

LAUNCHING AN EARLY COLLEGE HIGH SCHOOL WITH AN EMPHASIS ON CAREER  
AND TECHNICAL EDUCATION: AN ANALYSIS OF ITS FIRST YEAR OF OPERATION  
INCLUDING IMPLICATIONS FOR SCHOOL DISTRICT LEADERS

A Dissertation

by

LEE HERNÁNDEZ

BBA, St. Mary's University, 1998  
MS, Texas A&M University—Corpus Christi, 2003

DOCTOR of EDUCATION

in

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This dissertation meets the standards for scope and quality of  
Texas A&M University-Corpus Christi and is hereby approved.

Lynn Hemmer, PhD  
Chair

Dan Pearce, PhD  
Committee Member

Nancy Smith, EdD  
Committee Member

Jose Guardiola, PhD  
Graduate Faculty Representative

May 2016

## ABSTRACT

As the need for a skilled workforce increases (Legislative Budget Board, 2007), school districts seek to create alternative programs to prepare students for jobs in high demand. Districts work to develop an academic environment conducive to student learning and training for the workforce amidst budget constraints. The purpose of this study was to explore a district's implementation of an early college high school with an emphasis on career and technical education (ECHS-CTE) that prepares students for college *and* career readiness. Two theoretical frameworks, Astin's (1993) Input-Environment-Output Model and Mishan's (1972) Cost-Benefit Analysis, were utilized focusing on the environment between two models; ECHS-CTE and traditional high schools. Cost-benefit analysis was used to explore the social and human gains (benefits) in the context of development and operating costs.

An analysis of the school's first year of operations was conducted using a one-way ANOVA to compare differences in academic achievement and student behavior followed by an analysis of resource allocations between the ECHS-CTE and five traditional high schools. Interviews were conducted with individuals directly involved in the development of the ECHS-CTE. A qualitative thematic analysis was used to explore specific programmatic features and student achievement outcomes that helped district administrators consider the cost benefits with opening the ECHS-CTE.

Findings suggest no significant difference between the ECHS-CTE compared to the other five high schools with regard to GPA, state assessment scores, and attendance. A statistical significant difference in the number of CTE course credits earned existed. Differences in

operating expenses and resource allocations also existed. Themes of: strong partnerships and the keys to success; obstacles; and perceived value emerged from the data.

Despite costs associated with opening the school, participants anticipated beneficial gains of student outcomes and immediate employment opportunities. Beyond the financial cost to open an ECHS-CTE, it takes a committed school district, a supportive community, an open-minded college partner, and devoted industry leaders to foster an educational environment conducive to developing a strong workforce. Implications include recommendations for future studies to include longitudinal studies, case studies to include teacher and student perspective, and further exploration of the necessary partnerships.

## DEDICATION

This study is dedicated to my wife. Without her unconditional love and support, this dissertation would not have been possible. I wish to thank my kids who accepted the fact that my graduate study would take me away from them from time to time to better our family. I would also like to acknowledge the rest of my family and a supporting cast who pushed and encouraged me to finish this marathon of a process. Lastly, this study is also dedicated to those education innovators who are willing to take risks and constantly seek new ways to create opportunities for the betterment of our students and the community.

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Most importantly, I want to thank my biggest fan, Marcy. Without her cheering me on, I would not have won this race. I sincerely appreciate my kids, Mireya, Corina, Nick, and Marcos, who inspire me every day to work harder and to be the best dad and mentor I can be. I truly appreciate all of their sacrifices so that I, WE, could get this done. I would also like to thank my parents, Al and Alice, for always assuring me that I could accomplish my goals. In addition, I wish to thank my other parents, my in-laws, Daniel and Maria Briones. Their unconditional support, including helping us shuttle the kids around when I had class, and their constant encouragement truly helped me reach this goal. I have been blessed beyond belief, and I am so thankful for all of the helping hands along the way. I have been fortunate enough to have the right people in my life who have pointed me in the right direction—and for that, I am grateful.

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## CHAPTER I: INTRODUCTION

### **Background**

Much like the rest of the nation, the health of the Texas economy is largely driven and influenced by its current and future workforce, which directly impacts business, the state's economy, and its national and global competitiveness (Texas Association of Workforce Boards, 2014). Even though the Texas population is growing rapidly (more so than other states (Theis, 2014), it still struggles to employ a sufficient number of skilled workers due to a poorly educated workforce which will cause a significant shortfall of qualified workers that have the skills to fill middle-income jobs throughout the state (Legislative Budget Board, 2007). As this problem mounts, the public school system is scrambling to figure out how to meet this demand. It is no longer sufficient to educate students the way it's always been done. In fact, the Texas Association of Workforce Boards reports that we are positioning today's students to be less successful due to existing skills gaps and will continue to see these gaps unless there is a change in how we prepare high school students for postsecondary experiences that include developing skill sets that are relevant in the 21<sup>st</sup> century economy. And yet this sense of urgency can be challenging for school districts, especially when they are pressed to consider different if not innovative programs as a means to support the development of a skilled workforce.

Often, the conversation of preparing a skilled workforce centers on preparing students to be college and career ready (CCR), with particular emphasis on college ready. As noted by Carnavale, Smith, and Strohl (2010), the economy coupled with the perceived need for specific 21<sup>st</sup> workforce skill sets has increased the demand for citizens with college degrees. Further, as Gee (2013) contends, "the strength of America's future depends on the ingenuity sparked by our college graduates" (p. 5). As a result, the K-12 education system has been pressed to prepare *all*



students for success in two- or four- year institutes of higher education (Conforti, 2013). In many ways this agenda of preparing and sending all students to college has spurred new pathways to college and improved college access opportunities, persistence and success for underrepresented students.

### **College Readiness**

**The traditional route to college.** It is estimated that of the more than five million students are enrolled in Texas public schools (Texas Education Agency (TEA), 2013), students in grades 9-12 represent approximately twenty seven percent of the enrollment with the majority of them enrolled in traditional, comprehensive high schools. In these comprehensive high schools, students have choices to make regarding their individual academic path. That decision will include some students choosing a path that leads directly to a four-year baccalaureate degree, others may complete a two-year associate's degree after high school, and the rest will most likely go straight into the workforce. For those students choosing the traditional college path it can be rather systematic, with the typical student coming from an educated family and going through the traditional schooling process successfully, ultimately leading to a four-year bachelor's degree and then a career. In the last decade, a nontraditional path for students who traditionally have been underrepresented in college emerged, the Early College High School (ECHS).

**An accelerated path to college.** Taking up the challenge to reform, if not redesign, what schools can do to create access and opportunity to college, the Bill and Melinda Gates Foundation in 2002 started the ECHS initiative. This initiative, since adopted by many school districts across the nation, provided traditionally underrepresented students in the college populations with opportunities to earn an associate's degree while attending high school. The

Early College High School Initiative was designed to help underrepresented groups, specifically low-income students, students of color, first-generation college goers, and English language learners gain access to colleges and universities (Uribe, 2010). By blending high school and college courses in an academically rigorous and supportive educational program, students could earn a high school diploma and two years of college credit (Hemmer & Uribe, 2012). However, even the academic plan for students enrolled in ECHS assumes somewhat of a traditional path to college in that students may aspire for those careers that require a four-year degree. As a result of the ECHS model high school graduation rates have improved, as well as an increase in the number of students deemed college ready, as well as improvement to the college-going rates and college completion rates (Nodine, 2008).

### **Career Readiness**

In the early years of the rollout of the ECHS and with more and more school districts having adopted an ECHS model, much of the readiness conversation focused solely on preparing students to be college ready and less attention was on the second “C”, career readiness. According to Schultz (2012), this particular push for a particular professional career and a particular emphasis on college readiness caused a decline in educational opportunities for many students who do not aspire to be an architect or engineer. Even when there is mention of career readiness, the careers that typically are referenced still include pathways to college for students to become doctors, lawyers, engineers, architects, and veterinarians. In fact, in the wake of more and more districts adopting an ECHS model in the early years of the ECHS initiative, the college and career readiness conversations rarely included preparing students for careers as mechanics, welders, process technicians, and HVAC technicians.

