner. A summary of the students’ demographic and academic information is provided in Table 1.

Table 1

<table>
<thead>
<tr>
<th>Student</th>
<th>Age when first interviewed</th>
<th>Ethnicity</th>
<th>STEMM Major</th>
<th>Completed Associate Degree*</th>
<th>Plan to continue to 4-year degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bob</td>
<td>18</td>
<td>Multiracial</td>
<td>Engineering Technology</td>
<td>Yes (AAS)</td>
<td>No</td>
</tr>
<tr>
<td>Gwendolyn</td>
<td>17</td>
<td>African American</td>
<td>Medical</td>
<td>Yes (AA)</td>
<td>Yes + Med School</td>
</tr>
<tr>
<td>Joanna</td>
<td>17</td>
<td>African American</td>
<td>Medical</td>
<td>Yes (AA)</td>
<td>Yes</td>
</tr>
<tr>
<td>Neo</td>
<td>17</td>
<td>Caucasian</td>
<td>Science Education</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Nicole</td>
<td>17</td>
<td>Caucasian</td>
<td>Medical</td>
<td>Yes (AA)</td>
<td>Yes</td>
</tr>
<tr>
<td>Simon</td>
<td>18</td>
<td>Caucasian</td>
<td>Engineering Technology</td>
<td>No (AAS planned in Spring 2012)</td>
<td>Yes (undecided major)</td>
</tr>
<tr>
<td>Zakiya</td>
<td>18</td>
<td>African American</td>
<td>Medical</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*AA denotes Associate of Arts and AAS denotes Associate of Applied Science
High School Teacher and Administrator Profiles

The high school math and science teachers and the high school administrators were interviewed once during the spring 2011 semester. They were asked to describe their interactions with the students, how they try to prepare the students for college and their impressions of their transition to college. The interviews lasted between 20 and 55 minutes for a total of five hours of transcription.

Evelyn teaches math at the LMU Early College High School. She is the co-advisor for the senior class along with Sophie. She is assumed to be in her 50’s based on her life experiences. She joined the Community of the Sisters of Providence and became a teacher after completing her Bachelor’s in Chemistry. She later left the community and enlisted in the Navy for a short while. She holds a PhD in Chemistry and a Master’s in Polymer Science. She began teaching at the ECHS when it opened as the freshman science teacher but preferred teaching math so she switched to teaching freshman and sophomore math in her second year at the school. She was interested in teaching at the ECHS because she would have liked to have attended such a school when she was young and saw teaching at the school as the next best thing to attending it.

Sophie is the other math teacher at the ECHS. She is the co-advisor to the senior class with Evelyn. She is assumed to be in her mid 40’s. She has taught math at the school since it opened and taught previously in the public school district for more than a decade. She previously began working on a PhD in Computer Science but did not complete it when she started her family. She hopes to begin work on a PhD in Education next year. She enjoys teaching at both the high school and college level so she sees teaching at the ECHS as the perfect combination of the two.
Marianna is a science teacher at the ECHS. She began teaching the freshman course the second year the school was open after Evelyn switched to teaching math. Marianna was a chemist for 23 years and taught in the public school system for 12 years before joining the school. She is assumed to be in her late 50’s. She had mixed feelings about coming to the early college because she enjoyed teaching at one of the other local public high schools but she was ultimately glad to make the switch. She hopes that her background in science will help her lead students into the STEM fields.

Cecelia also teaches science at the ECHS. She is in her mid to late 20’s and is the youngest teacher at school. She only had three years of teaching experience before coming to the ECHS. She sees working at the school as a great opportunity and tries to inspire her students to study STEM majors.

Olivia is an administrator at the school. She was a language arts teacher for five years, then worked in the mental health field before returning to get her Master’s degree and becoming a high school guidance counselor. She worked at another local district for several years before joining the ECHS when it opened. Her job includes making sure the students meet all of the state requirements for graduation from high school, helping students choose a major, and acting as a college academic advisor by guiding students into the correct courses for their majors. She liked the idea of the school because it focuses on the middle tier of students. She feels that often the higher and lower achieving students get the most attention but that this initiative could benefit the middle group and provide them with a great opportunity.

Josephine is also an administrator at the ECHS. She was a physical, health, and business education teacher for several years before moving into administration. She
retired about five years prior to coming to the ECHS and worked part-time as a mentor for new principals. She was interested in the school because she sees it as “a great opportunity for kids that want to get ahead in life” (Josephine2).

Lily is an administrator at LMU and oversees all of the technical preparation programs, secondary outreach programs, dual enrollment pilot projects, and the early college. Her role at the ECHS is to run interference between the high school, the public school system and the college. She was on the steering committee to bring the ECHS to LMU and continues to find funding to keep the school in operation. She has sat on the committee to select each of the incoming freshman classes.

A summary of each teacher or administrators’ position and length of employment at the school is provided in Table 2.

Table 2

Brief Summary of the High School Teachers’ and Administrators’ Information

<table>
<thead>
<tr>
<th>Teacher/Administrator</th>
<th>Position</th>
<th>Number of years at the ECHS</th>
<th>Number of years teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cecelia</td>
<td>Science teacher</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Evelyn</td>
<td>Math teacher</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>Josephine</td>
<td>Administrator</td>
<td>1</td>
<td>23 teaching</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7 administration</td>
</tr>
<tr>
<td>Lily</td>
<td>Administrator</td>
<td>4 + preplanning</td>
<td>NA</td>
</tr>
<tr>
<td>Marianna</td>
<td>Science teacher</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Olivia</td>
<td>Administrator</td>
<td>4</td>
<td>5 teaching</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>13 administrative</td>
</tr>
<tr>
<td>Sophie</td>
<td>Math teacher</td>
<td>4</td>
<td>22</td>
</tr>
</tbody>
</table>
**College Faculty Profiles**

Five full-time college professors and two part-time college instructors were invited to participate in a short interview about their experiences working with the early college high school students and how they saw the students transitioning into college. Interviews were conducted with three science, one math, one allied health and two social science college faculty members. Since the school has only existed for four years and not all of the students take many STEMM courses, the science and math teachers were only aware of less than a dozen students in their classes thus far. The allied health professor has had closer to 40 students. In order to get a better feel for how the majority of students were transitioning to college, two social science teachers who had worked with at least 15 students each were invited to discuss their experiences with the students. All of the interviews lasted between 20 and 55 minutes for a total of 3 hours and 45 minutes.

Professor Beryl teaches Basic Math full-time. In addition, she teaches at least one Basic Chemistry class per semester. The ECHS students are not permitted to take developmental courses so she has only taught the students in her chemistry course. She knows quite a bit about the ECHS but chooses not to ask students to identify themselves as early college or post-secondary. She has learned which students are early college because of the progress reports they are required to complete. She figures she has only had early college students in her classes for the past three semesters and in that time she has had between six and ten early college students in class or lab.

Professor Chantal primarily teaches physics, chemistry and materials lecture and lab. Chantal admits that she does not know much about the ECHS and that she also does not try to identify the early college students within her class. She notes “I try to just treat
everyone as a college student so I usually lose track of who’s early college and then I also have the postsecondary” (Chantal3). She continues discussing how it is difficult to keep track of all the different programs offered to high school students at the university. She knows that she has had several early college students in her class but is unsure as to how many. She notes that she will pay closer attention in the future.

Professor Dorian teaches in the Allied Health Department. She knows a fair amount about the school and is aware of the students in her classes, especially in Anatomy and Physiology. She notes that the number of students in her classes has increased over the past two years and that she had close to 20 students in one section the previous fall semester. Overall, Dorian estimates that she has had between 30 and 40 ECHS students.

Professor Florence teaches Social Science at LMU. She is aware of the high school and its policies and has spoken with the guidance counselor at times when early college students have missed her class. Florence has had close to 100 early college high school students in the past two years. The students have primarily been in her economics class because it is a course for which the students can get both high school and college credit. Of the students interviewed for this study, she has had all but Zakiya in her economics course.

Professor Helene teaches physics and computer programming. She also teaches several classes in the College of Education. She is informed about the ECHS and has worked with some of the high school teachers. She has also taken her education classes to do observations at the ECHS. Despite her awareness of the school she has a hard time distinguishing which of her students are early college and, like Beryl, identifies them
based on the progress reports they submit to her. She estimates that she has only had four or five but as we talk she realizes that there are several more of whom she was not originally aware. By the end of the interview she approximates that she has had closer to eight or ten early college high school students.

Professor Neko is a part-time instructor of Social Science. She has only taught in the department for one semester. However, in this short time she has had 17 early college students between her two sections. She explains that she was given no information about the ECHS or that she would have the early college students in her course when she started.

Professor Tobias is a retired math professor who is now teaching in the department part-time. He was not initially presented with much information about the school when he began teaching part-time but has inquired about the school to learn more. He estimates that he has had three or four early college students. A summary of each instructor’s content area, employment status and estimated number of early college students taught is summarized in Table 3.

**Table 3**

*Brief Summary of the College Faculty's Information*

<table>
<thead>
<tr>
<th>Professor</th>
<th>Content Area</th>
<th>Part-time/ Full-time</th>
<th>Approximate number of ECHS students taught</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beryl</td>
<td>Basic Math and Chemistry</td>
<td>Full-time</td>
<td>6 – 10</td>
</tr>
<tr>
<td>Chantal</td>
<td>Science</td>
<td>Full-time</td>
<td>unsure</td>
</tr>
<tr>
<td>Dorian</td>
<td>Allied Health</td>
<td>Full-time</td>
<td>~ 40</td>
</tr>
<tr>
<td>Florence</td>
<td>Social Science</td>
<td>Full-time</td>
<td>~ 100</td>
</tr>
<tr>
<td>Helene</td>
<td>Science and Technology</td>
<td>Full-time</td>
<td>8 – 10</td>
</tr>
<tr>
<td>Neko</td>
<td>Social Science</td>
<td>Part-time</td>
<td>17</td>
</tr>
<tr>
<td>Tobias</td>
<td>Math</td>
<td>Part-time</td>
<td>3 – 4</td>
</tr>
</tbody>
</table>
Results

The categories described below were based on *a priori* as well as emergent codes. Throughout the data analysis 87 codes were used to code the data. The *a priori* codes were based on the literature and research questions. The emergent codes were derived from the students’, teachers’ and professors’ stories. These codes were reviewed, grouped and revised into six categories. Motivation was an *a priori* category based on research question 1a. The students’ academic identity and how they interacted and engaged in the college culture were emergent categories that also helped answer the question 1a. The students were asked extensively about their relationships with family, friends, the high school teachers and staff as well as the college faculty. The responses to these questions fell into the category of support which helped answer research question 1b and 1c.

Additionally, the students, high school teachers and college professors were asked about the students’ preparation for college. The responses to this question included several aspects including academic preparation, maturity, study skills and other skills necessary to be successful in college. This category also helped answer research question 1c. The second research question was answered by the category discussing the students’ attitude toward the STEMM fields and how this related to their major. A detailed description of how each of these categories answered the respective research questions will be discussed in Chapter Five.

Although these categories helped answer their respective questions, the order in which they are provided below is based on the way the categories fit together with each other. Ultimately, the students’ attitude toward the STEMM fields led them to their majors and influenced the classes they took and how they interacted with the school. This
also led to their motivation for wanting to attend college and ultimately the early college high school. Their motivation also determined their perseverance in the program and whether they planned to continue with college after they graduated from the high school. Their preparation in middle and high school affected how they did in the college courses and helped determine how they transitioned into their college course, especially their STEMM courses. The support they received at each level also contributed to their perseverance and dedication to completing the program. The level of interaction and engagement discusses their experiences; specifically whether they were what the students expected or didn’t expect from college. Additionally, this category examined how they started to drift from high school activities and a connection to the high school. Their level of engagement and interaction also contributed to the final category which discusses the students’ academic identity. Their academic identity was defined not only by the students, but also by how the high school teachers and college professors saw them and reacted to the students’ identity. The operationalization of each category is provided in Table 4 followed by a detailed description of the findings for all six categories.
Table 4

Summary of Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>A priori or emergent</th>
<th>Operationalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude toward the STEMM fields</td>
<td>A priori</td>
<td>The students ‘attitudes and impressions of all of the STEMM fields, the factors that led them to choose their STEMM major, their feelings about their high school and college STEMM classes and their preparation for these courses.</td>
</tr>
<tr>
<td>Motivation</td>
<td>A priori</td>
<td>Factors that motivated the students to attend the school and persist through the program.</td>
</tr>
<tr>
<td>Preparation</td>
<td>A priori</td>
<td>The students’ and the teachers’ impressions of the students’ academic preparation for college as well as their study skills, time management skills, organization, maturity and social preparation.</td>
</tr>
<tr>
<td>Support</td>
<td>A priori</td>
<td>The types and level of support the students received from their family, friends, community members, high school teachers and administrators, college professors and support staff while in the program.</td>
</tr>
<tr>
<td>Interaction and engagement in the college culture</td>
<td>Emergent</td>
<td>The activities the students participated in at the high school and college level and how this changed over the four years. Also, their interaction with high school and college classmates.</td>
</tr>
<tr>
<td>Academic identity</td>
<td>Emergent</td>
<td>How the students saw themselves and how they associated themselves with the school. Also, how the high school teachers and college professors viewed the students in their classes.</td>
</tr>
</tbody>
</table>

Attitudes Toward the STEMM fields

There were several contributing factors that related to the students’ ideas and attitudes towards the STEMM fields. First, several students noted how they felt their abilities in the STEMM fields had pushed them towards a certain major and away from
others. Additionally, their performance in the high school and college STEMM classes contributed to their plans to pursue and narrow in on their major. The high school and college faculty’s impressions of the students’ abilities also came into play with the way in which they dealt with and reacted to the early college students.

**The Decision to major in a STEMM Field.**

The students’ attitudes and preconceptions of the STEMM fields was an influencing factor on their experience at the LMU Early College High School. These attitudes and experiences influenced how the students reacted to their high school and college math and science classes and how they chose their majors. It also influenced their perception of success for continuing their education beyond their current coursework or completed two-year degree.

Many of the students described their introduction to STEMM majors during junior high school. Lam et al. (2005) noted in their study that summer camps and pre-college programs work to encourage underrepresented student populations to consider STEMM majors. Several of the students in the current study attended summer camps or took extra science and math classes while in junior high school. The students discussed how the camps, classes and their junior high teachers led them to pick general STEMM fields such as medicine, engineering or STEMM education. Gwendolyn, Joanna and Nicole attended the HIP summer camp which introduced students to the healthcare professions. Zakiya attended the MAP program which held weekly meetings during the seventh and eighth grade school year. The MAP program focused on what careers were available to students and how they should prepare for their future career during high school. Additionally, it emphasized the STEMM related careers during a summer camp.
between the two grades. All four girls noted that involvement in these camps, in addition to inspiration from family members, led them to choose majors in the medical fields.

Simon and Bob attended junior high school together and started taking high school level math in seventh grade. The class they took was taught by a senior high school teacher and allowed them to bypass Algebra I their freshman year of high school. They both discussed how their teacher was very supportive and encouraged them to attend the LMU Early College High School and to pursue STEMM majors. Both boys pursued engineering technology majors.

When asked why he wanted to become a teacher, Neo noted that he was influenced to do so by one of his junior high teachers. “I had a really, really good science teacher in eighth grade. [...] and I really loved science so I thought well, there’s a lot of things that you can do in science and what could be better than teaching it?” (1Neo3).

The experiences from junior high helped many of the students determine their major in their freshman or sophomore year, allowing them to start taking classes toward their major early on in the program. For instance, Bob and Simon had completed their college math requirement of calculus by the end of their junior year. Typically, students are admitted to the College of Nursing during their sophomore or junior year. However, Nicole and Joanna completed their associate’s degrees and most of their general education requirements which allowed them to be directly admitted in their freshman year. Zakiya only needed one additional semester of classes before being admitted to the nursing program.

The students also noted that while attending the LMU Early College High School their senior high teachers, guidance counselor and college classes directed them towards
a specific major. In the students’ high school freshman and sophomore years they have weekly advisory periods where they discuss the program and career planning.

Additionally, both high school science teachers noted that they encourage their students to pursue STEMM majors. Marianna plans to develop a senior project to get the students interested in engineering.

Marianna: But you have made me think that I need to know more about what our freshman class thinks about science careers. One of the things that I want to do is set up a class for next year's seniors is to set up something with engineering so that they can do some type of internship. I would like to see if there's some way to set up a senior project. (Marianna9)

However, they did not present unrealistic goals for students either. Marianna, the freshman physical science teacher, noted “I mean, you get some of the students that say that they want to be a doctor but they're getting a D in science and you have to tell them that it's not going to work” (Sharon8).

Students who narrowed in on their field or adjusted their course of study did so because of college courses they took or shadowing experiences. Zakiya mentioned that she had narrowed down her major during her junior year from nursing to a neonatal nurse practitioner. Joanna described her experience shadowing a nurse, “At first I shadowed a prenatal nurse and I was in the room when the lady was having a caesarean so I realized that that wasn’t what I wanted to do and I decided that I wanted to do neonatal and not prenatal” (1Joanna3).

Each student had a different story of how they became interested in a STEMM major. Bob and Simon enjoyed building things and chose engineering technology majors thinking that they would be able to turn this interest into a career. However, Bob noted that once he was in the classes that there was more to learn than just building,
Bob: I like to build things and that's kind of where I thought that the degree was taking me, but I mean, it allowed me to learn how to design things using software and by hand and how to understand what materials to use and how to use them and you know, it's just something that I thought was pretty useful to me in the future. (1Bob5)

Simon was also pleased about what he learned in the courses and how he would use what he learned in his future career:

Simon: All of the classes seem to be applied to the construction field and they're all applied. I think that they design all the classes thinking how they all think and how they like building things and they like to keep things simple. And they like to know why. They don't like to learn something they don't need. In every single one of the classes they bring it back to why you need it or when you're going to use it. [...] They go really in-depth. I really enjoy them. Like my Materials and Testing I and II I had a great professor because the labs were all about doing the thing that she just talked about. We were testing the soil and stuff like that. They are really involved courses. Their hands-on because they figure they are hands-on learners. I think that they did a really good job of building the courses. (1Simon8)

The length of time required to complete a degree also influenced which major certain students chose to pursue. Bob was originally majoring in Mechanical Engineering but switched to a two-year Mechanical Engineering Technology degree.

Bob: I saw the 4 year and I saw the two year and I was gonna go for the four but I said you know, if I get out of college and high school, I want to at least have something there. I guess that is pretty much the thing that pushed me there. On top, I didn't feel like staying another two years after. If I get this then I can at least get a decent job. (2Bob22)

Zakiya chose to be a nurse practitioner rather than a doctor because of the amount of time spent in school:

Zakiya: I wanted to be a pediatrician but I don't wanna go to medical school. That's too long to be in school, so we did this career thing and you could test and see all these different careers that matched up with your personality and nurse practitioner came up and I thought, oh I can do that and still do the same thing as a doctor but I don't have to go to medical school. (1Zakiya5)

Although gender discrepancies in the STEMM majors was not the focus of the study, it should be noted that while reviewing the majors of the senior class, only one of
the female students had chosen a non-medical or non-education STEMM major, namely biology. She did not volunteer to participate in this study. Thirteen of the female STEMM majors were majoring in nursing, pre-med, math or science education, and allied health. However, there were 14 male students pursuing engineering, biology or computer and technology majors.

The STEMM Fields: Majoring in One While Avoiding Another.

It should first be noted that every student did not take courses in all of the STEMM fields. Students pursuing engineering technology did not take biology or medical classes and those in the medical fields did not take many physics or technology courses. For this reason the students did not comment on all of the STEMM fields, only the ones with which they were acquainted.

While all of the students were in STEMM majors, most of the students still had a fear of certain classes within STEMM. For instance, Simon was an engineering technology major but felt he was not good at physics because it was the only subject he had to “work at.” Upon further discussion it was revealed that he did not feel he was bad at all physics, just electricity and magnetism because he felt the concepts were too abstract and he preferred concepts that he could view and physically manipulate. He describes the amount of time he spends on his classes and how he feels he is doing well in everything else except his physics class:

Simon: Besides physics, it's great. I, uh, I'm terrible at physics. It is the only subject that I actually have to work at. It's the only subject that I've had to try at in my entire life. With the easy concepts I can get them right away. Most of the hard work was just taking the time to do the work not that the work was hard for me, it just took time. With physics, I had to have her explain the material three times today before I can understand. There's this theory about magnetism and producing electricity and I have no idea how it works. I have a flashlight that does that with
that same principle when you shake it but I just don't have any idea why it works. […]

Katie: […] I think a lot of engineers think that they’re bad at physics even though engineering is all about physics.

Simon: I think that it’s because it goes against common intuition and with engineering you can actually build it with your hands but with physics it’s just very abstract. Like electricity is not something that you can see and since engineers are typically visual learners that it’s a lot more difficult. […]

Katie: You must be good at physics if you’re in engineering because engineering is all about physics.

Simon: I'm terrible at physics. I'm sorry, I am. I worked so hard for C+ in electronics and magnetism and I had no idea what was going on and the final exam. I was good in mechanics though. I could have gotten a better grade if I had put more effort into it. Heat and light was easy. (1Simon4)

Gwendolyn also expressed her lack of self-efficacy in physics and math. As a pre-med major planning to major in psychiatry, she was not sure why she had been signed up to take physics since she did not see how it applied to her major. She lamented about how it was the worst she had ever done in a course and was sad to see her GPA drop due to a class that she later found out was not required for graduation or her major. Precalculus was also giving Gwendolyn trouble. She knew that she needed to continue in math for her degree but was also worried about her current math class.

Gwendolyn: I know that I will have to keep going and math. It's not that I don't like math it is just that I think that I have hit a hard place. I think that if I go to tutoring then I will be able to get into it more and get past this class because I have heard that calculus is easier than precalculus. (2Gwendolyn16)

Despite her issues with precalculus and physics, Gwendolyn felt more confident about her abilities in chemistry. She even helped peer tutor her classmates and had helped a fellow student improve their grade in the course.
Several of the students expressed some fear or animosity toward at least one of the STEMM fields. Some of the students considered changing their major or adjusting their program focus to avoid certain courses. Neo planned to be a middle and high school science teacher but repeatedly noted how he despised math to the point where he did not plan to teach physics if it required him going much further in his math courses despite hearing that a physics endorsement might help him find and keep a job. He had no plans of continuing on in math beyond his required courses, “math, I’m not planning on minoring in math or teaching math so I don’t want any more math than what is required for science” (1Simon9). Neo had earned a D in precalculus and was surprised that he was allowed to register for Calculus I despite the prerequisite requiring a minimum of a C- in precalculus. He took the calculus course despite his reservations and was disappointed to find he was struggling early in the semester. He attended tutoring sessions but was unable to bring up his grade which led to his decision to drop the course. “Like I said, I got a D in precal so I didn’t have a whole lot of ground a stand on and I was trying to build on it but I just dropped off” (1Neo8).

Neo did not always despise math, although this was not his first setback. He describes his experiences during junior high school and his freshman year at the early college high school:

Neo: No, in my seventh grade I was in pre-algebra and in order to move on to algebra for the eighth grade you had to meet certain requirements and one of them was that you had to get an 86% in the class and I had all the requirements including the percentage which was an 86.2 by the end of the year but the teacher wouldn’t put me in algebra because she said an 86.2 wasn’t good enough and I was really mad because the requirement said that I needed an 86 and I had that but she wouldn’t let me. So I took pre-algebra in eighth grade but that teacher got us through the algebra book as well. So when I got to algebra high school, I knew everything already and I got an A+ on every quiz without putting in any effort so I guess if I can move on to geometry because I already knew everything. So I sat
down and took a test over the entire book and I did pretty well and [the math teacher] said she’d put me in geometry. I'd miss about three weeks so she helped me along for a few weeks but basically everything that you learn in algebra is FOILing and factoring and I got all of that pretty quick so I was good. (1Neo7)

Nicole and Bob were the only students who expressed confidence in all of their STEMM courses. Bob did not make any negative comments about his STEMM courses and felt he was doing well in all of his courses. Nicole enjoyed all of her biology and medical courses. She also did well in her college math and statistics classes. She considered them to be much easier than her high school math courses. Nicole had completed so many science classes with a high GPA that she received a STEMM Award from the local public school system.

**Preparation for College STEMM courses.**

The preparation for college STEMM courses differed depending on whether you were talking with a student, high school teacher or college professor. Each group had a slightly different outlook on the level of preparation.

**The Students’ Perspective.**

Overall, the students stated that they were prepared for their college math classes and to some extent for their science courses. With regard to math, the students felt that the early college high school math teachers at times made them work harder than their college math teachers. When asked how he felt his high school teachers prepared him for college Bob remarked “I guess by giving us a lot of work […] getting used to having work all the time” (1Bob7). Zakiya noted “we had homework, like the minimum we would have would be 20 to 25 problems every day and it was due the next day, which kind of to me I think college is easier than high school” (1Zakiya7). She continued when asked about her preparation for math in high school:
Katie: Do you feel that the high school math classes that you took prepared you for the stats class?

Zakiya: I think it did, I think that's why it wasn't as hard because I just knew that was going to be the hardest class in the world and it really wasn't. I would say that I did better in that class than I did in the high school classes even though I had a B in the high school classes. The work was easier to me than it was in the high school classes. (1Zakiya8)

Simon also commented that he felt his high school math courses were harder than the college ones because of the amount of homework but that he was glad the teachers made him do the work so he was prepared for his precalculus and calculus courses in college. Additionally, Nicole noted that her college general education math class was far easier than the Algebra II with Trigonometry course she took in high school, “Mrs. [Sophie] did that, after taking her class and the trig and all that, I just blew through Math for Allied Health and Statistics and the math classes. I mean it wasn't a problem for me at all” (1Nicole11).

The students had mixed responses about their preparation in science. The curriculum at the early college high school is the minimum state requirement of a physical science course freshman year and a biology course sophomore year. Some students felt that these courses were easy. The courses were reportedly easy for Simon, Bob, Neo, and Nicole. When asked if his science classes prepared him for college Simon balked “science is just an easy topic for me so I don't think that's a good question. I think I slept in a class in everyday and I still got an A+. I had like a 98%” (1Simon7). While he might have thought the high school classes were easy, he came to feel that he was not prepared for physics when he took it at the university.

Joanna noted that she felt her high school science classes were closely related to her college ones. She responded when asked about her preparation for science:
Joanna: In ninth grade when I had my first science class, that helped because my first college science class was Basic Chemistry so some of that stuff I learned in ninth grade and it was review and then I learned some new material. Now I’m taking microbiology and right now I’m not seeing any relation with my high school science classes. With anatomy and physiology I did. (1Joanna6)

Other students remarked that they did not feel the science courses adequately prepared them for their college level physics and biology courses. Gwendolyn noted “I really don't think that any of us got Biochemical Systems” (1Gwendolyn6). Zakiya also did not feel prepared by the high school biology course. When asked she replied:

Zakiya: Not at all.

