EXAMINING THE EFFECTIVENESS OF THE EARLY COLLEGE HIGH SCHOOL
MODEL IN THE RURAL APPALACHIAN REGION OF WESTERN NORTH CAROLINA

By

David Wayne Robinson

A Dissertation Presented in Partial Fulfillment
Of the Requirements for the Degree
Doctor of Education

Liberty University
July 2015
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ABSTRACT

The Early College High School (ECHS) model of education became a reality in North Carolina in 2002, and although some rich data resulting from research targeting the success of ECHS is starting to emerge; the focus is primarily broad in its comparisons of subjects attending ECHS with those attending traditional high schools (THS). This quantitative correlational research study utilized archived student achievement data and data collected from AdvancEd student surveys to explore possible relationships that exist between school setting, student achievement on required standardized tests, and feelings of school connectedness for students. The study revealed statistically significant positive relationships between school setting and higher achievement scores on the math I end of course test, and students’ perceptions of their respective school for the standards, Purpose and Direction, Governance and Leadership, and Teaching and Assessing for Learning as indicated by student survey results on the AdvancEd student survey. No statistical relationship was found between school setting and achievement scores and the English II end of course test and students’ perception of their respective school for the standards Resources and Support Systems, and Using Results for Continuous Improvement as indicated by student survey results on the AdvancEd student survey.

Keywords: Early College High School, Small school reform, Project based learning, Appalachia.
Dedication

I want to dedicate this body of work to my family who has supported me through good times and bad as I have made this educational journey. To my wife Wanda, the love of my life, “thank you” for being my greatest supporter for over 26 years; and for raising our kids (Ashley, Audra, and Alex) in a Christian home, many times with little or no help as I was pursuing my educational goals. You are the primary reason that we now stand at this threshold of achieving a lifetime pursuit. I love you more than I could express in any literary form, so I will instead try to show you how much for the rest of our lives. And to my children, thank you for being patient and understanding with me when I had to study and couldn’t spend as much time with you as I wanted to. I love all of you and I am proud, so proud of the adults you have become.

I also want to dedicate this to my mother, Shelby Robinson. Thank you for bringing me up in a Christian home and for the hard work that you and daddy did to make sure Michael and I always had what we needed. Thank you for supporting me through the years and for being my advocate as I continued on this path.
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I would like to acknowledge everyone who has helped and supported me as I have pursued this degree. First I want to thank God for the gift of salvation and for being the giver of all wisdom (Proverbs 2:6, KJV). I know that it is God who has given me the ability, the strength, and the perseverance to be at this point in my educational journey. To Gabriels Creek Baptist Church, you have been my immediate Christian family all of my life and I hope that I have represented you as a faithful Christian ambassador in my work, and that you are pleased with the result of your years of tutelage.

I also want to thank my mother and father in law, Victor and Shirley Hensley for supporting and helping me just as though I was their own son and also my Uncle Lawrence and Aunt Carolyn for doing the same. I also want to thank my brother Michael for always having my back and supporting me in whatever I was doing.

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CHAPTER ONE: INTRODUCTION

The Early College High School (ECHS) model of education became a reality in North Carolina in 2002, and although some rich data resulting from research targeting the success of ECHS is starting to emerge; the focus is primarily broad in its comparisons of subjects attending ECHS with those attending traditional high schools (THS). The purpose of this quantitative correlational study is to determine if there is a relationship between school setting and proficiency scores and feelings of school connectedness for students attending early college high school and traditional comprehensive high school in two rural school districts in the Appalachian region of Western North Carolina. The independent variable is the ECHS setting while the control variable is traditional high school setting. The dependent variables are proficiency scores on the North Carolina End of Course tests in Math I, English II, and student survey data detailing feelings of school connectedness for students in each respective school setting.

This chapter will discuss the background of the ECHS model, and present a rationale for the purpose and significance of this study. This chapter will also present the research questions that will guide this particular study.

Background

The Early College High School Initiative (ECHSI) was implemented to combat the large number of students who were dropping out of high school, or who were graduating high school not prepared for work or higher education. The target population for an ECHS is students who are traditionally underrepresented in college, including first-in-family to attend college, minority, and low income (Edmunds, 2010). There is a body of completed quantitative research emerging that focuses on comparing students who applied to an ECHS and were accepted to
those who applied to an ECHS and were not accepted as a result of being selected by a lottery system (Berger, Adelman, & Cole, 2010; Edmunds, 2010; Le & Frankfort, 2011; Thompson & Ongaga, 2011). The resulting data from these studies show that 9th grade students who applied, and were accepted to an ECHS were more on track for college, had less recorded suspensions and/or attendance problems, had higher levels of academic engagement, and reported more positive school experiences than students in the control group of the study (Edmunds, 2010). As will be shown in this study, the ECHS setting differs in many ways than that of the THS setting. As part of the NCNSP, ECHS are held to specific design principles aimed at the personalization of each school, fostering particularly powerful teaching and learning and the creation of a “college going culture” among members of its school community. All schools within the ECHS network also practice a “common instructional framework” that will be discussed in chapter 2 as well. Finally, ECHS are specifically designed as small school environments aimed at individualized instruction, support, and high expectations for all students.

The problem that will be addressed in this study is to determine whether the ECHS model succeeds in addressing students’ needs, and supporting those students attending school in the rural Appalachian region of Western North Carolina. There are two crucial demographics in this study:

(1)--According to statistics, 9th grade is one of the most critical years in determining the future academic success of a student. Research has shown that students who do not successfully complete English I and Math I by the end of 9th grade are not likely to complete high school with the coursework required for college (Edmunds, 2010).

(2)-- As part of Appalachia, the demographic of Western North Carolina is a region that is below average with respect to the academic and economic level of the culture (Hand & Payne,
The ECHS model allows for the possibility of changing the academic, cultural, and economical demographic of the region.

**Problem Statement**


**Purpose Statement**

The purpose of this quantitative correlational study is to determine if there is a relationship between school setting, proficiency scores and feelings of school connectedness for students attending early college high school and traditional comprehensive high school in two rural school districts in Appalachian region of Western North Carolina, and to determine if the relationships between groups are statistically significant.

The independent variable is the ECHS setting while the control variable is the traditional high school setting. The dependent variables are proficiency scores on the North Carolina End of Course tests in Math I, English II, and student survey data detailing feelings of school
connectedness based on data collected from the AdvancED students surveys completed during the accreditation process for each respective school district.

**Significance of the Study**

This study is significant in that the region has, for decades lagged behind the rest of the United States with respect to median household income levels, and educational attainment, while the percent of citizens living in poverty has been above the national average. The ECHS model has the potential to facilitate a shift in the educational, and socio-economic demographic of this region, but the majority of the emerging research is focused on making comparisons between students who were granted entrance to ECHS via lottery selection and students who applied to ECHS but were not picked via the lottery. ECHS are meant to be small school communities and in the more densely populated areas, schools utilize a lottery system to select those who will be admitted into their respective programs. In the rural Appalachian region, students are selected for entrance based on the same criteria as students anywhere else, but the numbers of students who apply do not warrant the use of lottery selection. Although several major studies have emerged in the past few years examining the effectiveness of the ECHSI in North Carolina, (Edmunds, J. A. 2010; Edmunds, J. A., Bernstein, L., Glennie, E., Willse, J., Arshavsky, N., Unlu, F., & Dallas, A. 2010; Edmunds, J. A., Bernstein, L., Glennie, E., Willse, J., Arshavsky, N., & Unlu, F. et al. 2010; Edmunds, J. A., Bernstein, L., Unlu, F., Glennie, E., Smith, A., & Arshavsky, N. 2012; and Edmunds, J.A., Willse, J., Arshavsky, N., Dallas, A. 2013), these studies have all made comparisons of students who were accepted into an ECHS via lottery with those who were not accepted and went on to attend a THS. As a result there is little research emerging which compares the performance and feelings of school connectedness for students attend both ECHS
and THS in districts in which the size of the schools does not warrant the use of the lottery selection system.

**Research Question(s)**

The following are the questions guiding this research study:

**RQ1:** What is the nature and strength of the relationship between school setting and achievement scores as indicated by the North Carolina End of Course Math I and English II Tests for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina?

**RQ2:** What is the nature and strength of the relationship between school setting and students’ feelings of school connectedness as indicated by the *AdvancED Student Survey* for ECHS students and THS students in two rural school districts in the Appalachian region of Western North Carolina?

**Hypotheses**

The following are the research hypotheses:

**H1:** There is a statistically significant positive relationship between school setting and achievement scores as indicated by the North Carolina End of Course Math I Test for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina.

**H2:** There is a statistically significant positive relationship between school setting and achievement scores as indicated by the North Carolina End of Course English II Test for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina.

**H3:** There is a statistically significant positive relationship between school setting and students’ feelings of school connectedness as indicated by the *AdvancED Student Survey* for
ECHS students and THS students in two rural school districts in the Appalachian region of Western North Carolina.

The following are the null research hypotheses:

**Ho1:** There is no statistically significant relationship between school setting and achievement scores as indicated by the North Carolina End of Course Math I Test for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina.

**Ho2:** There is no statistically significant relationship between school setting and achievement scores as indicated by the North Carolina End of Course English II Test for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina.

**Ho3:** There is no statistically significant relationship between school setting and students’ feelings of school connectedness as indicated by the AdvancED Student Survey for ECHS students and THS students in two rural school districts in the Appalachian region of Western North Carolina.

**Identification of Variables**

The independent variable for this study will be the Early College High School setting. An Early College High School is defined as “high schools that provide an academically rigorous course of study that ensures all students graduate with a high school diploma and two years of transferable credit or an associate degree. Each early college high school serves a student population that is representative of the student population in the district, with an emphasis on recruiting and serving students who would not typically get an opportunity to go to college or who would otherwise have dropped out of school (first generation college-going students, underachieving students and low-income and minority students)” (North Carolina New Schools
The dependent variables for this study will be:

- The North Carolina Math I End of Course Test-- used to sample a student’s knowledge of concepts as specified in the North Carolina *Standard Course of Study* for Math I (Content Standards) and to provide a global estimate of the student’s mastery of the course material in Math I (North Carolina Department of Public Instruction, 2015).

- The North Carolina English II End of Course Test-- used to sample a student’s knowledge of concepts as specified in the *North Carolina Standard Course of Study for English I* (Content Standards) and to provide a global estimate of the student’s mastery of the course material in English II (North Carolina Department of Public Instruction, 2015).

- School Connectedness—defined as how the students view their relationship with school faculty and staff and how this relationship has impacted their desire to integrate as active parts of the school community (Thompson & Ongaga 2011).

**Definitions**

1. Early College High School- high schools that provide an academically rigorous course of study that ensures all students graduate with a high school diploma and two years of transferable credit or an associate degree. Each early college high school serves a student population that is representative of the student population in the district, with an emphasis on recruiting and serving students who would not typically get an opportunity to go to college or who would otherwise have dropped out of school (first generation college going students, underachieving students and low-income and minority students)"
2. First generation college student—neither parent has a college credential (NCNSP, 2013).

3. Appalachia--largely rural area which has traditionally faced challenges of poverty, low rates of white collar employment, and low rates of college attendance (Hand & Payne, 2008). The geographical setting for this study is in the central Appalachian region of Western North Carolina.

4. Project-based learning—a teaching methodology that is student-driven and focuses on allowing students to create projects that result in meaningful learning experiences (Wurdinger & Rudolph, 2009).

**Assumptions**

There is one primary assumption with this particular research study: Because of previous research focusing on small school reform and project based learning, it is assumed that students attending ECHS will report a higher level of school connectedness and achieve higher scores on the North Carolina End of Course tests in Math I, and English I than students who attend THS in two rural school districts in Appalachian region of Western North Carolina?
CHAPTER TWO: REVIEW OF THE LITERATURE

Introduction

The over-arching goal of this study is to contribute to the existing body of literature focusing on the results of Early College High Schools (ECHS). Specifically, this study will address a gap in the literature, focusing on the effectiveness of ECHS that are officially classified as “rural” in the Appalachian region of Western North Carolina.

The present ECHS initiative began in 2002 through funding by the Bill and Melinda Gates foundation. One of the primary goals of the initiative is to improve the poor graduation rate in many states, and to improve the under-representation of certain demographics in the higher education population, specifically those students who would be the first in their family to attend college, minorities, and low-income students (Berger, Adelman & Cole, 2010; Edmunds, 2010). Another significant goal of the initiative is to create a school culture that is focused on student preparation for college. Although the college preparation component is heavily focused on academic rigor, the component also includes exposing students to the bureaucracy of the processes associated with college entrance. Specific examples include meeting important deadlines for admission and financial aid, accessing academic advisors, etc. Early Colleges begin this process with 9th grade students and the process continues throughout the student’s Early College career. Preparation strategies include multiple college visits each year, instances of interaction with college classes, various workshops focused on things such as the college application process and financial aid, etc. (Nakkula, 2013).

This chapter will begin by exploring the philosophies and theoretical framework of the ECHS initiative followed by a review of studies that focus on student outcomes based on the performance data of students who have chosen to attend ECHS. The chapter will conclude with
a review of the culture of Appalachia, and how the culture contributes to the historic and current economic and educational condition of the region. The review will demonstrate a gap in the current research with respect to the effectiveness of ECHS in the rural Appalachian region of Western North Carolina.