**Career and technical education paths.** Interestingly enough, even though Career Technical Education (CTE) has been around for several decades (though receiving less attention

of late compared to ECHS) students may choose a career technical education (CTE) path. This path historically, (also known as the vocational path) included classes such as automotive mechanics, auto-body, welding, construction trades, and other industrial based courses. Over the years however college readiness, rigorous academics for post-secondary preparation, and an increase in core graduation requirements has greatly limited a high school students' ability to choose CTE electives (Aliaga, Kotamraju, & Stone III, 2012). Coupled with the change in academic and graduation requirements, CTE has seen a tremendous cut in funding over the last decade. Baxter (2012) reports that in fiscal year 2011, CTE endured a \$140.2 million reduction which caused districts to eliminate many long standing CTE programs. The last few years, and as recent as the Obama Administration's request for FY 2016 CTE funding, has been leveled off, but funding reductions are still a cause for concern for CTE programs across the country (Association for Career and Technical Education, n.d.).

And yet in Texas, from 2002-2003 to 2012-2013, the number of students, in grades 9-12, participating in CTE programs has risen by an estimated twenty-one percent (Texas Education Agency (TEA), 2013). During the 2013-2014 school year, there were approximately 1,141,341 (81% of students, grades 9-12) Texas students enrolled in CTE courses (TEA, 2014a). The rise in programs and student enrollment in CTE courses is significant considering the employment trends in Texas as well as the demographic shift which will see a substantial impact on the workforce as aging employees leave the labor pool the demands for a skilled workforce (Combs, 2012).

Around the turn of the 20<sup>th</sup> century, educators, politicians, and business leaders began to actively debate about how to best educate the nation's rapidly growing, diverse student population, which now included large numbers of immigrants (Bragg, 2012). Hence, the

separation of the social classes began in public schools. Bragg goes on to say that for the wealthy and elite, high school education focused on college preparedness, whereas the working class students were specifically prepared only for immediate employment. For instance, the students in traditional high schools who were destined to go straight into the labor force after graduation have been historically pushed into vocational courses, such as agriculture, auto mechanics, construction, and welding, which carry a negative connotation. Kidwai (2011) adds that CTE had a certain stigma due to its association with the working class students who had no plans to attend a four-year college after high school. Although recently, the educational landscape has changed, the perceptions have not. An increase in academic choices for students and “the need to develop a workforce with advanced skills” are critical for the U.S. to remain competitive in the global economy (p. 17). Therefore, school districts are looking to change perceptions and the content of CTE programs by merging ECHS with CTE.

### **The Blending of College and Career Readiness Programs**

In the last few years, policy makers have encouraged conversations about college and career readiness and improvements to the curricula to expand career readiness intervention programming designed to provide students with an alternative pathway to postsecondary education. It also offers work experience in preparation for a career and eliminates the vocational education of yesteryear that consisted of low-level courses, job training, and single electives. Presently, CTE is being included in the same conversations as ECHSs. On their own the new CTE courses/programs are designed to provide academically rigorous, integrated, and sequenced programs of study that align with and lead to postsecondary education (American Institute for Research, 2013). In the context of ECHS, new opportunities exist for students when these programs are brought together.

**New models.** As expected, there is very little data about this new merging of the two previously separate models. However, it has been well established that the best college and career education programs offer students opportunities for individualized learning. However, this approach can be costly. An example is the \$1.1 billion dollars of President Obama’s 2015 budget earmarked to fund the Carl D. Perkins Career and Technical Education (CTE) program, a federal program that supports the redesign of the system to “ensure students graduate with the skills and abilities that are aligned with the needs of a global economy” (United States Department of Education, n.d.). Yet even with this budget set aside, at the local level, supplemental funds are still needed. At the state and local school district levels, the cost associated with CTE courses is of concern. For example, in Maine, department heads recognized a tremendous fluctuation in the cost of schools and programs that were dependent on specific CTE programs; however, funding from the Perkins program did not cover all costs associated with these programs (Allen, 2009). Educational leaders and policy makers were forced to consider different funding sources, especially for high-cost items in programs such as forestry, business, protective services, and commercial driving. In fact, additional funding sources, such as competitive grants to support new and existing CTE initiatives, are now in place in thirty one states.

Despite the high cost of offering CTE to public school students, there is evidence to suggest that these dynamic programs are now being implemented across the nation. These new models are very different from the high school vocational classes of years past, which focused on trades such as wood shop and auto shop and often lacked academic rigor (Nash-Hoff, 2013). Now, high schools with a CTE component are developing new partnerships with local colleges and employers, and creating classes and programs that focus on science, technology, engineering and math in order to better equip graduates for the demands of a high-tech economy. For

example, California funds a competitive grant opportunity to develop a work-based learning infrastructure, innovative regional partnerships for career pathway support, and the expansion and improvement of career paths for high school students. As a result, several California school districts have adopted innovative approaches that allow for the integration of academic and career preparedness programs organized around a broad theme, interest area, or industry sector.

In addition, Texas policy makers have responded to the demand for skilled workers by crafting a policy that bridges the goals of high school graduation, career technical education and college and career readiness. Texas legislators passed House Bill 5 (HB 5), which took effect in the 2014-2015 school year. As a result, Texas graduation requirements changed as new career oriented “endorsements” were added to replace what was known as the distinguished graduation plan (TEA, 2014). The intent of HB 5 was to provide Texas public school students with the opportunity to take courses for a specific career path rather than fill their schedules with less relevant electives. In addition to making learning more meaningful and relevant for high school students by connecting education to specific career pathways, it is also the intent of the policy to allow high school students to enter the labor market quickly with appropriate credentials.

### **Setting**

In 2014, with the passing of HB 5, Texas policy makers and education leaders, in coordination with the Texas Education Agency (TEA), Texas Higher Education Coordinating Board (THECB), and the Texas Workforce Commission (TWC), committed to supporting a new ECHS experience, one that included an emphasis on CTE (TEA, THECB, and TWC, 2014). The goal of the original ECHSs was to equip high school graduates with core college credits that could be transferred to a four-year college. This particular model would help students to “enter a

high-skill, high demand field by earning a high school diploma and a post-secondary credential simultaneously” (THECB, n.d., 2<sup>nd</sup> paragraph).

Against the backdrop of rapidly growing industries within major urban areas in Texas, business leaders fear that they will quickly run out of skilled labor to fill all of the jobs coming into demand (Wade, 2014). As a result, a South Texas school district leveraged HB 5 by opening the doors to a new high school that was structured after the ECHS model, but features an emphasis on CTE. This novel ECHS-CTE high school, hereafter known as the Academy, partnered with the local community college to offer students a program of study that mixes traditional and technology-based education, as opposed to the traditional ECHS model that only offers students college credit in core courses. During its first year of operation, the Academy offered 62 different programs of study (business administration, computer science, engineering and advanced technology, industrial education, natural sciences, public safety education and technology education) to tenth and eleventh grade students in addition to the course work necessary to earn a high school diploma.

In addition to the partnership between the school district and community college, the Academy also works with several businesses in the region to provide training in workplace settings. Wade argues for the necessity and value of these partnerships because they help to prepare individuals for thousands of new jobs, which is essential as states’ economies continue to grow. According to Wade, without developing partnerships between education and businesses, the shortages of skilled workers will increase.

## Statement of the Problem

The problem amidst a changing policy landscape that encourages student readiness by preparing them for a career and the financial constraints associated with CTE programs are the challenges that exist for educational leaders concerned with designing and implementing college and career pathways approach in high school as a strategy to help individuals acquire marketable skills and credentials. It is a concern that at a time when states are attempting to produce workers with the skills to master new technologies and adapt to the complexities of a global economy, questions arise as to how much to invest in education and how to measure the results of that investment (Luyten, Vissher, & Witziers, 2005).

From the perspective of school district leaders, implementing a new CCR initiative that includes a CTE framework can perhaps be viewed as a study of capacity in which educational leaders wish to bring about impactful, if not lasting change (Spillane, 1999). An initial study of capacity may include recommendations for changes to the organizational structure and governance, with particular attention placed on the redesign of the curricula (Christensen, Horn & Johnson, 2008; Tyack & Cuban, 1995). However, it may also entail an exploration of the full range of foundational resource demands (beyond finances), such as human, social and cultural capital.

As a greater number of school districts begin to implement new approaches to CCR, there is also a call to change the focus of career preparation programs from “programmatic to systemic, and be scaled nationwide” (Jobs for the Future (JFF), 2013, 2<sup>nd</sup> paragraph). Yet, before devising strategies for wider implementation, much can be learned at the individual programmatic level by first analyzing the many components of *one* particular pathway created at *one* particular school district. Specifically, as more states and school districts adopt this



innovative college and career pathway approach, Greene and Winters (2007) suggest it is essential to rigorously follow the program(s) to its completion, so that the outcomes and consequences will become clear to policy makers and educational leaders.