Katie: Can you elaborate on that?

Zakiya: Um, freshman year physical science I just didn't understand it at all. That was the first time in my whole years of being in school that I got a D in a class. Then sophomore year when we took the biology, we didn't learn anything at all. The teacher, I think we may be had five assignments and through those five assignments, the biggest assignment that we had that she actually graded and we were actually counted for was the ten page paper and for that we did the science fair which was easier than doing the paper. So I did the science fair. It really didn't prepare us for anything. A lot of people that year didn't pass OGT's, the science OGT's. I passed mine so, I guess I kinda learned but I guess it was just something that I learned on my own. We didn't really do anything. (1Zakiya9)

Zakiya later noted that she thought subsequent classes were better prepared by the biology course.

Some of the nursing students felt that they received additional preparation by repeating similar courses in different departments. For instance, Nicole, Zakiya and Joanna all took Anatomy and Physiology through the Allied Health Department and later came to find out that it did not transfer to the College of Nursing. This did not discourage the girls because they felt that taking the Allied Health course prepared them for the higher credit course in nursing and it also gave them resources for review when taking the nursing course. Additionally, the high school does not offer a chemistry course so
students who needed one for their college degree are recommended to take Basic Chemistry, a general education science course and bridge to Principles of Chemistry for students who have not had a high school chemistry course. Basic Chemistry counts for allied health and engineering technology majors but not for nursing or engineering majors. However, the nursing students felt better prepared for their General, Organic and Biochemistry (GOBC) course after completing Basic Chemistry since they had not had a chemistry course at the high school. Zakiya commented “like for the Basic Chemistry class that I took with Akron U, that was kind of the same thing that we did for physical science and I understood [Basic Chemistry] more” (1Zakiya9).

**The High School Teachers’ Perspective.**

The two high school math teachers and the two high school science teachers were interviewed on how they prepare their students for college level courses. All of the teachers described different techniques for preparing the students. They also made note that the students vary in ability upon entering the early college high school and that they work to get the students ready for what the teachers expect the college courses to be. All of the teachers commented that they give a high volume of work and critical thinking exercises since those were areas they felt would be the biggest hurdle for the students.

The Algebra I teacher explains that she tries to get her students ready for Algebra II and uses the analogy of an aircraft carrier to describe how she feels the school must function to prepare the students for college math:

Evelyn: My analogy is that we're kind of like being on the deck of an aircraft carrier, we have to catapult them out of here as opposed to letting them be a regular Airport and having the runway. I get them ready but I have hats off to my successor because she really gets them ready. She is like a booster shot. I try to get them ready for her class because it is revved up considerably. And then, um, I
can’t move too fast but I try to get them up to a speed that will allow them to be ready for her speed because she books and there is a lot of material. (Evelyn7)

The Geometry and Algebra II teacher, whose course follows Algebra II, said that her main goals were to get students used to the rigor of college and acquaint them with the methods and notation that they will encounter in their college courses. She also shows the students the college math textbooks and comments, “I actually use homework from those [college] books and give it to them so that when they go to [the college] classes, I know they’re gonna struggle but it won’t be as much had I not shown that to them” (Sophie7).

The two science teachers had different approaches from each other in preparing the students. The physical science teacher pointed out that she teaches a lot of math in addition to the science, “Of course you know, I am not their math teacher but I incorporate as much math as I can in their education and I think that they end up with a pretty good melding of math and science” (Marianna9). Marianna felt that she still needed to provide significant support to the students as they transitioned to her class from junior high school. The biology referred to her own method of mentoring as the “big sister” (Cecelia4) approach because she felt that she did not “hold their hands” with regards to coursework and assignments. Cecelia felt that her role as a science teacher was to get the students used to reading on their own and being self-motivated learners. She also noted that she was a strong proponent of repetition. She noted,

Cecelia: If they have a paper due and it’s not right then I tell them what is not right and they have to do it all over again until they get the idea that if they do it right the first time then you move on and you are faster and quicker and ready for the next topic that is coming. (Cecelia4)
She points out that she feels this is the best way to prepare the students to learn how to do their own revisions and corrections in order to stay on top of the material when they are on their own in the college science courses.

**The College Professors’ Perspective.**

Five STEMM college professors were interviewed on their experiences working with the early college high school students. Professor Helene teaches physics and technology, Professor Chantal teaches chemistry and physics, Professor Beryl teaches math and chemistry, Professor Tobias teaches math, and Professor Dorian teaches several courses in the Allied Health Department.

All of the college professors were concerned with the early college high school students’ prerequisite math and science background as well as their maturity to take college level STEMM courses. They also agreed that the early college high school students came into the STEMM courses with varying abilities just as their traditional aged students do. Professor Chantal commented “Some of them flunk and some of them do very well” (Chantal4).

The science professors were mostly concerned with the students’ math skills. When asked how she thought the early college high school students needed to develop to be ready for college Professor Beryl responded, “math skills. They don't have the math skills. That may change with the core now because they have added a year of math in the high school math core now” (Beryl3). She became worried when told that she was getting students who had recently completed or may currently be taking Algebra II with Trig:

Prof. Beryl: Oh, that is the problem. They don't have the algebra skills. You have to have the algebra skills for basic chemistry and physics. Physics is having a
much harder time because that is even more so where you have to have those trigonometry and algebra skills.

Professor Helene had Bob, Simon and Gwendolyn as students. She comments on her experience working with Bob and Gwendolyn:

Prof. Helene: Well, and now I can’t think of his name. The student I had last semester who I think was the first early college student I had. I had two of them in that class. He's in an MET major. Oh, who is it...Umm...anyway, [Bob]! Ya, um, he was really pretty good and I was impressed once I figured it out, I would not have figured out that he was an early college student. Something came up somewhere along the line and I was like, oh! But he was pretty good. But then this semester I had at least two students who were early college and they were just so weak. Oh my God. I mean, mathematically and maturity. They never did any of their homework. I mean, it was just like wow, I don't know what to do for you. They weren't good at figuring out what they understood and what they didn't understand so they were what I would call very immature learners where as Bob was very bright. Bright, bright, bright! He would ask questions. Kind of quiet but once you got him kind of relaxed, ya know, he was fine, he did great. But the two I had this semester where just, wow. I think the one girl that I still have is because she just looks so young but she doesn't bring me any little pieces of yellow paper. She's starting to get it. She is still in mechanics II and the other two dropped. It wasn't a very good experience and I was like, awe. [Gwendolyn], have you had [Gwendolyn]? Poor [Gwendolyn], she's such a nice girl but lost, lost, lost. […]

Katie: I think she was in precalculus this semester or last and I don't think it was going well either.

Prof. Helene: Oh no, because she didn't understand trigonometry, really basic ideas and trigonometry. (Helene4)

Both Gwendolyn and Professor Helene also noted that her struggles with physics may have been attributed to procrastination and her lack of appropriate study skills.

The story from the math teacher was quite different. Professor Tobias felt that the students he seen in his classes had relatively good math skills. He has had roughly six early college high school students in the past two years. Overall, he feels that they are prepared for his Tech Math II (trigonometry and algebra), Tech Math IV (precalculus) and calculus courses. He was especially impressed by one student; “I had one student in
Tech Math IV last semester and I have him again this semester in Calc I. He is one of the most exceptional students that I have had in a long time, out of all of my students” (Tobias3).

The students had various reasons for pursuing their STEMM majors. Some felt they had been drawn to their major from a young age, while others chose a major because they were good at a certain subject and didn’t know what else to choose. Some students liked all of their STEMM courses, while others felt drawn to certain STEMM fields but were fearful of or despised others. The students’ preparation for high school and college STEMM classes varied and will be discussed further in the preparation category.

**Motivation**

The students’ motivation played a role in their transition to the early college high school and then into their college courses. Each student expressed some factor that motivated him or her to attend the early college high school and then later to continue in the program. Some were motivated by a personal goal to attend college, earn a certain degree or attend a specific college after they graduate from the early college. Some enjoyed the challenge of the advanced coursework, or the competition with fellow classmates. Others had a desire to keep up a certain image in their community or be a role model for their friends and family. The students also noted how their motivation had changed during their high school experience. Despite the unique reason, each student used these motivating factors to enter the early college high school and work on their two or four year degree.
Motivation to attend the early college high school.

Six of the students explained how from a young age they had aspirations of attending college and earning a degree. These goals motivated the students to attend the early college high school. Gwendolyn had not been extremely motivated to attend the early college high school when she applied in junior high school, but because she was interested in medicine she knew she would need to attend college and go to medical school. Her motivation for attending the early college high school was that it allowed her to cut down on the amount of time it would take her to complete her degrees. Zakiya expressed that she was motivated for a similar reason:

Katie: Do you think that going here changed your motivation at all?

Zakiya: I wouldn't say that it made me more motivated but I think it has made me motivated so that I can go to the school that I want to go to because when I graduate from here I want to go to the University of Kentucky for grad school because I want to be a nurse practitioner. So that is my motivation to hurry up and get finished here so that I can go there. (2Zakiya28)

Bob was the only student interviewed who had not originally planned on attending college before entering the program. However, he was motivated to become one of the seventeen in his class to earn his two-year degree upon graduation from high school.

Katie: So, did you always know that you wanted to go to college?

Bob: Nah.

Katie: Why not?

Bob: I never… never set it as a goal for myself.

Katie: But you said that you were gifted and talented?

Bob: I know but I never set it as a goal for myself.
Katie: OK, are you glad it's a goal now?

Bob: Yeah, you could say that. It presents a lot of opportunities for me being eighteen and having an associate's degree to have opportunities of employment, and you know, it kind of sets me ahead of the race. (1Bob4)

Simon was also motivated by the opportunity the program presented to work toward a college degree. He explained how he believed a college education would improve his life: “I wanted to make something of myself and the only way that you can do that is by going to college or if you're lucky. I have terrible luck so I knew it wasn't going to be that” (1Simon3).

**Keeping up a certain image.**

Not wanting to be seen as a dropout or the desire to keep up a certain image motivated many of the students. Gwendolyn discusses how she is motivated in her senior year because she does not want to fail this late in the game. She discusses how seeing some of her fellow classmates leave really motivated her to finish the program.

Gwendolyn: I think that [my motivation] slowly got higher. I think that it was because I saw a people drop off like flies. Our class lost the most people so it was just, one of those where I didn't want to be that person. I can’t imagine having to go back to our home school and tell everyone that you'd been kicked out of the early college. I think that was more a pride thing for me because I don't wanna have to go back so I think that's what kept me here and kept me on top of doing work because I didn't wanna have to go backwards. (1Gwendolyn7)

Zakiya also worries about being a dropout. She responded when asked what got her through the hard days:

Zakiya: I think that the support of people being there and encouraging you to keep going., because I know a lot of times I’ll just be like, “oh I’m gonna be a college dropout” and they’ll be like “no you’re not!” so it was just kind of like a lot of encouragement and the encouragement, it helped a lot for me. (1Zakiya18)

Being a role model for others was motivation for Zakiya. However, she discussed how the pressure of others paying attention to her actions can be a good and bad.
Zakiya: I helped my mom and her friend's granddaughter, I helped her and so her mom was like “I was just telling her about how you're such a good role model” and she was like that, when I was like “I know” but sometimes I just you get tired of it because it's like you have so many expectations from a lot of people, so…

Katie: OK, so it's kind of a double edge sword?

Zakiya: Yeah, so, but I do it for myself but then I still do it because I know that there's always somebody watching just to see if I'm doing what I'm supposed to be doing or somebody watching me because they don't want me to be doing what I'm doing, so I always just try to keep going because I know that people look up to me. Like my little cousins. (1Zakiya13)

Joanna also saw herself as a role model and she notes how “being the oldest I’m trying to make an example for my sisters” (2Joanna17).

**Personal goals and meeting challenges.**

Several students discussed how competition with their high school classmates kept them motivated to do well in their high school and college courses. Nicole discusses how competition for first place rank in her senior class kept her motivated to keep up her grades. Other students expressed that they felt a bit of competition with the college students they met in their classes. Gwendolyn discusses how this internal competition with her college classmates kept her motivated:

Gwendolyn: I would strive to do as good as possible in those classes because I wonder what they would think if I had a better grade them and I'm only fourteen. So I think that's mostly what it was. It’s just, maybe it was outshining other people. I think that's what motivated me to do well. (1Gwendolyn8)

Nicole also discusses feeling competitive with her college classmates, especially when they bring up the fact that she is a high school student.

Nicole: The other one in my group keeps mentioning that I am such a high school student. I tell her that I’ve put more effort into this class then you have and I have a better grade in here yet I'm a high school student, so I won't take that as an insult. What does that say about you if you are a college student and I am getting better grades than you. I don't wanna get cocky. I would never say anything like
that but you just can't help but have these things run through your mind. (2Nicole27)

Simon also comments that he often feels smarter than many of the college students and that the image of being a “smart kid” keeps him motivated to do well in his classes. When asked if the early college experience would have been worth it if none of his classes transferred he responded, “Yes, that's just the kind of person that I am. I like to push my limits. I like to do challenging hard stuff. That is just how I am” (Simon26).

He also discusses his need to prove he is capable when he says:

Simon: I just wanted to prove everyone wrong and prove that I can do this. That's the best way that I can say it without having a long story that I don't want to explain. I just wanted to do well. I wanted to show myself that I could do well and I wanted to show everyone else that I can. (1Simon10)

While Simon says that he no longer needs to prove anything to anyone because he already has reached that goal, he still finds a need to prove his abilities to his college professors.

Simon: My other class is World Politics and Government which I don’t need for my major but I need to graduate high school. It has already started out difficult but just I love it. He told me, he actually came out said you don’t belong here. He pulled out all of the postsecondary kids after class. He told us “My son is in neurology and I was talking to him and he said that all the synapses in your brains aren’t completed yet for you to even take this class.” And I’m just sitting there in the back and listening to him say that we weren’t smart enough to take this class so now I’m determined to get an A in this class. (1Simon6)

**Motivation changes over the four years often leading toward “senioritis.”**

In order to gather information about the students’ motivation, all of the students were asked to rank their level of motivation in their first three years of the program, at the beginning of the spring semester of their senior year and toward the end of their senior year. They were to rate their motivation based on the scale of one to five where a one was no motivation at all and a five was very motivated. All of the students discussed how
their motivation changed throughout the program. Many of the students expressed how their motivation was declining towards the end of their senior year and how they felt they had a bit of “senioritis.” The students express how graduation is often the motivation that keeps them going at the end of the year.

Joanna noted that she had a motivation of three or four during her first three years at the early college, “because I knew I was going to be different and that I chose to go to the school and that I didn’t wanna drop out so I just decided to stick to it and do it” (1Joanna9). During the mid-semester interview she noted how her motivation was waning in her senior year because of early morning classes and a desire to go to another college in the fall, “I would say [my motivation is] a three and not a four because I’m ready to leave and I’m tired of doing it and hopefully I won’t have any more 7:45 classes” (1Joanna9). By the final interview Joanna expresses how tired she was along with her desire to move on:

Katie: How has your motivation level been this semester, on a scale of one to five?

Joanna: I would say a three and a half maybe a four. I’m just really tired. Being in this program is good but it puts a lot of stress and strain on me. I’m trying very hard and I’m just trying to make it. I’m ready to graduate and get this over with so I can actually go to college and do this on my own. (Joanna18)

However, Joanna was still motivated to keep her grades up “so I can go to college and be eligible for higher scholarships and stuff like that” (2Joanna19).

Gwendolyn had not been very motivated to do well in junior high school but felt that doing well at the early college high school would give her a chance to redeem herself. When asked what motivated her during the first three years of high school she noted, “I think it was just the fact that it was an accomplishment for me because I did so
bad in my eighth grade year so this was a chance to avoid falling into the same pattern in high school” (1Gwendolyn7). When asked about her motivation in the middle of her senior year she stated that her motivation had increased to 4.5 out of five. When asked about what was motivating her she explained “I think it’s because of my senior year and if I leave my senior year that I wouldn’t know anyone else in any of the other schools because I’ve been here my whole high school career and I can’t leave” (1Gwendolyn7). She continues “I think it’s also because I’m just so close to getting my associates degree and so close to graduating. It’s just that it’s in the final stretch and I’m so close to the end” (1Gwendolyn7). However, by the end of the year her motivation had declined. When asked to explain why she was less motivated she explains that it is “mostly senioritis” (2Gwendolyn18). She continues, “I just feel like I am almost done and I just don’t want to do this anymore. I just want to sleep through the rest of the semester and maybe one day I’ll wake up I will be at graduation” (2Gwendolyn18). Gwendolyn discussed how she had been planning to attend an abbreviated bachelor’s degree program that led straight into medical school. Unfortunately, she was not accepted to the program and she explains during her second interview that her motivation dropped severely because of her disappointment from not being accepted.

Gwendolyn: I was pretty disappointed because I have wanted to do this since I was twelve years old. I had planned to go to high school and then I would go to get my bachelor’s degree and then I would go to [medical school]. I have been in the HIP program and stuff like that so I have been around the campus so it was kind of a blow but you just have to shake it off I guess and I found somewhere that I really want to be. I’m excited to go to [my second choice school]. (2Gwendolyn16)

Nevertheless, within a few weeks of her initial rejection she learned that she was accepted to her second choice school and her motivation begins to improve again:
Gwendolyn: I feel like maybe if I would have gotten in [to my first choice] then I would have felt like I was on the right track and I wouldn't just want to get this done. I think me getting into [my second choice] because I had really written off that school because I didn't think I was going to get in there. I think that after finding out I got in there then I knew that I at least had to be in good standing to make sure I can go there because they can always withdraw my admission. I don’t want to just fail this whole semester and then they withdraw it. That has kinda kept me motivated. (2Gwendolyn18)

She concludes that her new opportunity was not what she originally planned but she thinks that it will turn out just as well and that it is enough to get her through the last few weeks of school.

Bob started out relatively motivated in junior high school and in his first three years of high school. During his first interview he says that he had a motivation of four but that by the middle of his senior year he is ready to be done and his motivation has declined to a two. When asked if he feels that it is because it is his senior year he responds, “not really. I'm just... I'm just trying to cut, not cut corners but, kind of make sacrifices where I see the need to” (1Bob9). By his end of the year interview he said his motivation level was a 3.5 and that he was ready to be done.

Neo was the most interesting case in terms of motivation. He describes how his academic motivation was minimal, only a two on the scale of one to five, when he was in elementary school, junior high and the first two years of high school because he had a good memory and school was not hard for him. However, things changed once he got into his college courses.

Neo: I was a two or three because kindergarten through about the tenth grade when things were said I would remember them and I would take a test and get a B or an A on it. I was just able to remember things. And that carried through into Spanish. I would remember things. I may not have understood, but I was able to remember but I would associate things with the answer that she gave previously so I was able to just copy down the answer from before. My junior year things changed because I had mostly college classes and I realized that I had to put more
effort into it and I was so not used to doing that because I was used to just sitting and listening and not having to take notes and I would take a test and get a B and move on. That was true for some classes but there were others that I would do that in and take a test and get a D (his eyes get big with shock). So I thought OK I’m going to take better notes and then I take the test and get a C-. OK, so now I have to study. So I studied. (1Neo11)

Because his college courses became more challenging Neo became more motivated although he does not consider himself completely dedicated to school. He qualifies his mid-year motivation, “I’m not all about dedicating my entire life and existence, which is what I would consider a five but I definitely want to get a 4.0 and I think I’m taking steps to do that. So at least a four” (1Neo12). He also notes that he is no longer only motivated by his parents’ rules about keeping up his GPA but is now more self-motivated. When asked what motivated him during his first three years he responds:

Neo: My parents mostly. If I got below of 3.5 I got grounded. No nothing. So I decided to get above the 3.5 but that didn't work because my grades slipped and I got a 2.0 so they changed it to me getting grounded if I got a 3.0. So then I saw that if I got a 3.0 it would be less work but now I see it as my future and I wanna get a 4.0 regardless of what my parents say. (1Neo12)

Similar to Neo’s description of being motivated but not overly so, Simon discusses his motivation level during the first three years of high school as a four. He continues

Simon: I mean I wasn’t so dedicated that I would throw away everything so that I could be the best student in the school. It was just that I wanted to get good grades but not to the point where I would have to kill myself to do it. I’m probably the most relaxed smart kid in the school. I get good grades but at the same time I’m always doing something other than school related things. (1Simon10)

However, his motivation declines during his senior year. At his first interview early in the spring semester he comments that his motivation “went down. It went down to a three. Maybe it’s senioritis or maybe it’s just that I realize that I don’t have to put so much effort to get a good grade” (1Simon10). At his second interview toward the end of the
school year he is hurried because he had an assignment due within a few hours that he had not yet completed. He discusses how he has a lot going on with work and helping to take care of his young daughter, but he is still motivated to attend class. On the other hand, he is not nearly as motivated to complete his assignments. He comments when asked to rate his motivation:

Simon: To go to class I would say it’s a five. I always try to go to class. To get things done is probably more like a two. Just because my time is limited and I am trying not to crash. I’m feeling the crunch of the end of the semester because I have all of these things due. (2Simon22)

Zakiya discusses several motivating factors and how she began the program with a motivation of a 3.5 or four because she really wants to get her degree quickly and start life as a nurse. She also does not want to go back to her home high school. In her first interview she is still motivated for classes but discusses how she is having a hard time getting motivated to apply for scholarships. At her second interview she sounds very tired and describes some health issues she’s had recently. She notes that her motivation has decreased. She describes her level of motivation for taking classes as a “two, maybe a 2.5. I can’t just not go to class, but once I go to class I just sit there and wonder when it is time to go” (2Zakiya26). She continues that graduation is the main factor keeping her motivated to finish the last few weeks of her senior year.

Nicole began the program highly motivated. She had been very excited to apply to the program and originally planned to get an associate’s degree in surgical technology. When asked about her motivation during the first three years she says it was a “five.” Unfortunately, a few weeks prior to her senior year, Nicole was informed that she could not be accepted to the surgical technology program because she was not 18 and therefore could not complete her clinical experience as a minor. She is initially discouraged by the
news but recovers and notes that her motivation is still strong because of her long-term goal of becoming a nurse or nurse practitioner. When asked what her current motivation level is she replies:

Nicole: I wasn’t sure and I’m still not quite sure what I’m doing but I gotta say a five. I can because I’m still motivated, like I said I wanna get into the medical, I wanna do medical, and I want to do nursing at Tulane. (1Nicole18)

At the end of the year Nicole is uncertain about her motivation. She discusses how she keeps self-reflecting on her motivation.

Nicole: Like I said, I am definitely motivated but it just… it doesn’t, I don’t know how well the engine is going to get me there. I have all of these high hopes and I have all of this motivation. It’s hard to answer because I feel like I am very motivated to do this and I feel like I want to do all of this stuff but then I realize that I can’t be too motivated if I don’t get my butt in gear and actually do it. I’m confused about it myself. I feel like I am motivated but then I always question myself on whether I’m really concerned about it since I won’t do it. I do try to do it but I just don’t seem to have any time. (2Nicole29)

She concludes that graduation is really keeping her motivated and that will get her through the end of the year.

**Impressions of other students’ motivation.**

The students who were interviewed also discussed their impressions of their fellow high school classmates’ motivation. Simon commented on why he thought some of his classmates had applied to the program.

Simon: They thought it was going to be a smart school and they thought they were smart because smart kids like to go to smart schools. Some people did it because they’re the smartest people in the school besides me. They did it because high school would be too easy for us.

Simon also discusses how his classmates have adjusted to college and how some have changed their motivation, “I think that all of the seniors by now are just used to the classes, they get a grade based on their own motivation for whatever grade they like to
Simon also noticed that some of his classmates were not as motivated as he considered himself to be.

Simon: A lot of people don’t have the right maturity level and a lot of people don’t have the motivation. Some people are lazy and some people just don’t care. Some people just didn’t feel like doing it and that is why a lot of people are gone. Those were the people that weren’t really interested in this from the start. They were the people complaining since the first year. And pretty much most of those people are gone. That’s just the way it is. (1Simon12)

Neo discusses how he feels that there was a mixed level of motivation among his classmates.

Neo: Oh, there are some people that just didn’t care about anything. They didn’t care about high school so why would they care about college? Those are the kind of people that don’t go to college anyway. The only reason that they were here was because they were part of this high school. There are some people like that and there are others that just had the drive to succeed in everything they do. If they had a 4.0 in high school then why can’t I get a 4.0 in college? Gee, I wonder why? Bam, 4.0 in college. Well, good for you. (1Neo13)

When asked if she thought attending the early college high school gave her and her classmates the motivation to continue school and earn a complete a college degree, Nicole responded:

Nicole: It depends on the person because I know some people who are really gung ho and trying to finish it and I know some people that are thinking of taking a year off. Again, I really don't think the program changes people really. It definitely gave us an edge over the other people but I don't know if it will really change our decisions that much. (2Nicole34)

Gwendolyn also noted that she feels many of her classmates who have made it to their senior year have hung on because they have so much time invested in the program.

Gwendolyn: I think that we all have the same mind set now. We're all realizing that it's well, as far as my grade goes, we're realizing that this is our senior year and we just kind of have to step it up and get through this and bite the bullet and this is our last semester. I think that is really what is keeping the people that are
here, here. This is it. It would be a waste of time to get all of these credits and then just go back to your regular high school for one semester and then graduate from there when you should have graduated from here. I think that is what is keeping us here. (1Gwendolyn10)

Zakiya discusses a conversation with a classmate about why he has stayed in the program despite how much he disliked the experience.

Zakiya: That's what a boy was sayin’ earlier because she asked us what would we change and he said "not coming here" and she said "well, why don't you leave" and he said "because I made it this far so why leave now?" and that's how I feel that when she started our junior year, why would you leave junior year? It's going to be so different because you've had your own schedule as to when you go to [your home school] we’re going to have to be there from 8:15 or 8:30 to 3:30. So, we've made it this far and it was a struggle but it was really successful and it was a good thing to see and like, I know a lot of people, well I know for me, like in my family and friends and all the things I do that a lot of people are going to be supportive because I’m the first one to do something like this. (1Zakiya18)

Next year plans.

Joanna, Gwendolyn and Zakiya were all motivated by their plans for the year following high school. The girls discuss how they looked forward to having a “real” freshman year filled with new experiences and new friends. Joanna discusses her plans of moving south to finish her bachelor’s degree in nursing. She is anxious to move and notes, “Well, I would say that I’m motivating myself more because it’s my last year and I want to do good so that I can hurry and go to actual college” (1Joanna10). Zakiya talks about her plans of continuing her studies at LMU and about moving to campus.