A Brief History of the Early College High School Initiative

In 2002 the Bill and Melinda Gates Foundation funded seven organizations to develop and implement the Early College High School Initiative (ECHSI). The overarching purpose of the initiative was to increase the college completion rate of students, with a specific focus on students traditionally considered to be under-represented in college. Students who are first in their family to attend college, minorities, and students from a low socio-economic background were considered to be part of the target population. The primary responsibility of the funded organizations was to facilitate partnerships between Institutions of Higher Learning (IHE), local businesses, school districts, and community organizations. The intent of these partnerships was to promote collaboration among the organizations involved and to establish an educational track which blends secondary education with higher education. The partnerships would also provide a vehicle for recruiting students who fit the demographic criteria which the initiative was created to serve (Berger et al. 2010; Jobs for the Future (JFF) 2009).

In 2009 members of the Bill and Melinda Gates Foundation along with the Jobs For the Future (JFF) organization worked with Intermediary organizations involved with the ECHSI to solidify five common principles that would guide all ECHS. These five common principles are intended to be a common framework which all ECHSs follow. The five common principles are:

1. ECHS will target and recruit students who are under-represented in college including; first generation college students, students identified as at risk of dropping out of high
school, students from a minority background, English Language learners, and students from a low socio-economic background. Admittance will not be based specifically on previous academic performance.

2. ECHSs are created and sustained through a collaborative partnership between a local school district, an Institution of High Learning (IHE), and the community. Through the development of a Memorandum of Understanding (MOU) specifically outlining the commitments of each entity, there is an understanding of shared accountability for student success.

3. The entities involved in the ECHS community develop an academic track in which students have the opportunity to earn one to two years of transferrable college credit, leading to college completion.

4. ECHSs are proactive in establishing academic and social support systems which help to ensure students’ ability to complete college and to address possible student barriers inside and outside of the school community.

5. Entities in the ECHS community work together to advocate for the ECHSI through the sharing of data to key stakeholders and leveraging of possible stakeholders and policy makers (JFF, 2009, p. 2).

The Guiding Principles of Early College High Schools in North Carolina

In North Carolina, the intermediary charged with promoting, growing, and expanding the ECHSI is the North Carolina New Schools Project (NCNSP). To ensure quality implementation and consistent instructional practice throughout the network of innovative schools within the NCNSP network, the organization provides ongoing professional development to assure adherence to a set of common design principles put in place to advance
and accelerate student learning (Le & Frankfort, 2011; Vargas & Miller, 2011). The design principles developed by NCNSP are a refined and personalized reflection of the broader guiding principles outlined in the previous section.

- **Ready for College**—The most basic premise for the creation and continued support for the ECHSI is that the schools within this initiative are preparing all students for college and/or careers. Some strategies utilized to accomplish this include: Creating a college culture through seminar classes that focus on college readiness skills; mandatory college visits by both students and their families; and the practice of heterogeneously grouping students for instruction. It is strongly emphasized that prior academic performance is not the determining factor when deciding the future track of students attending.

- **Powerful Teaching and Learning**—All schools within the network of the NCNSP share a common instructional framework. The framework was developed by the JFF organization and University Park Campus School in Massachusetts, a nationally recognized high school. The framework is based on the idea of success through consistency, rigor and relevance.

- **Personalization**—Each ECHS is unique with respect to student and community demographic, and this requires that each school “personalize” the academic and social supports offered to students, creating a strong relationship between staff and students. This design principle also gives each school the autonomy to create partnerships within their respective communities.

- **Redefine Professionalism**—this design principle is centered on the idea that staff members hold themselves and their colleagues accountable for the success of students. Common planning time, cross curricular planning, networking with other experts beyond the
school community, and relationship building with each student’s family are part of the design principle.

- **Purposeful Design**—the decisions regarding the mission, vision, and identity of the school are a result of collaboration between staff and administration of each individual school. The autonomy regarding budget allocation, professional development, and school curriculum needs work in tandem to create a powerful tool for creating an environment for individualized learning for each ECHS student (Edmunds, 2010; Le & Frankfort, 2011p.2; NCNSP, 2011; Vargas & Miller, 2011, pp. 4-5).

- **Leadership**—Principals in ECHS work to ensure the mission, vision, and individualized needs of the school drive the decision-making process. The principal also ensures that all stakeholders are included in the development of the school improvement plan and decisions regarding curriculum and academic needs are data driven (NCNSP, 2011).

The guiding design principles serve as a means by which each ECHS is an individual and unique community in which all stakeholders work together to achieve the common goal of student success, resulting in a common framework of relevance, rigor, and relationships (Thompson & Ongaga, 2011).

**The Common Instructional Framework**

The common instructional framework adopted by the NCNSP was developed by JFF and University Park Campus School in Worcester, Mass. The purpose of the framework is to accelerate student learning, improve college readiness skills, and empower students to take ownership in their own education (Vargas & Miller, 2011, p.2). In many ways this framework transforms the traditional role of teacher into a classroom facilitator, empowering students to achieve higher levels of problem solving skills.
Collaborative Group Work—allows students of all performance and ability levels to collaborate to solve problems. Collaboration allows students to learn from each other, and improve the skills they will need to be a part of an effectively functioning team such as compromise, communication, leveraging stakeholders, etc.

Writing to Learn—empowers students to develop and refine their own ideas through reflection, resulting in an improved set of higher level of thinking and problem solving skills.

Literacy Groups—helps students to develop communication and interpretive skills across multiple disciplines through discourse with peers.

Questioning—strategic questioning not only allows for purposeful and directed discourse between students and teachers, it also serves as an effective form of formative assessment for teachers.

Classroom Talk—empowers students to further develop and refine ideas based on the feedback and points of view of others. It also improves speaking and communication skills.

Scaffolding—empowers students to build intellectually on previous knowledge to meet new academic challenges (NCNSP, 2012; Vargas & Miller, 2011, p. 3).

The over-arching idea of the design principles and the common instructional framework is that they are set in place within the network of the NCNSP to empower schools to create environments of personalized instruction and learning to meet the needs of their respective demographic of students. Just as in predominantly urban areas, the rural Appalachian region of Western North Carolina is unique with respect to cultural heritage and identity, and also to the educational and socio-economic level of those within the culture. Thus, a “one size fits all” educational philosophy would no more fit in rural Appalachia than it would in an urban area,
which magnifies the significance of whether a framework focused on relevance, rigor, and relationships is as effective in Appalachia specifically as it is when viewed from a broader lens.

**Project Based Learning**

The common instructional framework that guides instruction in ECHS is grounded in the philosophy of project based learning (PBL). Each of the individual components of the instructional framework is considered “best practice” within the PBL philosophy. Likewise, the over-arching goal of PBL is to create learning experiences that are rigorous in content and investigation, and relevant to the everyday lives of students, while facilitating the building of relationships through dialogue, problem-solving, and collaborative inquiry (Wolk, 1994).

It could be argued that PBL is successful in motivating students to learn because when utilized as an instructional strategy it empowers students to take an ownership in their own education. In the PBL model students are empowered to not only find the solution to a problem, but also to formulate the question to the problem they feel is relevant to solve. The theory is that through the process of solving the problem, students learn, through inquiry and discovery, the concepts and principles of the respective content area. This is not to say that teachers have no place in the process. Teachers assist, when applicable, in the formulation of essential questions, facilitate activities, and assess conclusions drawn from project results. The significance of this process is the transformation of a teacher-centered to student-centered classroom, and the opportunity for teachers to evolve from lecture driven instruction to a facilitative role (Blumenfeld, Soloway, Marx, Krajcik, Guzdial, &Palincsar, 1991).

Because the goal of the ECHSI is to target those underrepresented in college, expose them to an accelerated curriculum, and ensure that each student graduates college ready, it should be expected that some students will need more academic and social supports in place
than their high achieving classmates. Collaborative grouping, when properly organized and facilitated is an effective strategy to help high achieving students to further hone their academic, social, and presentation skills. It is also effective in helping lower achieving students learn from their peers, and advance their social and presentation skills. Cheng, Lam, and Chan (2008) contend that PBL will be more successful if four components are present in collaborative grouping.

- The first component is positive interdependence. This component requires each group member to have an assigned role, and to share resources so that all members learn the material. The success of the group is equally dependent upon each member fulfilling their assigned role.
- The second component is individual accountability. This component is based on the premise that the success of the group depends on each group member learning the material, and contributing to the end product of the group effort.
- The third component is equal participation. This component is necessary so that all members, regardless of achievement level, equally contribute to the work done by the group.
- Finally, social skills allow students of all ability levels to build skills in communication, conflict management, and decision-making (pp. 207-208).

Although these four components do not emerge naturally from collaborative grouping, Cheng, Lam, and Chan (2008) found that schools which focused on collaborative grouping as an instructional strategy and provided the needed support for teachers produced students who had a firm understanding of group work and considered the work enjoyable (p. 218).
Small School Reform and Student Connectedness

One of the advantages of the ECHS setting is that the structures of the schools within the ECHS network are purposefully designed to be small school communities. Though the enrollment capacity numbers vary by district, most ECHS do not accept more than 100 students per grade, while some accept less than 100. Because of the smaller numbers, ECHS are able to create a more intimate setting for student-student, student-teacher, and teacher-parent relationships. Some research suggests that a smaller school environment produces a greater level of school connectedness for students. In a study done by Horyna and Bonds-Raacke (2012), the authors discuss the advantages of being part of a small school community such as, equal (or better) achievement on standardized tests, higher attendance rates, lower drop-out rates, increased levels of extra-curricular participation, and more participation from parents and community members (p.709).

The constructs of school connectedness as related to students include, academic engagement, a feeling of belonging on the part of the student, fair and consistent discipline, relationships with peers, the student feeling that he/she has a “voice” in the school, safety, and teacher support (Libbey, 2004, p. 278). School connectedness is very significant for all schools, both innovative and traditional because as Blum (2005) points out, increasing student connectedness is likely to reduce fighting, vandalism, and bullying while increasing student motivation, classroom engagement, academic performance, and attendance (p.1). Unfortunately, in 2004 Klem and Connell reported that data revealed 40-60 percent of students are “chronically disengaged from school” (p.262). In addition Blum (2005) notes that the percentage of students who are disengaged from school does not include those who have already dropped out (p.4). A study by Gillen-O’Neel and Fuligini (2013) examined the level of
students’ feeling of school belonging through the high school years, and whether school belonging is a positive correlate to higher academic achievement (p.678). The study found that students who felt more connected to their high school also found school useful and more enjoyable, thus helping them to persevere academically. The authors additionally reasoned from their findings that if school belonging helps students to enjoy school and find it useful, they are less likely to drop out (p.689).

In examining “why” small schools may achieve greater levels of school connectedness, Blum (2005) outlines three major categories that emerge from the research: 1) individuals, 2) environment, and 3) culture.

At the core of school connectedness is the connection between students and faculty/staff. Students are much more likely to be connected to school if teachers and school staff communicate the expectation that all students in the school community will be given fair and equal opportunities to achieve success (Blum 2005,p.4). Because adolescence is a time when adults other than parents become increasingly important and influential to students, positive connections made between students and teachers are extremely important, and have been shown to increase student motivation, student achievement, and positive feelings of well-being for students (Wilkinson-Lee, Zhang, Nuno, & Wilhelm 2011, p.223). A small school community allows for arguably a more consistent and thorough level of connection between faculty/staff and parents/guardians. It also allows for consistent expectations, greater levels of input from parents/guardians, and the consistent line of communication needed to ensure that adequate academic and social supports are in place to meet the individual needs of students (Wilkinson-Lee, et. al, p. 228). A case study of an ECHS in Southeastern North Carolina presented by Ongaga (2010) found that participants thought of their teachers as “caring,”
"confidants," "fair," and "trustworthy" (p.380). In a case study of another ECHS in Southeastern North Carolina presented by Thompson and Ongaga (2011), one of the major themes of the study was that of caring relationships. Students described relationships with teachers that were built on “mutual respect, high expectations, responsibility, and common focus” (p. 47). Data reveal that when compared to traditional comprehensive high schools, more ECHS students achieve proficient or higher on standardized tests. In addition the graduation rate is higher, the attendance rate is higher, and violent acts are lower (Edmunds, 2010; Edmunds, Bernstein, Glennie, Willse, Arshavsk, Unlu, F & Achievements & Dallas, 2010).

There is an emerging body of qualitative research which examines the phenomenon of how student/teacher relationships and the social setting on an ECHS campus might impact the engagement, motivation, and connectedness to schools of ECHS students. While all schools strive for this level of consistency and connection, it could be argued that because of the smaller population of the school community, achieving the goals of connecting with each individual student is more likely to happen within a small school community.