### **Research Purpose and Questions**

The purpose of this study was to explore a South Texas school district's implementation of an innovative school design to provide an alternative pathway for preparing students for college and career. This included an in-depth analysis of the school's first year of operations. A case study was incorporated to provide a deeper understanding regarding the establishment of an ECHS-CTE using two different approaches. First, the researcher utilized quantitative methods to explore detailed statistical factors such as student demographics (ethnicity/race, grade, and gender), grade point average (GPA), standardized state academic assessment scores, CTE course credits earned, and attendance to answer the following questions:

1) To what extent do differences in academic achievement and behavior impact student performance as measured by:

- 1.1) grade point average (GPA),
- 1.2) standardized academic assessment scores,
- 1.3) number of CTE course credits earned,
- 1.4) and attendance rates?

2) What percentage of resources are being allocated to ECHS-CTE schools

- 2.1) as measured by operating expenditures,
  - 2.1a) function and
  - 2.1b) program?
- 2.2) as measured by human capital, including presence of,

- 2.2a) professional staff,
- 2.2b) educational aides,
- 2.2c) number of students per teacher,
- 2.2d) years of experience for educators.

The researcher then employed a qualitative approach to explore the research question stated below:

3) What are the benefits of an ECHS with a CTE focus, according to school and district administrators?

Taken together, a descriptive assessment and interpretation of these research questions and respective approaches will provide a context for understanding the local capacity of a school district as it relates to perceived costs and benefits associated with the creation and operation of an ECHS-CTE program.

With an increased need for a skilled workforce in Texas (and in other states), more school districts may be turning to ECHS-CTE models to prepare students for current and future job/career opportunities and college. Findings from this study may be used to assist school district leaders in determining whether or not programs (such as the one in this study) effectively prepare students for college and the workforce.

### **Rationale**

Policy makers, community, business and education leaders have identified a need to grant educational opportunities to high school students, and in turn develop a skilled workforce. Although, there has been substantial empirical research on ECHSs and CTE programs and their impact on student success, to date there is no data on the merging of these two models.

In order to meet the needs of industries in the South Texas region, a school district decided to partner with a local community college to create an opportunity for high school students to simultaneously complete the Texas high school graduation requirements while attaining an industry certificate in a specified career pathway. Due to the considerable expense of operating such a system, district leaders had to carefully weigh the cost-benefit impact on the students and the community. Sharan, Shachar, and Levine (1999) have generated remarkable research which shows that innovative school designs are more community driven. In such schools, all stakeholders feel a sense of ownership with regard to the school's mission and vision.

Innovative programs such as an ECHS-CTE are not typically assessed or evaluated in their first year due to a perceived lack of data, evidence or time, which can be problematic when school district leaders are debating whether or not to launch a new program. A first year evaluation should focus on context rather than merely student achievement to provide administrators with relevant data for ongoing decision-making as they improve the program (Shepperson, Reynolds, & Hemmer, 2013). Weiss (1998) emphasizes that it is important to consider immediate and routinely available outcome measures to help assess innovative pilot programs. Furthermore, it is essential for school districts, especially those with shrinking budgets, "to create an evaluation process that can be used to efficiently determine the merit, worth, or value of a program, process, or product" (Scriven, 1991, p. 139); hence, more recent characterizations of evaluation are needed to inform and assist with defensible decision-making (Coryn, Hattie, Scriven, & Hartmann, 2007).

## **Operational Definitions**

**Attendance Rates**—Overall attendance average as calculated at the end of the second and fourth quarters for the five comprehensive high schools and the participating ECHS-CTE Academy.

**Career and Technical Education**—A series of courses that “provide individuals with coherent and rigorous content in addition to challenging academic standards and relevant technical knowledge and skills necessary for further education and careers in current or emerging professions.” This will lead to “technical skill proficiency, an industry-recognized credential, a certificate, or an Associate’s Degree” (Texas Workforce Investment Council, 2013).

**Cost Benefit**—The concept of providing guidance for forming policy, either public or private, while determining effective ways to evaluate projects (Posner, 2000).

**Course Credits**—In the context of this study, course credits refer to those earned by the end of the 2013-2014 school year.

**Dual Enrollment**—The option for high school students to earn college credit through a partnership with a local college or university (Marken, Gray, & Lewis, 2013).

**Early College High School**—An initiative spearheaded by the Bill and Linda Gates Foundation that emphasizes preparing students who are traditionally underrepresented in college preparatory programs through the utilization of small learning communities (Hall, 2013; Thompson & Ongaga, 2011).

**Grade Point Average (GPA)**—In this study, the overall average of grades as calculated at the end of the second and fourth quarters.

**Standardized Academic Assessment Scores**—The STAAR program “emphasizes ‘readiness’ standards, the knowledge and skills that are considered most important for success in the grade or course subject that follows and for college and career” (Texas Education Agency, n.d.). The

STAAR program also includes annual End-Of-Course (EOC) assessments for English I, English II, Algebra I, Biology, and United States History.

**Trade Certificates**—Certificates offered by the five comprehensive high schools and the participating ECHS-CTE Academy.

### **Methodological Framework**

This case study was grounded in Interpretivist Theory. According to Humphrey (2013), interpretivists perceive situations based on a series of shared “motives, meanings, life-goals and self-concepts. In this way, cultures are co-created with shared patterns of feeling, thinking, believing and doing” (p. 7). They believe that the only way to understand the social world is by drawing on shared experiences in order to make sense of the situation from the inside out. Leitch, Hill, and Harrison (2010) add that interpretivists establish causal relationships between variables by approaching the research problem holistically and clarifying perceptions; capturing the actual meanings in order to explain the phenomena or behavior. As such, the interpretations made in this study were based on a particular time and context, specifically a school district that opted to develop an alternative pathway to college. When the Academy becomes more established in the community, further studies and a re-interpretation of the data will be necessary.

### **Theoretical Frameworks**

Certain environmental factors may influence the academic accomplishment and agency of students, which is essential for leaders to consider when proposing innovative program in their districts. As such, this study was based on the explanatory and descriptive theoretical concepts of Astin’s (1993)\_Input-Environment-Output model (I-E-O) and Mishan’s (1972) Cost-Benefit Analysis (CBA) model. It is important to note that these two theoretical frameworks were used conceptually rather than directly applied during the analysis phase. The I-E-O model is made up

of three major components: input, environment and output. For the purposes of this study, the researcher focused on the environmental component to identify the differences between the two educational models, the ECHS and the traditional high school. Cost-benefit analysis became a lens through which to explore the social and human gains (benefits) in the context of cost when analyzing the data.

### **Input-Environment-Output Model**

Astin's Input-Environment-Output model "enables the researcher to simultaneously evaluate the effects of input and environmental variables on student outcomes" (House, 1999). Briefly, the environment of an ECHS, as compared to a traditional, comprehensive high school, differs greatly in terms of school culture, and climate, organization, structure and governance. These aspects will be discussed in greater detail in Chapter Two, the Literature Review.

### **Cost-Benefit Analysis**

Cost-benefit analysis, for the purpose of this study, was used with regard to human capital, resource allocation, and student social development. According to Psacharopoulos (2014):

Since education is not a purely economic activity, but has many other objectives, concepts such as human capital and cost-benefit analysis can never provide a complete answer to the questions of how resources should be allocated. However, the analysis of the returns to investment in education can throw some light on the question of how to allocate resources most efficiently or profitably, in other words how to maximize the returns or benefits derived from those resources" (p. 2).

School districts, then, must constantly remain vigilant regarding their community's needs and utilize that assessment to determine what programs would be most beneficial. In other words,

does the investment made go beyond fiscal concerns? These aspects were considered during the analysis of the data.

### **Limitations and Possibilities**

There are several limitations of this study since it had the restricted goal of analyzing the operational and accountability data from the first year of operation and the perceived benefits of creating an alternative pathway to college and career. Because the Academy was in its inaugural year, there was limited data and information to use in the study. Also, because of the newness of this type of program, there were no empirical studies or other campuses to use for comparison of the data that did exist. Therefore, this study was limited to the analysis of one South Texas school district's descriptive measures of the differences in student academic achievement and behavioral performance and the extent to which resources were allocated. It also included interviews with three key stakeholders involved in the creation of the Academy. Due to the non-probability nature of sampling, external validity was limited to study participants. Further, due to the non-experimental nature of the study, no causal inferences were drawn. Third, time may be considered a limitation of this study. The qualitative portion required an extended stay in the field, which according to Creswell (2011), may involve upwards of one year. However, because the interviews with the Academy creators were conducted during the second year of its existence, an extended time was not the most critical aspect of this study.