Zakiya: I’m just so excited. I am just so ready to do that. To just really be on campus and staying in the dorm and get the real college experience. People ask me why I am staying in the dorms if I am going to school so close to home and I’d tell them that if I didn’t then I would be doing the same thing that I have been doing for the past four years, going back and forth to school. It may be a waste of money but it is worth it for the experience. (2Zakiya26)

Gwendolyn explains how her experience attending extracurricular events at LMU has gotten her excited to get involved with campus organizations when she transfers to a new
school in the fall. When asked about how she thinks her and her classmates will transition next year to college she notes, “We have all been through this before so now we just have to do it for real this time” (2Gwendolyn18).

The students were motivated by family support, personal goals and competition with fellow classmates. All of this motivation helped them complete the early college program. Some were also motivated to complete their associate degree while others were motivated to continue on with college and earn a four-year degree higher. The students’ motivation and preparation were the driving factors to helping them finish the program. Their preparation for STEMM and non-STEMM college course will be discussed further in the next category.

**Preparation**

The preparation of the students for their high school classes and both general and STEMM college courses was discussed by the students themselves, their high school teachers and administrators, and the college professors. Topics that emerged include the students’ academic preparation related to such areas as content knowledge, critical thinking skills, study skills and habits, and test-taking skills. Social preparation for college was also a recurring category. Students discussed how they saw their own maturity and social skills develop as well as their classmates’ skills. Both the high school teachers and college professors also discussed the students’ maturity upon entering the college environment. The high school teachers discussed how they work to prepare the students for college by trying to act as real-world role models, increase appropriate technology use, build good time management skills, stress the importance of organization, and by helping the students build confidence. Finally, several policy
changes were discussed by the high school teachers and administration with relation to improving the preparation of future classes at the high school.

**Academic preparation according to the high school teachers and college professors.**

Academic preparation was discussed by the students, high school teachers and college professors. The high school teachers noted that the students spanned the gambit of academic preparation upon entering the program. Josephine points out the qualities that the school looks for when accepting students when she states “I want to dispel the notion that we have the cream of the crop because that just seems to be the notion. We don't. We look at character and motivation and things like that on the application” (Josephine2). Evelyn also notes that the students’ academic preparation spans “the whole gambit. Some are very well prepared and others are poorly prepared. Here it, academically it goes from very well prepared to moderately well prepared” (Evelyn6).

The college professors also noted that they felt the early college students entered their classes with a wide span of academic preparation. Professor Beryl notes that compared to traditional freshman, the early college high school students are “typical, some are really prepared and some are not” (Beryl5). Professor Chantal makes a similar comment:

Prof. Chantal: Academically I had a couple that were very good and got some of the highest grades in my class and then I would have others that would just flunk out. So it is extremely varied in their performance and in their behavior. They are at all different levels. (Chantal3)

Florence also noted that about half of the 100 early college high school students she has had over the past two years have been academically prepared. She also worries about their motivation to be successful in college courses.
Prof. Florence: As far as academically speaking I would say 50/50. I have some very good early college students. [...] Then there are others that don't get it and no matter how you explain or how much you explain to them they get frustrated because they're not getting it and then they will complain why are they getting a D and sometimes, which is even more scary is that when I tell them that they are getting a D and they just respond with a "OK." That scares me a lot more than the person who comes up and asks why they're getting a D because asking “why am I getting a D?” means that they at least you still have the urge to study and do well whereas "OK,” to me at least, means that you are blasé about it. (Florence5)

Both the high school teachers and college professors discussed how they worried about the students’ math and science skills. Professor Helene feels that many of the early college students she has encountered in her physics classes were not academically prepared.

Prof. Helene: I think some of them are having a really hard time. In fact, who was I talking to? [...] I was talking to a group of educators and they actually asked well maybe what they need is … because I was on my big Early College High School kick because I just don't know what to do for poor Gwendolyn and [other student]. I don’t know what to do for them, because they won’t come to me for help and they won’t hand in their homework and they’re just lost and they had no idea they were lost and you just ask them questions and they look at you like a deer in the headlights. But anyway, my take on them was just that they were not ready. They just needed a lot more, and I tell you that I am the queen of the hand holders. I have students that get B's in my class but if you sent them to the physics dept they would just die. (Helene10)

Cecelia blames the middle school science curriculum for the students’ lack of preparation in high school.

Cecelia: There's not a whole lot that they come in with because it stems from middle school because their middle school classes are very unrelated. For me, and I have a completely different style than any of the other teachers so for me a science why is it is very hard for them to transition from middle school to ninth grade to my class. (Cecelia4)

Marianna discusses her reservations about the students’ math skills coming into high school:

Marianna: I have my own old fashioned prejudices about math education and I think that they really struggled with number sense and just knowing what moving
a decimal place means and if you multiply by 100 what that means. They're so used to using a calculator that they don't really have any thought about whether their answer looks right. Estimating is not something that they do well. If they put in a calculator wrong then they don't realize it. (Marianna7)

When told that some of her chemistry students may be taking her class at the same time they are taking Algebra II in high school, Professor Beryl exclaims:

Prof. Beryl: Oh! That is the problem. They don't have the algebra skills. You have to have the algebra skills for basic chemistry and physics. Physics is having a harder time because that is even more so where you have to have those trigonometry and algebra skills. (Beryl3)

To get the students ready for college level math the teachers work hard to not only drill the material but also give the students a sense of how to problem solve. Sophie explains an instance of how the students appear to be retaining the content from her course,

Sophie: For instance we went over slope in the first quarter and today since we didn't have anything to do I decided to test them on what they remembered because this is something that's on the COMPASS tests and sure enough they remembered. I think it's because I hit them with it so hard in the first quarter. Almost 95% of them remembered. I was astonished that they were able to recall that all, whereas in the beginning of this semester they were clueless. In five minutes they went through the review and then working in groups on a worksheet and all finished it. Who knows what they will be like when they come to you though (she laughs). (Sophie7)

Evelyn Discusses how she sees math as the determining factor in a student’s career decision.

Evelyn: I personally believe that Algebra II is the most difficult high school math class because it is that one were you are going over the top. It's the one that decides which path you are taking. That's the one that truly separates those they really want to do math and those that did it because they had to. I think that is the course that decides in your path in math for the rest of your high school and college career. (Evelyn7)
Sophie sees math and reading as the two determining factors in a students’ success in college. She is also hopeful that the policy and curriculum changes that the school has implemented with regard to these areas will increase student retention.

Sophie: English and math are the two classes that they really need to be successful in college. If you cannot read English or math and you cannot perform in these classes then you're probably going to drop out. Most of the kids that drop out, it's because of these two things. So we still didn't solve that dilemma and it's a constant struggle. We're not giving up though. Just like any other organization, we need to keep tweaking things ‘till we get it right. (Sophie10)

As Sophie notes, reading skills were also an area of focus for the high school teachers. Marianna discusses how the school works to improve the students’ content reading skills so they are ready for their college classes.

Marianna: There's also a whole set of skills that we feel is important to teach our students including asking for help when they need it, being able to read a textbook and understand what it is saying because the students come to school from middle school and they have pretty much been told by their teachers what they need to know and even though there is a whole lot of understanding, a lot of it is still memorization. If they went to a traditional high school they might be able to get quite a bit more of that but we know that the college professors are going to expect them to read the textbook and know what it says so right now we're focused on college reading skills and content reading skills. (Marianna2)

Study skills is another area of concern. Evelyn discusses that she tries to teach these skills in her advisory period. She comments, “I focus on study skills, time management and work ethic. Those are the three things that will make you a successful student” (Evelyn4). She also makes an effort to warn the students about the importance of good study skills but not all of them listen.

Evelyn: That is where doing your homework every day is the difference between success and failure and unfortunately some of our kids have enough in the ability that they just think they can just coast. I keep trying to convince them that it is kind of like living on credit, sooner or later the bottom will fall out. The first two weeks in Algebra II they freak out and I have to say that I've told them so. I told you. (Evelyn7)
She continues by discussing how learning study skills early can save time for the students later,

Evelyn: There comes a defining point in everybody’s life that they learn that “gee, even I have to work,” however insulting that may be to our integrity, our ego or whatever, sooner or later we have to, and you might as well be ready for it because if you develop the skills and use them when it’s easier then when it’s harder you have something to go back on. If you haven’t developed any of those skills than it’s a bear because not only do you have to learn the content you’ve gotta get those skills developed. You have to do double duty. (Evelyn7)

Sophie describes a technique that she uses with her students that incorporates math, reading, writing and study skills. When asked how she feels students need to develop to be ready for college she replies,

Sophie: Many things, the number one thing is study skills. [...] I require them to do summaries. What is this summary? The summaries can be reading the book and summarizing what you read or reading your notes and summarizing what you read or combination of both, but most importantly it's their own words, not word by word. It's most importantly having something at the last minute to review before coming to class. At the beginning kids used to drag about it and you know whine about it but at this point, I swear to you and this is the first year I hear more than any other year. People will say, [...] someone will say to the other, "Did you review your summaries?" Now they're not complaining about it but they're actually using it which is really good. And you know what, they start off not knowing how to write it but little by little they learn and they tweak it so much that they know what the main ideas are and some of them write examples to remind them of things but that's one of the study skills that I use with them. (Sophie4)

Once in college, the professors agree that a student’s study skills can be the determining factor of success in a college course.

Prof. Chantal: I think a lot of it has to do with their background coming in because you can tell after the first test I can pretty much tell who is going to make it into isn’t and I can see from their homework habits and their quizzes in the first exam. If they are studying and on track, then they’re going to make it. It’s almost like if they come in ready then they’re going to do fine. (Chantal4)

Some of the professors notice that the ECHS students they have had in class are better at studying than the traditional students in the class. Tobias mentions that he feels
the ECHS students study more than the traditional college students in his classes. Chantal also notes that she finds that the ECHS students tend to take notes more than the average student. Neko felt that perhaps the early college program would prepare students to study more.

Prof. Neko: I don't know if this is just the Early College High School students or all of them because I have seen it both ways. There is just that gap of how you study, and how much you study, and how you should prepare, and how much time you should put into it, and a lot of those conversations was with regular freshman that haven't gone through the Early College High School. Maybe by the time these kids go to college for the first time then that gap won't be there. (Neko6)

While the high school teachers try to get everyone up to speed before they enter their college courses, they remarked that it was not always possible to reach everyone.

Sophie: One thing that we still cannot get figured out, and this is something at our school, is that students aren't academically mature to be in college, and some kids, no matter what you, just don't get it. They don't get that this is what it takes to be successful in college. One of them is reading before they come to class. Another is taking that twenty minutes between classes or right after the lecture to review what you just learned. All of these we talk about with them but some of them are just not academically mature. (Sophie4)

The school has implemented several measures to improve the students' study skills including an advisory period where they meet weekly with the students to discuss careers, study skills, learning styles and other topics. The curriculum for this course was left up to the individual instructor for the first four years of the school but is now moving to a more structured curriculum so that all of the students receive similar content. Several of the high school teachers discussed how they use this period to develop additional academic and life skills such as critical thinking, time management and organization. Another step the school is taking to improve student study and time management skills is implementation of required study halls for juniors. In previous years students were sent to study hall during their junior and senior year only if their progress reports indicated that
they were falling behind in a course. In the future all juniors and most of the seniors will be assigned to a study hall and be released from the study hall if they are doing well in all of their classes.

**Academic preparation according to the high school students.**

Before discussing academic preparation the students were asked their definition of being successful in a class. Since theses answers ranged from “passing” to getting all A’s, it was important identify the students benchmarks while they were discussing their academic preparation. Nicole had the highest aspirations. She was disappointed of herself for only having a 3.9 GPA in her college classes. Bob, Simon and Gwendolyn also wished to do well but simply said that they’d like to get all A’s and B’s. Gwendolyn was very upset when she received a D in physics. Neo said he wanted to get all A’s but wouldn’t be upset if he received some B’s or C’s as long as his GPA stayed close to a 3.0. Joanna and Zakiya both said that they thought B’s were really good grades and C’s were good enough. Both measured success by staying off academic probation which required a GPA of 2.5 or higher and no failing grades.

As described earlier, the high school teachers and college professors felt that the students ranged in their academic abilities. They were also concerned with their math and reading skills. Three of the students discussed how they felt well prepared for their college math courses and math intensive science courses. Nicole discusses how she felt very prepared for her college math classes,

Nicole: Oh, OK. Let's see, with the math was pretty much it. Doing the math made the rest of the, high school math, like I didn't take that much of an advanced math in college, I'll be honest, but maybe it didn't seem so advanced because I took the algebra and the trig and all of that. Mrs. [Sophie] did that. After taking her class and the trig and all that, I just blew through Math for Allied Health and statistics and the math classes. I mean it wasn't a problem for me at all. I was
sitting there looking around with all the college kids and they’re like, "I haven't taken this forever" and I'm like "Oh, OK." (1Nicole11)

Bob and Simon also mention that they felt prepared by the high school math classes. Bob was the only student to mention that he felt confident in all of his classes. Simon notes that Algebra II in high school seemed very difficult at the time. He continues, “I didn't feel like I learned until the class was over. So it had to take time to sink in” (1Simon6). He continues by discussing how he felt that his college math classes were easy.

Other students seemed to feel prepared for their first college math class but not always for subsequent courses. Ultimately, each student’s success in math seemed based more on their interest in the subject rather than preparation in high school. For instance, Neo felt that Algebra II/Trig prepared him for College Algebra but that his aversion to math kept him from being successful in Precalculus and Calculus. When asked how high school prepared him for college math he responded,

Neo: The algebra teacher taught factoring and FOILing and that's a lot of what we did in College Algebra. Algebra II/Trig was all about graphing and stuff and so that kind of helped me for calculus but Algebra II/Trig was all about $x^2$ and the parabolic functions but calculus is all about deriving [sic] that, and I'm taking what I had. OK, I can take a normal function and I can derive [sic] it and I can probably antiderive [sic] it too but you're telling me to do all of this stuff that I kind of get it but not really and I can still go to tutoring and it won't make any sense because you reinforcing that I don't know it. Calculus just didn't work for me. (1Neo8)

Gwendolyn had a similar experience to Neo. When asked how they prepared her she responded,

Gwendolyn: I think that our math instructor is very good by telling you everything you need to learn a certain way. I think that taking her classes transitions well into the university classes because where she leaves off is where they start the review. She also helps you along if you need it. She acts a lot like a university professor. She gives your assignments on the school’s website so it's easier for you to learn how it's going to be in college. (1Gwendolyn5)
However, Gwendolyn goes on to discuss how she felt prepared for College Algebra but was not doing as well in her Precalculus course during the spring semester. She also discusses how she is working to improve her grade, “I think that I have hit a hard place. I think that if I go to tutoring then I will be able to get into it more and get past this class because I have heard that calculus is easier” (2Gwendolyn16).

Zakiya was very worried about taking her college statistics course but found it to be easier that she anticipated. When asked if she felt her high school math class prepared her for college she responded,

Zakiya: I think it did, I think that's why it wasn't as hard because I just knew that was going to be the hardest class in the world and a really wasn't. I would say that I did better in that class than I did in the high school classes even though I had a B in the high school classes. The work was easier to me that it was in the high school classes. (1Zakiya8)

Since the students only take physical science and biology at the high school they had mixed responses on how prepared they felt for their college science classes. Those taking biology and nursing courses described feeling relatively prepared while those taking chemistry and physics were not as confident. Joanna mentions that her college Anatomy and Physiology course paired up well with high school biology and that she did well in Basic Chemistry because it had a lab to accompany the lecture. However, she notes that she did not do particularly well in either course and she wishes not to reveal her grades in the courses. Nicole also mentions that the high school biology teacher was helpful with Anatomy and Physiology because it was her area of expertise.

Simon and Gwendolyn both struggled with physics. Gwendolyn starts off the semester optimistic about her physics class. When asked if she learned much physics in high school she responds, “we learned a little bit. It put a good base down for me to be
able to feel like I kind of knew what I was doing so I'm able to just jump right into the physics class now” (1Gwendolyn6). However, she does not do well in the course and feels a bit discouraged during the second interview. When asked how her semester was wrapping up she lamented,

Gwendolyn: This is probably my worst semester. I’m not doing as well as I usually do and I don’t know if it’s because it is my last semester but I think, as far as my grades go, I actually got a D in one of my classes and that is the worst that I have ever done and this was for an eight week class this semester and this was the worst that I had done out of all of my classes. It was physics. I just couldn’t grasp onto it. It was Technical Physics: Mechanics I. For some reason I just couldn’t get it. (2Gwendolyn15)

Simon also discusses struggling with physics. Despite majoring in engineering, he doesn’t see the connection with engineering and physics.

Simon: I think that it's because it goes against common intuition and with engineering you can actually build it with your hands but with physics it's just very abstract. Like electricity is not something that you can see and since engineers are typically visual learners that makes it a lot more difficult. (1Simon5)

The students felt better prepared for the reading and writing at the college level.

Zakiya discusses how she feels the papers she wrote in high school were more advanced than the ones she’s written in college. When asked how high school prepared her she responds,

Zakiya: Really, the workload because we had a lot of work our freshman and sophomore year. We had to do papers. I know our English teacher, we were writing papers like how you are writing papers and some of those papers were longer than those I've wrote in college classes, more advanced. (1Zakiya7)

Joanna mentions that the reading in high school prepared her for college.

Joanna: Well, because with like all the readings and stuff like in high school they like baby you and prep you but when you get to college, the professors they don't do that. They tell you this is what you have to do and you have to keep up with it. (1Joanna6)
Nicole, Simon and Bob also discussed feeling prepared for the reading and writing demands of college. Simon notes that the difficulty of the reading helped him to be prepared for college, “the only thing that really helped was the difficulty of the classes. The English teacher made us read things that none of the other high schools were reading” (1Simon7).

Joanna discussed how the experience itself helped her to feel prepared for being on her own at college next year. She felt being in the classes was the best preparation because it was an actual college experience and not just a simulation.

Joanna: Just being able to take college classes while I’m in high school and go to actual college and just be ready.

Katie: What do you mean by “be ready”? 

Joanna: Because when you’re in high school you’re taking high school classes and they’re trying to get you prepared for college but you’re not taking any college classes that can actually place you in a classroom to get the feel of it. (1Joanna 12)

**Social preparation and maturity.**

The students’ level of maturity was mentioned by all of the high school teachers and college faculty. The term maturity was operationalized based on these comments as the students’ ability to act appropriately during class, interact properly with their classmates, and to take responsibility for their learning and behavior. There were mixed opinions among the college faculty about the students’ maturity but the high school teachers and administrators felt that most of the upper class students were mature. Sophie comments “by the time they're at this point in their junior year they really are mature because there in mostly college classes and they are on their own” (Sophie10). Professor Tobias comments that he feels the students “certainly are very well behaved” (Tobias2).
However, Professor Beryl feels that the students are a bit unruly in the halls, bathrooms and elevators. She complains,

Prof. Beryl: In the last four years I have seen a change, I don't know if it's just the sheer number of students, but out in the hallways and in the bathrooms we probably need to tie that up a bit and I'm not sure who does that because they have more freedom. […] and some of the conversations I'm thinking “Whoa! If I was a visitor I would be worried!” (Beryl4)

After speaking with the college professors, there emerges a sense of resentment Neko make comments similar to Professor Beryl’s about the inappropriate behavior of some of the ECHS students. However, an administrator at the school points out that the students involved in most of the disturbances that the faculty have complained about have actually been regular university students and not the early college students. She also commented that the addition of Josephine to the administration had an impact on the students’ good behavior.

Lily: You worried before it ever started that they're going to be here and they're going to be loud and they were. This year has been a miracle but I think that has a lot to do with the leadership as opposed to the kids. (Lily10)

Professors Chantal and Dorian worried that the students were being pushed into college at too young of an age. Chantal notes that her daughter will be attending high school soon and that she has attended meetings about the early college and postsecondary. However, she notes that she will not be encouraging her daughter to enroll in such programs because they cut down on the high school experience and because college classes can ultimately hurt a student’s GPA because they are often graded harder and do not count for honors credit. Professor Dorian notes,

Prof. Dorian: I think in some cases it may be the maturity issue and you may expect them to act like adults but you have to remember that they are in the ninth or tenth grade. It’s hard to say. Maybe they would do better in a group of their peers or in a regular high school. (Dorian6)
Lily also describes an incident where a college faculty member told the early college students in the class that “they don’t believe in it and that they don’t think that they should be here […] because you really don’t have the skills or the ability to be here” (Lily10). Simon describes a similar situation he encountered in his government class.

Simon: He pulled out all of the early college and postsecondary after class. He told us that “My son is in neurology and I was talking to him and he said that all the synapses in your brains aren’t completed yet for you to even take this class.” (Simon6)

There was also a concern among the college faculty about how they students “fit-in” with their college classmates because of their age difference. Beryl was the most concerned about the students’ maturity and ability to fit into the college classes.

Prof. Beryl: In Basic Chem we also have the Sophomore to Senior [sic] students and we also have postsecondary so those are typical honor students. Some of the early college are like that. They are go-getters. If they have a question they will ask you. They have the math skills and if they don't then they know where to go get them. Others just sit in the back and try to hide from you. They don't do their work. They don't even know what to ask you because they are still lost and they never really gel with the group. I don't know if it’s because their academic skills are so much less but they never really get into the college feel. (Beryl2)

Chantal agrees that there are varying degrees of maturity among the 30 – 40 ECHS students she’s taught.

Prof. Chantal: They are at all different levels. Some of them come in and I can tell because they sit there and gossip or chat and you almost envision that behavior in a high school or even a middle school setting and some people you just can't tell at all. They’re very mature. […]

Katie: What qualities do you think students need to be ready for college?

Prof. Chantal: I think there is a certain maturity level. I think this idea that I’m going to sit there and chit chat or text or wait for my cell phone to ring. They have to be past that to be successful. You can’t be texting and trying to learn at the same time. (Chantal4)
Professor Dorian also comments on the connection between maturity, using cell phones in class and student success.

Prof. Dorian: I notice that a large percentage of the students that didn't do well or didn't pass were goofing off in the back of the room. They were on their cell phones or texting. It's almost like they needed more structure that you would see in high school. (Dorian2)

Some of the college faculty worry that the students do not blend in or fit in well with their fellow college classmates, especially with non-traditional aged students. Tobias discusses how he skipped a grade in middle school and felt out of place for many years after. He relates this experience to the few early college students he’s had in the past two years.

Prof. Tobias: I have not observed enough of them in a classroom setting to make a substantiated statement on this but it does worry me a little bit about being with the older students and adult students too because we have the non-traditional students and so forth. I sort of, remembering my own experience and limited observation, I would think that it might be a problem that they might have in their college courses. (Tobias3)

Beryl expresses a similar worry about the students feeling uncomfortable around older classmates when she says, “My chemistry class tends to have a lot of older students who are going into the Allied Health professions so it can be intimidating to take a class with someone who is the same age as your mom” (Beryl3). She also notes that she has many international students in the class and she worries that the high school students may not know how to react to the diversity of the class.

Prof. Beryl: It is now a general education class so there are all kinds of major's in there now. I also have a lot of international students in my classes. It is a very odd dynamic this semester because I have a little bit of everybody in there and I also don't know if the early college students know how to deal with the diversity in the class because they're not used to that, especially because I have students from Saudi Arabia and Iran and that is very different from the black and white that they might be used to from high school. I have an Asian student and it is very different.
I'm not sure how you get them used to that. That is just kind of a college class. It is more unique. (Beryl3)

Neko approaches the maturity issue from a psychological perspective,

Prof. Neko: It's the social age difference where your parents are still in control on most things but when you turn 18 you start that process of moving on. I think that is the difference. It's not just a physical age, it's the social age and what responsibilities you have. (Neko4)

She continues by discussing how she feels many students in her classes have a sense of entitlement and do not take responsibility for missed assignments or failing grades. When asked if she feels the early college students exhibit this sense of entitlement she responds,

Prof. Neko: I think they are worse because they are so used to everyone catering to them. That's part of what being a teenager is. Talking from a developmental standpoint you think that everything is about you. You are totally egotistical. That's why their reactions are so wrong because if they do something embarrassing they think that everybody is watching them and no, that's not always the case. I think they are worse with entitlement and I think that comes from the immaturity and it's not their fault. It comes from where they are developmentally. (Neko5)

Professor Florence also feels that the students are not mature enough to behave properly in their college classes.

Prof. Florence: maturity-wise they are not prepared. A lot of them are not but some of them are. Some of them know that this is a college situation and they come prepared and they behave maturely. They take notes and participate and discuss everything just like any other college student. They make mistakes like any other college students. They are smart aleks like any other college student, but then there are others who will not realize or do not have the maturity level and they will giggle throughout class. They will talk between themselves, among themselves and make childish comments, ask me personal questions in the middle of class. It's not that I mind answering some personal questions but some questions just go beyond the level of acceptance. (Florence5)

The high school teachers discuss how they feel obligated to teach the students responsibility early on in the program so they are ready to enter college. When asked what she feels she teaches in her courses besides the content, Cecelia replies,
Cecelia: Responsibility, um, as far as being organized and being responsible, it’s like, it’s their life right now and they have to grow up really quick. As far as like being 14, 15, 16 years-old and trying to decide what they want to be in college and knowing what they want to do. (Cecelia3).

The high school teachers all discuss how they see maturity as the quality that makes or breaks a student’s chances of success at the school. When asked how students need to develop to be ready for college Evelyn responds,

Evelyn: Maturity, being more serious. It boils down in my opinion to the only discipline that matters, is self-discipline. A self-disciplined person will generally be a successful person because they will have all of the tools that they need and if they don't then they will go and seek them out. They will not wait for someone to tell them. When you start taking responsibility for your own actions and the totality of your life than that self-discipline will give you time management and the work ethic and then you can actually do better with those and lesser innate skills than you can with great abilities and no discipline, work ethic and time management, but if their low then those high abilities will soon plummet. (Evelyn7)

Sophie also discusses how she works to develop the students’ maturity.

Sophie: I feel that I have to prepare them to be on their own and independent, but like I said, that academic maturity really is the key. If they are academically mature then they are really prepared to be on their own but if they're not academically mature then these are the kids that come back to me and still feel that they need some kind of mentoring before they are independent. (Sophie9)

The high school teachers and administrators feel that they work hard to develop the students’ social skills and maturity but, like with academics, they may not reach all of them. Sophie comments, “every once in while we get the exception to the rule. All kids are not the same. Even the seniors we have to remind about certain social etiquette but it's not major. Nothing major happens anymore” (Sophie10).