School environment is also a key component in facilitating higher levels of students’ connectedness to school. One of the more significant elements of how the school environment is perceived is school climate. Some common behaviors and policies that would probably be observed in a school with a positive school climate include: A strong focus on academic achievement: a sense of safety among students: positive teacher-student relationships: respect for and among all members of the school community: fair and consistent discipline policies: and high level of parent and community involvement (Blum, 2005, p.7). Again, it could be argued that the environmental factors which positively contribute to school connectedness can be more realistically attained in the setting of a small school community such as an ECHS. Ravitz
(2010) notes that one of the most basic objectives of the small school philosophy is to purposefully provide teachers and students with advantageous settings that allow for unique teaching and learning experiences not normally found in larger, traditional schools. The author especially recognized experiences such as individualized instruction, and learning opportunities which are relevant to individual students within the school community. Some research argues that small schools can yield positive results from these and other strategies simply because of the smaller student load per teacher, affording the opportunity for more one-on-one intervention, remediation, and conversations (p. 290-91). Ravitz also discusses the fact that smaller schools have made strides in creating more personalized environments for teaching and learning, the instructional practices in many of these schools have lagged behind or have shown inconsistencies in design choice and fidelity of implementation. The author also notes that any initiative focused on school change must have a component focused on instructional design (p.292). The ECHSI brings together the concept of small school reform and has outlined a common instructional framework (CIF) anchored in the philosophy of project based learning that all school within the network adhere to. The North Carolina New Schools Project offers both professional development for teachers and leadership development for administrators to ensure that components of the CIF are being utilized in every classroom of every school within the network.

Finally, school culture plays a significant role in the connectedness student experience toward school. While the goal of every school is to maximize learning opportunities that lead to student success, many students connect with school through social, athletic, and/or extracurricular activities. In larger school environments the various outlets through which students connect with school can at times inadvertently create groups or “cliques” which foster a
culture of exclusion for many students who don’t really “fit” into any particular mold (Blum, 2005, p. 13). Small schools such as those within the network of ECHS have been shown to establish a culture of high expectations and focus of career and college preparedness, creating a “common bond” among all members of the small school community. This bond serves as a catalyst for strategies such as the formation of study groups, etc.

**Evaluation Results of Early College High Schools**

Since 2002, ECHS and their respective partners have been involved in the implementation or redesign of over 270 schools in 28 states and the District of Columbia. As stated earlier, the target populations of these innovative schools are low-income, first generation college students, and minorities typically underrepresented in institutions of higher learning. Because so many of the ECHS are located on college campuses, students are immersed in the college going culture, and learn to navigate the bureaucracy of the college system through their experiences while attending these innovative schools. It could be argued that nurturing students from the target populations of ECHS as they learn to navigate the college “system” is an incredibly important component of the overall philosophy of the initiative. Student who have traditionally participated in dual enrollment and advanced placement opportunities usually have done so in a setting other than the college campus. In fact, many times these opportunities are offered on the high school campus itself. Also, participation in dual enrollment and advanced placement classes have most times been restricted to advanced students. The ECHS initiative not only gives these opportunities to all students, it expands the opportunities to include the possibility of achieving an associate’s degree while attending class on college campuses (p.1). Janice Lombardi, principal of Trini Garza Early College High School in Texas noted that for her students, physically being on the college campus and taking classes with traditional college
students seems to raise the expectations for everyone in the school community, students, teachers, and parents. She also reported that more than 80% of her school’s population was first generation college students, 86% were classified as free/reduced lunch, and 84% of the school population was Hispanic. Although the national four-year graduation rate for ECHS was around 93%, in the 2010-11 school year, Trini Garza graduated every student in their senior class, while the district posted a graduation rate of 76%, and the state of Texas posted a graduation rate of 78.8%. In addition to the 100% graduation rate in 2012, 46 of the 86 graduates achieved an associate’s degree, and the class as a whole graduated earning an average of 30 semester hours (p.2).

Berger et.al, (2010) analytically examined the results of the national research of five evaluation years of the ECHSI. The authors use data provided by American Institutes for Research (ARI), and SRI International (SRI). The data are based on a National Focus of the ECHSI (p.335). The issue of “effectiveness” for ECHS is not only focused on outcomes for students but also the extent to which these innovative schools have achieved the goals of the core principles of the initiative. It could be argued that successful student outcomes would be less meaningful if the basic principle of targeting students who are traditionally underrepresented in college was not being achieved. Likewise, unsuccessful student outcomes would be less meaningful if the core principle of providing the necessary academic and social supports for students were not in place. Data provided for the five year evaluation of the ECHSI revealed that nationally, ECHS were meeting the requirements as set forth in the core principles. With respect to student outcomes, the study found that ECHS were successful in keeping pace with the national average attendance rate, matching the national average of 94%. The data also revealed that ECHS outperformed other district schools on state English and mathematics
assessments and achieved a 66% Cumulative Promotion Index (CPI), which was 14% higher than other schools in the districts examined. CPI is an estimate of the 9th grade students who will graduate based on grade to grade progression rates (Berger et al., 2010, pp. 342-344). In an ongoing study done by Edmunds (2010), the data reveals that the ECHSI in North Carolina is having a positive impact on the students being served by the initiative. Specifically, the ECHSI appears to be closing the achievement gap among student subgroups and better preparing students to be “college ready.” The study by Edmunds also reveals that ECHS students are less likely to be suspended, have a better attendance rate, and students reported more positive school experiences. The study also suggests that students in ECHS are being exposed to higher levels of academic engagement than students in the control group (p.3). The work done by Edmunds focuses on comparing students who attend an ECHS and traditional High school students who had applied to an ECHS but had not been accepted via a lottery system. Later studies by Edmunds, Bernstein, Unlu, Glennie, Willse, et al., 2012 confirmed that early college students were found to be achieving at higher levels in college preparatory classes, particularly in the area of mathematics. A study conducted by Edmunds, Bernstein, Unlu, Glennie, Smith, et al., 2012 also confirmed that early college students were more likely to stay in school.

Edmunds, Willse, Arshavsky, and Dallas (2013) examined factors that may explain “why” ECHS may be seeing the results that they are seeing. Although no one factor has definitively been shown to be the cause of the positive effects happening in ECHS, Edmunds, et al. examines the concept of “mandated engagement”. Simply put, mandated engagement is the requiring of students by the school community to engage with the schooling experience (p.3). For the purpose of their study, indicators of engagement included attendance rate, suspensions, schoolwork engagement, feelings of being challenged academically, and perseverance of
students to complete assigned tasks. Facilitators of engagement for the study included rigor of instruction, relevance of instruction, perceived relationship between instructors and students, expectations held for students by instructors, and the academic and social support structures available at the school level. Quantitative data gathered revealed that ECHS students demonstrate or report high levels of engagement on almost every indicator of engagement (p. 17). Furthermore, data also reveals that ECHS students report a higher degree of implementation with respect to factors that are considered to be facilitators of engagement (p.17). Based on the quantitative data gathered in this study, the authors viewed qualitative data from the context of the level to which students experienced the facilitators of engagement. Qualitative data gathered from this study revealed major categories that were somewhat different than anticipated by the researchers but no less significant. As the data began to emerge into themes, researchers found that the “common thread” linking the experiences of students to the facilitators of engagement was the purposefulness on the part the ECHS design to intentionally create a school environment completely focused on the success of students. The researchers concluded that ECHS “deliberately set out to create a set of expectations, structures, classroom instructional experiences, and relationships that required students to engage with the different aspects of schooling” (p. 18). From the interviews conducted for the study, several major facilitators of engagement emerged from the perspective of the students.

As one of the most basic premises of the philosophy of the ECHSI, high expectations emerged as a common theme among who were interviewed for the study. As part of the ECHS philosophy, all students attending an ECHS are required to take honors level courses, and generally begin taking college level courses in their freshmen year. Students seem to recognize and be very vocal in their awareness of these expectations, and commented on how the
expectations placed on as ECHS students seemed to be higher than those placed on THS students. For example, when comparing her workload at an ECHS to that of her brother at a THS once student commented that the workload expected for her is much greater than what is expected from her brother who takes the same course. Other students being interviewed reiterated this concept and added that in an ECHS setting, giving less than one’s very best was not an option (p.19). One student commented that if “they know you’re an A student”, you’re expected to perform at that level, and if you don’t someone is there to intervene to help to get students back on track (p. 20). This theme is echoed in other qualitative studies as well. In a case study conducted by Thompson and Ongaga (2011), students describe an academic environment in which students are required to participate in class. In this particular school, as is the case in many ECHS, many teachers teach students multiple years creating familiar relationships that allow them to gain an in depth understanding of their student’s strengths and weaknesses and more importantly ensures that all students are “noticed, connected, and cared for” (p. 47). In a report detailing how ECHS are transforming the lives of students traditionally underrepresented in college, Hoffman and Webb (2010) remark that when coupled with adequate academic supports, “challenge, not remediation” will lead to success in college for students traditionally underrepresented in institutions of higher learning (pp. 54, 56).

Another theme that emerged from the interviews was that of required academic support. Though it is common for THS to offer academic support in the form of after school tutoring, etc, ECHS intentionally design programs of study and schedules that include the embedding of academic supports within the normal school day. Students being interviewed consistently commented on the dedication of their teachers to ensure that they as students were successful. Interestingly, when asked “Tell me about a student who would not be successful at the early
college”, one student remarked, “I don’t know because…In middle school, my report card was pretty much straight Fs. Now, I’m making As and Bs, and a few Ds” (p.21).

Another theme that emerged from the study was that of emotional and social support. In addition to the support that students felt they received academically, they also reported a high level of social and emotional support from school faculty and staff. Students remarked that staff “really cared” about them and seem to always “just know” when something was wrong. One student commented that the counselor “knew everything” about the students (p.22). Some of the schools in the study had even created structures that included specified times in which small focus groups of students met and talked about anything that was on their mind (p. 23). In a study conducted by Thompson and Ongaga (2011) students described teachers-student relationships as those of “mutual respect”, “common focus”, “high expectations”, and “responsibility” (p.47). In a study conducted by Ongaga (2010), one student remarked “without teachers who took time to know me, pushed me, and cared about me, I wouldn’t have had the chance to be here [university]” (p.380).

An additional theme that emerged in the study conducted by Edmunds et. al (2013) was that of peer relationships and support. One of the unique components of the ECHS culture is the absence of “cliques”. Because of the small school setting students across grade levels attend classes together, eat together, attend focus groups and study hall together, and attend college classes together. One student described the setting as one in which students attended class together, got to know each other, and talked to each other with many becoming friends, regardless of age or background. Another student who was home schooled prior to attending an ECHS described how he tried to just “do his own thing” until other students consistently probed
him to help with various tasks and did not relent until they had ‘adapted’ him ‘into their body’ (p24).

Finally, the last theme that emerged from the study was that of engaging instruction. One of the guiding principles of the ECHSI is the adherence of all schools within the network to the common instructional framework, grounded in the theory of project based learning. Student at multiple schools involved in the study conducted by Edmunds et al (2013) reported varying instructional practices by teachers that required students to participate in class activities, labs, projects, etc. Students also expressed their feeling that this type of instruction made the process of learning more meaningful and relevant to them (p.25).

Challenges for achieving Higher Educational Attainment in Appalachia

Over the past few decades there has been much research focusing on how the culture of a community or neighborhood, and the family of an individual each contribute to issues such as violence, and academic achievement. However, the overwhelming majority of this research has been conducted in urban settings. In a study conducted in Western North Carolina by Brown, Copeland, Costello, Erkanli, and Worthman (2009), the authors argue that the effects of local setting or “neighborhood” and the effects of family cannot be isolated to those areas with a high population density. A common misconception made by many persons outside of the region holds that the lower population density of the rural south somehow indicates that the influence of the local setting is not as significant as it is in more heavily populated, urban areas. However, it could be argued that the rural south experiences equal, if not more social stratification, exploitation of workers, and intense poverty. Furthermore, when considering the “effects of community” as they relate to the outcomes of individuals within the respective communities, studies have shown that attachment to place is very significant in rural areas, and rural youth
have been found to be more attached to place than non-rural youth (p. 796). The authors also emphasize the importance and significance of the influence of family in the Appalachian culture. The results of this particular study actually found that the influence of family is stronger than the effects of community in Appalachia, though both are significant, with families being considered the primary resource for support with respect to educational attainment. However in the area of planning and goal setting for college the impact of place and community cannot be underestimated. Youth who lived in areas with a higher proportion of adults holding college degrees were more likely to consider attaining a college degree as an important life goal while those students living in areas with a lower proportion of adults holding college degrees were less likely to consider achieving a college degree as an important life goal (pp.803-804).

Western North Carolina is located in the Central Appalachian Mountain region of the United States. From the perspective of the social sciences, people native to this region would predominantly be considered collectivist in nature. As a result of this fact there exists a very strong bond between community, family, and individual. In fact, the defining characteristic of the collectivism of the region is that there is a tendency among residents to consider the goals of the family or community as their own, or in many instances to prioritize the goals of the community or family above their own (Gore, Wilburn, Treadway, & Plaut, 2011, p. 378). It is not at all uncommon for the family “unit” to encourage students to develop knowledge and skills that will help the individual fill a “necessary gap” in the family unit, while discouraging the student from separating from the family by going away to college. This idea is reinforced in many instances when a student gets a college degree but cannot find a job in the area, and thus has to move away from the community to find an adequate job. The result is an implication that
gaining a higher education credential is associated with leaving the family and community (Hendrickson, 2012, pp. 38-39).