Other limitations that were likely to impact the study were my own experiences. At the beginning of the study I was the assistant principal at the Academy. Prior to this promotion, I worked at the district's original school for four years. I believe that these unique experiences have given me insight into the inner workings of the system. In addition, I also taught at-risk students in a traditional, comprehensive inner city high school for eight years. Midway through

the study, I accepted a position as principal in an urban region to help it earn an ECHS district designation.

### **Significance of the Study**

With the renewed interest of state policy makers to create the reforms necessary to provide a skilled workforce, there is now a demand for a fundamental shift to improve career readiness options for high school students. Leveraging the knowledge developed by one school district's initiative to create an innovative college and career readiness pathway allows for insight into the resulting questions, issues, or challenges, which may be useful to other school district leaders as they consider similar initiatives. However, acquiring evidence of success can be challenging, because demonstrable results are notoriously difficult to define and the full effects of a particular program can take years to become fully evident. Still, the ability to assess (through direct measures or meaningful proxies) whether a program is of value for its key constituents is an essential prerequisite for any discussion prior to replication or scaling of a CCR initiative. An in-depth analysis is critical for addressing sustainability and equity issues. Given the newness of the ECHS-CTE model, there are no exemplars, a dearth of empirical data, and gaps in the literature to assist school district leaders in determining whether or not the implementation of an Early College High School Career and Technical Academy would be beneficial for their respective district. At this point, scholars are unable to generalize the limited data on a larger scale.

However, as policy makers, legislators, school district leaders, and school administrators struggle with budget cuts and how to allocate limited funds, the importance of assessing needs and determining the effectiveness of implementation and sustainability, the cost-benefit of these programs becomes critical. Downey and Roman (2014) explain that the purpose of a Cost-



Benefit Analysis (CBA) is not necessarily to seek out fiscal savings, but to understand the social value which naturally creates an inherent comparison between two programs or alternatives that may have different types of impacts. Although this type of analysis is primarily used in the business world, it is important to note that it can be highly effective outside this sector. Using a CBA to determine program need and efficacy can assist school district leaders in making informed decisions to benefit their students and the community at large.

### **Chapter Summary**

As Texas acknowledges demand for a larger skilled workforce, high schools struggle with creating solutions to meet that need and to prepare students not only for college, but for the workforce as well. With the growth of Early College High Schools (ECHS), and students moving along the traditional high school path to the four-year degree, demands for an alternative for students who plan to go directly into the workforce have become more prevalent. Career and Technical Education (CTE) is pushing its way back into the conversation. Gone are the days of old when CTE was considered a lower-level vocational route. The rigor of CTE courses now prepares students for numerous career and educational opportunities. It is essential to combine college readiness with career readiness in order to fully educate each student.

This study brings to the forefront the necessity of helping students get a head start on their academic and professional careers. The researcher investigated the data of an ECHS-CTE Academy and compared them to traditional, comprehensive high schools within the same school district in South Texas. The purpose of this study was to explore a South Texas school district's implementation of an innovative school design to provide an alternative pathway for preparing students for college and career. Although further studies will be needed, the analysis of student outcomes will be better assessed over an extended period of time. The researcher studied the

experiences of one school district's initiative to create an innovative college and career readiness pathway. This will allow for insight into the questions, issues, or challenges that may be useful to other school districts considering similar initiatives. School officials will be able to utilize the results of this study to consider and plan for a CBA to better decide if this type of initiative would be the most beneficial for their community.

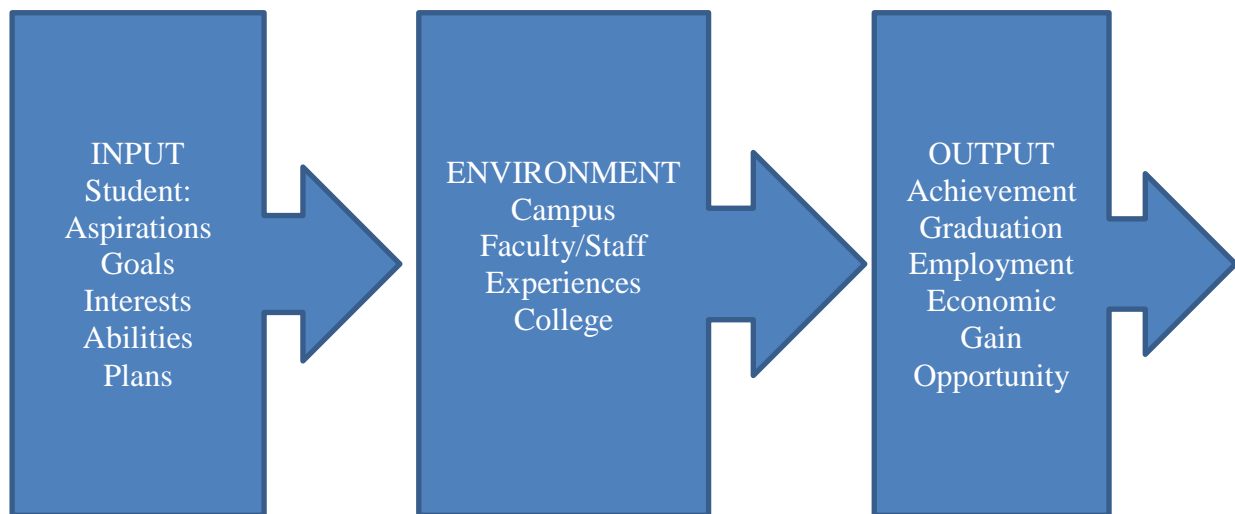
## CHAPTER II: INTRODUCTION

Preparing students for college and the workforce requires collaborative efforts from all stakeholders. As global economic demands intensify, the need to prepare students for successful careers becomes much more imperative. Nevertheless, it is the responsibility of the schools to provide an academic environment that emphasizes student-centered learning and a culture that cultivates academic success. Chapter II is organized into two major sections: an analysis of the theoretical frameworks of Astin's (1993) Input-Environment-Output model and Mishan's (1972) Cost-Benefit Analysis (CBA), and a literature review of diverse educational environments, and the culture and climate of various school programs.

### **Theoretical Frameworks**

#### **Adaptation of the Input-Environment-Output Model**

Astin's (1993) I-E-O model has three components: inputs, environment, and outcomes (I-E-O) (see Figure 1) that have been used to assess and evaluate activities in a traditional classroom. Input (a control variable) is typically "refer[ed] to [as] those personal qualities the student brings inherently to the education program (including the student's initial level of developed talent at the time of entry)" (Astin, 1993, p. 18). Environment (an independent variable) refers to the "students' actual experiences during an educational program" (Astin, 1993, p. 18). Outputs (outcome variables) "refer to the 'talents' we wish our students to develop in our educational program" (Astin, 1993, p. 18).



*Figure 1. Input-Environment-Output*

While early studies (e.g. House, 1999; Kelly, 1996; Knight, 1994) used the I-E-O model to link a particular educational experience with a particular student outcome, Astin and Sax (1998) argue that in order to adequately determine such a link, the researcher must control for student input factors. They point out that in educational research, students may bring various characteristics to an educational program; therefore, rather than revealing the impact of program participation, the outcomes may simply represent inherent differences in the characteristics of students. The I-E-O model was used because it controls for input differences and yields a more accurate estimate with respect to how environmental variables influence student outcomes. However, for this study, Astin's I-E-O model was not used to determine the impact of the ECHS-CTE on students' outcomes while controlling for gender and educational background characteristics per se. Rather, the researcher chose to focus on the larger scale of descriptive data generated from the conceptual I-E-O model to help inform district leaders about the first year of operations for the ECHS-CTE compared to other high schools that offer CTE courses.