The preparation the students received in high school was a factor in how they transitioned into their college courses. However, the support the students received from the high school and college also played a role in their transition. A description of the
support the students received from the high school, college, family and classmates will be discussed in the following category.

**Support**

Just as motivation and preparation were driving factors that lead this group of students to attend the school and get a head start on college, support helped them complete the program. Students discussed support at many levels including family, friends, community members, high school teachers and staff, college professors and support staff, and classmates. At each step of their journey they relied on some level of support from one of the aforementioned groups. This support included encouragement, reassurance that they could succeed, advice on what to expect in college, help with determining their major early in their high school experience, and later how to apply for scholarships and other programs to complete their four-year degree after graduation from the early college. The high school teachers initially support the students by providing academic support and career planning but also worked to guide the students toward using college resources such as tutoring, faculty office hours, financial aid, and advising in order for them to acquire the heuristic knowledge they would need to be successful in college. The college faculty noted that they provided the same support they would to any of their students such as encouragement and additional help through office hours. There were also instances of a lack of support on the college professor’s part. Some of the students and high school faculty discussed encounters with college faculty who disagreed with the concept of the early college high school and the animosity these professors directed toward the students. A summary of the support and lack of support, from family,
friends or peers, high school teachers and administrators, and college faculty and support staff follows.

**Family and community support.**

The students’ families played a role in their motivation as well as support. Many of the students discussed how their family had encouraged them to attend the school in the first place. Some noted that they were motivated to make their parents happy or proud. Others discussed how members of their family encouraged them to pursue a certain career field or to stick with the program. The amount of support and the family member providing support varied among the students. Nicole, Zakiya, Joanna, Gwendolyn and Bob discuss strong support from their family.

Nicole discusses how her entire family is extremely supportive,

Nicole: Oh yeah, [my family is] violently supportive (laughs). I'm sorry, my family is all about tough love but you definitely know the love that is there. I'm amazed that, I don't wanna put myself out there like I'm better because I have a good family […] I really feel that the relationship I have with my family is extraordinary because we sit down to dinner at every night and then when I tell some people that their eyes get all big, they're like "you sit down with your family every night for dinner?" Yeah, that's almost the best part of the day when we're sitting there talking and joking with each other. My dad is not my favorite person but I still know I can go and talk to him. Me and him still get into those deep conversations because I can kind of understand the way he thinks and I don't always necessarily agree with him but he still my dad and I love him and I know he is going to be there for me. Again, when I tell people about my family, any of them, my aunts and uncles and my grandpa, then at the drop of a hat they would come in and do something for me or come help me if I needed it so that is definitely been a big help for me. Just being here I have had to call on them to maybe come get me or, especially my aunt and uncle, I gotta throw that in there because especially, just recently I had to borrow the camera from them.

(2Nicole36)

Zakiya also discusses having a significant family and community support system, “like in my family and friends and all the things I do, that a lot of people are going to be supportive because I'm the first one to do something like this.
Gwendolyn also comments that her parents and extended family have been very supportive of her, especially when it comes to applying for scholarships.

Gwendolyn: My dad is very supportive. He finds scholarships for me and tells me to fill them out. I tried to get at least one done a week. He said that he will find stuff for me and ask around and see if there are any that aren’t as well publicized. My mom emails me with huge lists of scholarships and they really push me for stuff like that. I have a lot of support from my parents. Ever since I started here my mother's and father's extended family have been very excited for me and happy for me. They want to be at graduation. I think that I have had a lot of support from them to. (2Gwendolyn21)

Bob discusses how his parents are supportive and excited to see him earn his associate’s degree.

Bob: My parents are pretty supportive. My mom is excited about me graduating. My dad is like, "Whatever, it's what you are supposed to do." My mom is trying to get me to do all of these things like go to the ceremonies. There are four or five of them for us to go to. I guess she wanted to see me get something. She wanted to recognize my graduation or something like that. (2Bob24)

Joanna notes that while her mother was supportive, her grandfather was the biggest supporter for her education.

Joanna: My grandfather was always the one that told us that education was important and he always stood behind us and he always made sure that we had everything we needed. He just stood behind me and made sure that I did what I had to do.

Katie: Anybody else in your family?

Joanna: My mom was one but she wasn’t as big as my grandfather was. (1Joanna10)

Neo and Simon were the only two to discuss not having support at home. Neo says that his family is supportive but that he tries not to rely on their support. During his first interview Neo discusses this issue when he says, “they've always offered help but I don't like asking for help from people, much less asking help from them” (1Neo18).

When asked during his second interview to elaborate on the point he comments, “I don't
talk to my family. I'm not open with them. I would say support was minimal but that was because of my choice” (1Neo31). Simon also comments that he has very little family support. He responds when asked if he receives support at home, “Not really, probably none at all. My mom is busy with her stuff and my dad is not around. Everyone is just busy with their own stuff and I’m never really home to talk to anyone anyways.” (2Simon24). He also discusses his independence when he comments, “I have to depend on myself for my own grades and get my own stuff done. I have been pretty independent for the past few years” (2Simon22).

Financial support was also discussed by several of the students. Zakiya notes “My mom and my dad are really supporting me, ‘specially this year because senior year is so expensive” (1Zakiya18). Nicole also discusses how the senior expenses have been a burden but that her family is helping out.

Nicole: Another thing that is motivating me, it's negative, just recently everything has been coming due like student dues and our senior trip. It's all of the end of the year stuff like prom dresses and everything has been really hectic for my family for money. We're scraping by and that is the motivation for me. I like my stress and like being flustered but being stressed out about money is just not the same thing. I don't like doing that or seeing my family like that. (2Nicole29)

For some of the students, family support was just making sure the students got to school every day. Neo and Zakiya note that they depend on their parents for transportation to and from school. Bob makes this comment when asked how his family supported him, “I guess just making sure that I get to school every day. It's support in itself. Just kind of egging me on to look at my opportunities and decide what I really wanted do for myself” (1Bob15).

The high school also notes the importance of parental and family support. When asked how important this support is the students, Josephine responds,
Josephine: It’s huge. They can’t do it without the parental support, just even he nurturing. This is a tough program for kids. They have to get the “ata boys” and the discipline to sit down and do the work and have someone checking up on them. I think most parents realize that that are here just based on the numbers we see like for progress report pick up. And now it dwindled with the upperclassmen but initially the parent support is very strong in the ninth and tenth grade years. I think we can use more of it and I’ve been making an effort this year to contact more parents, like when we get the grades out and they’re not so good I will call home. [...] We sent letters home when the kids were below a 2.0 last semester in they university classes and they’re on university probation. If that happens for two semesters then it’s Too ra loo ra. We sent letters home and made several calls, as well. Mom and dad half to crack the whip because there’s only so much that we can do here. (Josephine3)

When the school finds that a student is lacking parental support, the high school teachers and staff step in to fill that role.

Olivia: I think that parental support is very, very important. When it is missing then I find we put a surrogate in place such as a staff member or another family member. I'm seeing it with my own home that transition piece you always worry and so someone has to be there to support you and if it's not somebody at home than you need somebody to reassure you that yes this is good. The practicality of it, you run into students who don't have that support at home, even for the financial aid. They need to have their parents information and if they are willing to give that or they are there then once again they're at a standstill until somebody can step in and figure it out. (Olivia6)

Two of the high school teachers discussed taking on the role of mother or older sister to the early college students. Sophie expresses feeling like a parent to the students.

Sophie: I always look at these kids as a parent because I have kids at home that are going to college so I always think that I have to be fair and I always think like a mom. I feel that I have to prepare them to be on their own and independent. But like I said, that academic maturity really is the key if they are academically mature then they are really prepared to be on their own but they're not academically mature then these are the kids that come back to me and still feel that they need some kind of mentoring before they are independent. (Sophie9)

Cecilia sees herself more as a big sister.

Cecilia: The good thing is that they come in with is that some of the other teachers decide that we will let them be on their own a little bit but they really struggled coming from that hand holding environment in middle school and freshman year.
to my class with no handholding. I tell them that I am not their mother. I'm more of the big sister then the mothering type. (Cecilia1)

One of the college professors also noted acting like a parent with her students.

Prof. Helene: I think I would probably mommy them more. Usually, this is going to sound kinda funny, but usually in every class there are those that end up needing more of a mommy than others and I know that I end up mommying them, but they need to be. Like the mommy thing where you go “Hey, come on, you can do more than that homework” and “How’d you study for this?” and you kind of take them aside because a lot of times students respond to that because they didn't get a lot of that or maybe it's just knowing that the instructor cares enough to take them aside makes them go “Oh!” Or maybe it's just embarrassment of "Oh no, she knows I'm not doing my homework!" Of course I know that you aren't doing your homework. (Helene11)

Conversely, Olivia discusses how the family members need support just as much as the students. Padron (1992) found that first-generation students may face animosity from family members’ who are insecure because they feel the student is elevating their social status through education. Olivia discusses how providing support for the family can help overcome these types of issues.

Olivia: I think that it is also very important to support the parents in the transition. With our population, some of the parents are running into that fear that their kids are, "you're going to be smarter than me or you're going to outclass me," so there's almost, although they don't say it out loud, there's almost that wish that they will fail so that they can restore the homeostasis. They don't mess with everything. It does in some ways mess with the family structure but if you can get that parental support where they are buying in and they are excited and helpful then there is a lot with being available for me and being accessible for the parents because they didn't do this or they did it unsuccessfully. (Olivia6)

Olivia finds that this blend of family and high school support as well as the high school providing support for the student’s family may be the key to student success.

**High school support.**

The discussion of high school support was consistent between the interviews of the high school students and high school teachers and staff. Both teachers and students
talked about the academic preparation, discussed previously, as the first level of support for the students. All of the students also discussed coming back to math, English and science teachers initially for help in their college classes.

Once the students were primarily in college courses, there was a mixed reaction of how they felt supported. All but one of the students still felt supported by the high school. All of them noted that they felt that they could go back to their teachers and guidance counselor for support. Neo discusses how he is happy he attended the school because of the support now and in the future.

Neo: Well, I've talked to the guidance counselor about classes and I've gone to her about other people. I mean, I've tried to help people but whatever. I've gone to her for all kinds of things. I've gone back to other teachers for help with stuff, especially my math teacher. I borrowed a graphing calculator from her. Other than that, it's kinda nice to know that I can always fall back on that if I have to. So, even though I consider myself to be a college student, and that was one reason that I say that I would be happy if I went here because I still have this relationship with the school. I can still come and talk to these people.

Katie: Do you think that you would?

Neo: Probably, some more than others and some not all. I mean, the school has helped in that way because once you’re in college you’ll still have the ability to come back and talk to people. You don't see that a whole lot in other high schools.

Zakiya also describes how she feels she can go back to the high school faculty for help.

Zakiya: They’re really supportive because they will still help us out in any way that they can. Like if, they will tell you if you need help with a class that you can just come back and ask them. I know that our high school English teacher will help if you ask. If you need her to read over a paper then she will help you with that. She was really good about that. [Sophie] will help you with math. If you need help with science, I know when I needed help with science I went to [Cecilia].

(1Neo16)
Joanna briefly notes that she feels the high school teachers are supportive when she says “They do a lot of things to make sure that you are getting the help you need in passing classes” (2Joanna20).

During her first interview Gwendolyn discusses feeling supported by the high school teachers.

Gwendolyn: Yes, like [Evelyn], if I’m working on homework, I’ve actually done this a few times before if I’m working on like science homework. I’m like, “[Evelyn], since you’re in the office can you help me out with this?” They’re just great support because they tell us that if we need help then we’re there. We’re not occupied with underclassmen. So, I mean, it’s not that they abandon you after you pass their class so it is good that they are there for moral and tutoring support and stuff like that. (1Gwendolyn11)

However, in the second interview she notes that she has moved on to university support for academic issues but that she still seeks advice about her future plans from the guidance counselor.

Gwendolyn: I don’t really think that I’d talk to my high school teachers for help with classes. I think I depend on tutoring more. As far as moral support or asking what I should do next and then I go to the guidance counselor. When I’m making a life decision I ask for her opinion. (2Gwendolyn21)

Nicole also mentions that she feels the high school teachers are very supportive but that she has moved on to university tutoring for academic support. Additionally, she feels that it is nice to have both high school and college perspectives for some assignments.

Nicole: I mean I've gone back and talk to my English professor and my high school teachers too but sometimes it's just nice to have that university spin on it. I mean, sometimes I've gone to both of them just to see. (1Nicole22)

Moreover, she praises the preparation and support the high school teachers provide.

Nicole: Right, well my high school classes I've gotta really say about the teachers really, I mean I can't really say anything about the classes themselves, but the teachers were wonderful. I hate to sound like a brown-noser, but they were really
helpful with having us be prepared and telling us what to expect and being there if we actually needed them. Oh like "just e-mail us or come see us" especially since we were like seeing them every day. It was really helpful that way. (1Nicole9)

Bob made comments that he was self-sufficient and did not spend much time discussing the support he received from the school. He quickly mentions that he did not seek much guidance or support from the high school staff. When asked if he had gone back to talk to any of the high school staff he responds “No, I was out and about” (1Bob13) and that he would contact them only to schedule classes “I mean I'll talk to the counselor to try to get classes and things and talk about graduation but that would be about it” (1Bob13). When asked to elaborate on the support he received he comments that he is annoyed by the events the high school plans and would rather be on his own.

Bob: I guess they were supportive. They mostly annoyed me. They were always making events for us to go to when I had things to do. There is nothing wrong with that I guess. Like, we have a senior recognition ceremony and I have an exam at the same time. (2Bob24)

Simon is the only student to express feeling abandoned by the high school teachers and staff. He notes that the only teacher he felt was still supportive after they started attending primarily college classes was their junior year English teacher Mrs. Fry. During his first interview he discusses his overall impression of the support received from the high school during the junior year transition.

Simon: They just pushed us out and there were all of these activities for the junior class but for us there was nothing. There’s no award ceremony for us. There wasn’t anything. We really felt left out. A lot of the students didn’t try anymore after that because we felt like they didn’t care about us. That is how they put it out to be. (1Simon11)

Katie: You mean the teachers and staff?

Simon: They told us that we were in college now and we were on our own. They just kicked us out of the door and shut it. It was a little bit harsh to me. I thought that it was. It didn’t even feel like we were part of a high school anymore but then
we’re still in high school so we had all these rules to abide by. I don’t know if they really meant it to be that way but that’s how it came across. I’ve also heard some of the juniors complaining about that too.

Katie: So you haven’t gone back to any of your high school teachers?

Simon: They are pretty predictable. They tell us that they warned us about all of this and this is just what we have to do to work on our associate’s degree. It feels like we’re not even part of the school anymore. [...] Just the way that they gave us the cold shoulder about everything. We felt that we didn’t deserve that. There was really nothing.

Katie: So you don’t feel that there was a lot of support?

Simon: All we had was the high school teacher, Mrs. Fry. She did everything that she could, she really did. But other than that. (1Simon11)

While Simon seemed quite resentful about the lack of support in his first interview, during his second interview he stated that his teachers were very supportive.

Simon: Any one of those teachers would be more than willing to help out any of the students if they ask. They are great teachers. I go back and talk to the guidance counselor. I used to talk to her more often but I’ve been busy. (2Simon24)

The students also discussed the support they received from the high school administration and staff. The decision to go to college is a big one which requires not only academic and career planning support but also moral support and personal guidance. Bob said that he went back for help with scheduling classes but would have also liked more help in finding an internship or job after graduation. When asked what he would talk to the school administration about he responded, “maybe a job, but other than that I don't know what else” (1Bob14). Gwendolyn also discusses how the administration helps with many of the details of being enrolled in college when she says “I think mostly the technical things like adding and dropping classes and things like that are what I really need [Olivia] for” (1Gwendolyn11).
Most of the students discussed talking to the administrators about scheduling classes or applying for scholarships. Several of them also discussed going back for advice on life decisions and for moral support. Simon, Gwendolyn and Zakiya discuss how they go back and talk with the guidance counselor.

Simon: I always go to talk to [Olivia]. I don't ask her for help with classes because I don't need it.

Katie: Do you go to her to register for classes?

Simon: Yeah.

Katie: What else do you go to her for?

Simon: Just to say hi. I really just go in there to say hi and talk to her for a little while.

Katie: So she hasn't cut you off?

Simon: No, a lot of the students there go and to talk to her. She is always there but other than that, Mrs. Fry does all that she can but she is only one teacher and she has about 70 students by then. (1Simon15)

Later he notes, “I go back and talk to the guidance counselor. I used to talk to her more often but I've been busy” (2Simon21).

Gwendolyn discusses seeking advice from the guidance counselor when she states “As far as moral support or asking what I should do next, uh, then I go to the guidance counselor. When I’m making a life decision I ask for her opinion” (1Gwendolyn 21).

Zakiya feels that she can rely on the high school administrators while she is in the program as well as next year when she is no longer a high school student. She notes “I know I can go to Lily a lot for assistance and probably next year I’ll still be going to her asking for help or Olivia or our principle” (1Zakiya16).
The teachers noted that they have had several students come back to ask for help in their college courses. All of the teachers discussed being available to upperclassman for tutoring. Sophie made herself available the most often.

Sophie: I have an open door policy. As a matter of fact, my lunch period as well as my planning period I am just in my classroom and the sophomores, juniors and seniors can come back if they need help. I'm open for them. (Sophie5)

Marianna also discusses helping students that come back and ask for help.

Marianna: But I'm pretty happy with the way that they turn out. They keep coming back to me which is something that we consider very important because for them to be successful they need to be able to go back and ask for help wherever they can get it so we say now that there is one place that they go back. They're coming to me and when I can't help them then I know that I can send them to somebody else. (Marianna9)

Evelyn says that at least a quarter of the senior class has come back and that they will find any spare moment the teacher has to ask for help with their college classes.

Evelyn: Usually not with their homework in math, but more so for chemistry or physics. For some reason I get more questions for those than I do for math.

Katie: About how many do you say come back?

Evelyn: From the senior class, out of 60, probably fifteen to twenty.

Katie: Do they initiate it on their own or are they forced to?

Evelyn: They come on their own. They have no inhibitions. “So you're eating a lunch, too bad! I have a question.” (Evelyn9)

Cecilia describes how many of the students also come back to her for help in their college biology classes.

Cecilia: I would say that I see about 40% of them who come back and say hi or talk to me.

Katie: Do they come back for help with classes?
Cecilia: Oh yeah some come back panicked about the natural science biology. It's nice to see them come back and talk to you like a normal person because they know that you are there for them. (Cecilia6)

One of the high school teachers also discussed how she tries to steer the students towards college resources such as professor office hours and the university tutoring.

Sophie: I think it's a confidence thing really, because they're still used to me. Just like your son or daughter always comes back in and asks the parents. The students come back to the teachers they know but by the end of the year they really are using university tutoring more. (Sophie5)

The school has many supports in place but the ultimate goal of the program is to have the students transition over and rely on university support. The next section will discuss these university supports and the level of support encountered by the students.

**University support.**

The support the students received from the university was different than that provided by the high school. It includes support received from university professors and teaching assistants (TA’s) such as office hours and one-on-one interaction during class as well as other resources such as financial aid, advising, and tutoring services. This section also discusses how the college professors interviewed consider their role in the transition of not only the early college high school students but all of the students they have in their classes.

The first thing identified when reviewing the college faculty interviews was that there was a mixed response on whether the college faculty were willing to give special attention to the early college students. Some tried to give the early college students extra help while others refused to treat them any different than typical students. Professor Beryl discusses how she tries to provide extra guidance to the early college students in her lab.
Prof. Beryl: If I have them in lecture and lab then I definitely can work with them because I can see them during the lab time. I try to tell Lily that if you put them in my lecture then try to stick them in my lab because then I can kind of watch over them a little bit more and direct them. (Beryl4)

Dorian and Helene noted that they may have given them extra help had they been able to better identify the early college students early in the semester. Dorian comments that she would like to have more interaction with the high school in order to provide better support for the students.

Prof. Dorian: I don’t feel like I got any information but I guess maybe that is the idea because we’re supposed to treat them just like any other college student. I wouldn’t be calling the parents of my college students, but maybe there is something extra that we need to do to encourage their success. I don’t know.

Katie: Do you have any ideas on what?

Prof. Dorian: I’m filling out the progress reports and they have their nine week grade cards due I believe. Maybe there should be something a little more in that way. I don’t know if meeting with a guidance counselor, that I would meet with her when I turn the sheet in. Maybe make a form that is a little more descriptive rather than just checking your average and whether you have a good attitude. I don’t know. (Dorian3)

Professor Helene notes that she would provide additional support to the early college students if she was able to identify them at the beginning of the semester.

Prof. Helene: Like if I knew from day one that Gwendolyn was an early college kid then I probably would have tried more, I would have pushed her more than I push the normal kids because my stand is always that you guys are grown-ups and with every decision comes something. Even deciding not to do your homework is a decision and you have to understand the impact with that and I think that it is a lot easier to get that if you are 20 rather than 17.

Katie: What do you think that you would do different if you knew they were early college?

Prof. Helene: I think I would probably mommy them more. (Helene11)

Other professors commented that they tried to treat all of their students the same and that they did not see their role in helping the early college students’ transition to be
any different that helping a traditional or returning non-traditional student transition to college. Chantal discusses how she makes it a point to treat all of the students the same.

Prof. Chantal: I don’t try to point them out or treat them any different. I try to just treat everyone as a college student so I usually lose track of who’s early college and then I also have the postsecondary. There are just so many programs in their so I don’t really keep track of who is and what. [...] Everybody is a student to me so I don’t treat the early college students any different. If there is an issue then I will let them know, just like any other student. Sometimes if they are real chatty, I will have other students say something or sometimes I will say something like “let’s keep our voices down”. I’m not going to say “OK guys, you are acting like kids.” (Chantal3)

Professor Florence resonates a similar response when asked if she treats the early college students different than her other students.

Prof. Florence: Absolutely not. The reason why I don't is because we have been told not to end this has been kind of drummed into us at the faculty meetings is that we’re not supposed to treat them any different. I don't treat my traditional and nontraditional students any different so why should I treat the early college students different. (Florence6)

The level of interaction with professors also varied among the students interviewed. Bob noted that they never attended office hours because they never felt the need to. Gwendolyn expresses her appreciation for teachers that are willing to help students during office hours.

Gwendolyn: I go to office hours. Like, if there is an assignment that I'm not sure of or things like that. I've found that the professors really appreciate that you're taking the time to come down to office hours because you care enough about the class to come see them so they will usually help you through it if you just address them with your problem. I really appreciate that. (1Gwendolyn11)

Zakiya discusses staying after class with Professor Dorian to get help but that her microbiology teacher was not very helpful, “with my microbiology I talk to the lab instructor or the TA. I tried to talk to the professor but he really wasn't responsive” (1Zakiya17). Joanna also said that she has used multiple academic support resources on
campus including office hours and tutoring. When asked during her first interview if she attends office hours Joanna responds, “When I took introduction to psychology course I did. I went to a lab hours. For sociology I just asked questions and got help, but when it came to math I definitely went to the tutoring in the library” (1Joanna13). During her second interview she discusses attending office hours for her humanities course.

Joanna: I went to office hours for my humanities class and I will probably go up again soon because we have a test coming up in a couple of weeks. That is the only class I go to office hours for though. (2Joanna20)

Simon says that he tries to get his questions answered during class but is not afraid to go see the teacher during office hours to get his questions answered. He also has some insight into what he perceives as his classmates fear of asking for help.

Simon: I either come to the teacher’s office and ask them to explain it or I go to one of the students that did understand it and I ask them to explain it. I usually don’t have much trouble figuring things out but I’m also not afraid to ask questions. If I don’t know something then I will bluntly ask them to explain it in more detail and I will keep on having them explain it until I understand. I’m not afraid to ask a question. I think that is one of the problems that a lot of the high school students have is that a college environment is very different and they don’t know how to react and they’re out of their element. It’s not the environment that they’re used to, so even if they don’t know the material, they won’t ask the teachers. They won’t go to the teacher’s office.

Katie: So these are your high school classmates?

Simon: I don’t know how they are now. The people still here have learned how to deal with it now that they’re used to this stuff but some of them are just too shy and some of them just aren’t acclimated to the college life yet. That is one of the big things, they are afraid to ask questions. If you ask questions then you can figure out the material and if you know the material than you will get a good grade. (1Simon14)

The high school teachers and staff are also aware of the fact that some of the early college students’ are intimidated by their college professors and do not want to ask them
for help. Sophie explains her experience with the students and how she tries to talk them into approaching the professors when they have questions.

Sophie: The thing that, the reason that they come back is they feel “Oh, I’m comfortable with the way she taught and I’m comfortable to ask her questions that maybe a college professor or instructor I’m intimidated by.” Not that the college instructors are intimidating them but the high school kids have a different perspective and are intimidated. […]

Katie: The intimidation, do you feel that they are intimidated?

Sophie: They really are. The thing, they think. You know how we all have a myth in our mind about certain things? There is, it is that university instructors, let alone professors, even an instructor is like “we can’t talk to them because they’re from a different world but the high school teachers are more like us and we can open up to them.” A lot of kids sit down in the classes but don’t ask questions even though they have tons of questions. And some of them I will ask why they aren’t asking the questions, and they will say that it’s “because they are only two of us Akron early college and the rest are adults in the classroom,” so it’s not just the intimidation from the professors but also from their peers, “they’re older and we’re younger.” They feel like maybe since they’re younger they don’t have the right or their questions might be silly, so they don’t ask them. So that’s another thing that we talk about in our classes. This is one of the other things that we talk about other than content. We do discuss these things in the classroom. We tell them “you’re paying for these credits. You’re not going for free. […] It is your right to ask questions and if you don’t feel comfortable, really, really don’t feel comfortable then you can always go to office hours and maybe one-on-one they will feel more comfortable.” (Sophie5)

Several of the students discussed using the tutoring services available on campus. Bob and Simon note that they do not have time to go to the tutor, nor do they feel they need to go as they feel they typically understand the course material. As mentioned previously, both Gwendolyn and Nicole discuss using the tutoring labs more often than going back to their high school teachers for help. Joanna mentions going to tutoring for her math class. Zakiya mentions several times that she visits the tutoring center for math and science classes. She notes that she goes “in the College of Arts and Sciences they have their own statistics tutoring and I would go there and I also would go to [the library]
and it's one of those tutors that they have downstairs’ (1Zakiya8). Neo mentions going to the tutor a few times but that it did not always help him understand the material. He notes “I’ve gone to a few of the learning assistant’s tutoring sessions but as a whole I haven’t really gone to anyone. I don’t know why, I just don’t” (1Neo17).