The issue of the relevance of education is viewed negatively in many areas of Appalachia. Possible explanations for this negative view in many instances are multilayered due to the stagnant economic conditions which exist in many of the Appalachian communities. On the most basic level, many students and their families do not see education as relevant or valuable due to the low educational requirements to gain employment in the jobs which are available in the area. Additionally, many students and their families have not seen an economic advantage for those who have achieved a high school diploma and a higher education credential even though this is often due to the unwillingness of the person achieving the education to leave the community and family. This attitude reinforces the idea of the culture tending to be constructivist (Hendrickson, 2012; Starcher, 2005). Approaching education from the perspective of applicability and relevance to the everyday lives of students is crucial in the Appalachian region. Because of the constructivist culture of the region, each generation attempts to preserve the conditions of the generation before and in many instances finds no true meaning or value in the educational process, especially the need for higher education. For example, in a study conducted by Cooper, Knotts, and Livingston (2010) in Western North Carolina, survey results revealed that individuals native to the area were less likely to support policies that foster growth, support policies that protect green space preserves, and more likely to oppose policies encouraging steep slope development (p. 38).

**The Significance of the Early College High School Initiative in Appalachia**

The overarching purpose of the ECHSI is to give those traditionally underrepresented in college an opportunity to achieve an Associate’s degree while simultaneously earning their high
school diploma. Students in Appalachia face many challenges unique to their particular cultural demographic. Statistics show the percentage of residents who have achieved at least a high school diploma is lower than the national average, while the poverty rate in Appalachia is higher than the national average. Shaw, DeYoung, and Rademacher (2004) point out that when comparing the results of the 1980, 1990, and 2000 census results, the number of individuals in Appalachia achieving a college degree has increased in each census. The disparity is found when a comparison is made between Appalachians achieving a college degree as compared to individuals in the rest of the United States achieving a college degree. In each census from 1980 through 2000, the gap has widened between individuals in the United States achieving a college degree, when compared to individuals in Appalachia achieving a college degree (p.311). In a report examining the relationship between educational attainment and poverty rates, Ziliak (2007) suggests that rates of high school and college completion must rise if the Appalachian region is to narrow the gap in poverty rates relative to the rest of the nation. Ziliak discusses the profound impact of educational attainment for the people of Appalachia in terms of monetary gains over time. For example, high school graduates will earn, on average about 20 percent more than GED recipients. Although the coursework and test scores for the two groups are similar, it could be argued that high school graduates, through formal education have developed skills more marketable in the job market such as, self-initiative, charisma, and the responsibility of meeting deadlines, working in teams, etc. Furthermore, individuals who have attained a college degree are shown to yield a return of about 20 to 30 percent more than those who have attained only a high school diploma. Statistics show that although high school and college completion rates have risen in the last two decades, the rates are substantially below the U.S. average (Ziliak, 2007). This statistic is especially significant when considered within the context
of the technological shift/advancements that have been made in recent years. As employers continue to look for employees to fill jobs that require certain levels of technological knowledge and other 21st century skills, preference will continue to shift even further toward individuals who are college educated (Bollinger, Ziliak, Troske, p.819, 2011).

In many areas of Appalachia the job market is dissipating and in a large part of the region commodities such as tobacco and timber, which once allowed citizens to be self-sufficient or to supplement incomes, are no longer viable options. The economic conditions of the area have created a demographic in which family income levels have stalled or decreased while the cost of going to college has increased. In addition to the deteriorating economic demographic of the area, many students come from families who do not place a high value on higher education. Students are faced with dilemma of whether to break with the traditions of the cultural heritage or remain loyal to family. Appalachian students who are considering college as an option also face the challenge of navigating the bureaucracy of higher education institutions with respect to the application process, financial aid, etc. with minimal family guidance due to the high percentage of students who are first generation college students (Hand & Payne, 2008; Rural Students, 2006).

Emerging research studies reveal that the ECHSI is having a positive impact on the target population of the initiative. For example, a report by Hoffman and Webb (2010) details that the ECHSI is achieving success especially among Latino and African-American students from low socio-economic backgrounds who are first generation college students. The report indicates that students are graduating with relatively high grade point averages, and perhaps more importantly, the confidence and knowledge needed to be successful in college (p.55). Dessoff (2011) reports that the graduation rate for J.D. Clement Early College High School in
Durham, NC is 95%, compared to the district average of 74%, and 89% of students met end of course standards as compared to the district average of 47% (p.75). In a report by Smith, Fischetti, Fort, Gurley, and Kelly (2012), the authors describe the process of establishing an ECHS in partnership with a university, detailing the experiences of students, challenges for teachers, and the potential for success that exists in the small, innovative schools in the network of the ECHSI. The authors specifically detail the success of a young African-American who was identified in middle school as a potential drop out; though he achieved a level of proficient on his seventh grade state math, English, and writing tests. As detailed in the article, Isaac Bear Early College requires that students pass the state administered tests in math, English, and writing in seventh grade in order to be accepted into the school (p.387). This is a point of debate at the present time within the NCNSP network because, at least in theory, “grade requirements” for admittance are likely to disqualify a significant number of students in the target population. The authors found that the small, innovative high schools within the network of the ECHSI empower students to achieve success by holding high academic expectations, and a personalizing education at each school within the network (p. 392).

In a longitudinal study Brown et. al (2009) analyzed how area effects (community poverty and average educational attainment) relate to the average educational goals and attainment patterns of 200 white youth (ages 19-24) living in the Appalachian region of Western North Carolina. The goal of the study was to examine educational goals and attainment simultaneously. While much research has emerged detailing and analyzing educational attainment, the authors point out that there is limited research examining area effects on goal setting, and the major studies that have emerged were conducted in urban areas (p.797). Of the 200 participants, 41 reported having earned a 2-year college degree and was subsequently
disqualified from the college goal setting portion of the study. Interestingly, of the 41 who reported having achieved the degree, 79% reported having been exposed to parental figures with a college degree as opposed to 56% of those who had not yet achieved a college credential. In other words, 41 of the participants in the study would not have been defined as a first generation college student. Of the remaining 159 participants, 48% (76 participants) indicated that the achievement of a college degree was a significant life goal for them. To summarize, 117 participants had either achieved at least a 2-year college degree or considered it a life goal to do so, leaving 83(41.5%) that had not achieved at least a 2-year college degree nor considered it a significant life goal to do so (pp.800-801). The results of the study with respect to educational attainment revealed that individuals subjected to higher levels of family poverty achieved lower levels of educational attainment, whereas individuals who had more exposure to at least one college educated parent attained a higher level of education (p.801). With respect to educational goal setting, the study found that individuals who lived in communities with higher proportions of college educated citizens considered achieving a college degree to be a significant life goal. Likewise individuals who spent more time with parental figures that had achieved at least a 2-year college degree did as well (p.802). The study concluded that with respect to educational attainment, family poverty and parental education level had a significant impact on the participants whereas the community or area effect was not as significant. As stated by the authors, “Completion of educational milestones requires considerable resources, persistence, and support, and these must be provided on a regular and consistent basis” (p. 803). Because of the rate of poverty among families, many cannot provide these resources to students, even if the student considered achieving a higher education credential as a life goal. Interviews of participants participating in this study confirmed this conclusion, detailing a life in which
parents could not afford to send them to college. One student discussed how those who go to college only do so because of scholarship money. He detailed how his parents could not afford to send him and moreover he could not afford to go because he had to contribute financially to the family unit to ensure their survival. Another student discussed how his parents were no better off than he and that they were in just as much debt as he was. He went on to point out that if he could go to college he would not be able to work and pay for his vehicle or other bills (p.803). The authors point out that there was logic in the fact that individuals living in communities with lower levels of educational attainment had lower aspirations with respect to educational goals. Specifically, the attachment to place has been shown to be very high among rural youth and the job market in these areas probably requires a lower level of education as a condition of employment. Therefore if an individual plans to work and live in one of these areas a college education might not seem necessary (p. 804). This point made by the authors is very significant in that it implies that poverty and educational attainment and goal setting in these areas are cyclical. The significance of the ECHS in Appalachia is significant because it has the potential to break the cycle.

The purpose of the ECHSI is to create small school communities in which students who will be first generation college students and are from low socio-economic backgrounds have the opportunity, access, and supports necessary to achieve a college credential with little or no cost to the student. These innovative schools have created a culture that is driven by relationships, expectations, and support. Brown et. al found that students living in areas and households with low educational attainment, followed the same path. The ECHSI contradicts the expectations of these settings, helping to mold and grow the educational goals of students. As has been documented in this review, ECHS faculty and staff develop relationships with students such that
their influence on students inspires them to believe in themselves and the possibilities to the point of causing them to dream of a life better than that of the generation before them.

**Summary**

The body of emerging research with respect to the ECHSI is significant in that it provides validation that the ECHSI is achieving positive results for students within the demographic in which it is intended to serve however this chapter highlights the noticeable absence of emerging literature examining the effectiveness and results of ECHS in the rural Appalachian region of Western North Carolina. While there is certainly a demonstrated need for the close examination of successful educational initiatives in urban areas, Appalachia also shares many of the same demographic characteristics, and warrants similar examinations. The ECHSI has the potential to transform the educational and economic landscape of the Appalachian region, and because of this it is imperative that equal efforts with respect to research are made to examine the effectiveness and results of the ECHSI in the rural Appalachian region of Western North Carolina.

The ECHSI in North Carolina was implemented to increase the number of youth in institutions of higher education who had been traditionally underrepresented. Specifically, the initiative targets minorities, students from low socio-economic backgrounds, and students classified as first-generation college goers. Schools within the network of ECHS are bound to the guiding design principles and common instructional framework as set forth by the North Carolina New Schools Project. The common instructional framework is grounded in the philosophy of project based learning and requires that all students in every class engage and participate through the utilization of group collaboration, projects, literacy groups, and strategic questioning strategies. Schools within the network also create school cultures of high academic
rigor, the building of meaningful relationships with students, and the expectations that students will successfully graduate high school while achieving a 2-year college degree. School connectedness for students toward school is common due to the natural environment created by the design philosophies in ECHSI. The small school settings lend themselves to the building of strong positive relationships between staff and students and opportunities for individualized instruction and enrichment opportunities that might not be feasible in larger school environments. The schools also create and promote a culture of high expectations, rigor, and immersion in the skills that it takes to be successful in college.

The literature examining the culture and condition of the Appalachian people revealed an area plagued for generations with poverty consistently higher than the rest of the United States and income that consistently lagged behind. This is still the case today. It could be argued that the origin of this condition of the region, especially in the south, could possibly be traced to the re-construction era following the civil war. It could also be argued that this condition might be traced back further to the settlement of the area itself. Literature reveals that the people in this region are strong, proud, resourceful, self-reliant, and have a fierce loyalty to their family and community. Most times this loyalty is so strong that many individuals put the immediate needs of their family and community above their own. The literature suggests that through the generations this has created a culture in many areas of the region that either don’t place a very high value on education or does not place enough value on it to leave the family and community in order to attain it. The literature also reveals that even for those students who do desire to achieve a higher level of education it is often very hard for them to attain it because of the lack of support, both monetary on otherwise. Many families cannot afford to send their kids to college, and even if students get financial aid many families lack the experience needed to
support them in the navigation of the bureaucracy of the higher education system. This is not to say that many families don’t want the best for their children, it is merely to point out that first generation college students face challenges that students who have parents who have “been there” do not.

A thorough review of the literature reveals that ECHS have created school settings such that the target population of the initiative is given the level of supports needed to overcome the obstacles that may face them in becoming successful college students. The relationships built within the small school setting nurtures a level of trust between staff and students such that staff may influence students in the setting of goals and help them to discover the possibilities for their future. The literature reveals that ECHS have consistently reported higher high school graduation rates when compared to traditional schools at the district and state levels. The culture created by the ECHS also enables students to become immersed in the nuances associated with going to college. Many of the most significant obstacles faced by students in Appalachia are the lack of clear guidance and understanding of these nuances. As the ECHS becomes more engrained in the culture of the region, the educational level of communities will theoretically rise, opening the possibility of higher wages for workers and the possibility of more businesses matriculating to these areas.
CHAPTER THREE: METHODOLOGY

Introduction

The purpose of this correlational study is to determine if there is a statistically significant difference in the strength and direction of the correlation between school setting and proficiency scores and feelings of school connectedness for students attending early college high school and traditional high school in two rural school districts in Appalachian region of Western North Carolina?

The independent variable is the ECHS setting while the control variable is the traditional high school setting. The dependent variables are proficiency scores on the North Carolina End of Course tests in Math I, and English II, student survey data detailing feelings of school connectedness based on data collected from the AdvancED students surveys completed during the accreditation process for each respective school district.

Design

The research design utilized for this proposed study will be the non-experimental correlational Design. The non-experimental correlational design was chosen to determine if there is a relationship between school setting, proficiency scores and feelings of school connectedness for students attending early college high school and traditional comprehensive high school in two rural school districts in Appalachian region of Western North Carolina, and to determine if the relationships between groups are statistically significant. A correlational research design is useful in determining relationships, assessing consistency, and making predictions (Ary, Jacobs, Razavieh & Sorensen pp. 29,378, 2006).