The I-E-O model is ideal for this type of research because it provides a framework for measuring the level of student connection with the environment (DiRamio and Jarvis, 2011). In addition, because capacity assessments and evaluations of first year operations are critical for a school district, even though they may be limited, they can still be used by district leaders to compare outcomes and costs to the projected outcomes of the new program. As such, the I-E-O model was adapted in a slightly different way. Rather than controlling for input factors and varying environment factors, the research compared student academic and behavioral success at a traditional high school that offers career technical education (CTE) courses to an early college high school with a technical career education emphasis (ECHS-CTE). A comparison of resource allocations between the two academic environments was also included.

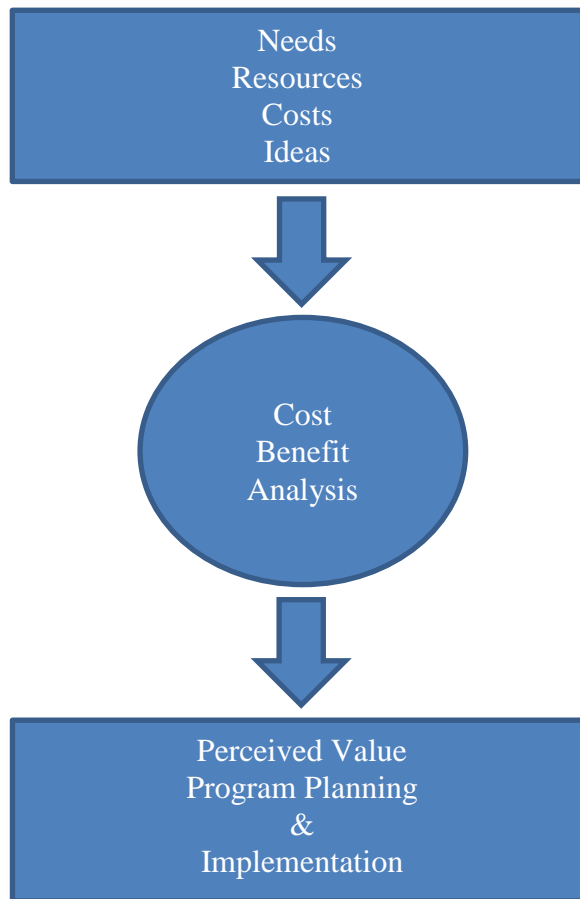
### **Cost-Benefit Analysis**

Businesses use various strategies to assess opportunities, trends, and impacts on their ventures. For this purpose, companies frequently implement a Cost-Benefit Analysis (CBA). Cost-Benefit Analysis is used as “a method for comparing seemingly incommensurable values” which “convert all costs and benefits into a uniform metric, monetary value, by figuring out how much money people would be willing to pay for positives” (Bronsteen, Buccafusco, and Masur, 2012, p. 1612). In fact, the concept of CBA dates back to 1972 when Mishan first introduced it in his book *Elements of Cost-Benefit Analysis* to answer the questions of “whether a number of investment projects, *A, B, or C*, etc., should be undertaken and, if investible funds are limited, which one, two, or more among these specific projects that would otherwise qualify for admission, should be selected” (p. 11). It can also be used for “determining the level at which a plant should operate or the combination of outputs it should produce” (p. 11).

Brent (2007) explains that a cost-benefit analysis is necessary when any decision must be made which has an impact on the use of resources. He goes on to point out that in order for a

decision or project to move forward, the benefits must be greater than the costs. In other words, a decision or project should be terminated if the costs are greater than the benefits. On an individual level, one makes decisions by weighing the costs against the benefits to identify the impact of the outcome. Kuklinski, Briney, Hawkins, & Catalano (2012) posit that CBA is increasingly used as an integral part of studies and to guide decision makers to create positive, cost effective outcomes.

With regard to education, which continues to be beset by financial constraints, school districts must now approach operational decisions much in the same way that businesses do to determine the allocation and distribution of funds throughout their respective districts. Downey & Roman (2014) add that CBA can be useful not only for researchers but also for practitioners and policymakers who consult studies to make decisions about how to use limited resources. This technique has garnered significant attention in regard to its impact on large investment projects. The decision of whether or not to design and implement new programs is strongly driven by the benefit of the outcome, as shown in Figure 2



*Figure 2. Cost-Benefit Analysis*

As such, “economic valuation of the benefits of a program in addition to the calculation of its cost will provide all the relevant economic information necessary to enable policy makers to make more judicious decisions” (Mishan & Quah, 2007, p.10). Downey and Roman (2014) add that as resources have tightened, the role of the decision makers to determine evidence-based and cost-effective mandates about the use of funds, labor, materials and equipment has increased. However, the measured impacts go far beyond money or financial gain. One must also consider the intangible impacts, such as social benefits, which according to Eime, et al. (2013), may include positive relationships with others, making new friends, and developing interpersonal and social skills. Mishan and Quah (2007) add that being able to calculate the

cost-benefit effectively and expressing gains or losses in terms of utility rather than in terms of money have become increasingly important.

It must be noted that traditionally, Cost-Benefit Analysis did not take into account emotional or developmental effects (Masur & Posner, 2012). Furthermore, Downey and Roman (2014) state that CBA is subject to criticism such as the argument that CBA places value on aspects that cannot be measured in this way, like pain and suffering from a violent crime or loss of life. They also pose a second criticism which pertains to the way in which the value of aspects is quantified such as wages and earnings to estimate the value of someone's time and his or her productivity (2014). Bronsteen, Buccafusco, and Masur (2012) also argue that although CBA is flawed, it is still used widely in part because there is "no comparably rigorous, quantitative, and workable alternative" (p. 1607) to measure positive and negative outcomes. In a study of ecosystems and their effects on human welfare by Wegner and Pascual (2011), CBA was utilized "to compare alternative policy options by quantifying all impacts on ecosystem service flow through a monetary metric, and by aggregating the obtained monetary values so as to calculate the total net benefits of each policy option. Policies are then selected in terms of their capacity to maximize total net benefits or social welfare. At the basis of CBA is the normative view that individual values and net benefit maximization are of prime importance, and that personal values are revealed through choices in the market place" (p. 3).

That study showed that CBA can only quantify net benefits; however, further analysis is necessary to assess non-quantifiable information such as personal values or human capital. Moreover, in the case of schools, the cost-benefit is often tied to student outcomes, performance, and attainment which is analyzed in the context of the school environment.



## **Understanding School Environments**

According to Lukes (2014), schools must invest in intense advanced strategic planning and heavy community involvement to circumvent what traditional high schools struggle to do. Tanner (2014) found, “School environments were usually built on whims, standardized codes, and unsupported ‘best practices,’ or hearsay evidence among educational planners and decision-makers” (p. 24). How to most effectively operate schools and how to develop effective curricula has been debated for a number of years. Drawing upon Astin’s I-E-O model, in which the environmental variables represent a student’s instructional setting, organizational setting, the culture of his or her school, teaching practices used, class size, plus resources, the next section offers a literature review of studies which focus on these complex aspects. This is followed by a discussion on the “grammar of schooling” and an explanation of three different types of educational programs: traditional, early college high school, and career and technical education.

### **School Environment**

Although schools’ initial responsibility is to provide a rigorous academic environment, over time, they have evolved to play expanded roles in the lives of children. Schools no longer simply teach reading, writing, and arithmetic. Sometimes the schools innately become a second “home” for students, where they are able to find food, shelter, and comforts not found in their own households. Sucharita (2013) argues that schools are not merely building, but also essential social places where students interact with peer groups on a daily basis, which heavily influences how they behave and acquire new social skills in the process. Kidger, Araya, Donovan, and Gunnell (2012) suggest that features such as school size, class size, and quality of interactions within the school impact student success.

In retrospect, overcrowding, which is an important policy problem that frequently leads to large class sizes, has been found to negatively impact student achievement (McMullen &

Rouse, 2012). In large classes, students often get lost in the shuffle. The successful student will typically continue to achieve while the low achieving student will most likely continue to struggle, and the average student can easily fall on one side or the other. Lee, Ready, and Welner (2002) add that overcrowded schools cause increased class sizes, especially for school districts that lack funds to build additional facilities, which impacts the quality of students' educational experience. There is plentiful research, both experimental and correlational, that proves that crowded classrooms significantly impact student success by decreasing student engagement, motivation, achievement levels, graduation rates, and time on/off tasks (Haimson, 2014). Therefore, addressing the issue of overcrowding and managing the school environment becomes that much more urgent.