The resources available to students also included financial aid and advising. The students were typically introduced to the additional resources on campus by the high school teachers and staff during their advisory period and class meetings. Olivia notes “I tried to refer them to people in financial aid and try to work with transitioning them to find out who they need to talk to for each thing” (Olivia7). When asked how she found out about the resources on campus Nicole responded,

Nicole: I think it was through meetings, well we just had a senior meeting where she was talking about the financial aid. She brought in a person from a bank to talk about credit and we've had meetings like that and I've talked to her one-on-one and I've talked to people in the office one-on-one. I actually used to be an office helper so that helps a lot with getting information. (1Nicole11)

However, not all of the students were aware of the resources. When asked if she had met with an advisor or financial aid, Joanna responds:

Joanna: No, I didn’t know we were allowed to.

Katie: Well now you do (laughs). Do you think that you’ll take advantage of talking to someone in financial aid or an advisor now?

Joanna: Mmhmm, of course. (1Joanna13)

Lily points out that all of the seniors should have met with an advisor during the fall semester.

Lily: They were all supposed to have met with their college adviser by the end of October. So, they met with me and signed a contract and I'm trying to turn them over to [the head of advising] and they were supposed to go upstairs. (Lily9)
However, Gwendolyn, Neo, Nicole and Zakiya are the only ones interviewed to acknowledge meeting with an advisor.

Support is an instrumental component needed for success in college. This section described the differing levels of support received from family, friends, the high school and the university. The high school has spoken with some of the college faculty about treating the high school students as they would any other student and some of the professors take that to heart while others still will make to an extra effort to help the early college students. The students also take advantage of the resources with varying degrees. Some see their professors during office hours and go to tutoring while others still depend on the high school teachers for help. The level of support also plays into how the students become involved on the university campus activities and integrate into the college culture which will be discussed in the next section.

**Interaction and Engagement in the College Culture**

One of the themes that emerged throughout the interviews of the students was that of interaction and engagement in high school activities as well as the college culture. Students varied on their level of involvement in extracurricular high school activities such as clubs, student government and social functions. The students also discussed the differences between their high school experience and what they perceived a traditional high school experience to be. Their level of engagement in college activities such as involvement in student organizations, attendance of campus events and use of extracurricular services like the recreation center tended to be relatively low. However, those planning to continue their education after completion of the high school program noted that they planned to get more involved next year when they were “real” freshman.
Throughout the student interviews, several codes emerged related to the college culture including the demand of the college courses, the difference in expectations between high school teachers and college professors, the onus of learning, the amount of time and work required on assignments, and the flexibility in their class schedules. The students were also asked about to compare their transition experience to their high school and college classmates. The students’ responses to this question tended to correspond to their level of engagement in the college culture. Their relationships with high school and college classmates were also discussed.

**Involvement in high school activities.**

The students’ involvement in high school activities varied. All of the students participated in at least one high school activity. Bob, Joanna and Neo participated in only one student group while the other four were involved in several organizations and activities. The thing that all of the students except Gwendolyn had in common was that their level of involvement tapered off in the final two years of high school when they were primarily or completely in their college classes.

Bob played intramural basketball at some point during his first two years of high school but had not played recently. Joanna was in the National Honor Society but noted that she did not have time for any other activities. Neo had a sense of resentment towards many of the student groups. He had help start a Chess Club but the group only lasted his sophomore year. When asked about being involved we responds, “we started a chess club and I was a big part of that but then it died and I didn't care because I can play chess with anybody on campus that I want to” (1Neo18). Neo also had a negative attitude about the National Honor Society. He comments, “National Honor Society, I don’t really care
about that. It just shows off how much of a nerd you are and makes people think you’re too good for them” (1Neo19).

Nicoile, Simon and Zakiya were initially involved in several groups but their involvement declined over their four years at the high school. Nicole discusses her involvement in several groups over the years and how she decided to step down from leadership to give her classmates a chance to gain some experience.

Nicole: Like I said, the National Honor Society, I was involved in the Cultural Diversity Club but that kind of went to the wayside.

Katie: And that was the high school club?

Nicole: Yeah, I was in the Student Council leadership thing, like the first two years and then like, OK, I'm like I'm going to let other people get in it. I was involved in the yearbook.

Katie: When was that? Which years?

Nicole: The first two years, and then, actually I take that back, sorry, freshman year I wasn't, sophomore and junior year I was. [...] And then, I've done the school intramurals which we kind of made up for like, sports. [...] Sophomore year I was actually in the play and then junior year I helped out with the play, like backstage at all of that. (1Nicole15)

Simon was originally involved with several groups but ran into issues with time constraints.

Simon: I was on the student council for two or three years. I was in the national honor society but then I resigned because of certain circumstances. For my own reasons, because of personal stuff. I was in robotics but then because of time restraints I couldn't do it anymore. I was in the intramural dodgeball and I loved it. (1Simon16)

During her initial interview Zakiya lists several high school groups that she has been in and how her commitments to community groups has limited her ability to stay involved with them.
Zakiya: Um, I did yearbook, I did SPIF which is Students Paying it Forward. I don't think we did that again this year. That's why I'm not doing it. I did Cultural Awareness last year but I couldn't do it this year because of a conflict with a program that I do at [the community group]. […] This year I just did student council, well, and I am a class officer so I just did that. I did yearbook the first three years but I didn't do it this year because it was kind of time consuming especially with all of the stuff that I do out of school. (1Zakiya4)

Gwendolyn was the only student to discuss maintaining her involvement in high school activities and clubs. During her initial interview she notes:

Gwendolyn: I am the president of the Cultural Awareness Club. This is a group that me and the class president founded. I am a member of Student Council. I was a member of yearbook for the first three years of high school. […] I'm also part of the Students Paying it Forward (SPIF) club. It's kind of office help. (1Gwendolyn13)

When asked during her second interview if she had stayed involved with the high school organizations she replied, “Yes. That is one thing that I've stayed involved with. […] That is one thing that I can keep track of is the extracurriculars” (2Gwendolyn22).

The students also discussed their attendance at high school sponsored social events such as prom and the senior breakfast. Bob found the awards events to be a nuisance that interfered with his college classes. Nicole, Gwendolyn and Zakiya talk about being excited for the senior prom. Nicole also noted that the cost of the events and senior dues has been a bit of a burden for her and her family. Joanna, Neo and Simon did not discuss the social events or awards ceremonies.

While speaking with the high school teachers and administrators it is noted that the school is working to try to give the students a “real” high school experience. Yvonne states,

Yvonne: There is also the social piece. One of the things that I was really interested in with this job is that there are development stages that kids have to master in high school and if you put them in a college setting and they try to skips those then where is it going to come back later? So, it was a really important for
me to make sure that they got the traditional high school experience with the
dances and the peer unity and being part of a group. It was real important that we
foster some opportunities for them to do that. (Yvonne3)

Nicole also mentions that some of the teachers that joined the school during the second
year brought in new clubs and activities. She comments, “the newer teachers coming in,
they've brought so much more to it. Like I said, with the club's I'm involved in, they
actually brought in with them” (1Nicole15).

Evelyn discusses some of the issues that have arisen while trying to establish
senior traditions because of the school’s unique schedule.

Evelyn: Well since this is the first year that we have had a senior class it entails
establishing traditions which the other [local] public schools have a picnic for
their students which usually occurs at the end of the year. Ours occurs at the
beginning of the year because we had to do it before the university classes started
so that we wouldn't interfere with that. We also have an informal dance called
MORP which is prom spell backwards and it is a fundraiser for prom. I'm also in
charge of planning the prom and the awards assembly recognition luncheon.
(Evelyn2)

Despite the school’s efforts to provide these experiences, some of the students
still feel that they have missed some of the fun experiences. When asked how she thinks
her high school experience would have been different had she gone to a traditional high
school, Joanna responds,

Joanna: I would say it would’ve been a lot of funner. I probably would have had
more involvement and it would have been a lot less time consuming. The work
probably would have been easier. I probably would’ve interacted more and seen
my friends because we would be in the same grade and all of the same classes.
(Joanna19)

Nicole also notes that there are some things that she did not experience because of
attending the ECHS but that she does not feel like she missed out on anything.

Nicole: I mean, I have the option to go to a couple of football games and I did go
to a couple at [the local high school]. I didn't go to any pep rallies but then again I
have never really been that big of a you know .. So, no I'm not really crying about
it. I didn't really care about it one way or the other but it's always just something to bring up. (2Nicole33)

Overall, the students were relatively involved in the high school clubs and social activities available. However, their involvement in student clubs declined as they progressed through the program. The students attributed this decline to several reasons including a lack of time and being busy with non-school extracurricular activities.

**Involvement in college activities.**

The students were involved in far fewer university activities than high school activities. None of the students participated in any university student organizations; although several said that they planned to get involved the following year during their “real” freshman year. Most of the students noted that the reason they did not get involved with student organizations or participate in university activities was because they did not know they were allowed. When asked if he had been involved with any student organizations Simon responded, “No, I didn't even know that I could so I didn't bother trying” (1Simon17). When the administration was asked about this issue they noted that the students are not allowed to participate in campus intramurals or use the recreation center until they were 17 years old but after that they were permitted. They also noted that the students were allowed to participate in any university student organizations except the athletic teams.

The girls interviewed said that they were interested in the student groups but either did not realize they were allowed to participate or wanted to wait until next year when they were “real” college students. Gwendolyn said that she would have liked to have gotten involved with a group but that she wasn’t sure of how to join. When asked if she planned to get involved in student organizations next year she commented, “most
definitely I will be in student groups because if I'm not in the high school ones then I will need to fill my time with something else” (1Gwendolyn14). Joanna said that she had not been involved in any groups but hoped to join a sorority the following year. Zakiya also discussed getting involved the next year.

Zakiya: I'll probably go more. I wanna stay on campus even though I live like five minutes from campus. I don't wanna stay at home. I wanna still have like the "real" college life. I wanna be able to go to events and be involved in different groups and stuff. (1Zakiya21)

The three boys interviewed expressed that they did not get involved with student organizations because they did not have the time and were not interested enough to make the time to get involved. Simon noted, “I am really more interested in my academic activities and taking the classes that I need and then doing the things that I need to at home or work” (1Simon17). Bob also noted that he didn’t participate because of time constraints. When asked about his reasons for not getting involved he comments “Usually they always conflict with my schedule” (1Bob18) then continues “this is probably going to be one of my busiest semesters, so…. no time” (1Bob18). Neo comments several times that he is simply not interested in participating in university events. When asked if he thought he might get involved the following year when he was no longer a high school student he responded, “that never really interested me now so I don't see why it should then” (1Neo20).

The few activities in which the students participated were attending presentations or performances on campus, attending university sporting events, using the recreation center, and visiting the pool hall and bowling alley at the student union. All of the students mentioned using the recreation center at some point but none went on a regular basis. Simon, Neo and Joanna noted spending time at the student union pool hall with
friends. Joanna, Nicole and Gwendolyn all attended a university soccer game and Gwendolyn attended a few university football games.

The presentations and performance were typically not attended by choice but rather for class assignments. Nicole discusses attending the Vagina Monologues for her Women’s Studies class. Zakiya, Joanna, Neo and Simon attended speakers during the cultural awareness week to complete assignments for various classes. However, Gwendolyn, Nicole and Zakiya attended university sponsored presentations and performances for fun as well as to complete assignments. Gwendolyn and Zakiya attended additional cultural awareness speakers and Nicole attended some of the plays brought to the campus theater.

**Relationships with their high school and college classmates.**

The students were asked about their relationships with their high school and college classmates. One issue that arose during the interviews was related to the students’ class schedules which changes drastically between their sophomore and junior year when they go from a relatively typical high school schedule with one or two college classes to a full college schedule with one or two high school classes. The students noted that their relationships with their high school friends changed over the four years because of this schedule change. The students also noted that their relationships with their high school classmates were different than their college classmates. Finally they discussed what they expected their relationships to be like the following year if they were planning to continue with their college degree.
Although the early college high school had a relatively high rate of completion of 62%\(^1\) compared to the other early college high schools in the state, the students took note of their classmates that did not finish the program. Zakiya discussed how some of her friends have left the school, “Really, it was me and five other girls who were really close freshman and sophomore year but now three of them don’t go here. The one I still see and talk to” (2Zakiya29). Gwendolyn initially felt some resentment toward her classmates that did not stick with the program.

Gwendolyn: At first I was really upset because I felt that they were taking a spot from someone who probably would have tried harder to be here but then I kind of got over it. The people who left, I just figured that they didn’t want to be here because if they had wanted to be here then they would’ve done whatever they had to do. (1Gwendolyn10)

Some of the students discussed how they felt a strong camaraderie with their high school classmates because of the experience of attending the school and sticking with the program through the end. Nicole discussed how she felt about not seeing her friends as often because of differing schedules and how it’s nice to see friends that are still in the program.

Nicole: It's not like you don't see them because you kind of do have the school events. You see them there and it's kind of like a nice surprise and you say "Oh you're still here! Everybody else dropped out on us." (2Nicole35)

Gwendolyn commented that her classmates are supportive because they are all trying to help each other get through the program. She noted “it’s kind of a mutual support because we all have to help each other stay here since there are not very many of us left” (1Gwendolyn12).

\(^1\) Note: Of the 100 students that started in the freshman class, 62 completed the program. The remaining 38 transferred and subsequently graduated to other public or private high schools. All of the students that were enrolled during their senior year at the high school, graduated with a high school diploma.
The students also discussed how their relationships with their high school classmates have changed since they started taking college classes. Joanna comments that she thinks her friendships would have been stronger had she attended a traditional high school. When asked about this she responded “I would think I would still talk to them but it probably would have just been stronger I guess because I would see them more often” (1Joanna20). Nicole also mentions that her friendships were stronger when she saw her friends every day.

Nicole: It was definitely stronger even a year or two ago when we were seeing each other pretty regularly whereas now we see each other once in a blue moon. You get lucky to see some people. I'm not sure but I think there are still some people from my high school class that I know still go here but I still haven't seen this year. I still have to ask people if people are still here. (2Nicole35)

Simon expressed that he no longer had time to see many of his friends.

Simon: My friends miss me. They always complain because I am never around anymore. I have a busy schedule. I wake up, go to school, going to work, come home, try to eat something, and then try to get some work done and it doesn't happen all the time but I do it again the next day. (2Simon24)

Bob noted that he had lost touch with his classmates in the last two years but was not overly concerned about it. When asked how he saw his connections to his high school classmates being different had he had gone to his home high school, he responded,

Bob: I don't know how much that would change anything. We pretty much all spent the first two years together. I don't think they would have changed much because we all pretty much know each other. After we all started drifting off it was kind of like "Oh well." (1Bob23)

Not all of the students saw the schedule issue as a problem for keeping connected with their high school friends. Neo saw the flexibility of the college schedule to be an advantage to maintaining his friendships. When asked about the highlights of his time at the school he responds.
Neo: That's a hard one. I would have to say that it would be just hanging out with people during my free time ... my friendships. I think I have enjoyed that the most. Because of a normal high school you don't have random hours throughout the day to hang out and you can't leave the high school building to go to different place. We can all leave [our building] and go to the [student] union or go out into the grass in front of the buildings. We can do whatever the heck we want. [...] I have enjoyed that a lot, which I know is different from a regular high school. (2Neo35)

Gwendolyn noted that the effort she had to put into maintaining friendships once the college schedule started helped her choose worthwhile relationships rather than convenient ones.

Gwendolyn: I think the farther you go in this program the more people that fall off from friendships and you kind of realize where your base is as far as your friends go because schedules change and you might have to work it out and see if you can be able to hang out.[...] Freshman year you are usually in a class with most of your classmates and you are going to see those people throughout the day every day and that gives you time to form a friendship and then it is kind of a test when you get to your junior year or senior year because you have to put more effort into it, way more effort than you would if you were in high school because you are all in the same building in high school. All I would have to do is walk down the hall to see my friends.

Katie: How do you think that affected your high school experience?

Gwendolyn: I think it made, not only me but a lot of us, more mature and able to pick out the people that are going to suit us as good friends because it is easy to get clouded if you are in a high school where you may think that just because you see someone a lot that they just become your friends to where now we might not have to see each other but as long as you can feel that there is still a connection. I think that has really helped us out to kind of pick off the bad people. (2Gwendolyn19)

The students also discussed their relationships with the college students. The initial survey the students submitted asked the students how many college (non-high school) friends they had. The responses varied from Zakiya saying that she only had one or two and that the relationships only lasted through a the semester to Bob who said he had about 20. All of the other students said they had between five and ten.
About half of the students said that the experience of being in the college classes made them more outgoing. Although Zakiya said she had not made very many close friendships with her college classmates, she commented that being in the classes helped her get to know new people.

Zakiya: I think in college, the early college also helped me to be more open because I really wouldn't talk because I was really shy but I'll talk to people in the classes and will come to class and be like "Hey, did you do this" so it really helps you, it helps you to see that even though you don't have your friends there, and you can still start talking to other people and that they can help you along the way, even if it is just for a couple of weeks. So I started doing that, talking to people, and we would be able to help each other out. (1Zakiya19)

Nicole mentioned that not having her high school friends in her college classes led her to make connections with her college classmates. When asked how she felt about not seeing her high school friends as much she replied “well, it kinda makes me sad in a way, just because you don't see them but then it kinda forces you to go out and make other connections, especially with college students” (2Nicole35). Gwendolyn also commented that her experience of being in the college classes helped her be more social and feel like she fit in.

Gwendolyn: I think that I’ve transitioned pretty well compared to my freshman year because I know that in my freshman year I wouldn't talk to anybody that wasn't in our school. I just felt like I needed to go to class and blend in and then I had to get out. Now I socialize and I think it's more of a peer level because there are some college students here who are only seventeen and it feels more like these are my classmates instead of just being the only one of me in a class. I think that I have transitioned pretty well just by talking to people and now it just feels like a bigger high school to me. (1Gwendolyn9)

Joanna noted that being in classes by herself initially kept her from participating in class discussions but eventually she became more vocal.

Joanna: in the beginning I did. It helps because I was able to open up and when it was just me in a class I really didn’t open up as much and I was quiet. Like, I
didn’t go to the front of the class or force my opinion or anything like that. But now I do because I got used to it. (1Joanna11)

The students noted that most of their college friendships were only maintained for a semester or via Facebook. Gwendolyn noted that she has found study partners in her college classes but that the friendship usually only lasts through a specific class.

Gwendolyn: I think it's more here and there maybe we had a class or two together and we kind of buddied up so that we can study or if one of us misses the assignments we could help each other out. We're also friends on Facebook. There hasn't been anybody really that I’ve met a few years ago and I'm still friends with now. It's more per semester. (1Gwendolyn8)

Nicole made a similar comment.

Nicole: I know a lot of people just walking on campus I'll see them and say it “oh, I had you in this one class. I can't even remember what it was but I recognize you. So, hey, how are you?" and then there's the other ones that I’ll talk to. Like one of the students has a cousin that goes here and he hangs out with us […] and then I've got a couple of people on Facebook. (1Nicole21)

Neo is the only student that discusses seeking out and maintaining friendships with college students.

Neo: I just used to sit in the same place and listen and these people are fairly intelligent and they would have conversations about stuff and I used to just listen and then there was one time that I jumped right in there and we started debating about things and one guy was like "well, you're pretty good. How old are you? " and I tell them I was sixteen (gives a shock to look) and they asked what I was doing there. He asked if I was doing postsecondary, so I started to explain it to them, it was kinda sorta like postsecondary so I explained it all and they were like whatever and they knew that I was part of this high school but they're like "he's cool." (1Neo15)

Overall, the students’ relationships changed over the years with both their high school and college classmates. Most of the students noted that they did not have as much time for their high school friends or did not see them as much. The students also did not form long term friendships with their college classmates. The impact of these
relationships on their academic identity will be discussed in the next category, Academic Identity.

**The college culture and their transition experience compared to their high school and college classmates.**

The students discussed their college experience, expectations set by college professors, how to be successful students, navigating campus, schedule flexibility and the differences between high school and college. All of these comments were grouped together to see what the students thought of the college culture and how they were transitioning into this culture compared to their college classmates.

The increased workload was one of the most common responses the students had when asked about the differences between high school and college. Gwendolyn noted:

Gwendolyn: There was a huge jump in responsibility because when you have your high school class you’re accounted for and they take attendance every day and somebody's making sure that you're in school. There's a shift this year to where professors don't really care if you're there are not because they are going to get paid anyway. [...] So you're kind of responsible for your own attendance and studying and there's nobody hammering knowledge down your throat so it was a bigger environment to be around but I think after being here for so long it became easier to adjust. (1Gwendolyn5)

Bob made a similar comment when he said “you always expected that college was worse than high school. That it was more work. So you just went along with it” (1Bob9).

Neo commented that his biggest shock was having to start studying for classes rather than passively listening to the teacher and expecting to get by.

Neo: My junior year things changed because I had mostly college classes and I realized that I had to put more effort into it and I was so not used to doing that because I was used to just sitting and listening and not having to take notes and I would take a test and get a B and move on. That was true for some classes but there were others that I would do that in and take a test and get a D (eyes get big with surprise). So I thought OK I'm going to take better notes and then I take the test and get a C-. OK, so now I have to study. So I studied. [...] and I didn't like
that because I used to be able to do that stuff without any of this work and be able to get an A and now I have to put all this work and I hated it. Delayed gratification was what it was all about and I'm never one for that because I want it here in a want it now and that didn't work so I had to change that. (1Neo11)

Another issue that arose during the student interviews was that of the freedom associated with a college schedule which led to some students skipping classes. Several students noted that they felt their peers were not successful because the freedom associated with the college class schedule allowed them to skip class. Zakiya describes how she worked to mold herself to be a good student and how one of her friends failed a class because she would skip class.

Zakiya: I think I just took it more seriously because you know in your junior year we only had that one high school class and as long as you went to that high school class they didn’t know what you’re doing. So you had all the freedom in the world, and you’d be like,” Oh, I'm not goin.” And I know one to my friends that she used to go here, she was on academic probation. The first year when she got on academic probation it was because she got an F in the class and the reason why she got the F was because she wasn’t doing her speeches. It was Effective Oral, but like for her, she had to print stuff off and everything and she would be like “Oh well, I didn’t print it off so I’m just not gonna go to class.” So that was an F. Then, the next semester she was taking some class and didn’t wanna take the class and our counselor, I think it was Basic Chemistry, our counselor wouldn’t take her out of the class because of course you have to take the class. It’s mandatory for us to take Basic Chemistry. She didn’t want the class so she wouldn’t go to class. So, it was kinda like she didn’t take it serious and I know a lot of people who would be like “Oh well, if we don’t have this class” and they see their friends are getting ready to go somewhere that now say “I’m not gonna go to class, I’ll just go with you.” Yeah, so, it’s kinda, you just have to have, I guess you just have to be able to mold yourself to go to some classes, and I know there’s been times when I don’t want to get up and go to class. I mean, even right now the 6:45 class. (1Zakiya14)

The high school faculty noticed the students skipping classes as well and a new policy of a required check-in period or study hall for all students was implemented to try to keep better tabs on the students during the day. Lily commented on the issue of skipping classes and the school’s policy to remedy the problem.
Lily: One of the things that we saw this year was that almost all of the seniors are out and fulltime college students so they are not touched on a weekly basis to kind of check-in with them. That is going to change for next year. That is already under discussion and we know it is going to change but it kind of took us those four years to see what was going to happen. […] The juniors have a check-in time every day. They're going to keep that. That is something we added for the juniors this year. (Lily4)

Neo was the only student who admitted to skipping class frequently in his junior year and stated that this was probably the worst decision he could have made but he was happy that he learned his lesson and now strives to keep perfect attendance. He gave the following response when asked why he skipped class.

Neo: Well I just really didn't care. The one that I failed pretty bad was geography. I like some areas of social studies but geography, political geography, not so much. I'm not really into that. So I thought you know what, I've got better things to do. I should have stayed but I didn't and I've paid for that. I'm not going to do that again.

Katie: So what would you do instead?

Neo: Sometimes I would go to the student union and hang out. Other times, I pretty much stayed on campus the whole time. I never really left campus. I just hung out with people. "Don't you have class?" .. "I'm here aren't I? So obviously I didn't go to class" and they’d tell me that I should've gone but I didn't. I'm one of those people that says well this is what you should've done but you didn't so what are you gonna do about it. What I should've done about it was go to class but I didn't so my grades suffered for it. (1Neo15)

Later, when asked what advice he would give an incoming freshman, he responded.

Neo: Don't skip class. I don't care if it's high school or college, don't skip class. If you're sick it's one thing but if it's just a cough then you should come anyway. I mean, I've talked to people who have said they've been sick and I ask them if they were throwing up and they said no that they just had a stomach ache and I tell them that they should have come to class. Moron! (smacks is hand). (1Neo20)

The students commented that they felt their experience at the school made them better prepared for college than a traditional college students and also helped them transition easier. Some of the reasons they gave for having an easier transition were that
they were used to the workload and that they knew what was expected of them in their classes, how to navigate campus, and what resources were available to them such as tutoring, financial aid and advising. Gwendolyn noted that the advice from high school teachers about how college would be was beneficial to her transition.

Gwendolyn: *(laughs)*. They were like, they're not going to just help you out and I mean, you can try to get a good relationship with a professor who might cut you some slack here or there but for the most part they are not going to step you through the class. You just kind of have to do it on your own and you have to follow the syllabus. They're not going to tell you when everything is due because everything is on the syllabus. They're not going to tell you what to read tonight because it is on the syllabus. They taught you that you're syllabus is basically your teacher. [...] So, I think that helped a lot. I think that it was better than college prep that you get at a regular high school, was just the first two years of being here. *(1Gwendolyn10)*

When asked how he would compare his transition to his college classmates, Bob responded, “a lot of them from what I hear, they played around in high school and then when they got here they realized that it meant business, so it was kind of a wakeup call for them from what I hear” *(1Bob13)*. Simon also commented that he felt his college classmates complained a lot about the amount of work.

Simon: College students, a lot of them don't seem like they know what they're doing. If something is too hard than they have this mentality that they just don't care. They usually complain a lot more because they're not used to it or they don't like it. [...] I don't know why they come in here and they pass their classes but they complain every step of the way.

Katie: What do they complain about?

Simon: That it's too much work or it's too hard or the teacher didn't teach it well enough or that the teacher should give them a break even though it was really their fault. Every class I've heard nothing but complaints. [...] I think the most common thing that I've seen is just the "I don't care" mentality. That is really it, and that they blame the teacher if they can't learn. Then if it is a good teacher, they also complain that it is too much material in a short amount of time. *(1Simon14)*
Gwendolyn commented that she thought traditional college students don’t realize the level of responsibility required to be a successful student.