The rationale for the utilization of this study is grounded in the premise that the students who have chosen to enroll in an ECHS will be receptive to the unique philosophies, and
practices that are common in an ECHS model, resulting in a stronger positive relationship between ECHS students and proficient scores on standardized tests, and a stronger positive relationship between ECHS students and feelings of school connectedness than those subjects assigned to the control group.

The independent variable is the ECHS setting while the control variable is the traditional high school setting. The dependent variables are proficiency scores on the North Carolina End of Course tests in Math I, and English II, student survey data detailing feelings of school connectedness based on data collected from the AdvancED students surveys completed during the accreditation process for each respective school district.

**Research Question(s)**

The following are the questions guiding this research study:

**RQ1:** What is the nature and strength of the relationship between school setting and achievement scores as indicated by the North Carolina End of Course Math I and English II Tests for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina?

**RQ2:** What is the nature and strength of the relationship between school setting and students’ feelings feelings of school connectedness as indicated by the AdvancED Student Survey for ECHS students and THS students in two rural school districts in the Appalachian region of Western North Carolina?

**Hypotheses**

The following are the research hypotheses:
**H1:** There is a statistically significant positive relationship between school setting and achievement scores as indicated by the North Carolina End of Course Math I Test for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina.

**H2:** There is a statistically significant positive relationship between school setting and achievement scores as indicated by the North Carolina End of Course English II Test for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina.

**H3:** There is a statistically significant positive relationship between school setting and students’ feelings of school connectedness as indicated by the AdvancED Student Survey for ECHS students and THS students in two rural school districts in the Appalachian region of Western North Carolina.

The following are the null research hypotheses:

**Ho1:** There is a no statistically significant relationship between school setting and achievement scores as indicated by the North Carolina End of Course Math I Test for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina.

**Ho2:** There is no statistically significant relationship between school setting and achievement scores as indicated by the North Carolina End of Course English II Test for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina.

**Ho3:** There is no statistically significant relationship between school setting students’ feelings of school connectedness as indicated by the AdvancED Student Survey for ECHS students and THS students in two rural school districts in the Appalachian region of Western North Carolina.
Participants

The sample population for this study was drawn from ECHS and THS in two school districts located in the rural Appalachian region of Western North Carolina. Participants were non-randomly assigned to control and experimental groups based on which school setting they chose to attend. ECHS students were considered the experimental group and THS students were considered the control group. The criterion for participating in this study was specific to students who attend and ECHS or THS in the rural Appalachian region of Western North Carolina. Data collected for this study was archived, and dependent upon the grade level and school setting, some students may have contributed from one to three points of data.

To address research question one, data was collected from students who took the end of course exams for Math I and English II in the 2013-14 school year. In both ECHS and THS settings it is common to require freshmen to take Math I, hence this set of data is comprised mainly from freshmen students in both school settings. Also, data was collected from students who took the end of course exam for English II in the 2013-14 school year. Grade level of students contributing to this set of data is largely dependent on school setting. In the THS setting it is common for students to take English II in their sophomore year. However, because of the need to accelerate the high school curriculum in the ECHS setting, it is common for students to take English II in the spring semester of their freshmen year.

To address research question two, data were collected from any student from any grade level who completed the AdvancEd student survey during the accreditation process for their respective school district.
Setting

For the purpose of this study, the population sample was drawn from two different school districts in Western North Carolina. Each of the school districts selected meet the official definition of rural as defined by the National Center for Education Statistics (2006). Each of the school districts selected has a student demographic of greater than 95% white, and a free/reduced classification of greater than 50% as a system. The experimental group for the study was students attending an ECHS while the control group for the study was students attending a THS. None of the ECHS in the participating school districts select students based upon a lottery system. For the purpose of this study, the two school participating school districts will be referred to as “district A”, and “district B” respectively.

District A

District A has a student enrollment of approximately 2500 students. The district is comprised of seven schools: 4 elementary schools, 1 middle school, 1 traditional high school, and 1 early college high school. The district school population is less than the state average at the elementary, middle, and high school levels. The per pupil expenditure funding from the state is above the state average, while local and federal funding is less. Student performance data for the district is below the state average in each discipline that is tested by a state mandated end of course test.

The traditional high school for the district has a student enrollment of approximately 640 students. The school employs 54 teachers, 12 of which hold advanced degrees and 7 of which are certified through the National Board for Professional Teaching Standards (NBPTS). Approximately 85% of the teachers employed in the school have more than four years of experience in the field with 56% of the teachers employed in the school having more than ten
years of experience in the field. Approximately 8% of the student population in the school is
classified as students with disabilities. The attendance rate for the school is 94%, one percentage
point below the state average, and average class sizes in end of course tested subjects are below
the state average. The graduation rate for the school was 85% in the 2013-14 school year.

The early college high school in the district is not located on the campus of the higher
education partner of the school. The school has a student enrollment of approximately 220
students. The school employs 11 teachers with four holding advanced degrees and one being
certified through NBPTS. Approximately 75% of the teachers employed in the school have
more than four years of experience in the field with more than 50% of the teachers in the school
having more than ten years of experience in the field. Less than 5% of the student population is
classified as students with disabilities. The attendance rate for the school is 97%, and average
class sizes in the end of course tested subjects are below the state average. Graduation rate for
the school was 88% for the 2013-14 school year.

District B

District B has a student enrollment of approximately 3600 students. The district is
comprised of 9 schools: 1-- K-6 elementary school, 4--K-8 schools, 1--K-12 Alternative school,
1--7-13 early college, 1--9-13 early college, and 1—9-12 high school. The student population
per school for the district is less than the state average at each level. The per pupil expenditure
funding from the state is above the state and federal average, while local funding is slightly less.
Student performance data for the district is below the state average in Biology and above the
state average in Math I and English II.

The traditional high school in the district has a student enrollment of approximately 750
students. The school employs 59 teachers, 13 of which hold advance degrees and 13 who are
certified through NBPTS. Approximately 75% of the teachers employed at the school have more than four years of experience in the field and 45% of the teachers employed have more than ten years of experience in the field. Approximately 15% of the student population in the school is classified as students with disabilities. The attendance rate for the school is 93%, and average class sizes in end of course tested subjects are below the state average in Biology and Math I and above the state average in English II. The graduation rate for the school was approximately 90% in the 2013-14 school year.

School district b has two early college high schools, one of which is a grade 7-grade 13 school. This early college high school is not located on the campus of the higher education partner for the school. The school has an enrollment of approximately 160 students. The school employs 10 teachers, 4 of which hold advanced degrees and 2 who are certified through NBPTS. 50% of the teachers employed have more than four years of experience in the field and 20% of the teachers employed have more than ten years of experience in the field. Less than 5% of the student population is classified as students with disabilities. The attendance rate for the school is 94%, and average class sizes in the end of course tested subjects are below the state average in Math I and English II, and above the state average in Biology. The graduation rate for the school was approximately 95% in the 2013-14 school year.

The other early college high school in school district b is located on the campus of the higher education partner of the school. The school has a student enrollment of approximately 130 students. The school employs 4 teachers, 3 of which hold advanced degrees and 1 who is certified through NBPTS. 50% of the teachers employed have more than four years of experience in the field with 50% of the teachers employed having more than ten years of experience in the field. Approximately 43% of the students enrolled in the school are classified
as students with disabilities. The attendance rate for the school is 97% and average class sizes in English II and Math I are below the state average. Students earn high school biology credit through dual enrollment on the campus of the higher education partner with this early college. The graduation rate for this school was 98% in the 2013-14 school year.

**Instrumentation**

**North Carolina End of Course Math I and English II Tests**

In North Carolina student proficiency in the areas of Math I, and English II is measured based on achievement scores achieved by students on the standardized tests for Math I and English II. There are five levels of proficiency on each test. Students achieving a level three or higher are considered to have achieved proficient in the subject. Achievement scores for the Math I test are divided into the following intervals: Level I= ≤ 243; Level II= 244-249; Level III= 250-252; Level IV= 253-263; Level V= ≥ 264. Achievement scores for the English II test are divided into the following intervals: Level I= ≤ 140; Level II= 141-147; Level III= 148-150; Level IV= 151-164; Level V= ≥165.

The test development process utilized by the North Carolina Department of Public Instruction includes six phases, and usually takes approximately four years to complete. The process is outlined in detail through a report available to the public on the North Carolina Department of Public Instruction’s website (NCDPI Report). The six phases of the process are:

- The first phase of the process is the development of specifications for the tests.
- The second phase of the development process is the development of the test items, as well as “item try outs” (p.3).
- The third phase of the process is field test development. Test items are written by North Carolina educators, recruited and trained as item writers. Because of the diversity of
the group utilized as item writers, and because of the group’s knowledge of the North Carolina standard course of study specifically, instructional validity is validated and maintained. North Carolina educators are also recruited and trained to review items that are written, and they provide feedback as to what revisions need to be made to the items. Field Test forms are then developed and reviewed by another group of educators specifically trained to provide feedback on issues such as curricular appropriateness, potential bias, clarity and correctness. Field tests are then administered and the statistics are reviewed by NCDPI as well as a local psychometric laboratory, UNC Chapel Hill, and Technical Outreach for Public Schools (TOPS).

- Phase four is the development, review, and administration of the pilot test. The first step of this phase is to develop equivalent and parallel forms of the test. Final test items must meet approval by the division of accountability/testing and the division of instructional service of NCDPI. Curriculum specialists also review each form of each test to ensure that test specifications have been implemented, and that tests forms are parallel in terms of curricular coverage (p. 6-7). Tests are then reviewed twice more by a final group of educators and test development staff respectively. Following these reviews the tests are administered as a pilot test. Finally, tests are scored and standards are developed. North Carolina utilizes the Contrasting Groups Method to establish standards.

- Phases five and six entail the administering of the tests as fully operational and reporting of results (North Carolina Department of Public Instruction, 2003).

Before tests are released for use, the North Carolina Department of Public instruction releases the processes and data that have been utilized to ensure the reliability and validity of the tests. In addition to the validity and reliability measures taken by the Department of Public Instruction with respect to the instrument, reliability is also increased by the nature of the
variable being measured and the objectivity of scoring the instrument used to measure the academic gains (Ary, Jacobs, Razavieh, & Sorensen, 2006).

**AdvancEd Student Survey**

Student survey data used for this study was collected from archived data retrieved during the AdvancEd accreditation process for each of the participating districts. The student survey instrument was re-developed and piloted by AdvancEd (2011). AdvancEd is a large non-profit, non-partisan educational organization offering accreditation to those school systems who choose to partner with them. Part of the AdvancEd accreditation process is the administering of surveys to student, parent, and teacher stakeholder groups. This study utilized data collected from the student stakeholder group in order to gauge student feelings of school connectedness to their respective school setting. Surveys are administered to students in both online, and paper/pencil format. The surveys are structured so that students are responding to questions from a personal perspective though the use of questions that are phrased such as, “My school”, “My teacher”, etc. The surveys are also structured in such a manner that questions are grouped into one of the five AdvancEd standards: 1—Purpose and Direction; 2—Governance and Leadership; 3—Teaching and Assessing for Learning; 4—Resources and Support Systems and; 5—Using Results for Continuous Improvement. The student survey consists of 32 questions that use a 6-point Likert Achievement with each response choice assigned a numeric value. Response choices included: Strongly Agree (5); Agree (4); Neutral (3); Disagree (2); Strongly Disagree (1); and Not Applicable (0). Because each choice was assigned a numerical value, the researcher calculated the descriptive statistics for each of the five standards to which the survey questions were grouped. By utilizing the descriptive statistics, in particular the overall mean for each standard, a generalization can be made as to
the feelings of school connectedness each respective group of students has towards their particular school setting.

AdvancEd evaluated the validity and reliability of the study through a pilot study conducted in the spring of 2011. Participants in the study included 19,982 elementary students and 25,427 middle and high students. All participants attended schools either accredited by, or seeking accreditation through AdvancEd. The statistical analyses for the study were completed by independent consultants considered experts in the field survey methodology and psychometrics. When the data from the pilot program was collected it was subjected to multilevel factor analysis aimed at determining the level of validity and reliability of the achievement scores. As a result, all items in the survey were statistically found to be valid and reliable (2011).

**Procedures**

Under the guidance of the researcher’s dissertation committee and research consultant, the researcher sought and gained the approval to conduct research in three rural school districts in Western North Carolina (Appendix C). The researcher then sought, and was granted approval by Liberty University’s Institutional Review Board (IRB) to conduct the specified research (Appendix D). Upon receiving IRB approval, approximately 300 surveys were sent to early college and traditional high schools in the participating school districts, and achievement data was pulled from the Accountability section of the NCDPI website. This achievement data is available to the public. There were a very minimal number of individuals who chose to participate in the study. Approximately two months later, the same number of surveys was sent to the same schools. The reason the surveys were re-sent is that the researcher thought it possible that the number of responsibilities and pressures associated with the end of the school
year for parents, students, and staff may have contributed to the extremely low number of participants. Approximately one month following the second round of surveys being sent, the researcher gained permission from the dissertation committee chair to change the structure of the research to include archived data from the AdvancEd accreditation process in the participating districts. Two of the three districts that had originally granted permission to conduct the research were not accredited through AdvancEd, so the researcher gained approval from the dissertation chair to include another district in the study. The researcher then gained approval from the IRB through the appropriate change in protocol form (Appendix E).