Smaller classes help students, teachers, and parents to develop positive relationships, which aid in the implementation of a rigorous and relevant curriculum more so than within a large, traditional high school (Smith, Fischetti, Fort, Gurley, & Kelly, 2012). Schools that fail to meet the needs of individual students due to large class sizes, overcrowded schools, and the focus on standardized testing alienate the vulnerable students; therefore, increase the probability that they will not succeed (Lagana-Riordan et al., 2011). With smaller class sizes, school leaders are better able to facilitate school connectedness and academic motivation, which are directly correlated to student success, as measured by grades, attendance, test scores, and behavior (Anderson-Butcher, Amorose, Iachini, & Ball, 2012).

### **School Culture**

School culture has become an important factor in academic reform over the past several years. According to Burrello and Reitzug (1993), it also plays a significant role in stagnation and suggest that it is “inextricably linked to fundamental changes in the planning and implementation” of change and reform (p. 669).

Although there are many definitions of school culture, Hoy's (1990) is particularly useful:

At middle range of abstraction, culture is defined as shared values. Values are shared conceptions of what is desirable. They are reflections of the more basic assumptions of culture that define what members should do in the organization to be successful. When individuals are asked to explain why they behave the way they do, their answers may reflect the basic values of the organization. Core values define the character of the organization and give it a sense of identity and mission. (p. 157-158)

Understood values such as a strong work ethic drive behaviors that have an impact on the daily operations and how everyone in the school functions in and out of the classroom.

Culture is shaped by everyone on the campus. Although the administration typically sets the tone for the culture of the school, ultimately, the teachers have the largest impact. Brotman and Mensah (2013) found that school culture is both observable and unconscious, which adds to the notion that it is implicit and works on many levels. According to NegİŞ-IŞİk and GÜRsel (2013), “It can be concluded that positive organizational cultural characteristics, such as (1) teachers who represent different points of view, (2) teachers who demonstrate shared attitudes toward problem solving, and (3) school directors who demonstrate leadership characteristics also contribute to school success” (p. 221). While Gruenert (2000) poses that school culture does not have a direct effect student achievement, he argues that it does have an impact on the school’s academic process. Furthermore, Karadağ, KiliÇOĞLU, and Yilmaz (2014), state, “A positive school culture influences the motivation of students and teachers, academic achievement of the students, job satisfaction, commitment and cooperation of the teachers, employee dedication and motivation, and structuralization of the school community” (p. 105).

It is that very culture that bleeds into the classroom as well. The classroom acts as a “sub-culture” of the overall school culture. Teachers create their own culture in their classroom, which implies universally understood expectations for how the classroom is to function efficiently. Through a strong classroom culture, Farr (2011) asserts that teachers empower students with choice and responsibility for their own learning. This type of culture builds students' confidence and intrinsic desire to work hard and strive for success.

### **School Climate**

There is an emerging consensus within the school reform literature regarding the conditions that contribute to student success (Connell & Klem, 2004). Although they differ from campus to campus (even within the same school district), it is those defined conditions that create what is known as school climate.

Because school climate takes many forms, it can be defined in many ways. Ultimately, school climate comes about as a result of the perceptions of the teachers, administrators, and students within the school. Hoy (1990) draws upon Edmonds' (1979) description of school climate that includes strong administrative leadership, high performance expectations, a safe and orderly environment, an emphasis on basic skills, and a system of monitoring student progress. All these aspects constitute a school climate that promotes academic achievement. According to Anderson (1982), the literature tends to describe climate as intuitive rather than empirical. Woodman and King (1978), also define this phenomenon as a set of characteristics that describe the school, influence the behavior of the teachers, administrators, and students, and frame the attitudes of everyone in the school. More recently, GÜLŞEn and GÜLenay (2014) added that school climate is an expansive concept that includes the teachers' perception of the leadership of the school, as well as the working environment, and the informal organization of the school. Kohl, Recchia, and Steffgen (2013) state:

School climate is the totality of students', parents' and staff's perceptions of the school experience. Thus, it incorporates interpersonal relationships in and outside of school, teaching and learning methods, organizational structures, and also the community's goals, norms and values in which the school is embedded in" (p. 415).

Kohl, Recchia, and Steffgen (2013) categorized school climate into the five areas of safety: relationships between students, between students and teachers, between teachers and parents, teaching and learning, and the school environment. School climate, in essence, is the ambience, or attitude, of the school. Similar to the culture of large businesses, school climate has an immense influence on all stakeholders involved. It has a direct effect on everyone from the faculty and staff, to the students, to the parents, and even the community. Consequently, the federal, state, and local policies now emphasize the enhancement of student, faculty, staff, and community perceptions of their schools (Anderson-Butcher et al., 2012).

Goldkind and Farmer (2013) pose that understanding the importance of creating a safe and respectful learning environment can contribute to a school's effectiveness. This realization has led to several school reform initiatives that focused on reducing school size in order to create a school climate that supports high levels of achievement. According to Mitchell, Bradshaw, and Leaf (2010):

Given the association between school climate and positive student outcomes, such as improved academic achievement and a reduction in discipline problems, school climate is often a target of school improvement initiatives and programs aiming to promote positive outcomes for students and staff" (p. 272).

The climate (attitude) of the school drives the decision making and allows for necessary reform or adjustments for progression and stability. If all of the stakeholders feel safe, comfortable, and

welcomed by the school, then everyone will be more willing to provide the needed resources for student success.

### **Grammar of Schooling**

The constraints that traditional high schools have placed on creativity, innovation, and progress, can be explained by Tyack and Tobin's (1994, p. 454) concept, the "grammar of schooling:"

The basic 'grammar' of schooling, like the shape of classrooms, has remained remarkably stable over the decades. By the 'grammar' of schooling we mean the regular structures and rules that organize the work of instruction. Here we have in mind, for example, standardized organizational practices in dividing time and space, classifying students and allocating them to classrooms, and splintering knowledge into 'subjects'.

In other words, certain structures have been put into place that appear to be restrictive. Public policy, laws, district policies, and standardized performance assessments have stifled progress in classrooms. Martínez, Arbelaiz, and Correa Gorospe (2009) propose "that this rigid set of structures and rules are lecture-type sessions, which include, among other defining features: exams, a clear division between subjects, standards for different topics, etc. holds innovation back" (p. 52). Division of subjects decreases opportunities for cross-curricular activities and for teachers to work collaboratively to connect subjects such as English to social studies and math to science. Furthermore, Seker (2008) asserts that building educational programs upon a single approach and basing the implementation on this one approach will restrict the variety needed to meet the individual needs of the students, forcing the teacher into the mold constructed by traditional methods. To compound the issue, traditionally, the varied understanding and perceptions of the deeply ingrained roles of administrators and teachers in the established institutional practices relied heavily on past experiences and expectations, which has hindered

change and progress (Kim, 2004). The same practices and methods have been utilized for so long that change becomes difficult. Today's public schools are populated by a wide variety of students with an equally wide variety of needs.

### **Types of Educational Programs**

Due to the many types of public school educational programs available, students have a multitude of choices with regard to their education. Certain types of programs are designed to provide unique opportunities to acquire various skills, which prepare them for college and career. Given that the structure of educational organizations may vary widely, the framework in which data was collected and analyzed demands a prerequisite understanding of the three types of educational programs that were included in this study: traditional high schools, early college high schools, and career technical education.

#### **Traditional High Schools**

Bloom (2010) states that traditional school systems do not always align with college and career readiness; meaning that the curriculum most likely will not be sufficiently rigorous. More specifically, low-income schools typically do not have the resources to provide an environment conducive to effective, rigorous learning. Students in more affluent areas not only have the resources but also often have the support structures at home as well. Additionally, Hallett and Venegas (2011) found that schools serving low-income students offer significantly fewer upper level advanced placement or dual credit courses than their counterparts in more affluent communities. As a result, the students in these low-income environments have limited access to educational advancement. Moreover, fewer resources mean fewer tools and equipment, leading to fewer opportunities to expand their learning. Thus, the student's potential is severely restricted.

A study by Lagana-Riordan et al. (2011), indicates that traditional schools often lack the personal relationships with teachers, a school-wide focus on maturity and responsibility, an understanding of social issues, and positive peer relationships that alternative school settings typically provide. Wilson, Kauffman Jr, and Purdy (2011) also reported that even though all traditional educational practices have a “surface logic,” many strategies are often poorly integrated and implemented by districts managers. Additionally, Wilson, Kauffman Jr, and Purdy purport that when district leaders implement programs that “make sense” to them; unfortunately, they are only scratching the surface at resolving the issues at hand. For example, if students are struggling with core content, it would make sense to concentrate more on the "3 R's" and eliminate or scale back on recess and art. To policy makers, it makes sense to standardize practices and quantify testing as a measure of student success, which limits teachers' ability to be creative in their teaching methods. This type of standardization is common practice in the traditional school setting.