Gwendolyn: I think that is what the problem is for a lot of college freshmen is that they are from an environment where there in one building with the same people every day and you have teachers who are holding your hand through every lesson or through this semester and the transition when you get here is that not everybody is as nice as you expect them to be and every professor is not going to hold your hand and I think that's what makes most people drop out their freshman year is that you're expecting it to just be a bigger high school instead of a whole new adult environment where people are responsible for their own learning and you are responsible for making your own friends. (1Gwendolyn9)

Nicole discussed how she felt like the school gave her an upper hand with regard to knowing about how college worked.

Nicole: Well, I definitely wouldn’t have as many ideas or as many opportunities as I do it now. I mean, because before I came here I had no clue how to do the whole college thing. No clue about the scholarships. No clue how to schedule. I mean I really had no idea. I still kind of have gaps in my knowledge about the university thing but I think I would really, that I was really better off going here just because I already got my foot in the door. In high school I get that they do the postsecondary stuff and I think I definitely would have done that to but again, like I said, if I was going to a traditional high school then I don’t think I would have got as much knowledge. Not even knowledge about classes but knowledge, common sense-wise, about, you know.

Katie: How things work?

Nicole: Right. (2Nicole32)

The students also had their own perceptions of why some of their college classmates were not successful. Neo and Gwendolyn noted that the difference between their experience and a typical college student was the issue of freedom. Gwendolyn talks about how many incoming freshman look forward to the parties rather than classes and that her experience at the school has taught her how to keep her priorities straight.

Gwendolyn: I feel like people coming in, they think that you go to class sometimes and then you party more and then you sleep and then you wake up and decide on whether or not you can go to class and really the thing that is keeping
you here is passing your classes. I think that's what a lot of people fail to realize is that if you don't pass then you don't stay and then where is your party? I don't think a lot of students who are straight out of high school really put an emphasis on going to their classes. I think that by our school pushing us to be in class than if you have something else to do then you learn to reschedule. They really put the emphasis on even if we are having some type of class meeting and you are supposed to be in a college class then you skip the meeting. I think that has really set the bar for us. (2Gwendolyn19)

Zakiya also notes that she feels many college freshman spend too much time partying.

When asked how her experience differed from a traditional college freshman, she replied:

Zakiya: Um, I guess on a more personal level but a friend, he ended up graduating early so he’s here at [LMU] taking classes and like I said the freedom thing, like he would go and party all week, which he’s not even old enough to. (1Zakiya15)

Neo notes that his experience was different from a typical college freshman because he still had to adhere to the high school rules.

Neo: I experience it in my own way and right now that's through this high school. So our experiences are different, simply for that fact. They can go out and drink and do stuff like that, even if they don't but they are older than eighteen so they have a lot of privileges and stuff that I don't. I'm still seventeen so I still have to obey all of the [public] schools rules but at the same time it's college so I mean there are some similarities and differences. (1Neo16)

The experiences the students had helped them learn the college culture. All of the students noted that the program gave them a chance to learn what college professors expected and how to navigate the campus. Neo, Nicole, Simon and Zakiya, who planned to continue their studies at LMU the following fall, were also able to learn the layout of campus, where resources such as financial aid were located, and how to use the online communication tools such as their university email account and learning management system. Gwendolyn and Joanna planned to transfer to new colleges the following year but still felt like the experience of knowing that all schools provide similar campus resources would help them be successful at their new school.
**Academic Identity**

The students’ attitude toward the STEMM fields, their motivation, preparation and support as well as their interaction and engagement in the college culture all contributed to the final category which was the students’ academic identity. Throughout the interviews, several codes emerged about how the students saw themselves, how the high school teachers and administration saw them and how the college professors saw the students. The students were in the final semester of their senior year of high school and were taking only college classes, except Joanna who had one high school class. They no longer saw themselves as high school students but had not yet fully integrated into the college culture. The high school teachers still wanted to maintain a level of control over the students’ schedules and engagement. They noticed that giving this first senior class a fair amount of freedom came at a price; the students did not keep up communication with nor did they identify themselves with the school. In contrast, the college teachers felt that the high school students tended to stick out as younger and less mature. Their academic identity in turn fed back into the previous categories by keeping them motivated, allowing them to determine the types and amount of support they sought from the school and their family and ultimately manifesting in their attitudes toward their STEMM majors.

**The students’ academic identity.**

The students all noted that they no longer identified themselves as high school students. Over half of them said they considered themselves to be college students who simply had some additional rules to follow by being enrolled in the high school. Simon made the analogy that the seniors are like “ghosts.”
Simon: We're not even part of the high school. We're just there. We are kind of like ghosts that come in. I swear, the freshman start whispering when we come in "Is that a senior? I didn't know we had any of those!" we’re like an endangered species or something. We just mingle around. Sometimes you see us and sometimes you don't. I haven't even seen most of the seniors. I see probably about a quarter of them. [...] I don't even feel like I'm part of the program anymore. I feel like I am just a college student. I don't know how other people feel. I'm not even in high school anymore. I haven't been in high school since my junior year. (1Simon18)

Neo discussed how his college friends used to consider him part of the high school group but now he is a part of a new college social group. He commented “They used to call us ‘that high school group’ and now I'm one of them. I'm not part of the high school group anymore. Technically I am, but to them I'm also one of them so it doesn't really matter” (1Neo15).

Nicole also noted that she feels more like a college student than a high school student. She commented “we always have those reminders like prom or when you walk into the office or something or you talk to other people but I mean, when I'm in a college class I'm definitely like, I'm a college student” (2Nicole39).

Simon mentioned that the junior year was hard for him because he did not know who to identify himself with. When asked if he felt like a college student, he replied:

Simon: This year I do. Last year I didn't know what to feel like. Last year I didn't want to be in the school anymore either for a little while. Just the way that they gave us the cold shoulder about everything, we felt that we didn't deserve that. There was really nothing. (1Simon11)

Gwendolyn stated that she was still a bit confused about her status with regards to being a high school or college student. When asked how she felt about technically being a college sophomore, she responded:

Gwendolyn: It’s so weird. I don't even identify myself as that. I usually say high school senior and then I have to think that I am also a college sophomore. When you tell people that they think that you graduated high school early and I have to
tell them “No, I'm still in high school.” There's this whole conversation about whether you're still in high school and how you got to college and they think that I'm really smart. (2Gwendolyn24)

Not only did the students state that they no longer felt like high school students, they made an effort to keep their college professors and classmates from finding out that they were from the early college high school. Zakiya discussed how she, along with many of her classmates, chose not to reveal that they were early college students to their college professors and even went to lengths to use the university’s rather than the high school’s progress reports so they would not be identified.

Zakiya: I'm one of the ones like, a lot of us don't tell people that we’re in high school so if the professor doesn't say anything and then we don't say anything.

Katie: OK, why is that?

Zakiya: It's kind of like an outcast thing, like once they know you're in high school then the other students kinda try to move away from you. I don't know. A lot of us feel that way.

Katie: Has that ever happened to you?

Zakiya: No, because in none of my classes I've said I'm a high school student. Even with the progress reports now this year with the progress reports on the bottom it says something about early college, like if you don't turn this in you'll have to go to study hall and I was like “Why would they put that on there?” So, a lot of us came here and went upstairs and just got the ones that were upstairs that didn't say anything so that they wouldn't know. (1Zakiya21)

Nicole was not ashamed of being a high school student and noted that she did not broadcast that she was in high school, but if someone asked her then she would be forthright with the information. When asked if she hid the fact that she was in high school or knew of friends that did, she responded.

Nicole: Yeah, I can see what they're saying and ya I’ve done that but when somebody asks me or when it comes down to that whole question of "tell me about yourself," I mean that's usually, then I say because I mean, I'm not necessarily ashamed of the fact. I don't want to broadcast it because like I said,
some people aren't too happy with us but then like I said, a lot of the times, especially a lot of the students are like really surprised and there like "Oh, if you're getting a lot of that out of the way" and like "Oh, you get your books free" and "Oh, you got a laptop!" I think they might be a little jealous but they're pretty cool about it. (1Nicole20)

Over half of the seniors interviewed also noted that they did not like to associate themselves with the underclass students because they thought of them as loud and rowdy. Several noted that they felt those students gave the school a bad name. Zakiya noted that the reason that many of the students try to keep the fact that they are from the early college hidden is so they are not identified with the students who they feel give the school a bad name.

Zakiya: It just depends on whether you let your teachers know that you are in early college. I know that I purposely didn't tell my teachers that I was an early college. I tried to keep that's as secret as I could. A lot of people see early college as a nuisance because you see the crowd of kids going across campus and bein’ loud or bein’ in the student union and doing things that they're not supposed to be doing. So I really didn't tell them. When we had to do the progress reports I would get the ones from the third floor instead of ours so that they wouldn't know I was early college. (2Zakiya30)

Neo also discusses how he felt that some of the younger students made a bad name for the rest of the students by acting inappropriately.

Neo: I really don't like having a target on my back. When we walk around campus you know, they're like "Oh, it's that high school group" because there have been some underclassmen that caused so much trouble for us that the college kids just don't like us at all and these bags associate us even though I've seen college students with them, it's like, OK, you know what it, whatever. The people that know me, if they care then they don't matter anymore. That's pretty much the only setback that I've seen is that some idiots have done some really stupid stuff that has given us a bad name. I'm not the only upperclassmen that thinks that way. (1Neo20)

Neo felt that the senior class had figured out how to act on campus but that the younger students did not. He made the following comment when asked if he felt like an outcast.
Neo: Kind of, a college guy in my Spanish class who was actually my partner, he asked me if I was in high school and I said yes and he asked if I was part of that group of high school students. I said ya. He said that I was different because he saw those kids all the time and he just wanted to hit them. [...] He just said that I was different from them because they go around campus in big packs and make a lot of noise and do all kinds of things but I go around and if I'm in a big pack it's a group of seniors and we're not loud and we all know what we're doing. They just go around shouting, screaming and doing whatever the heck they want. It's just bad. (2Neo31)

The students were also concerned about the reaction of their college classmates.

Gwendolyn commented that she always felt awkward explaining that she was a part of the school because her teachers and fellow classmates don’t believe how old she is.

Gwendolyn: It's just the look of shock on their face, and they would ask me if I were sure like I didn't know or something. I would tell them that I was fifteen or sixteen and they'd ask me if I were sure and I would tell them that I was pretty sure that I knew what year I was born. It was the funniest thing. People just can't believe it. To me, of course I think I look like I am seventeen are sixteen. (1Gwendolyn9)

Joanna discussed how she was afraid of how her college classmates would respond to her being in high school.

Joanna: I really didn’t associate with all of them but some of them I did. I didn’t know anyone. Sometimes it was only me in a college class and that was hard and I didn’t like for any of them to know that I was in high school because I didn’t want them to look at me wrong or anything. (1Joanna11)

Nicole noted that she does not feel the need to hide that she is a high school student but that she doesn’t like when students make an issue about it.

Nicole: I'm not about to lie about my age and other people are like that so they don't want to offer the information because some people get weirded out, even the people that get excited. And then you get the people who tell us that we get everything for free and you're only seventeen. They want to act like you have the plague or something. The other one in my group keeps mentioning that I am such a high school student. I tell her that I’ve put more effort into this class then you have and I have a better grade in here yet I'm a high school student, so I won't take that as an insult. What does that say about you if you are a college student and I am getting better grades than you? I don't wanna get cocky. I would never say anything like that but you just can't help but have these things run through
your mind. Like when they hear about the program and some of them say "Oh, you're those high school students" and they get this little sneer on their face and it's like hmmm. I understand what they're kind of saying because we have had our issues but then it's like, hmm, and you're still talking to me like this when I just saved your butt and answered your question that you couldn't answer. (2Nicole27)

Neo discussed how he responded to college students that gave him a hard time about being a student at the early college high school.

Neo: I challenge them. I talk to them. Someone will say to me that "Oh, you are one of those high school students?" and I will say "Ya, but I'm not one of them" and they'll ask what I mean. I'll tell them that I'm not like them because I don't go around campus shouting and screaming. “Do you see me doing that? Do you see me going around in a big, big group of people? No! So do you really think that you have the right to classify me?” (2Neo31)

Overall, the students identified themselves as college students but did not fully engage in the college culture as discussed in the previous category. The students gave several reasons for choosing to hide that they were part of the school when in their college classes. Primarily, they did not want their professors or college classmates to treat them differently and some felt that their younger classmates had acted inappropriately and given the school a bad name. The next two sections discuss how the high school has responded to the students’ academic identity and how the college professors view the students in their classes.

The high school’s response to the students’ academic identity resulting in policy changes.

The high school administration is aware that the seniors no longer identify with the high school. Josephine joined the school’s administration in 2010 so she noted that she had only known the first class as seniors and not for the whole four years. In the brief time she has had at the school she noticed the issues trying to keep contact with the senior class. Despite the students feeling like college students, the high school still sees them as
their responsibility and wants them to maintain communication with the high school staff.

She expressed concern about this issue.

Josephine: My perception is skewed because I've only known them as seniors. I do think that they are different but I have to qualify that because the seniors, they're pretty much like college freshmen. There's no place where they all come together. We don't have our thumb on than anywhere. That concerns me because they are still high school students. (Josephine2)

Some of the teachers that have been with the school for three or four years notice a difference in the students, especially because of policies that have changed since the first class entered the school. Marianna has been teaching at the school for three years and noted that the first class was much different than the subsequent ones because the first class had been treated as “special” and they found a repercussion of this treatment was that the students felt a sense of entitlement.

Marianna: One of the things that we had an issue with since this was such a new endeavor was just trying things out. You never think about the fact that they will just kind of go off on their own. We never dreamed it would be that way. The first class got a lot of special treatment to. So they tend to think that they are special so I think it’s where some of the entitlement attitude comes from. I hear that word thrown around a lot. We already realized this our second year so we were able to adjust things for them. Our current junior class has been treated very differently. (Marianna6)

Olivia makes a similar comment about the level of entitlement the seniors seem to have and how they have worked to adjust how they treat the students to try to make them more self-sufficient.

Olivia: Our seniors this year don't understand when they have to pay to take the ACT and things like that. They are having a really hard time taking responsibility for their own education because we almost went too far with making sure you have this and making sure that you handle that. I had to laugh when a student asked if we were going to be supplying the little blue books that you need to take your exam for humanities, those things only cost a quarter. They have this understanding that everything would be provided for them and we have to make that shift and that adjustment. (Olivia5)
As mentioned previously, the high school implemented several new practices and policies to keep the students more engaged with the school. First, rather than discuss how the students were “special” they worked to change the perception that the students had been given an opportunity to attend the school and should take full advantage of it. Second, they implemented mandatory study hall for all students at least one period per week so that students always had a check in time with the school to keep track of their academic progress and to make sure they were attending classes. This also gave the students a continuous connection to the high school.

**The college faculty’s awareness of the students and how they view them.**

The level of faculty awareness varied from those that knew a lot about the program and which students were in their classes to those that knew very little about the program or who the students were. The administration from the early college high school came to speak at a college faculty meeting when the program first started to explain the goals of the program and inform the full-time faculty that they would be seeing the students in some of their classes. However, not all of the full-time faculty were in attendance at the meeting and the part-time faculty were given no information about the school. Initially the students could be identified on each professor’s roster because their major is listed as “Early College High School Prog.” However, as the students progress through the program, their major is listed the one they declare. This causes some confusion for the faculty that wish to identify the early college students in their classes. The faculty awareness and perceptions of the students are included in this category because it was the basis for how the faculty viewed the students and could have
contributed to how the students saw themselves. If they are being treated like college students then they are more likely to assume that role.

Professor Chantal knew very little about the school and had no idea which students in her classes were early college.

Prof. Chantal: What I thought I knew and what is really true is probably not the same. I was talking to [Professor Beryl] this morning and it was my impression that the early college was available to anybody who met a certain criteria and was in high school obviously but now they can take some college credits. I guess the postsecondary is different and their criteria is harder. You have to have a high GPA to get into postsecondary. Then I found out that there is also a senior to sophomore program. I’m not even sure what their criteria is. I don’t know why we have so many. Why not just all call it all early college?

Katie: The early college is very specific. *(I explain how the early college is different.*) *[…]*

Prof. Chantal: Oh, OK. So when they graduate, most of them will have an associate’s degree?

Katie: That’s the goal. *(Chantal2)*

Initially Professor Chantal said she did not distinguish which students were traditional colleges or high school.

Prof. Chantal: It’s hard to say. I don’t try to point them out or treat them any different. I try to just treat everyone as a college student so I usually lose track of who’s early college and then I also have the postsecondary. There are just so many programs out there so I don’t really keep track of who is and what. *(Chantal3)*

However, later she commented, “I’m going to have to pay attention to that difference a little bit more now” *(Chantal3).*

Professors Tobias, Dorian and Florence had a good understanding of the early college program and who the early college students were in their classes. Professor Tobias has only had three or four early college students in his math classes. He is a part-time faculty member that did not get to attend the presentation by the high school
administration when the school started. He learned much of what he knew about the program by asking questions.

Prof. Tobias: Mostly it's things that I have observed just in coming down the elevator and seeing this mass of people there and wondering what it was all about. When I see people that appear to be faculty on the elevator that I don't know, then usually they are with the Early College High School so I will talk to them a little bit. I have talked to some of them. […] What else do I know about the early college? I have asked about what it is. A lot of times when you talk to some friends who have kids that go here you will ask how they are doing. When you have a kid who is doing well but may not be planning to go to college they may want to go to the early college. So I called and asked for information so I could relay it to someone that I knew whose kid wanted to be a part of it. (Tobias2)

Professor Dorian teaches allied health courses and has had about 40 students in her classes over the past two years. She knows how the program works and that it is primarily housed in the same building in which her office is located. Although she knows about the program, she feels that she was not given much information about how to treat the students and she is a little concerned that the early college students may need additional support that she is not able to provide.

Prof. Dorian: I don't feel like I got any information but I guess maybe that is the idea because we're supposed to treat them just like any other college student. I wouldn't be calling the parents of my college students, but maybe there is something extra that we need to do to encourage their success. I don't know. (Dorian3)

Professor Florence teaches a general education social science course that many of the high school students choose to take because it fulfills both high school and college requirements. For this reason she has had close to 100 early college students in her classes over the past two years. She says that she is able to identify the early college students by the fact that they have special progress reports that she must fill out twice a semester. She also knows quite a bit about the program and has even spoken with the guidance counselor when she has had issues with a few students. She feels that she
received an adequate amount of information about the program but wished certain details had been spelled out better.

Prof. Florence: Some information I wish I would have had access to in the sense that I wish I knew how to address parents when they write me about their students grades and exactly what the university guidelines are about that. I wish I had known about that before. I also wish I had known about what recourse is available to me when they stop coming to class or when they don't attend classes regularly. Do I go and complain to the guidance counselor or do I consider them as college students and therefore it is their responsibility and if they do not come to class than they are docked participation points, things like that. (Florence4)

In addition to those that either knew very little or quite a bit about the program, there were two middle groups that either knew about the program but did not identify the students in their classes or one who knew little about the program but knew that she had the students in her classes. Professors Beryl and Helene knew something about the school but Helene had a hard time identifying the early college students in her classes and Beryl simply chose not to identify the students so that they could “blend in” with the rest of their classmates. Professor Beryl noted “I'm really good friends with [Lily] so I know a lot about the program” (Beryl2) however, she chose not to identify the students in her classes. When asked how many early college students she’s had in her chemistry classes, she responded:

Prof. Beryl: It depends on the semester. It changes. I think I have three this semester but some of them might be postsecondary. I just kind of know that they're there. They tell me and I know they're in high school but I don't really care what they are. Other students try to treat them differently too and I just don't talk about it. If they want to share and that's fine but otherwise no one needs to know. I'd say in the spring I don't have as many as in the fall. In the fall I probably had six out of 24. In the lab there are sixteen. (Beryl3)

Professor Helene also knew about the school and had even worked with the early college high school to have her students complete field observations for an education class. However, Helene commented that she had a hard time identifying which students
were in the early college. She noted, “Sometimes it is really hard to tell. Some of them look older and sometimes I have students that I think early college but they’re not and sometimes I can tell because they're designated as associate of arts” (Helene3). When asked how many early college students she had had in her classes she responded that she wasn’t sure. She lists three that she knows she has had but then I mention three other names of early college students that I know have been in her classes. Later she discusses how she expected to see many more students in her classes.

Prof. Helene: Apparently I only know of four. Until I had [Bob] I didn't even know for sure that they were coming through. Originally, when we first started talking about them coming into the physics classes they suggested that I was going to be getting ten at a time. So I kept waiting for this big group of early college students to come through and that just never happened. (Helene4)

In contrast, Neko knew little about the program but knew which students from her classes were in it. Neko is a part-time social science instructor who had 17 early college students in her first semester teaching at LMU. She identified them based on the roster designation and the progress reports. Since Neko is a part-timer she has received no formal information about the program or the students.

Prof. Neko: I have learned nothing except for the small conversation that we had about them and that they are in high school and sit in the lobby and I was told by someone that when they graduate high school they also get an associate's degree. (Neko3)

She also commented that it would be nice to provide information about the school and students to new part-timers when they begin so that they know what to expect. When asked if she treated the students any different she responded:

Prof. Neko: I get that they are 16 years-old and you treat a 16 year-old different than a 26 year-old but on the other hand you are in college so I also think that we should treat them just like a college student and that they shouldn't get any special treatment. But I also feel like there is a gap. (Neko7)
It should be noted that the college professors interviewed for this study had interacted with the early college high school sophomores, juniors and seniors so some of their comments may regard underclass students rather than the senior class. For instance, Beryl primarily had juniors in her chemistry class. She noted that the students she saw seemed to be uncomfortable and did not see themselves as college students.

Prof. Beryl: I think because they feel uncomfortable because they don't perceive themselves as college students. I don't see other students treating them that way but I don't think they perceive themselves as college students and they are intimidated about asking questions to other students or to me. (Beryl3)

Professors Chantal, Dorian, Helene and Tobias also made comments that the early college students tended to stick together in pack for their classes and did not always blend in. Professors Chantal and Dorian also noted that the early college students tended to stand out because they would chat with each other during class or spend time texting.

In contrast to the college professors’ perception that the early college students stood out in their classes, the high school administration felt that the upperclass students blend in with their college classmates. Lily noted that this transition occurs over the students’ four years at the school and culminates during their senior year when they take only college classes.

Lily: Really once the year three came you didn't know who was and who unless they were in a crowd of people all huddled together. The seniors blend in. The juniors blend in and you don't know that they are high school students. (Lily10)

It was also noted by some students and high school administrators that there were faculty members on campus that were blatantly hostile towards the students because they did not approve of their presence on campus. This backlash from faculty could have influenced the students’ academic identity and how they viewed the school and their classmates. When asked how the professors treated him, Bob responded:
Bob: Alright. I had one tell me, or the whole class, that he didn't like high school students so I just didn't say anything. He was one of the main teachers. I've had him for seven classes and he still doesn't know that I'm in high school. I plan to tell 'em after I'm done. (2Bob25)

Simon discussed how his world politics teacher stated that he did not believe the high school students were capable of succeeding in his class; a claim that Simon took as a challenge to get an A.

Simon: My other class is World Politics and Government which I don’t need for my major but I need to graduate high school. It has already started out difficult but just I love it. He told me, he actually came out said “You don’t belong here.” He pulled out all of the postsecondary kids after class. He told us “My son is in neurology and I was talking to him and he said that all the synapses in your brains aren’t completed yet for you to even take this class.” And I’m just sitting there in the back and listening to him say that we weren’t smart enough to take this class so now I’m determined to get an A in this class. […] He actually told us that he was going to have to find a way to grade us differently. I actually went up to him after class and told him that if I don't do well then just give me my F. That's what I said to him. If I fail the class then that is what I deserve. If I work hard enough though I should be able to still get a good grade.
(1Simon6)

Gwendolyn had the same professor the previous semester and noted that he had made similar comments to her class.

Gwendolyn: He wasn't a bad professor but he was just kind of out there. He would say that he didn't know who had scheduled us for the class and “tell them to never schedule you guys for this class again because it is just not for you guys.” He kind of ragged on early college and we were all just totally upset. He would say that we just weren't ready and our minds weren’t ready. We told him that we had been doing it for years. He said that our neurons weren’t developed yet. He said that it wasn't personal it was just that we weren't developed yet.

Katie: How did you guys do in the class?

Gwendolyn: We actually all did really well. We were kind of scared for the class because he went in a lot of different directions but we all did really well. […]

Katie: Did you get any other impression from him afterwards on whether you might have changed his mind?
Gwendolyn: Throughout the class I saw that he wasn't as bad of a person. He was actually just really sarcastic and that was his personality. We all kind of liked him after the end of the class. We were all content with how it went and we didn't have any complaints. (2Gwendolyn22)

Lily discusses how she has had to intervene with two college professors who openly stated that they did not want early college students in their classes.

Lily: I have experienced only two people who really don’t want them in their classes.

Katie: Is in the government teacher that Simon has?

Lilly: No. […] We have had a conversation with the department chair because that person made statements on the first day and it was a cohort class so everybody in the class was [early college]. They pretty much said that they don’t believe in it and that they don’t think that they should be here because they are too young but you’re stuck with me. So over the course of the last two semesters, 75% have a failed and the other 25% have gotten a C or in a D so no one has ever pulled an A or a B. All of the other instructors are giving A’s and B’s so that’s one. The other one […] basically did the same thing on the first day. “I don’t think you should be here. You really don’t have the skills or the ability to be here and you are taking up a seat from someone else.” Two of the students have taken that person multiple times and gotten A’s in all of their classes. I think that there is a perception that, and you know, until they can prove themselves. (Lily9)

The reactions of the university professors, the college students and their high school teachers all contributed to how the students viewed themselves. Their experiences at the school and in their college classes also provided the catalyst for these students to start identifying themselves as college rather than high school students. The high school changed some policies because the seniors did not maintain communication with the high school. They now require a check in time with each student during the week and have mandatory study hall for all students. These policies were also adopted to improve the students’ sense of connection to the school and to support their academic success.
Summary

This study used qualitative interviews with students, high school teachers, high school administrators and college professors to investigate the transition experience of seven STEMM major early college high school students in their senior year of high school. The analysis of the interviews produced six categories: the students’ attitude toward the STEMM fields, their motivation, their preparation, the support they received, their interaction and engagement in the college culture, and their academic identity viewed from their perspective as well as from their high school teachers and college professors.

There were discrepancies between how well prepared the students claimed they were for the college classes and the level of preparation discussed by the college professors. The students felt relatively well prepared for math and writing but not as much for science. The college faculty noted that the level of math and science preparation they saw from the students varied greatly. Study skills and maturity was another issue discussed. The students and teachers agreed that the students’ study skills could use improvement. With regards to maturity, the students and high school teachers and administration felt that the senior class was very mature and had integrated into the college culture. However, they noted that the freshman, sophomores and juniors were not as well behaved. This was affirmed by the college faculty comments that some of the students chatted during class and lacked a level of proper behavior and maturity expected in college classes.