**Data Analysis**

Data for this study was analyzed using IBM SPSS 22 software. For this study a point biserial correlation was used to determine what, if any, relationship existed between school setting, student achievement scores, and feelings of school connectedness for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina. A point biserial correlation coefficient ($r_{pb}$) is produced when comparing a continuous variable, such as achievement scores of a standardized test, with dichotomous variables such as school setting. The correlation coefficient produced can range from -1 to +1. A positive coefficient value indicates a positive relationship and a negative value indicates a negative relationship. As the absolute value of the coefficient increases, so does the strength of the relationship being observed. A correlation yielding a coefficient of zero indicates that there is no relationship between the variables (Howell, 2008). For example, a value between variables near +1 would indicate a strong positive relationship. Applying this concept to this particular study infers that a strong positive relationship would indicate that students in the setting of ECHS achieved higher standardized test scores than those in the setting of THS. Likewise, a value between
variables near -1 would indicate a strong negative relationship implying that students in the setting of ECHS achieved lower standardized test scores than those in the setting of THS.

Although a correlational study is useful in examining relationships and possibly making predictions, it does not indicate that changes in one variable are caused by changes in the other variable (Ary, et. al. p.154, 2006).
CHAPTER FOUR: FINDINGS

This chapter will examine the descriptive statistics for each of the data sets collected and analyze each research question and hypothesis based on the statistical test and results for each corresponding question and hypothesis.

Purpose

The purpose of this quantitative correlational study was to determine if there was a relationship between school setting, proficiency scores and feelings of school connectedness for students attending early college high school and traditional comprehensive high school in two rural school districts in Appalachian region of Western North Carolina, and to determine if the relationships between groups are statistically significant.

The independent variable is the ECHS setting while the control variable is the traditional high school setting. The dependent variables are proficiency scores on the North Carolina End of Course tests in Math I, English II, and student survey data detailing feelings of school connectedness based on data collected from the AdvancED students surveys completed during the accreditation process for each respective school district.

Research Question(s)

The following are the questions guiding this research study:

RQ1: What is the nature and strength of the relationship between school setting and achievement scores as indicated by the North Carolina End of Course Math I and English II Tests for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina?

RQ2: What is the nature and strength of the relationship between school setting and students’ feelings of school connectedness as indicated by the AdvancED Student Survey for
ECHS students and THS students in two rural school districts in the Appalachian region of Western North Carolina?

**Hypotheses**

The following are the research hypotheses:

**H1:** There is a statistically significant positive relationship between school setting and achievement scores as indicated by the North Carolina End of Course Math I Test for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina.

**H2:** There is a statistically significant positive relationship between school setting and achievement scores as indicated by the North Carolina End of Course English II Test for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina.

**H3:** There is a statistically significant positive relationship between school setting and students’ feelings of school connectedness as indicated by the *AdvancED Student Survey* for ECHS students and THS students in two rural school districts in the Appalachian region of Western North Carolina.

The following are the null research hypotheses:

**Ho1:** There is a no statistically significant relationship between school setting and achievement scores as indicated by the North Carolina End of Course Math I Test for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina.

**Ho2:** There is no statistically significant relationship between school setting and achievement scores as indicated by the North Carolina End of Course English II Test for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina.
**Ho3:** There is no statistically significant relationship between school setting and students’ feelings of school connectedness as indicated by the *AdvancED Student Survey* for ECHS students and THS students in two rural school districts in the Appalachian region of Western North Carolina.

**Descriptive Statistics**

Data for this study was comprised of archived data from two rural school districts in the Appalachian region of Western North Carolina. Data included North Carolina end of course achievement scores in Math I and English II, as well as student survey results collected during the *AdvancEd* accreditation process from each respective district. Each of the data sets collected had varied sample sizes due to the nature of the particular school setting. For example, it is most common in both school settings that freshmen students take Math I. It is most common in the THS setting for sophomores to take English II, while most ECHS settings offer English II in the spring semester of a students’ freshmen year. *AdvancEd* surveys were collected from students across all grade levels in both school settings. Because of the difference in philosophies of school setting, in particular that of creating a “small school” environment in the ECHS setting, sample sizes varied.

**Math I Achievement Score Statistics**

Archived Math I achievement scores from the 2013-14 school year for the THS setting (N=374) and ECHS setting (N=98) were examined. Students attending school in the THS setting achieved an overall mean score of 2.07 (SD=1.189) while students attending school in the ECHS setting achieved an overall mean score of 2.76 (SD=1.158).

Table 1
Math I Achievement Scores by School

Setting

<table>
<thead>
<tr>
<th>Setting</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECHSMATH</td>
<td>98</td>
<td>2.76</td>
<td>1.158</td>
</tr>
<tr>
<td>THSMATH</td>
<td>371</td>
<td>2.06</td>
<td>1.189</td>
</tr>
</tbody>
</table>

Valid N 97
(listwise)

Figures 1 & 2 graphically represent the Math I achievement score distribution for THS students.

![Histogram of Math I THS achievement score distribution.](image)

*Figure 1. Histogram of Math I THS achievement score distribution.*
Figure 2. Q-Q Plot of THS Math I Achievement Score Distribution

Figures 3 & 4 graphically represent the Math I achievement score distribution for ECHS students.

Figure 3. Histogram of Math I ECHS achievement score distribution.
Archived English II achievement scores from the 2013-14 school year for the THS setting (N=336) and ECHS setting (N=124) were examined (Table 2). Students attending school in the THS setting achieved an overall mean score of 3.14 (SD=1.305) while students attending school in the ECHS setting achieved an overall mean score of 3.34 (SD=1.096).
Table 2

*English II Achievement Scores by School*

<table>
<thead>
<tr>
<th>Setting</th>
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<th>Mean</th>
<th>Std. Deviation</th>
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</thead>
<tbody>
<tr>
<td>ECHSENG</td>
<td>124</td>
<td>3.34</td>
<td>1.096</td>
</tr>
<tr>
<td>THSENG</td>
<td>336</td>
<td>3.14</td>
<td>1.305</td>
</tr>
</tbody>
</table>

Valid N 124 (listwise)

Figures 5 & 6 graphically represent the English II achievement score distribution for ECHS students.

*Figure 5. Histogram of English II ECHS achievement score distribution.*
Figure 6. Q-Q Plot of ECHS English II Achievement Score Distribution.

Figures 7 & 8 graphically represent the English II achievement score distribution for THS students.

Figure 7. Histogram of English II THS achievement score distribution.
AdvancEd Student Survey Results

As previously stated, the AdvancEd student survey consists of 32 questions. Questions are grouped according to five standards: Purpose and Direction (5 questions); Governance and Leadership (3 questions); Teaching and Assessing for Learning (14 questions); Resources and Support Systems (7 questions); and Using Results for Continuous Improvement (3 questions). Each group of questions is designed to probe the perceptions of students as to “how” they view their respective school thus allowing schools and districts to draw conclusions as to the feelings of school connectedness students have for their school. This data source is meant to serve as a tool to be used along with other data sources in the improvement process for administrators and policy makers. Summary data is available in Appendix A.
Results

Null Hypothesis One

Null hypothesis one stated that no statistically significant relationship existed between school setting and achievement scores as indicated by the North Carolina End of Course Math I Test for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina. To test this hypothesis a point biserial correlation statistical test was conducted. Figure 9 graphically shows the results of the test. Group “0” represents the THS setting and group “1” represents the ECHS setting.

Figure 9. Scatterplot of Math I EOC Achievement Scores by School Setting.

Table 3 shows that the results of the correlation were significant with $r_{pb} = .225$. 
Table 3

Correlation between THS and ECHS Math I

Achievement Scores

<table>
<thead>
<tr>
<th>ACHLEVMA</th>
<th>Pearson</th>
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<th>225</th>
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</thead>
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<tr>
<td>TH</td>
<td>Correlation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>471</td>
<td>471</td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>Pearson</td>
<td>225</td>
<td>1</td>
</tr>
<tr>
<td>Correlation</td>
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<td>Sig. (2-tailed)</td>
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</tr>
<tr>
<td>N</td>
<td>471</td>
<td>472</td>
<td></td>
</tr>
</tbody>
</table>

For sample size N=472, an \( r_{pb} \) value of .225 indicates that there is a positive relationship between school setting and higher achievement scores in Math I. As school setting changed from THS to ECHS Math I achievement scores increased. For the correlation to be significant the p value must be less than .05. The p value totaled .000 using a two-tailed test indicating a level of statistical significance. The positive correlation was statistically significant at \( \alpha = .05 \) \( (r_{pb} [472] = .225, p < .05) \). Because there was a statistically significant positive relationship found between Math I achievement scores and school setting the researcher can reject null hypothesis one.

Null Hypothesis Two
Null hypothesis two stated that no statistically significant relationship existed between school setting and achievement scores as indicated by the North Carolina End of Course English II Test for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina. To test this hypothesis a point biserial correlation statistical test was conducted. Figure 10 graphically shows the results of the test. Group “0” represents the THS setting and group “1” represents the ECHS setting.

Figure 10. Scatterplot of English II EOC Achievement Scores by School Setting.

Table 4 shows that the results of the correlation were not significant with $r_{pb} = .070$. 
Table 4

Correlation between THS and ECHS English II Achievement Scores

<table>
<thead>
<tr>
<th></th>
<th>ACHLEVEN</th>
<th>GROUPEN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pearson</td>
<td>Pearson</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>.070</td>
</tr>
</tbody>
</table>

Correlation

Sig. (2-tailed) .131

N 460 460

For sample size N=460, an $r_{pb}$ value of .070 indicates that there is no statistical relationship between school setting and higher achievement scores as indicated by the English II end of course test. As school setting changed from THS to ECHS English II achievement scores did not increase or decrease to a statistically significant level. For the correlation to be significant the p value must be less than .05. The p value totaled .131 using a two-tailed test indicating that there was not a level of statistical significance. The correlation was not statistically significant at $\alpha = .05$ ($r_{pb} [460] = .070, p < .05$). Because there no statistically significant relationship found between English II achievement scores and school setting the researcher failed to reject null hypothesis two.
Null Hypothesis Three

Null hypothesis three stated that there was no statistically significant relationship between school setting and students’ feelings of school connectedness as indicated by the AdvancED Student Survey for ECHS students and THS students in two rural school districts in the Appalachian region of Western North Carolina. To test this hypothesis a point biserial correlation was conducted by comparing all responses from questions grouped by standard for each school setting. For example, the N value in the following five tables represents the number of total responses for each group of questions in the respective standard being tested. The following tables show the results yielded from each correlation conducted on each of the five standards from the AdvancEd student survey. Table 5 displays the correlation results comparing students overall perceptions of Purpose and Direction for their respective school setting.

Table 5

Correlations Results – Standard I

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>5</td>
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<td>.071</td>
</tr>
<tr>
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<td>5</td>
<td>Pearson</td>
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<td></td>
<td>Correlation</td>
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</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>5869</td>
</tr>
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</table>

<table>
<thead>
<tr>
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<th>.071</th>
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<td>Correlation</td>
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<td></td>
<td>Sig. (2-tailed)</td>
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</tr>
<tr>
<td></td>
<td>N</td>
<td>5869</td>
</tr>
</tbody>
</table>
For sample size N=5869, an $r_{pb}$ value of .071 indicates that there is a positive relationship between school setting and students’ perception of their respective school in the area of *Purpose and Direction*. As school setting changed from THS to ECHS the average mean of the responses to questions probing students’ perceptions of *Purpose and Direction* for their particular school setting increased. For the correlation to be significant the p value must be less than .05. The p value totaled .000 using a two-tailed test indicating a level of statistical significance. The positive correlation was statistically significant at $\alpha = .05$ ($r_{pb} [5869] = .071$, $p < .05$).

Table 6 displays the correlation results comparing students overall perceptions of *Governance and Leadership* for their respective school setting.

Table 6

*Correlation Results-Standard II*

<table>
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<tr>
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<tbody>
<tr>
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</tr>
<tr>
<td></td>
<td>Correlation</td>
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</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
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<tr>
<td></td>
<td>N</td>
<td>3521</td>
</tr>
<tr>
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<tr>
<td></td>
<td>Correlation</td>
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</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>3521</td>
</tr>
</tbody>
</table>

For sample size N=3521, an $r_{pb}$ value of .076 indicates that there is a positive relationship between school setting and students’ perception of their respective school in the area of
Governance and Leadership. As school setting changed from THS to ECHS the average mean of the responses to questions probing students’ perceptions of Governance and Leadership for their particular school setting increased. For the correlation to be significant the p value must be less than .05. The p value totaled .000 using a two-tailed test indicating a level of statistical significance. The positive correlation was statistically significant at α = .05 ($r_{pb} [3521] = .076$, p < .05).

Table 7 displays the correlation results comparing students overall perceptions of Teaching and Assessing for Learning for their respective school setting.