### **Early College High Schools**

The public has engaged in an energetic discussion over whether non-traditional, alternative schools are more effective than traditional public schools in raising student achievement (Xin, Deepa, & Young, 2014). Lagana-Riordan et al. (2011) state that students who were transferred to alternative schools were unsuccessful in traditional programs and exhibited poor grades, truancy, behavior problems, or experienced special circumstances that impeded their learning. Alternative schools have historically been utilized for credit recovery and saving such students. Today, there are a variety of alternative educational opportunities, including the Early College High School Initiative (ECHSI). Since its inception in 2002, this initiative has focused on creating “small schools that merge aspects of the high school and



college experiences in order to create a new environment dedicated to increasing the number of students who graduate from high school and enroll and succeed in postsecondary education”

(Edmunds, 2012, p.82). According to Thompson and Ongaga:

The ECHSI is particularly interested in serving student populations traditionally underrepresented in postsecondary institutions—i.e., racial and ethnic minority students, low-income students, first-generation college students and English language learners—by offering rigorous curriculum and opportunities to earn college credit as part of their high school education. (2011)

Early College High Schools are not recovery-based schools. Instead, they offer a variety of opportunities for high school students that cannot be found in the traditional programs.

Thompson and Ongaga (2011) go on to say that the ECHSI initiated by the Bill and Melinda Gates Foundation has helped push the small school model into the spotlight launching a host of empirical studies to study the impact on student achievement. So, when the debate about how to solve the overcrowding issue in comprehensive high schools rages, one cannot help but reference the opportunities and environment ECHs offer. Furthermore, although managing overcrowding is a contentious topic, research indicates that smaller class sizes “provide the type of small, supportive, personal environment that is often lacking in large high schools” (Smith et. al., 2012, p. 385). The emphasis on small learning communities in the ECHS model impacts students on many levels. Smaller class sizes minimize the number of students who get lost in the hustle of the immensely distracting classrooms found in the comprehensive high schools.

In 2014, a new type of ECHS emerged as another collegiate option for Texas high school students. It is the ECHS which emphasizes career and technical education (ECHS-CTE). Operating under the same philosophy that embraces small schools and small class sizes, the

ECHS-CTE program focuses on earning college credits towards a level one industry certificate while simultaneously completing the necessary high school requirements. The core classes are taught at the high school, and the CTE courses are taught at the college by college professors and/or professionals in the industry. This program also gives high school students direct access to millions of dollars of modern equipment that they would not otherwise have the opportunity to use in a traditional high school. However, there is a less than pleasing perception of the role of vocational, career-based education in academics today, which has created a disconnect between the youth and the understanding of career development (Porfeli, Hartung, & Vondracek, 2008).

### **Career and Technical Education**

The historical roots of Career and Technical Education (CTE), commonly referred to as vocational education, can be traced back to ancient times, which since the nineteenth century has seen an increasing need for continued growth (Gordon, 2014). Over the past few years, support for career and technical education has grown tremendously, so much so that policy makers have been pushing to advance opportunities to increase the number of CTE options in schools (Kreamer, 2014).

As shared by de Moura Castro (1987):

It is patently absurd to pass judgment on something which, depending on the definition used, may be so broad as to put general schools whose curricula contain a small and incidental vocational component in the same bag as highly specialized schools that undertake state of the art R&D [what does this stand for] and produce students who are snatched up by firms even before they can finish their practical internships (p.604).

Career Technical Education (CTE) provides students with the opportunity to test their career plans in authentic work scenarios, which are extremely valuable and are not typically available in “traditional” academic courses and settings (Washer, Fedorchak, Shellhorn, & Wales, 2013). As technology changes at a rapid pace, the global economy’s demand for trained and skilled workers must also increase. It is CTE's role to prepare these students for an ever-changing career market. Therefore, the function of CTE has shifted from solely preparing students for work or a vocation immediately upon graduation to becoming a valuable asset in college preparatory academics (Sass et al., 2011; Shaw, 2012). Aliaga, Kotamraju, and Stone III (2014) found that although CTE traditionally targeted low-income, at-risk students, there has been an increase in the levels of participation among higher income students whose parents have higher levels of education. This scenario has been correlated with positive academic outcomes. In a study that included more than 6,000 students from urban school districts in the United States, Castellano, Sundell, Overman, Richardson, and Stone (2014) found, that by increasing the number of CTE courses and placing them in career oriented programs of study (or pathways), students outperformed their peers by earning more credits in STEM and AP classes while also attaining higher GPAs in their CTE classes. The Perkins Act, which funds many of the CTE programs, has put forth certain expectations of CTE educators to incorporate and support math skills and literacy within their courses; however, there is no requirement that core content teachers incorporate real-world experiences into their respective curricula (Meeder & Suddreth, 2012). Career and technical education programs inherently have an advantage over their core counterparts due to the distinct relevance and exposure to the very careers students may one day enter.

## **Chapter Summary**

Focusing on the environmental component of the Astin's Input-Environment-Output model and the concept of the Cost-Benefit Analysis, the research examines an alternative option to the traditional, comprehensive high schools' method of teaching. By assessing the school environment, the study provides insight into how the characteristics of ECHSs impact student behaviors and outcomes. The impact not only impacts the students but also the stakeholders in the community. The study is not meant to single out any individual school but rather to explore the process, systems, and factors behind the perceived value an ECHS-CTE academy.

That perceived value is based on the cost-benefit of opening such a school. Although CBA is mostly used in the business sector, in this study the emphasis is not for fiscal purposes, but for measuring human value. In essence, school officials will be able to more effectively identify the value of the outcomes from the environment that is created by an ECHS-CTE. Due to the limited data and dearth of empirical studies available, the review of the literature is essential for building the foundation for further inquiry and exploration over time.

### CHAPTER III: METHODS

This chapter outlines the research design of the study. The chapter includes the research questions, research design, review of the theoretical frameworks, selection of the participants, instrumentation, variables, procedures, data collection, and data analysis strategies.

As a means of analyzing the opening and the first year of operation of a new Early College High School with a Career and Technical Education focus (ECHS-CTE), this study employed both quantitative and qualitative approaches to answer the following research questions:

1) To what extent do differences in academic achievement and behavior impact student performance as measured by:

- 1.1) Grade Point Average (GPA),
- 1.2) standardized academic assessment scores,
- 1.3) the number of CTE course credits earned,
- 1.4) attendance rates?

2) What percentage of resources are being allocated to ECHS-CTE schools

2.1) as measured by operating expenditures,

- 2.1a) by function
- 2.1b) by program?

2.2) as measured by human capital

- 2.2a) professional staff,
- 2.2b) educational aides,
- 2.2c) students per teacher,
- 2.2d) years of experience for educators?

3) What are the benefits of an ECHS with a CTE focus, according to school and district administrators?

According to Morse and Niehaus (2009), both a quantitative and qualitative component are useful when there is some “aspect of the phenomenon that cannot be measured and that would enhance the narrative description of the phenomenon” (p.14). Therefore, the first portion of this study was designed as a non-experimental, quantitative approach to the first part of the study based on research questions one and two. According to Luyten, Vissher, & Witziers (2005), performance differences and student outcomes should be examined objectively between and within schools in order to distinguish facts from internal values. As such, the research compared performance indicator differences of students attending an Early College High School Career and Technical Education (ECHS-CTE) Academy in South Texas to those who were taking career and technical education courses at the five traditional, comprehensive high schools in the same districts. This was followed by analysis of the percentage of funding allocated to each type of school.

Woodcock and Beal (2013) state, “Qualitative studies that foreground the voices of students and focus on the *process* of ECHS attendance, in addition to the *outcomes* of ECHS attendance are critical” (p. 57). Hence, employed quantitative and qualitative methods were employed, specifically the interview, to investigate the ways in which school and district administrators describe the benefits of creating the Academy.

All aspects of the research design were intentional. In addition to the descriptive statistics, Hall (2013) suggests that student retention, achievement and perceptions, and implementation should also be examined to determine the success of the ECHS. With this study,

it was sought to extend this approach by combining various forms of measurement to more fully describe the first year of the Academy.