The final categories discussed the students’ involvement and engagement in the college culture as well as their academic identity. The seniors interviewed noted that they
had not become very involved with university activities and not many of them made long-term friendships with their college classmates. Although they had not fully integrated into the college culture, the students identified themselves as college rather than high school students. They felt little connection to the high school other than attending occasional meetings and events. This differed from the college faculty’s impression that the students did not consider themselves to be college students and had a hard time assimilating into the college culture. This discrepancy may have been attributed to the fact that the college professors saw sophomores through seniors and may have been identifying the younger students rather than the seniors.

It was found that, while the students had chosen a STEMM major, they did not feel comfortable with all of the STEMM fields. Additionally their motivation to pursue a certain STEMM major depended on how they felt about the other STEMM fields. Their motivation and the support they received from the high school and college helped them transition into the college classes and ultimately complete the program. The next chapter will examine how the themes uncovered in the data analysis answered the research questions.
CHAPTER V
CONCLUSIONS, IMPLICATIONS AND FUTURE RESEARCH

This case study sought to explore the transition experience of seven early college high school seniors majoring in STEMM fields. Since the Early College High School Initiative is a relatively new venture for providing college access to first-generation, low-income, minority or other under-represented populations in higher education, there is limited research on the early college high school, especially with regard to its impact on transition, (Aviles-Reyes, 2007; Born, 2006; Valdez, 2009). There have been articles published discussing the drawbacks of dual-enrollment programs in preparing students in STEMM majors (Bressoud, 2007; Bressoud, 2009), yet little to no research has been conducted about how the early college high school prepares students for such degrees. Additionally, research has been conducted on the impact STEMM “bridge” programs have on first-generation and minority enrollment in and persistence through STEMM degrees (George et al., 2001; Lam et al., 1997; Lam et al., 2005; Yelamarthi & Mawasha, 2008). However, there is currently limited research on how programs providing access and support to first-generation students effect their transition into STEMM majors.

This chapter presents conclusions drawn from the analysis of interviews from seven students, four high school teachers, three high school administrators and eight college professors. The research questions were answered by the six categories that emerged from the analysis; 1) the students’ attitude toward the STEMM fields; 2) their
motivation; 3) their preparation; 4) the support they received; 5) their interaction and engagement in the college culture and; 6) their academic identity. These categories helped explain how the students, high school teachers, high school administrators and college professors made sense of the transition experience from their perspective. Therefore, a constructivist perspective guided the analysis and helped create a more informed construct through which to view the transition (Denzin and Lincoln, 2008). Additionally, the transition theories of Van Gennep (1960), Tinto (1988, 1993, 2006), and Bridges (2003, 2004) were useful for evaluating which factors contributed to the transition experience. Implications for how this study applies to the college, the LMU Early College High School and other early college high school programs are also discussed along with suggestions for future research.

Findings for Each Research Question

The two research questions, including the sub-questions for question one, are presented below with the findings that answer each. The categories discussed in Chapter IV aided in answering the research questions.

Question 1: How do early college high school students experience the academic, social and cultural transition from high school to college and, more specifically, into a STEMM major?

Chen and Carroll (2005) found that first-generation students who are successful early in a college program are more likely to complete a degree. This study found similar results. The students interviewed for this study had been successful early in their college degrees, with four out of the seven interviewed having completed their associate’s degree by the time they had graduated from high school. Six of the students also planned to
continue on for a bachelor’s degree. Therefore, this study contributes to the literature by finding that this early college high school was successful in helping students do well during their first years of college, thereby giving them the foundation to complete a two-year degree and move on to a four-year degree.

Bressoud (2007) found that many dual enrollment programs do not sufficiently prepare students for the STEMM majors and since there was minimal research on the early college high school at the time of his study, he argued that it was unclear if the program adequately prepared students for these majors. The college professors fell in line with Bressoud’s (2007) findings by expressing apprehension about the incoming early college students’ preparation for college math and science courses. However, the students felt that they were doing fairly well. Moreover, Bob and Nicole did exceptionally well by finishing in the top five of their class in addition to earning an associate’s degree upon graduation from high school. Therefore, this study provides support that this group of students felt adequately prepared for the STEMM courses related to their majors and were predominately successful in such courses.

The students commented that the school taught them to keep classes as their top priority, rather than social aspects and partying. Those who were continuing their studies the following year felt that since they had already experienced college as a purely academic endeavor, they were more likely to continue that trend by staying on top of their classes and being less distracted by partying and other social events. Whether or not they are successful in avoiding these distractions is beyond the scope of this study. If, however, this proves to be the case, then the school would be living up to its purpose of providing motivation for students to pursue an increased intensity curriculum, while
helping the students make the psychological transition from high school to college that the literature notes first-generation students often struggle with (Crockett-Bell, 2007; Watson, 2000).

While the students appeared to be prepared academically, they were not fully engaging in the college culture because they were unsure of how they fit into it. Engle and Tinto (2008) argue that low-income and first-generation college students need to be engaged in campus life activities in order to reduce their chances of attrition. Because students at the early college high school are caught between the two worlds of high school and college, results of this study did not find Tinto’s (1988; 1993) model applicable to this group of students. While several of the students attended college events like sporting events, plays or speakers to complete course assignments, they were not engaged in the college community as Engle and Tinto (2008) describe.

Furthermore, Pike (2005) found that first-generation students are less likely to be engaged, because they do not understand the importance of engagement in the transition process and the correlation that engagement has with academic success or degree completion. Perhaps because the students were not encouraged by the program’s administration to get involved with college student organizations, none of them became involved with such groups while in the program. It does not appear that this study supports Pike’s (2005) claim since several of the students noted that they planned to get involved when they continue on the following year. The students seemed to understand the importance of these activities but they did not feel that they were welcome to get involved since they were still in high school. Since five of the seven students were pursuing associate degrees, results of this study are consistent with Borglum and
Kubala’s (2000) finding that a lack of involvement in college activities did not influence community college students’ degree completion.

Another aspect of the college culture is the heuristic knowledge necessary to navigate the college curriculum and locate campus resources. Padilla, Trevino, Gonzalez and Trevino (1997), found that minority and first-generation students had a harder time gaining this heuristic knowledge. The early college high school’s curriculum and structure was designed to help students gain this knowledge and experience by discussing the available resources and providing the students with scheduling assistance. This is most likely why the students discussed that they felt confident that they would know what to do the following year when they had to apply for financial aid, find tutoring and apply for classes on their own. Nicole even mentioned that she would not have known what to do had she not attended the school. This is promising for programs like the Early College High School Initiative, since they help build the heuristic knowledge of navigating the higher education system that first-generation students are often lacking (Padilla et al., 1997; Padron, 1992).

**Question 1a: What are the internal factors which contribute to their transition?**

**How do these factors affect their transition?**

Internal factors can be defined as mental aspects such as the attitudes, emotions and thoughts intrinsic to a student. The two internal factors contributing to the students’ transition that emerged during the interviews were motivation and academic identity. In this case motivation contributed to the students’ decisions to initially attend and ultimately complete the program. Since first-generation and minority students are less likely to attend college and complete a degree, (Bui, 2002; Chen & Carroll, 2005;
Hamrick & Stage, 2004; Ishitani, 2006) the students’ motivation contributed to their transition by first getting them to attend the early college high school and then by helping them complete the program.

Six of the seven students noted that from a young age they had wanted to attend college. Their desire to attend college was an influential piece in choosing to apply to the early college high school in order to get a head start on college. The four young women also discussed wanting to attend college because a parent or close relative had been interested in a certain field or was currently pursuing such a degree. This is contrary to the literature that indicated first-generation students were not as likely to list family influences as a reason for pursuing higher education (Bui, 2002). However, this study only examined the experience of seven students so these findings cannot be generalized.

All of the students expressed exhaustion by the end of their senior year but they had the goal of graduation in sight and were not willing to give up at the end. Despite their exhaustion, Gwendolyn, Nicole, Simon and Zakiya all expressed that they felt the need to do well in their classes and complete their degree or be prepared to continue their coursework the following year. Rather than disregard their senior year, they chose to take challenging courses that would help them earn a degree. They saw how completing the college courses were relevant to their goals of earning a college degree. This is consistent with other studies that have found high school seniors perform better when they can associate their work with their future success (Lords, 2000).

The other internal factor that contributed to the students’ transition was their academic identity. Tinto’s (1993) model of student transition discusses how students must break ties with the culture from which they came in order to be incorporated into the
new college culture. This study found that the students began to break ties with their previous high school culture but did not integrate into the college culture. The students identified themselves as college rather than high school students but did not participate in the college activities or see themselves as equals with their college classmates so they were unable to fully transition into the incorporation phase that Tinto (1988) describes. Since these students were in a unique situation of being both high school and college students, they were forced to remain in the intermediate phase. Therefore, Tinto’s model does not adequately fit this group. Other studies have found the transition phase to be the most critical phase to student retention and engagement (Hay, 2005; Howell, 2004; Smith & Zhang, 2009; Terenzini et al., 1993; Tinto, 1988). However, the nature of the Early College High School program is to have the students experience both high school and college simultaneously so they are caught in a state of liminality while in the program. The students planning to continue their degrees the following fall expressed excitement about being “real” college students so it would appear that they will complete the transition experience once they are finished with the early college high school program. Further research would be needed to confirm or deny this speculation.

Since the students did not fit well into Tinto’s model of student retention, Bridges’ (2004) model was found to be more applicable. His “neutral zone” was the most frequent phase noted by this group of students. This is consistent with Howell’s (2004) findings that Bridges’ (2003; 2004) transition phases were a helpful lens through which to view college student transition. The program provided an extended “neutral zone” where the students had time to learn about the college culture without fully engaging in it. Furthermore, it was apparent from the student discussions that while they were still tied
to the high school in many ways they were ready to move beyond the “neutral zone” by becoming full-fledged college students.

**Question 1b: What are the non-school related external factors which contribute to their transition? How do these factors affect their transition?**

The non-school related external factors that the students discussed were family support, their friends and involvement in community activities. Several studies found that a lack of family support can be an obstacle for many first-generation students when attending college because their families are often unable to provide the additional academic and personal guidance required to integrate into college (Lara, 1992; Padron, 1992; Terenzini et al., 1996). The findings from the current study are not consistent with this claim. Five of the seven students interviewed discussed having extensive support from their families. However, they also noted that the additional support provided by the school was beneficial in showing them how to navigate the rules and regulations of higher education.

Furthermore, studies have found that first-generation students are either pushed by their family to better themselves by attending college (Bryan & Simmons, 2009; Hicks, 2009) or at the other extreme, they face animosity from family members who interpret the children’s success as a threat to family norms (Bryan & Simmons, 2009; Padron, 1992). The results of this study fall in line with both findings. The student interview findings are consistent with the family support described by Hicks (2009) since five of the students noted that their family was very supportive. Many of the students noted that they or their friends were pushed by their parents to enroll in the program because it was a chance to reduce the cost of attending college and earning a degree.
However, the high school administrator Olivia noted that often the parents were very supportive in the beginning of the program but that their support dwindled as the students began to enter the college classes. At this point the parents often expressed frustration because they were unfamiliar with the course content and the rules of college or felt that they no longer knew how to help their children. She also mentioned that she had witnessed a few instances in which parents had become resentful of the student for succeeding in college. This observation supports the research of Bryan & Simmons (2009); and Padron (1992). In the cases where family support is lacking, the school provided supplemental support through additional time with faculty and staff. Since support is an instrumental factor in the degree completion for first-generation students (Bryan & Simmons, 2009; Lara, 1992) the surrogates that the high school provides can be the necessary mentors the students need to be successful.

**Question 1c: What types of school (high school and college) related support do they receive and how does this support affect their transition?**

The types and levels of support the students received from the high school teachers and administrators differed from that received by the college professors and support staff. The high school teachers saw a role in the students’ transition and discussed how they worked to support the students by providing specialized preparation, making themselves available to students for tutoring and giving advice about various college related issues. This is the type of support which the literature indicated first-generation students need (Bui, 2002; Ishitani, 2006; Lara, 1992; Padron, 1992). Neo noted that he saw this support as a direct advantage that the program provided, because he could go back once he had graduated to ask help from the teachers with whom he was comfortable.
The college professors who were interviewed noted that they did not treat the early college high school students different than their usual college students. They said that they provided the same level of support that they would give to any students. They did not feel that they played any direct role in the students’ transition other than treating them as college students in order that they behave as such. However, the student perception of how the faculty acted toward them was not consistent with the faculty responses. The students felt that some of the college faculty viewed the school negatively. This was confirmed by Lily and Olivia. This finding reveals that faculty may be giving intentional and unintentional cues to students that they are not supportive of the early college high school students. This is consistent with previous studies that found first-generation students view faculty as minimally supportive and less concerned about their success (Pike & Kuh, 2005; Terenzini et al., 1996).

The students were aware of the tutoring resources on campus but only Joanna and Zakiya mentioned using them. The students were also aware of other resources such as advising and financial aid but they were not certain if they were allowed to use these services. Instead they often turned to the school’s guidance counselor for help with scheduling and applying for financial aid to continue their studies after completion of the early college high school program. Tinto (1988) argued that college campus resources such as advising were instrumental in student retention. However, these students do not fit into the traditional student profile upon which Tinto’s (1988) model is based and therefore these resources were not of value to them because they had the high school resources upon which to fall back. This is consistent with Capps (2010) findings that
Tinto’s model did not apply to community college students since they tended to find their own support networks and resources.

**Question 2. What factors contributed to these first-generation students initially choosing and continuing to pursue a STEMM major and how did these factors influence their choice?**

This research question was answered by the attitude toward the STEMM fields category. This category examined the factors that the students listed as influences for them to choose STEMM majors, their preparation for STEMM classes and their perceptions of the STEMM fields.

Much of the research on first-generation students focuses on those who have completed high school. For that reason, the results found in those studies (e.g. the tendency of first-generation students to be more likely to enter college with weaker math, reading and critical thinking skills and are less likely to take math courses during their first year of college [Chen & Carroll, 2005; Lara, 1992; Terenzini et al., 1996]), do not apply to these students because they have undergone a unique college preparatory high school curriculum and are all required to complete at least one college math and science course in order to complete their high school graduation requirements. This is consistent with the research literature which finds that high intensity high school coursework is a strong contributor to college success (Bui, 2002; Chen & Carroll, 2005; Hamrick & Stage, 2004; Ishitani, 2006; Lee & Burkam, 2002). All of the students discussed feeling well prepared for their college math courses. All of the students also discussed feeling prepared for their first science course, typically Basic Chemistry or Anatomy and Physiology. However, subsequent courses proved to be more difficult for all of the
students except for Bob and Nicole. This neither confirms nor denies the literature on first-generation students (Chen & Carroll, 2005; Ishitani, 2006; Terenzini et al., 1996) because it appears the students were prepared for the preliminary classes but not for subsequent ones. It is uncertain if the responsibility of the preparation for later STEMM courses lies with the high school or initial college course instruction. It is also apparent that the students’ perceptions of their preparation did not correspond to their grades in the courses, so the students were not necessarily effective at gauging their own level of preparation. This is consistent with Howell’s (2004) findings that students are not effective in anticipating what college level courses will be like.

Additionally, it is unclear if the early college high school students would be prepared for traditional “weed-out” STEMM courses described by Lara (1992). These are typically large (100+ person) lectures with minimal faculty interaction and intense student competition for grades (Lara, 1992). The students at the LMU ECHS were primarily enrolled in small (20 – 40 person) classes offered by the Community and Technical College of the university. There had been extensive discussion during the school’s second year about whether the students should take the small section course, Basic Chemistry, offered by the Community and Technical College or the large lecture Principals of Chemistry course offered by the Chemistry Department. Many of the high school teachers were concerned that the students, having only a general science course and a biology course, would not be prepared for Principals of Chemistry. They felt instead that the Basic Chemistry course would satisfy the general education requirement for the students pursuing an associate’s degree while also providing a strong foundation for the students choosing to take a principals course later when they continued on to a
four-year STEMM degree. Further research should investigate how effective this strategy was for preparing the students for the typical freshman STEMM “weed-out” courses.

The students in this study discussed how they did not feel that all STEMM fields were equal. While educators group them all together (Becher, 1981; Becher, 1994; Biglan, 1973), the students did not perceive them this way. This finding provides insight into how students view the STEMM fields as independent of each other and do not assume that performance in one STEMM course impacts another as the literature suggests (Lent et al., 2005; Lewis & Collins, 2001). Therefore, it may not be appropriate to enact policies that treat science, technology, engineering, math and medicine as one unified field. We instead need to look at each field independently with regards to educational policy. Additionally, just because students were majoring in one STEMM field did not mean that they appreciated all of them. In fact, some were fearful of certain STEMM fields. Neo wanted to teach science but despised math. Simon wanted to be an engineer but felt he was terrible at physics.

Other studies have found that first-generation students are intimidated by the STEMM fields (Armstrong & Thompson, 2003; Montgomery, 2009; Seymour & Hewitt, 1997; Özyürek, 2005). This study suggests that, since the students do not see all of the STEMM fields as a cohesive group, they are not intimidated by all of them, just primarily those that they do not see directly linked to their major. Further, students in the biological sciences and medical fields were more intimidated by the math intensive subjects while the two engineering students were not. This may be due to the extensive amount of coursework the engineering students took in math intensive subjects while the medical majors only took the minimum math requirement.
Implications for Universities

In light of the current initiative to increase university access to underrepresented populations, and to increase retention and graduation rates, this study can provide additional insight into how first-generation students transition into college. In an effort to introduce underrepresented populations to college with the hope that they will earn at least a two-year degree or continue on for a four-year degree, the early college high school allows students to earn up to two years of college credit or an associate’s degree by the time they graduate from high school. Four of the seven students interviewed received associate’s degrees. From the entire school, 16 of the 62 high school graduates received associate degrees, with an additional 10 – 15 scheduled to complete their degrees by the end of 2011. While this is still a relatively small number compared to the general population of first-generation students, it is a significant number of this first graduating class. Therefore, some programs such as the early college appear to be working to improve access to college and other universities may wish to look into starting such programs to increase access to first-generation and other underrepresented populations.

Clearly, however, the issue of access must be addressed further. The early college high school is effective at providing access to some first-generation and minority students and to providing additional support while they are in the program, but whether or not this is enough to get students through an associate degree or to continue on to a four-year degree has yet to be determined. Look at the example of Bob. He was an exceptionally bright student who had the ability and motivation to be one of the 16 to receive his associate’s degree in addition to finishing in the top five of his high school class.
However, he had no intention of continuing on to complete a bachelor’s degree despite his high aptitude. He just wanted to be done with school in order to find a job. He noted “I’m tired of going to school. There comes a time when it needs to stop” (2Bob20).

Ultimately, Bob saw his degree as means of achieving a higher paying job. He had never intended to go to college and he felt that his associate’s degree was more education than he had ever expected to receive. One of the primary goals of the Early College High School Initiative is to provide access to college for under-represented populations, so that they can earn a degree which should increase their ability to find a higher paying job (“The Early College High School Initiative,” 2007). It is not surprising therefore that some of the students feel that the goal is achieved once they graduate. Certainly the idea of students seeing a degree as means to an end rather than an opportunity to become well rounded or better educated is one that does not apply solely to the Early College. It is a discussion that has been debated for decades and still needs to be addressed (Nasworthy & Rood, 1990; Thelin, 2004).

Another issue is the financial obligation for completing a degree. Although several of the students mentioned receiving scholarships for the following fall, none mentioned receiving full funding for their education. All of the students noted that they came from low-income households and were happy to be in the program because it cut down on the cost of college. However, Neo, Nicole and Simon expressed worry about how they would pay for the years after high school. Neo discussed taking time off to save up money before returning to finish his four-year education degree. Nicole considered earning a certification as a nurse aid in order to work part-time to support herself through the rest of her four-year nursing degree. Simon worked nearly full-time during his fourth
year of high school to support himself and his daughter. He had high aspirations of returning to finish his associate’s degree then later a bachelor’s degree or higher. However, he was worried about the money and time it would take to complete these degrees. Since financial concerns are one of the most common reasons given by first-generation students for not completing their degrees, (Deafenbaugh, 2007; Ishitani, 2006; Lee & Burkam, 2002), universities should work to improve the financial assistance for low-income students. While there are currently programs in place such as the Federal Pell Grant and Federal Work-Study, the amount of money awarded by these programs has not kept pace with increasing tuition costs. Furthermore, they typically do not provide enough funding to cover other living expenses such as room and board (Engle & Tinto, 2008). Moreover, they are often the first programs to have funding cut when federal budget deficits are high. Since these programs may not cover all of the costs associated with attending college, it is more difficult for low-income and first-generation students to pay for tuition, fees and textbooks in addition to rent and travel to campus. These students are also more likely to work full- or part-time to cover the costs leaving them less time for studying and participating in college life activities (Engle & Tinto, 2008; Ishitani, 2006). If the goal is to make higher education more accessible, then universities need to work to make education affordable and to help low-income students find funding options.

Another issue that has arisen multiple times in the literature is that of the additional family, financial and career issues that first-generation students face (Bryan & Simmons, 2009; Bui, 2002; Capps, 2010; Inman & Mayes, 1999; London, 1989; Padron, 1992; Pike & Kuh, 2005; Terenzini et al., 1996). This study found the same issues arose
for the students at the early college high school. Since first-generation students are much less likely to have a parent who knows how or when to apply for financial aid, Engle and Tinto (2008) suggest that universities may want to step in to provide workshops on applying for financial aid and filling out the FAFSA. The LMU Early College High School provides such workshops for its students and many of the students graduate from the high school program with some funding to complete their college degree. Universities could take this as an example to offer similar workshops to other local high schools or even require low-income and first-generation students who are planning to attend the university to participate in such a workshop prior to enrollment.

**Implications for Early College High Schools**

There are also several implications for the LMU early college high school and other early college high schools. Identity was a significant component of the transition theories used as a framework for this study. Van Gennep (1960) discussed how certain rights of passage help teens learn the rituals and responsibilities of associated with adulthood. Tinto (1988) translated this into the stages of being a successful college student. Tinto (1988; 2006) warned that students who did not transition properly into the college culture would be at a higher risk of attrition. The early college high school students were receiving mixed messages about their academic identity. The high school was telling them that they needed to behave like college students by studying long hours, taking responsibility for their learning and acting appropriately during class. They were also telling them that they needed to stay connected to the high school and follow their special rules by filling out special progress reports and attending certain events. In the college classrooms the students heard that either they were just like every other college
student or in some rare cases that they didn’t belong in college. All of these factors led to a fragmented self-identity for many of the students.

There are several ways the school could address the academic identity issue. First, the school has recently implemented a mandatory study hall for all students, so the juniors and seniors now check in with the high school several days per week. This should give the students a stronger connection to the high school while they are transitioning and provides the necessary support to help them be successful. Second, it is important to keep in mind that the students are going through a transition stage, part of which involves being torn between the old and new cultures. The vital point that each of the transition theories states is that the students must take the final step of being incorporated into the college culture in order to fully transition. It is apparent that these students are ready to move on to that next stage but that it may not occur until after they graduate from the high school. Since the program is designed to have the students immersed in both the high school and college cultures simultaneously, it is understandable that the students felt that they belonged to neither worlds at times.

Moreover, Van Gennep (1960) advocated that ceremonies between stages of life were necessary to complete a rite of passage. He argued that these rituals served both a functional role by providing a structure through which the individual could learn the accepted customs associated with the new life stage, as well as a therapeutic function by providing time for coping with the transition (Tinto, 1988; Van Gennep, 1960). Traditional college students have completed the ritual of high school graduation. However, the early college high school students are making a transition between their sophomore and junior high school years from being primarily high school students to
primarily college students. It may be beneficial to have some type of ceremony to celebrate the rite of passage between sophomore and junior year. This ceremony would acknowledge that the students are embarking on a new experience and will have limited interaction with the high school for the next two years. Since one of the goals of The Early College High School Initiative is to ease the transition from high school to college and prepare the students to be successful college students, this type of ceremony may also help the students accept that they will need to be more self-sufficient as they become primarily college students during their junior and senior year.

Additionally, the students had a hard time figuring out to which social group they belonged. They no longer felt associated with the high school, yet they were not completely college students. The school may wish to build in some type of mentoring program with the students about how they will encounter these issues before and during the transition. It may help the students feel more supported. This mentoring could take place during the advisory period the students have in their first two years with a culminating discussion at the ceremony recommended above or leading up to the ceremony. Olivia suggested having some of the seniors help with this portion of the advisory period, so that the students could hear stories of resiliency from their peers. She felt that this held more credibility with the students than having the teachers give advice on the subject. This is a helpful addition to the advisory period and should benefit the students during their first two years, but the school also need support students in the last two years of the program. To address the problems students have in their junior and senior years the school may wish to take a few days per month from the newly implemented study hall period to discuss the obstacles the students are encountering and
techniques for overcoming them. This would provide a support group for the upper-class students that are experiencing troubles in their college classes and allow their classmates to provide insight and peer support.

Conversely, the students observed that many of their classmates left, because they wanted the traditional “high school experience” and some of the students who were interviewed felt disconnected from the school, especially in their senior year. Olivia and the high school teachers discussed how they worked to provide the typical high school activities such as clubs, dances, award ceremonies and sporting events but the students participation diminished over the course of their four years in the program. The school may want to consider promoting participation in select college student organizations during the students’ junior and senior years to get the students more involved in the college culture. They may also wish to create a student organization for only juniors and seniors to keep them more involved.

Tinto (1988) argues that integration into the college culture through campus involvement is a foundation of student success. However, Tinto’s (1988) model is based on students that are enrolled full-time at four-year institutions and are often living on campus. The idea of college being a coming of age experience is a privilege for those that can financially afford to be full-time students with free-time to participate in campus activities. The students at the LMU ECHS are from low-income families and often cannot afford this luxury. Their motivation for enrolling in the program is to cut down on the cost of earning a college degree in order to start a job sooner so that they can begin earning money to either help their family or start their own lives. With this in mind it is
not surprising to see that the students were concerned more with their classes than with becoming involved in college activities.