Table 7

<table>
<thead>
<tr>
<th>Correlation Results - Standard III</th>
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<tbody>
<tr>
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<td>Pearson Correlation</td>
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<tr>
<td>Sig. (2-tailed)</td>
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<tr>
<td>N</td>
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<tr>
<td>0</td>
</tr>
<tr>
<td>Pearson Correlation</td>
</tr>
<tr>
<td>.018</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
</tr>
<tr>
<td>N</td>
</tr>
</tbody>
</table>

For sample size N=16435, an $r_{pb}$ value of .018 indicates that there is a positive relationship between school setting and students’ perception of their respective school in the area of Teaching and Assessing for Learning. As school setting changed from THS to ECHS the average mean of
the responses to questions probing students’ perceptions of *Teaching and Assessing for Learning* for their particular school setting increased. For the correlation to be significant the p value must be less than .05. The p value totaled .021 using a two-tailed test indicating a level of statistical significance. The positive correlation was statistically significant at $\alpha = .05$ ($r_{pb} [16435] = .018, p < .05$).

Table 8 displays the correlation results comparing students overall perceptions of *Resources and Support Systems* for their respective school setting.

### Table 8

*Correlation Results-Standard IV*

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<td>Sig. (2-tailed)</td>
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<td></td>
</tr>
<tr>
<td>N</td>
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<td>8217</td>
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<tr>
<td>Correlation</td>
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</tr>
<tr>
<td>Sig. (2-tailed)</td>
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<td></td>
</tr>
<tr>
<td>N</td>
<td>8217</td>
<td>8217</td>
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</tbody>
</table>

For sample size N=8217, an $r_{pb}$ value of -.002 indicates that there is a negative relationship between school setting and students’ perception of their respective school in the area of *Resources and Support Systems*. As school setting changed from THS to ECHS the average mean of the responses to questions probing students’ perceptions of *Resources and Support*
Systems for their particular school setting decreased. For the correlation to be significant the p value must be less than .05. The p value totaled .868 using a two-tailed test indicating that there was not a level of statistical significance. The negative correlation was not statistically significant at α = .05 ($r_{pb}[8217] = -.002$, p < .05).

Table 9 displays the correlation results comparing students overall perceptions of Using Results for Continuous Improvement for their respective school setting.

Table 9

**Correlation Results-Standard V**

<table>
<thead>
<tr>
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<tbody>
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<tr>
<td></td>
<td>Correlation</td>
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</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.898</td>
</tr>
<tr>
<td></td>
<td>N</td>
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</tr>
<tr>
<td>0</td>
<td>Pearson</td>
<td>-.002</td>
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<tr>
<td></td>
<td>Correlation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.898</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>3521</td>
</tr>
</tbody>
</table>

For sample size N=3521, an $r_{pb}$ value of -.002 indicates that there is a negative relationship between school setting and students’ perception of their respective school in the area of Using Results for Continuous Improvement. As school setting changed from THS to ECHS the average mean of the responses to questions probing students’ perceptions of Using Results for Continuous Improvement for their particular school setting decreased. For the correlation to be
significant the p value must be less than .05. The p value totaled .898 using a two-tailed test indicating that there was not a level of statistical significance. The negative correlation was not statistically significant at \( \alpha = .05 \) \((r_{pb} [3521] = -.002, p < .05)\).

Null Hypothesis three stated that there is no statistically significant relationship between school setting and students’ feelings of school connectedness as indicated by the *AdvancED Student Survey* for ECHS students and THS students in two rural school districts in the Appalachian region of Western North Carolina. The results of the correlation tests conducted for each of the five *AdvancEd* standards yielded statistically significant positive correlations between the setting of ECHS and *Purpose and Direction, Governance and Leadership*, and *Teaching and Assessing for Learning*. However, negative correlations that did not meet the level of statistical significance between the setting of ECHS and, *Resources and Support Systems*, and *Using Results for Continuous Improvement* were also found. Based on these results, the researcher failed to reject null hypothesis three.

**Summary**

Archived Math I and English II student achievement data, as well as archived *AdvancEd* student survey data was collected from THS and ECHS in two rural school districts in the Appalachian region of Western North Carolina. The data was utilized to probe two specific research questions aimed at determining if a statistically significant relationship existed between school setting and achievement scores and feelings of school connectedness for students in each respective school setting. A point biserial correlation method was used to test the hypotheses of the study. The data revealed a significant positive correlation between the ECHS setting and achievement scores in Math I. The data also revealed no significant positive correlation between the ECHS setting and achievement scores in English II. A point biserial correlation was
conducted for each of the five *AdvancEd* standards. Questions were grouped by standard as they are in the actual survey. The data from the tests revealed statistically significant positive relationships between the ECHS setting and the following standards: *Purpose and Direction*; *Governance and Leadership*; and *Teaching and Assessing for Learning*. The data also revealed a negative relationship that did not meet the level of statistical significance between the ECHS for the *Resources and Support Systems*, and *Using Results for Continuous Improvement* standards.
CHAPTER FIVE: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Discussion

The ECHSI became a reality in North Carolina in 2002 through funding made possible by the Bill and Melinda Gates foundation. The initiative was implemented to combat the poor graduation rate in many high schools, and also to improve the under-representation of many demographic groups in the higher education population, specifically African-American males, students who would be first generation college students, and low income students (Berger, et.al, 2010; Edmunds, 2010). The purpose of this quantitative correlational study was to determine if there was a relationship between school setting, proficiency scores and feelings of school connectedness for students attending early college high school and traditional comprehensive high school in two rural school districts in Appalachian region of Western North Carolina, and to determine if the relationships between groups were statistically significant.

Research question one asks the nature and strength of the relationship between school setting and achievement scores as indicated by the North Carolina End of Course Math I and English II tests for THS and ECHS students in two rural school districts in the Appalachian region of Western North Carolina. The subsequent hypotheses stated that there would be a statistically significant positive relationship between school setting and achievement scores as indicated by the North Carolina End of Course Math I and English II Tests for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina. The null hypotheses stated that there would be no statistically significant difference in the achievement scores of the two groups being compared.

For research question one a total of 472 Math I achievement scores were utilized with N=374 for students in the THS setting and N=98 in the ECHS setting. The total mean score for
students in the THS setting was 2.07 (SD=1.189), while the total mean score for students in the ECHS setting was 2.76 (SD=1.158). A point biserial correlation test was conducted to test the relationships being examined in research question one. A point biserial correlation was utilized because one of the variables being measured was a dichotomy. The correlation coefficient calculated was .225. For a statistical relationship to exist between the two groups being studied the p value is required to be less than .05. In this instance the p value totaled .000. As a result the data provided clarification that the relationship between school setting and achievement scores as indicated on the North Carolina End of Course Test in Math I was statistically significant. The null hypothesis for this part of research question one was rejected. This result supports research conducted by others. Edmunds (2010) found that students who had applied and were chosen via lottery to attend an ECHS were more successful in completing Math I than was students who had applied but were not chosen to attend and therefore attended a THS. In the evaluation study conducted by Berger, et. al (2010), students attending an ECHS posted higher achievement scores on state standardized tests in Math.

Research question one also asks the nature and strength of the relationship between school setting and achievement scores as indicated by the North Carolina End of Course English II test for THS and ECHS students in two rural school districts in the Appalachian region of Western North Carolina. The subsequent hypothesis stated that there would be a statistically significant positive relationship between school setting and achievement scores as indicated by the North Carolina End of Course English II Test for ECHS and THS students in two rural school districts in the Appalachian region of Western North Carolina. The null hypothesis stated that there would be no statistically significant difference in the achievement scores of the two groups being compared.
A total of 460 achievement scores were utilized with N=336 for students in the THS setting and N=124 in the ECHS setting. The total mean score for students in the THS setting was 3.14 (SD=1.305), while the total mean score for students in the ECHS setting was 3.34 (SD=1.096). A point biserial correlation was utilized because one of the variables being measured was a dichotomy. The correlation coefficient calculated was .070. For a statistical relationship to exist between the two groups being studied the p value is required to be less than .05. In this instance the p value totaled .131. As a result the data provided clarification that the relationship between school setting and achievement scores as indicated on the North Carolina End of Course Test in English II was not statistically significant. The null hypothesis for this part of research question one was not rejected. Edmunds (2010) reported that there was no gap in the percentage of minority students who completed English I when compared to non-minority students in the ECHS setting. For students in the THS setting, nine percent more non-minority students completed English I than did minority students; however, in this study the data does not support the hypothesis that there is a statistically significant positive relationship between attending an ECHS and high achievement scores on the English II end of course test.

Research question two asks the nature and strength of the relationship between school setting and students’ feelings of school connectedness as indicated by the AdvancEd student survey for THS and ECHS students in two rural school districts in the Appalachian region of Western North Carolina. The subsequent hypothesis stated that there would be a statistically significant positive relationship between school setting and the five standards probing feelings of school connectedness as indicated by the AdvancEd student survey for THS and ECHS students in two rural school districts in the Appalachian region of Western North Carolina. The null hypothesis stated that there would be no statistically significant difference in the survey
results of the two groups being compared. For the null hypothesis to be rejected a statistically significant positive relationship between school setting and the five standards probing feelings of school connectedness as indicated by the *AdvancEd* student survey for THS and ECHS students needed to be confirmed. Each standard was evaluated based on the total number of responses for each group of questions associated with each standard.

Standard one focused on students’ feelings as to the purpose and direction of their respective schools. A total of five questions were grouped to address standard one. A total of 5870 responses were collected, N=4955 from students in the THS setting and N=915 from students in the ECHS setting. A point biserial correlation test was conducted to test the relationship being examined in research question two. A point biserial correlation was utilized because one of the variables being measured was a dichotomy. The correlation coefficient calculated was .071. For a statistical relationship to exist between the two groups being studied the p value is required to be less than .05. In this instance the p value totaled .000. As a result the data provided clarification that the relationship between school setting and students’ feelings about the purpose and direction of their respective schools was statistically significant.

Standard two focused on students’ feelings related to governance and leadership in their respective schools. A total of three questions were grouped to address standard two. A total of 3522 responses were collected, N=2973 from students in the THS setting and N=549 from students in the ECHS setting. A point biserial correlation test was conducted to test the relationship being examined in research question two. A point biserial correlation was utilized because one of the variables being measured was a dichotomy. The correlation coefficient calculated was .076. For a statistical relationship to exist between the two groups being studied the p value is required to be less than .05. In this instance the p value totaled .000. As a result
the data provided clarification that the relationship between school setting and students’ feelings about governance and leadership in their respective schools was statistically significant.

Standard three focused on students’ feelings related to teaching and assessing for learning in their respective schools. A total of 14 questions were grouped to address standard three. A total of 16,436 responses were collected, N=13,874 from students in the THS setting and N=2562 from students in the ECHS setting. A point biserial correlation test was conducted to test the relationship being examined in research question two. A point biserial correlation was utilized because one of the variables being measured was a dichotomy. The correlation coefficient calculated was .018. For a statistical relationship to exist between the two groups being studied the p value is required to be less than .05. In this instance the p value totaled .021. As a result the data provided clarification that the relationship between school setting and students’ feelings about teaching and assessing for learning in their respective schools was statistically significant.

Standard four focused on students’ feelings related to resources and support systems in their respective schools. A total of 7 questions were grouped to address standard four. A total of 8218 responses were collected, N=6937 from students in the THS setting and N=1281 from students in the ECHS setting. A point biserial correlation test was conducted to test the relationship being examined in research question two. A point biserial correlation was utilized because one of the variables being measured was a dichotomy. The correlation coefficient calculated was -.002. For a statistical relationship to exist between the two groups being studied the p value is required to be less than .05. In this instance the p value totaled .868. As a result
the data provided clarification that the relationship between school setting and students’ feelings about resources and support systems in their respective schools was not statistically significant.

Standard five focused on students’ feelings related to using results for continuous improvement in their respective schools. A total of 3 questions were grouped to address standard five. A total of 3521 responses were collected, N=2973 from students in the THS setting and N=549 from students in the ECHS setting. A point biserial correlation test was conducted to test the relationship being examined in research question two. A point biserial correlation was utilized because one of the variables being measured was a dichotomy. The correlation coefficient calculated was -.002. For a statistical relationship to exist between the two groups being studied the p value is required to be less than .05. In this instance the p value totaled .898. As a result the data provided clarification that the relationship between school setting and students’ feelings about using results for continuous improvement in their respective schools was not statistically significant.

Based on the findings of each of the five standards, null hypothesis three was not rejected, indicating that there was not a positive statistical relationship for each standard examined. Berger et. al (2010) reported similar findings when subgroups of students in the study were probed about feelings towards school. In particular, students reporting that they would be the first in their family to go to college achieved lower high school and college GPA’s, had lower aspirations as to furthering their education, and had less positive feelings toward school. Consequently, the opposite was true with respect to GPA for minority and low income students and with positive feelings toward school for students from non-English speaking homes. Overall however, there is a substantial body of research that reports positive situations that are related to small school environments. This is not to say that there are no
advantages to a THS setting but because of the smaller size a small school community almost intuitively lends itself more to things such as, more individualized instruction, more opportunities for in depth remediation, opportunities for one-on-one interventions, and more opportunities for personalization based on student needs (p.290-91).

Conclusions

Based on the results of this study it could be argued that the ECHSI is having a positive impact for students in the two participating school districts. Much of the emerging research examining the effectiveness of the ECHSI is focused on students who were selected via lottery system to attend an ECHS compared to students who applied to an ECHS and were not selected to attend. Studies conducted by (Berger, A., Adelman, N., & Cole, S. 2010; Edmunds, J. A. 2010; Edmunds, J. A., Bernstein, L., Glennie, E., Willse, J., Arshavsky, N., Unlu, F., & Dallas, A. 2010; Edmunds, J. A., Bernstein, L., Glennie, E., Willse, J., Arshavsky, N., & Unlu, F. et al. 2010; Edmunds, J. A., Bernstein, L., Unlu, F., Glennie, E., Smith, A., & Arshavsky, N. 2012; and Edmunds, J.A., Willse, J., Arshavsky, N., Dallas, A. 2013). are examples of such studies and yielded similar results to the findings from this study. In each of the studies the authors reported higher percentages of success for ECHS students on math and English standardized tests. This study compared achievement scores for both the Math I and English II end of course tests mandated by the NCDPI. For a student to achieve a passing score a level III or higher must be attained. Student achievement scores utilized for this study, when grouped by achievement level as defined by NCDPI, reveal that the pass rate for ECHS students is approximately 27% higher in Math I and 6% higher in English II than that of their THS peers. Viewed through the lens of percentage of students achieving proficient, test scores in Math in the ECHS setting compared to those in a THS setting is even more pronounced in the two rural school districts
participating in this study than in other studies cited; and although null hypothesis number two could not be rejected because a statistical difference did not exist between school setting and achievement scores on the English II test, it does indicate that the trend reported in other studies is consistent in the two rural school districts participating in this study in that the percentage of students achieving proficient scores in English II is greater than or equal to those in the THS setting. In a study examining students’ motivation in large versus small high schools, Horyna et al. (2012) discuss that one of the advantages in being a part of a small school community is that of equal or higher achievement on standardized tests (p.709). The significance of this is magnified when considering the statistical implications of a student not achieving success in Math in particular. A study by Finkelstein and Fong (2008) revealed that of the students who did not successfully complete Math I by the end of their 9th grade year, 6% went on to complete the courses needed to go onto college.

It could be argued that one of the most significant factors that influence high student achievement in the ECHS setting is the Powerful Teaching and Learning design principle which is supported by the CIF that is set forth by the NCNSP. The main purpose of the CIF is to accelerate student learning, improve college readiness skills, and empower students to take ownership in their own education (Vargas and Miller, 2011, p.2). With a focus on this particular design principle, teachers and administrators in ECHS utilize the NCNSP provided services of instructional and leadership coaches resulting in a continuous process of reflection and improvement. Practices such as peer observations, instructional rounds, peer school reviews and ongoing professional development at the building, regional, and state levels are common within the network of schools. This perhaps explains, at least in part, the consistency of this study when
compared to others with respect to student achievement comparisons made between ECHS and THS students, especially in Math.

Schools within the ECHS network purposely designed as small school communities aimed at creating a more intimate setting than that of a THS, resulting in a more favorable environment for student-student, student-teacher, and teacher-parent relationships. Previous research has found that the creation of small school communities such as these nurtures and grows strong feelings of connectedness to schools for the students who attend them. A study conducted by Gillen-O’Neel and Fuligini (2013) found that students who felt more connected to their high school also found school to be useful and more enjoyable, reducing the risk of students dropping out (p. 689). The results of this study, at least to a certain degree, supports previous research findings related to school connectedness. In the areas of, purpose and direction, governance and leadership, and teaching and assessing for learning a statistical positive relationship was found when comparing student survey responses in the two school settings. This doesn’t imply that school setting “causes” the strong feelings of connectedness (or the higher achievement scores achieved on the English II or Math I tests), but it does indicate a statistically significant relationship between attending an ECHS and each of these independent variables. The constructs of school connectedness includes academic engagement, a feeling of belonging, equitable and consistent discipline, peer relationships, teacher support, and the student feeling as though their “voice” is heard in the school planning process (Libbey, 2004, p.278). The first three standards of the student survey analyzed in this study encapsulate all of these issues. Standard I (purpose and direction), and standard II (governance and leadership) focus on issues such as expectations set for students, collaborative efforts by faculty and staff to ensure that academic supports are in place to help students, equitable discipline, and perceptions
of how students treat each other and how students and staff treat each other. In each of these three standards this study found a statistically significant relationship associated with feelings of school connectedness and school setting. In other words, students attending an ECHS reported stronger feelings of connectedness to school, as indicated in standards I, II, and III of the survey, to a level of statistical significance. These findings are consistent with other research. Blum (2005) points out that increasing student connectedness is likely to reduce fights, vandalism, and bullying while increasing student motivation, classroom engagement, academic performance, and attendance (p.1). Consequently Edmunds (2010) found that students attending ECHS has significantly lower numbers of suspensions and unexcused absences. In a case study conducted by Ongaga (2010) students attending an ECHS in Southeastern North Carolina described their teachers as “caring”, “confidants”, “fair” and “trustworthy” (p.380).

The resulting correlations for standards IV (resources and support systems), and V (using results for continuous improvement) do not necessarily coincide with much of the existing literature and research. The relationship between standard IV and school setting was negative. In other words, students attending a THS had a more favorable view of their school as indicated by questions grouped together to define this standard. Questions associated with standard IV almost exclusively dealt with resources allocated to schools by the district. Examples of such resources include staff allocation, available technology, counseling and planning staff, and the adequacy of building and grounds. In North Carolina ECHS are funded through the general assembly each year to purchase school supplies, college textbooks, and even pay for tutors. However, funds allocated to ECHS cannot be used to pay teacher salaries or for capital improvements such as building expansion, building maintenance, or pay for anything that will become a “permanent” part of the structure. The result of these regulations is that
ECHS are completely dependent on their respective school district for teacher allocation and building maintenance/adequacy. This is not in any way to suggest that the participating district policy makers are “under serving” the ECHS in their respective districts, it is only meant to suggest that most of the issues associated with standard IV are not within the control of school community of the ECHS.

Standard V (using results for continuous improvement) consists of three questions focusing on how well school staff and administration include the voice of students in planning for improvement, share student successes with family and community members, and how prepared students feel for the next school year. The results of this standard indicate that there is opportunity for school improvement for the ECHS participating in the study. Initiatives such as regular communications to local media, school website, principal’s weekly newsletter, etc. can serve as invaluable outlets to celebrate the successes for students with family and community members. Also, ensuring that students are represented and have a voice in the school improvement process is crucial in the development and nurturing of strong feelings of school connectedness. One of the most basic assumptions of a small school community is that it creates an environment in which high expectations for all students, greater levels of input from parents and students, and consistent levels of communication with all stakeholders are the norm (WilkinsonLee, et. al, 2011, p. 228).

Implications

Multiple evaluations, reports and studies have emerged comparing achievement levels and experiences of students who were chosen to attend an ECHS via lottery selection with those who had applied to an ECHS but were not chosen (Edmunds, 2010; Edmunds et. al, 2010). Multiple qualitative studies have also emerged focusing on students’ experiences and feelings of
school connectedness to the ECHS in which they attend (Ongaga, 2010; Thompson & Ongaga, 2011). This study was conducted to fill a gap in the emerging literature focusing on the ECHSI. Specifically, this study focused on the effectiveness of two school districts in rural Appalachia.

The Appalachian region of Western North Carolina is rich in cultural heritage, with many of the residents living serving as caretakers of the land that was handed down to them from previous generations, some dating back to the 1700’s. There is a common misconception from those outside of the region that the low population density somehow indicates that the influence of the setting is not as influential on those who live there as it might be for individuals who live in more urban and more densely populated areas. But research focused on the Appalachian region has found quite the opposite. Those native to the area have a strong sense of obligation to the community, and even more specifically to the family unit. Moreover, it is very common for an individual to consider the goals of community and/or family as their own in many instances to prioritize the goals of community and/or family above their own (Gore, et. al, 2011). It is not at all uncommon for the family “unit” to encourage individuals to develop a specific body of knowledge or skills that will fill a necessary gap in the family or community unit, while discouraging the individual from separating from the family unit by going away to college. Simply put most of the people who are born in Appalachia stay in Appalachia. This is not to suggest that choosing to live in Appalachia is a bad decision. The region is a beautiful landscape with some unique cultural traits that could be traced to Ireland, Scotland, and England. The issue that continues to plague the region is the number of citizens who live in poverty, many of whom derive from several generations before them who have lived in poverty. The ECHSI has the potential to change the socio-economic landscape of the region for many of its citizens. Although different studies report different views of Appalachian citizens towards education, the graduation
rates are similar (and better in many instances) to those in more populated urban areas. And although census data reveals that more people in Appalachia are now earning college degrees, the gap has actually widened when comparing people in Appalachia who are earning college degrees to the rest of the United States (Shaw, et.al, 2004). The implications and significance of this study and those that may follow is that the effectiveness of ECHS in the Appalachian region is arguably one of, if not the most significant strategies in breaking the cycle of poverty that has plagued the region for generations. With the completion of this study, the body of emerging research focused on the ECHSI has now began to examine the rural Appalachian region of Western North Carolina, and perhaps this and future studies will reveal data that will guide policy makers as they continue the school improvement and design process and ultimately improve the economic demographic and quality of life for the citizens who live there.

Limitations

Because the study utilized archived data, no subgroups were identified or analyzed. This is possibly significant if either school setting had high numbers of students with disabilities, English language learners, etc. Data was analyzed based on achievement scores on the standardized Math I and English II tests, and student survey data collected with no other factors being considered.

Recommendations for Future Research

Since this study only utilized archived data it would be beneficial to identify specific subgroups of students in which to do experimental studies. Analyzing data from first generation college students who were not successful in middle school would also be advantageous, not only analyzing achievement scores but also attendance, discipline issues, and feelings toward school. It would also be beneficial to collect data from teachers as to their feelings of the instructional
practice, professional development opportunities, and how they have seen/not seen the ECHS
philosophy transform the behavior and success of students. Though this study focused on the
rural Appalachian region of North Carolina, it would also be beneficial to conduct similar studies
in the rural areas of Eastern North Carolina. The socio-economic demographic is very similar to
that of Appalachia, and the area also has a unique cultural heritage unlike other places. It is
significant and important to study the effectiveness of the ECHSI in densely populated urban
areas, but it is no less important to replicate and expand those and other studies in the rural areas
of North Carolina as well.
References


Libbey, H. P. (2004). Measuring Student Relationships to School: Attachment, Bonding,


## Appendix A

### Student Survey Summary Statistics by Standard and School Setting

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<tr>
<th>Setting</th>
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<th>Maximum</th>
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September 22, 2014

Dear Donna James:

It is my pleasure to give permission for Mr. David Robinson to have access to the AdvanceEd Parent and Student Data for the traditional and early college high schools within the Madison County School district. I understand that no students or districts will be singled out within this research request.

Please feel free to contact me if you need additional information.

Respectfully,

Ronald Wilcox, Ed. D.
Superintendent of Schools
September 19, 2014

Dear Donna James,

It is my pleasure to give permission to Mr. David Robinson to have access to the Advance Ed Parent and Student Data for the traditional and Early College High schools within the Jackson County Public Schools District. I understand that no students or districts will be singled out within this research request. Please feel free to contact me if you need any additional information.

Sincerely,

Mike L. Murray
Superintendent
Jackson County Public Schools
Appendix C

LIBERTY UNIVERSITY
INSTITUTIONAL REVIEW BOARD

April 15, 2014

David Robinson
IRB Approval 1809.041514: Examining the Effectiveness of the Early College High School Model in the Rural Appalachian Region of Western North Carolina

Dear David,

We are pleased to inform you that your above study has been approved by the Liberty IRB. This approval is extended to you for one year. If data collection proceeds past one year, or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms for these cases were attached to your approval email.

Please retain this letter for your records. Also, if you are conducting research as part of the requirements for a master’s thesis or doctoral dissertation, this approval letter should be included as an appendix to your completed thesis or dissertation.

Thank you for your cooperation with the IRB, and we wish you well with your research project.

Sincerely,

Fernando Garzon, Psy.D.
Professor, IRB Chair
Counseling

(434) 592-4054

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Appendix E

IRB Change in Protocol Approval: IRB Approval 1809.041514: Examining the Effectiveness of the Early College High School Model in the Rural Appalachian Region of Western North Carolina

IRB, IRB <IRB@liberty.edu>
Fri 9/26/2014 3:11 PM
Inbox
To:
Robinson, David;
Cc:
Bragg, Rick (School of Education) <rbragg2@liberty.edu>;
Garzon, Fernando (Center for Counseling and Family Studies);
IRB, IRB <IRB@liberty.edu>;
Good Morning David,

This email is to inform you that your request to include de-identified Macon, Jackson, and Madison County Schools' student and parent survey data collected through the AdvancEd accreditation process instead of surveying students from three school districts in the western North Carolina region has been approved. Thank you for submitting your permission letters from Macon, Jackson, and Madison County Schools for our documentation.

Thank you for complying with the IRB’s requirements for making changes to your approved study. Please do not hesitate to contact us with any questions.

We wish you well as you continue with your research.

Best,

G. Michele Baker, MA, CIP
Institutional Review Board Coordinator
The Graduate School

(434) 592-5530