With regard to the students’ preparation for STEMM majors, it appeared that the students felt adequately prepared for their introductory math and science courses. Upon observation of the math classes and discussions with the high school teachers, it is clear that the math teachers strive to align the high school curriculum with the college. Their intention is to provide a strong and streamlined preparation for the students prior to entering the college courses. If other early college high schools hope to prepare their students for college level math courses, it is recommended that they follow a similar model. The same level of intense preparation was not described by the science teachers. However, they did note several ways that they worked to explicitly prepare the students for the college science classes. If the science teachers at the LMU Early College High School wish to reach the same level of preparation as the math area, they may wish to develop a similar type of curriculum alignment with the college science courses. Since the high school teachers may not be as familiar with the curriculum for which they are preparing the students, collaboration with the college science professors would also give the high school teachers a complete picture of what the early college high school students will see upon entering the college courses,

Further, there is a large discrepancy between what the college faculty perceive as the kind of students they will be getting from the early college high school and the students who actually appear in class. Some faculty, for example, expected very bright students while others anticipated that the high school students would struggle in their classes. Currently, the LMU Early College High School wants the college faculty to treat
their students as though they were typical high school student. In many cases this has led to the high school administration refraining from communicating with the faculty in the hope that by not identifying the early college students, they will not be singled out. However, if the school wants to clarify the perceptions held by the college faculty, then they should better communicate their expectations.

The students interviewed noted that they felt that their school had received negative attention because some of the younger students acted inappropriately on campus by being rowdy or obnoxious. This perception kept many of the students from identifying themselves with the school. However, it is possible that if the successful students that tried to hide their association with the school instead took ownership of the fact that they were successful and mature early college students, then the school would have a better image and future classes may not feel that they need to hide the fact that they attend the school. Regardless of whether the college students did indeed exclude the high school students or whether the high school students kept to themselves in fear of how they would be received; the perception of feeling outcast kept the students from forming friendships with their college classmates and from fully integrating into the college culture. As mentioned previously, participation in select college student organizations during their junior or senior year may also build the students confidence and help them to build a network of college peers.

First-generation students often need additional academic and social support. The students noted that their high school classmates were supportive of each other. They helped each other with homework and gave advice about certain classes or professors. Administrator Olivia commented that the school was working to implement peer tutoring
to get the students to help each other more and to build a sense of community among the students. As noted earlier, she also wanted to have the upper-class students help facilitate the advisory classes in an attempt to acknowledge the upper-class students resilience while building this same quality in the under-class students. Padron (1992) notes that this type of additional support aids in successful first-generation degree completion. Other early college high schools may wish to implement these types of support for their students if they do not already have them in place.

Zakiya was the only student to discuss having support from community members, but it was this support that often kept her going when she felt like giving up. Bryan and Simmons (2009) found that strong community support was beneficial to the success of first-generation Appalachian college students. This school, and similar programs, may wish to look into building a network of community members to act as surrogates by providing additional support and mentoring for the students.

Limitations Revisited

This study only examined seven early college high school students at a Large Mid-western Urban University so the findings cannot be generalized to a larger population. Additionally, the researcher was the primary data collection instrument so there may be some limitations due to bias. Since qualitative research provides a snapshot of an individual case, this method is essential in understanding the specific details of the students’ transition experiences (Creswell, 1994). Furthermore, while these findings cannot be generalized beyond this group of early college high school seniors, the findings of this study can offer recommendations to the LMU early college high school and other early college high schools to help improve the transition of their students to college. The
findings can also provide information for other programs looking to improve the college transition for first-generation students.

**Future Research**

Throughout the study the following ideas emerged for future research.

1. Since the Early College High School program is designed to introduce underrepresented populations to college and to help the students transition into college, it would be beneficial to interview students who complete the program and then continue on to finish either their two-year or four-year degree. This would provide insight into how the program affects the four-year degree completion for the students that participate.

2. The students interviewed for this study were in their final semester of the program. These students noted that their junior year was the hardest with regards to transition. It would be helpful to look at the students’ transition between their sophomore year, which is still primarily a high school experience with one or two college classes, to their junior year when they take only one high school class and all other classes are at the college.

3. This study was conducted at an early college high school that was housed on the participating university campus so students had the “college” experience from the beginning of the program. There are also early colleges housed in their own facility with transportation to a nearby community college or university. In most of these cases, college professors come to the high school campus during the first two years and then the students only go to visit the college campus in their third and fourth years. It would be helpful to explore the transition of the students that
attend this other type of early college and to compare with the results of this study.

4. According to Lily, an administrator at the ECHS, the LMU Early College High School has the highest retention rate of any of the early college high schools in the state. However, there were still 38 students who transferred out of the program for various reasons. The students interviewed for this study all graduated from the high school and four of the seven completed an associate’s degree. An investigation of the experience of those who began the program but transferred back to their original high school could help this early college high school, and others, adjust their programs to increase retention. It could also provide additional insight into the factors that keep some underrepresented populations from completing college.

5. This study only explored the transition of STEMM majors. It would be beneficial to broaden the sample to include all majors as well as those that are also undecided.

6. The students identified themselves as college students but still had some conflicting issues related to academic identity. Future research should investigate how students at other early college high schools perceive their academic identity and how this influences their transition into college.

7. This study examined the qualitative impressions held by the students and faculty of the students’ academic preparation for college STEMM courses. It would be helpful to perform a statistical analysis of the students’ actual performance in the college STEMM courses.
8. This study was only conducted with seven students. It would help to expand the student to involve more participants from different demographics.

9. The students interviewed for this study were primarily enrolled in small (20 – 40 person) STEMM classes so it is unclear how the Early College High School program prepares students for large (100+ person) lecture STEMM courses. Further research may wish to investigate how these students do in such courses.

Summary

The purpose of this study was to explore the transition experience of a group of early college high school students pursuing STEMM majors during their senior year of high school. This was accomplished by interviewing seven early college high school seniors majoring in STEMM fields during at the beginning and end of their final semester. The four female students were all pursuing degrees in the medical field. Two of the male students were working on engineering associate degrees and the other male was planning to complete a science education degree. In order to get a more thorough view of the experience, two high school math and two high school science teachers, three high school administrators and eight college professors were also interviewed on their perceptions of the students’ transition. The researcher was the primary data collection instrument.

The research questions were answered through analysis of the semi-structured interviews which revealed the six categories of attitude toward STEMM: 1) motivation, 2) preparation, 3) support, 4) interaction, 5) engagement in the college culture and, 6) academic identity. The analysis was compared to the literature on first-generation,
minority and low-income students as well as with Tinto’s model of student retention and other transition theories proposed by Van Gennep and Bridges.

It was found that the students did not look at all STEMM fields the same way and that some of the students tried to avoid certain STEMM courses despite being enrolled in another STEMM major. The students were motivated by personal goals, their interest in a specific STEMM field or their desire to keep up a certain image. Additionally, over half of the students noted that they were influenced by a friend or family member to pursue a certain area of study. The students felt prepared for their initial college math and science courses but not as much for subsequent courses. However, the college professors felt that the students were prepared no better or worse than a traditional student. The high school teachers discussed playing a large role in the students’ preparation and transition but the college professors stated that they did not play much of a role in this process. Additionally, the students identified themselves as college students but did not fully integrate into the college culture.

Suggestions were made on how this research can benefit universities that serve first-generation students, for the early college high school program at LMU and for other early college high schools. Future research should examine students from other majors and other early college high schools. Additionally, longitudinal studies of the students’ transition over the four years of high school and in the years following graduation would provide a larger picture of the transition process.
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Crockett-Bell, S. (2007). *The dual credit program: Measuring the effectiveness on students' transition from high school to college.* (Unpublished doctoral dissertation). Capella University, Minneapolis, MN.


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APPENDICES
APPENDIX A: INITIAL SURVEY QUESTIONS

1. What major are you planning to pursue?

2. What classes are you currently taking this semester?

3. What classes are you planning to take in the Spring 2011 semester?

4. How many hours outside of class on average did you spend studying per week in your first three years of high school?

5. How many hours outside of class on average have you spent studying per week in the Fall 2010 semester?

6. How many college (non high school) friends do you have?

7. Do you have a job? If so, how many hours per week do you spend working?

8. Would you consider talking with a researcher about your experiences at the Akron Early College High School?

9. If so, when are you available to meet with the researcher and what is the best way to contact you (cell phone, email, etc.)?

*Disclaimer – Participation in this study is completely voluntary, and the findings from this study in no way represent the philosophy and beliefs of the school district.*
APPENDIX B: STUDENT INITIAL INTERVIEW PROTOCOL

1. Tell me a little bit about yourself.

2. Why did you choose the major that you are planning to pursue?

3. You are entering into the first semester that you will be taking only college classes and no high school classes. How do you think that your high school experience prepared you for the whole college experience?

4. How do you think that your high school math and science classes prepared you for your college math and science classes?

5. Based on course schedule
   a. Do you think the math class you will take this semester will be useful? In what ways? How might this class help you with other classes you are taking this semester or might take later?
   b. Do you think the science class(es) you will take this semester will be useful? In what ways? How might this class help you with other classes you are taking this semester or might take later?

6. Compare your study habits now, as you enter your senior year, to your previous three years in high school. Do you think that you will study more this semester then you did in high school? Do you think this year will be more demanding than the previous years, or less?

7. Recall your previous three years of high school. How would you rate your level of motivation, 1 representing little motivation, fatigue, or the desire to “blow off”
classes and 5 representing a high motivation to complete the semester with good grades?

8. Compare this upcoming year to your previous three years. How would you rate your level of motivation, 1 representing little motivation, fatigue, or the desire to “blow off” classes and 5 representing a high motivation to complete the semester with good grades?

9. Describe what motivated you in your first three years? What made you want to get up and go to school every day? If you didn’t want to do to school, describe why you felt this way?

10. Describe what you think will motivate you this semester? What will make you want to get up and go to school every day? If you didn’t want to go to school, describe why you feel this way?

11. How do you feel that you will be supported by your high school teachers, principal, guidance counselor or any other high school faculty this semester? How will you utilize this support?

12. How do you feel that you will be supported by your college teachers, lab instructors, tutors or any other college faculty this semester? How will you utilize this support?

13. How do you feel that you will be supported by your parents/guardians and family this semester? How will you utilize this support?

14. How do you feel that you will be supported by your friends (high school or college) this semester? How will you utilize this support?
15. Which student organizations have you become involved with in your first three years? What organizations do you think you might try to get involved with this year?

16. What UA related events have you attended or participated in during your first three years? What was your experience?
APPENDIX C: STUDENT FINAL INTERVIEW PROTOCOL

1. How did this semester go?

2. Compare this semester with the fall, was it better or worse? Easier or harder? How were the two semesters different?

3. What classes did you complete this semester? Did you find the math and science classes you took this semester useful? In what ways? Were they as useful as you thought it would be? How so? How might this class help you with other classes you are taking now or might take later?

4. Compare your study habits now to the fall semester. Do you think that you studied more this semester then you did in the last? Was this semester more demanding than the previous semester, or less? How so?

5. How will you use what you’ve learned this semester with regards to your study skills, time management skills, and motivation next year in school or on the job?

6. Who is a role model in your life?

7. Compare this year to your previous three years. How would you rate your level of motivation, 1 representing little motivation, fatigue, or the desire to “blow off” classes and 5 representing a high motivation to complete the semester with good grades?

8. How has your motivation changed throughout this semester? What factors have influenced your motivation?
9. When we originally met, you mentioned that you thought _______ would motivate you this year. How well did it work?

10. How do you think your transition to college next year will compare to that of your high school classmates?

11. How do you think your transition to college next year will compare to that of your college classmates next year?

12. How do you think your college experience would be different if you hadn’t attended the Early College High School?

14. How would you describe your connections to your high school classmates this year?

15. Do you feel that there have been any setbacks or obstacles you’ve faced while attending the Early College High School? If so, how did you deal with them?

16. Describe the support you received from your high school teachers, principal, guidance counselor or any other high school faculty this semester/year? How was this different from what you expected at the beginning of the year?

17. Describe the support you received from your parents/guardians and family this semester? How was this different from what you expected at the beginning of the year?

18. Describe the support you received from your friends (high school or college) this semester? How was this different from what you expected at the beginning of the year?

19. How do you feel your college professors treated you?

20. Which student organization(s) have you become involved with this semester?

   Describe your experience with this organization.
21. What UA related events have you attended or participated in this semester? What was your experience?

22. What are your plans for next year?

23. When did you apply for college? Have you been accepted anywhere? Have you applied for scholarships?

24. If none of your classes transferred to a four-year degree and the only benefit of attending Early College High School was to get the experience. Would you still have done it? Would it still have been worth it?

25. Where do you see yourself in five years?

26. What has been the highlight of your experience at Early College High School?
APPENDIX D: JOURNAL PROMPTS

1. How is the semester going? Has anything changed since we last spoke? If so, what? How are your classes going?

2. How many hours outside of class on average did you regularly spend studying this week?

3. How many hours outside of class on average did you spend studying before exams this week?

4a. Describe your time management skills. Do you have a planner or calendar to keep track of things? Do you procrastinate? Do you get things done early or at the last minute? Describe your process of organizing your time.

4b. Describe your organizational skills. How do you keep all of your course work organized? How do you keep the rest of your life organized?

4c. How are you preparing for college next year? Are you applying to attend UA or other colleges? Have you received any acceptance letters? Have you applied for scholarships and other financial aid? Do you think you’ll live on campus? What are your plans?
APPENDIX E: HIGH SCHOOL TEACHER INTERVIEW PROTOCOL

1. How did you come to the Early College High School? What made you decide to teach at the Early College High School?

2. What is your role at the Early College High School?

3. What do you feel that you teach besides the content of your courses?

4. How do you feel that the students need to develop to be ready for college?

5. What is your role in the transition of these students to college?

6. What do you teach about in advisory?

7. How do you feel that the students are prepared when you get them in class?

8. How do you work to develop them?

9. How do you feel that the students are prepared after taking your class?

10. How have you changed your teaching since you first started at the Early College High School? Why did you change?

11. How do you think the students are doing with the transition to college?

12. Do you use Springboard and email?

13. What do you do to encourage students into STEM majors?

14. What has been the highlight of your teaching experience at the Early College High School?
APPENDIX F: HIGH SCHOOL ADMINISTRATOR INTERVIEW PROTOCOL

1. What’s your background?

2. What is your role at the Early College High School?

3. How did you come to be involved with the Early College High School? What made you decide to get involved at the Early College High School?

4. How do you feel that the students need to develop to be ready for college?

5. How do you work with the students to prepare them for college?

6. How important to transition is parental support?

7. What changes have you made since coming to the Early College High School?

8. How do you think the students are doing with the transition to college?
APPENDIX G: COLLEGE PROFESSOR INTERVIEW PROTOCOL

1. What is your role at [LMU]?
2. What do you feel that you teach besides the content of your courses?
3. What do you know about the Early College High School?
4. How do you feel that the Early College High School students are prepared when you get them in class?
5. How do you feel that the students need to develop to be ready for college?
6. How do you work to develop them?
7. How do you feel that the Early College High School students are prepared after taking your class?
8. What do you feel is your role in the transition of the Early College High School students to college?
9. How do you think the students are doing with the transition to college?
APPENDIX H: HUMAN SUBJECTS INFORMATION

May 11, 2010

Kathryn Cerrone
Curricular and Instructional Studies
The University of Akron
Akron, Ohio 44325-6105

From: Sharon McWhorter, IRB Administrator

Re: IRB Number 20100420 “A Case Study Investigation of the Transition of Early College High School Students to College”

Thank you for submitting an IRB Application for Review of Research Involving Human Subjects for the referenced project. Your protocol represents minimal risk to subjects and has been approved under Expeditied Category A.

Approval Date: May 10, 2010
Expiration Date: May 10, 2011
Continuation Application Due: April 26, 2011

In addition, the following is/are approved:

☐ Waiver of documentation of consent
☐ Waiver or alteration of consent
☐ Research involving children
☐ Research involving prisoners

Please adhere to the following IRB policies:

• IRB approval is given for not more than 12 months. If your project will be active for longer than one year, it is your responsibility to submit a continuation application prior to the expiration date. We request submission two weeks prior to expiration to ensure sufficient time for review.
• A copy of the approved consent form must be submitted with any continuation application.
• If you plan to make any changes to the approved protocol you must submit a continuation application for change and it must be approved by the IRB before being implemented.
• Any adverse reactions/incidents must be reported immediately to the IRB.
• If this research is being conducted for a master’s thesis or doctoral dissertation, you must file a copy of this letter with the thesis or dissertation.
• When your project terminates you must submit a Final Report Form in order to close your IRB file.

Additional information and all IRB forms can be accessed on the IRB website at:
http://www.uakron.edu/research/ersip/compliance/IRBHome.php

Cc: Nidaa Makki - Advisor
Cc: Stephanie Woods - IRB Chair

☐ Approved consent form/s enclosed

Office of Research Services and Sponsored Programs
Akron, OH 44325-2102
330-972-7666 • 330-972-6281 Fax
The University of Akron is an Equal Education and Employment Institution
Dear Parent or Guardian of and Early College High School Student:

**A Case Study Investigation of the Transition of Early College High School Students to College**

My name is Katie Cerrone and I am a doctoral student in the Department of Curricular and Instructional Studies, at The University of Akron. I am currently conducting a research study to find out why students choose their college majors and how Early College High School students transition into college.

All Early College High School students pursuing a Science, Technology, Engineering and Math major will be given a survey about their study habits. Based on the responses I will select some of the students to participate in some more in-depth discussions of their experience at the Early College High School. I would like to involve your student in the initial survey and, if they are selected for further involvement, to participate in the following*:

- The student will meet with me in the Early College High School office or a classroom in the Polsky building, three times throughout the academic year for approximately one hour each time. The first meeting will be at the end of the Fall semester, we will meet again at the beginning of the Spring semester and a final meeting will be scheduled for the end of their senior year. During the meeting I will ask your student about their school experiences. I will audio record our discussion and take notes during each meeting. The interview will later be transcribed for my review.
- The student will complete a few journal prompts throughout the semester to check their progress and discuss their study habits.
- Permission to review your student’s academic records to observe their schedule of classes and grades.
- Permission to review some of your student’s course assignments. (These will not be graded in any way. The documents will only be used to examine the quality and level of your student’s work.)
- Permission to access the student’s Early College High School application information.

There are no known risks anticipated with participation in this study. All information I collect will be kept confidential. I will write a report at the end of the study, but no names will be used in the report. Your student’s participation is completely voluntary and they may choose to withdraw from the study at any time. Copies of all documents and transcribed interviews will be stored in a locked file cabinet in the locked office of Katie Cerrone. Electronic data files will be stored on The University of Akron’s secure server. Access to the data files is password protected, and only the primary researcher

Date
will have access to the files. The researcher’s computer is also password protected. The data will be kept for five years and will be destroyed upon completion of the project.

Although you and your student will receive no direct benefits for your student’s participation in the study, completing the interviews might provide them an opportunity to reflect on their preparation for and transition to college. The findings of this study will also inform the field of STEM (Science, Technology, Engineering and Math) Education by providing insight into the experiences of first-generation college goers pursing STEM majors and will inform other programs that help students transition into college.

If you have any questions about the study or survey please contact Katie Cerrone at 330-972-8809, Dr. Nidaa Makki (project co-advisor) at 330-972-6955, or Dr. Lynne Pachnowski (project co-advisor) at 330-972-7115. If you have any questions about your student’s rights as a research participant, you may call the IRB at 330-972-7666.

I hope you will allow your student to join me and other students from your school in this discussion. Your cooperation is greatly appreciated.

Sincerely,

Kathryn Cerrone  
Doctoral Student  
Department of Curricular and Instructional Studies  
The University of Akron

*Disclaimer – Participation in this study is completely voluntary, and the findings from this study in no way represent the philosophy and beliefs of the school district.*
A Case Study Investigation of the Transition of Early College High School Students to College

I have read the information provided and all of my questions have been answered. I voluntarily agree to allow my student to participate in the following parts of this study upon their agreement. Please select all parts by checking the corresponding box, then print your student’s name and sign and print your own name.

☐ The initial survey on study habits
☐ The three audio taped interview sessions.
☐ The journal prompts throughout the semester to check their progress and discuss their study habits.
☐ Permission to review your student’s academic records to observe their schedule of classes and grades.
☐ Permission to review some of your student’s course assignments. (These will not be graded in any way. The documents will only be used to examine the quality and level of your student’s work.)
☐ Permission to access the student’s Early College High School application information.

Please mail one copy of this page only to the researcher in the enclosed stamped envelope and keep the other for your records. Thank you!

________________________________________  __________________________
Signature (Parent or Guardian)               Date

________________________________________
Print Name (Student)

________________________________________
Print Name (Parent or Guardian)

________________________________________  __________________________
Signature (Researcher)                       Date
Kathryn Cerrone

*Disclaimer – Participation in this study is completely voluntary, and the findings from this study in no way represent the philosophy and beliefs of the school district.
Dear Early College High School Student:

**A Case Study Investigation of the Transition of Early College High School Students to College**

My name is Katie Cerrone and I am a doctoral student in the Department of Curricular and Instructional Studies, at The University of Akron. I am currently conducting a research study to find out why students choose their college majors and how Early College High School students transition into college.

You have been selected because you are an Early College High School student pursuing a Science, Technology, Engineering, Math or Medical major. As part of participation in this study you will be given an initial survey about your study habits. Based on the responses and recommendations from your teachers I will select some of the students to participate in some more in-depth discussions of the Early College High School experience. I would like to involve you in the initial survey and, if selected for further involvement, to participate in the following*:

- Meeting with me in the Early College High School office or a classroom in the Polsky building, three times throughout the academic year for approximately one hour each time. The first meeting will be at the end of the Fall semester, we will meet again at the beginning of the Spring semester and a final meeting will be scheduled for the end of your senior year. During the meeting I will ask you about your school experiences. I will audio record our discussion and take notes during each meeting. The interview will later be transcribed for my review.
- Complete a few journal prompts throughout the semester to check your progress and discuss your study habits.
- Permission to review your academic records to observe your schedule of classes and grades.
- Permission to review some of your course assignments. (These will not be graded in any way. The documents will only be used to examine the quality and level of your work.)
- Permission to access your Early College High School application information.

There are no known risks anticipated with your participation in this study. All information I collect will be kept confidential. I will write a report at the end of the study, but no names will be used in the report. Your participation is completely voluntary and you may choose to withdraw from the study at any time. Copies of all documents and transcribed interviews will be stored in a locked file cabinet in the locked office of Katie Cerrone. Electronic data files will be stored on The University of Akron’s secure server. Access to the data files is password protected, and only the primary researcher will have access to the files. The researcher’s computer is also password protected. The data will be kept for five years and will be destroyed upon completion of the project.
Although you will receive no direct benefits for participating in the study, completing the interviews might provide you an opportunity to reflect on your preparation for and transition to college. The findings of this study will also inform the field of STEM (Science, Technology, Engineering and Math) Education by providing insight into the experiences of first-generation college goers pursuing STEM majors and will inform other programs that help students transition into college.

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Your cooperation is greatly appreciated.

Sincerely,

Katie Cerrone Arnold  
Doctoral Student  
Department of Curricular and Instructional Studies  
The University of Akron

*Disclaimer – Participation in this study is completely voluntary, and the findings from this study in no way represent the philosophy and beliefs of the school district.*
A Case Study Investigation of the Transition of Early College High School Students to College

I have read the information provided and all of my questions have been answered. I voluntarily agree to participate in the following parts of this study, and know I can only participate if my parent(s) or guardian(s) also give their consent. However, I am not required to participate even if my parent(s) or guardian(s) provide consent. Please select all parts by checking the corresponding box.

☐ The initial survey on study habits
☐ The three audio taped interview sessions.
☐ The journal prompts throughout the semester to check my progress and discuss my study habits.
☐ Permission to review your academic records to observe your schedule of classes and grades.
☐ Permission to review some of your course assignments. (These will not be graded in any way. The documents will only be used to examine the quality and level of your work.)
☐ Permission to access your Early College High School application information.

__________________________________________  ____________________________
Signature (Student)                                      Date

__________________________________________________________
Print Name (Student)

__________________________________________  ____________________________
Signature (Researcher)                                      Date
Kathryn Cerrone

*Disclaimer – Participation in this study is completely voluntary, and the findings from this study in no way represent the philosophy and beliefs of the school district.
Dear Professor:

**A Case Study Investigation of the Transition of Early College High School Students to College**

My name is Katie Cerrone and I am a doctoral student in the Department of Curricular and Instructional Studies, at The University of Akron. I am currently conducting a research study to find out why students choose their college majors and how Early College High School students transition into college.

I would like to get your perspective as a teacher at The University of Akron on the students’ transition to college. If you agree to participate, we will meet in your office to discuss your experience and insight into the students’ experiences. I will audio record our discussion and take notes during the meeting. The interview will later be transcribed for my review.

There are no known risks anticipated with participation in this study. All information I collect will be kept confidential. I will write a report at the end of the study, but no names will be used in the report. Your participation is completely voluntary and you may choose to withdraw from the study at any time. Copies of all transcribed interviews will be stored in a locked file cabinet in the locked office of Katie Cerrone. Electronic data files will be stored on The University of Akron’s secure server. Access to the data files is password protected, and only the primary researcher will have access to the files. The researcher’s computer is also password protected. The data will be kept for five years and will be destroyed upon completion of the project.

Although you will receive no direct benefits for participation in the study, completing the interview might provide you with an opportunity to reflect on your involvement in the students’ transition to college. The findings of this study will also inform the field of STEMM (Science, Technology, Engineering, Math and Medicine) Education by providing insight into the experiences of first-generation college goers pursing STEM majors and will inform other programs that help students transition into college.

If you have any questions about the study or survey please contact Katie Cerrone at 330-972-8809, Dr. Nidaa Makki (project co-advisor) at 330-972-6955, or Dr. Lynne Pachnowski (project co-advisor) at 330-972-7115. If you have any questions about your student’s rights as a research participant, you may call the IRB at 330-972-7666.

Your cooperation is greatly appreciated.

Sincerely,

Kathryn Cerrone
Doctoral Student
Dear Early College High School Administrator or Teacher:

A Case Study Investigation of the Transition of Early College High School Students to College

My name is Katie Cerrone and I am a doctoral student in the Department of Curricular and Instructional Studies, at The University of Akron. I am currently conducting a research study to find out why students choose their college majors and how Early College High School students transition into college.

I would like to get your perspective as a teacher at the Early College High School on the students’ transition to college. If you agree to participate, we will meet in your classroom to discuss your experience and insight into the students experiences. I will audio record our discussion and take notes during the meeting. The interview will later be transcribed for my review.

There are no known risks anticipated with participation in this study. All information I collect will be kept confidential. I will write a report at the end of the study, but no names will be used in the report. Your participation is completely voluntary and you may choose to withdraw from the study at any time. Copies of all transcribed interviews will be stored in a locked file cabinet in the locked office of Katie Cerrone. Electronic data files will be stored on The University of Akron’s secure server. Access to the data files is password protected, and only the primary researcher will have access to the files. The researcher’s computer is also password protected. The data will be kept for five years and will be destroyed upon completion of the project.

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