## **Methods**

The study first employed a quantitative descriptive analysis (Creswell, 2011) followed by a qualitative thematic analysis (Morse & Richards, 2002). The quantitative component drove the study, which consisted of standardized questions and other forms of measurement (Morse & Niehaus, 2009). This research design was employed to create a stronger foundation for outlining the purpose and rationale of the study. According to Greene and Hall (2010), the central purpose for using two different research designs in one study is to provide a better understanding of the research that cannot be fully presented through either qualitative or quantitative methods alone. In this particular exploratory study, both quantitative and qualitative approaches were used to paint a detailed picture to better understand the benefit and impact of providing the option of an early college high school career and technical program for high school students.

### **Quantitative**

To fulfill the quantitative portion of the study employed an ex-post facto research design. Ex-post facto, translates to “after the fact.” According to Lord (1973), “The ex-post facto method of research seeks to establish causal relationships between events and circumstances,” determining the “cause of certain occurrences or non-occurrences” (p. 3). Cohen, Manion, and Morrison (2000) add that, as a research method, ex-post facto explores the cause-and-effect relationships in the present moment with no manipulation of the variables. In this study, the intent was to examine the causal relationships between students taking career and technical education courses at the Academy compared to those who remained at a traditional high school also taking CTE courses and how student outcomes were affected.

Quantitative analytical methods were used to examine the school-level and student-level secondary data. Descriptive analysis was conducted to describe the demographics of the schools participating in the study. Descriptive statistics were employed to describe research data concisely and to bridge the relationship between the two variables (Chow, 2002). For exploratory studies such as this one, Gall, Gall and Borg (2003) suggest following a correlational research design, in which the researcher attempts to determine the relationships between variables that are not manipulated and to which random assignment is not possible (Turner, Balmer, & Coverdale, 2013). However, as Gall, Gall and Borg (2003) stated, it is equally important to note that inferences about causality on the basis of collected data are difficult to infer. A series of t-test analyses were performed to compare the basic characteristics of both groups. Secondly, a one-way ANOVA was used to compared student academic and behavior performance as defined by GPA, standardized academic assessment scores, number of course credits earned, and attendance rates; the operating expenditures as defined by function and program; and human capital as defined by professional staff, educational aides, teacher by program, and years of experience.

## **Qualitative**

The qualitative data were described via a case study. Case studies are useful for observing phenomena in their natural context, and they provide an opportunity to use different sources of evidence (Houghton, Casey, Shaw, & Murphy, 2013). According to Cronin (2014), case study research contributes a description of specific situations which allows the researcher “to investigate everything about that situation, be it individuals, groups, activities or specific phenomena” (p. 20). Yin (2003) argues that case studies are necessary for certain types of research in order to understand complex social phenomena, which allows the researchers to



“retain the holistic and meaningful characteristics of real-life events—such as individual life cycles, organizational and managerial processes, neighborhood change, international relations, and the maturation of industries” (p. 2). Measurable student learning outputs for students enrolled in nontraditional schools is limited because this information is buried in state reports (Hemmer & Shepperson, 2014). Additionally, test scores, attendance rates and course completion does little to prove a school’s effectiveness (Rumberger & Palardy, 2005). By including the case study design, the participants themselves are able to provide explanations for the decisions, learning outputs, implications, and effectiveness of the Academy.

Using a qualitative thematic analysis (Morse & Richards, 2002) allowed me to categorize and interpret the data and to ascertain broad patterns and themes that highlight cultural norms (Ely, Anzul, Freidman, Garner, & Steinmetz, 1991) in terms of the educational climate and the environment of the Academy. The use of this macro-analysis of data helped explain major social and educational discourses within the entire school district as a result the opening of an innovative new school.

### **Triangulation**

Incorporating multiple methods for collecting or analyzing data enhances the description, understanding or explanation of the phenomenon (Morse & Niehaus, 2009). Both quantitative (student descriptive characteristics) and qualitative (interviews) methods were employed to triangulate the data in order to yield robust results. Fielding (2012) describes triangulation as the combining of different methods and kinds of data to bring about a deeper understanding of specific phenomena. For the quantitative component, data was collected through the Public Education Information Management System (PEIMS), which was retrieved from the Texas Education Agency website. Student data, including GPA, standardized academic assessment

scores, the number of CTE course credits earned, and attendance rates were retrieved from the school district to identify differences in academic and behavioral performance between students enrolled in an ECHS-CTE Academy and those attending a traditional comprehensive high school.

Qualitative methods, such as interviews, were conducted with three individuals who were directly involved in the planning and decision to open the Academy. Although the qualitative method played a supporting role and could not stand alone, the interviews clarified (Morse & Niehaus, 2009 ) the significance of the Academy and the rationale for providing this type of alternative educational opportunity. By relating the case study to the descriptive characteristics, the thematic data more fully describes the success of the students attending the Academy versus those attending the traditional high schools who only have access to a CTE program.

By utilizing both quantitative and qualitative approaches in this study, a more detailed profile and description of the Academy, it's method of operations, faculty and staffing patterns, as well as the students enrolled in the program was created. The goal of this study was to explore specific programmatic features associated with the various student achievement outcomes that will help school district administrators to explore the cost benefits associated with opening an alternative school.

### **Selection of Site and Participation**

In 2013, sixty five ECHSs were in operation throughout Texas (Texas Education Agency (TEA), 2014) . As previously mentioned, ECHSs typically target and enroll students designated as “high-risk.” During the 2013-2014 school year, there were approximately 1,141,341 (81% of students, grades 9-12) students enrolled in career and technical education courses (TEA, 2014a). During that same school year, 10,528 (74% of students, grades 9-12)

were enrolled in CTE (TEA, 2014a) courses in the participating school district. Additionally, the Academy had 68 tenth and eleventh graders, 100% of whom were enrolled in CTE courses.

The participating school district is located in a city on the coastal plains of South Texas with an estimated population of 281,000. A profile of the participating schools, district and state demographics is shown in Tables 1 and 2 (TEA, 2014a). As shown in Table 1, the vast majority of students enrolled in this district are Hispanic and represent 79.3% of the student population. There are only, 13.8% White and 4.1% African American students in the district. According to the Academy enrollment data, 85.3% of students enrolled are Hispanic. Only High Schools (HS) 1 and 2 enrolled more Hispanics.

Table 1  
*A Profile of the Participants Enrolled (by percentage)*

<b>Campus</b>	<b>Hispanic</b>	<b>White</b>	<b>African American</b>	<b>Native American</b>	<b>Asian</b>	<b>Pacific Islander</b>	<b>2 or more races</b>
<b>CTE Academy</b>	85.3	8.8	2.9	1.5	0.0	0.0	1.5
<b>HS 1</b>	74.9	15.3	6.2	0.2	2.4	0.1	0.9
<b>HS 2</b>	66.8	22.3	5.1	0.2	4.0	0.2	1.2
<b>HS 3</b>	86.2	6.7	6.4	0.1	0.2	0.1	0.4
<b>HS 4</b>	94.4	2.0	2.6	0.0	0.7	0.0	0.4
<b>HS 5</b>	81.9	12.9	2.6	0.4	1.6	0.1	0.5
<b>District</b>	79.3	13.8	4.1	0.2	1.7	0.1	0.8
<b>State</b>	51.8	10.0	12.7	0.4	3.7	0.1	1.9

Table 2 also shows the percentage of students designated as members of a special population, as defined by state and federal criteria. For example, 58.5% of the students enrolled in the district were identified as "at-risk," whereas the Academy enrolled an overwhelming 79.4% of students in this category. All of the students enrolled at the Academy were considered at-risk.

Table 2  
*A Description of the Participants Enrolled (by percentage)*

<b>Campus</b>	<b>At-Risk</b>	<b>Eco Disadv</b>	<b>ELL</b>	<b>Special Education</b>	<b>Mobility (2012- 2013)</b>	<b>Enrolled in CTE</b>
<b>CTE Academy</b>	79.4	51.5	2.9	2.9	-	100
<b>HS 1</b>	61.3	40.3	0.3	9.5	21.5	63.0
<b>HS2</b>	63.2	39.3	1.1	9.6	21.6	59.3
<b>HS 3</b>	76.3	74.7	2.4	15.4	25.5	61.2
<b>HS 4</b>	77.6	66.7	2.3	11.5	23.2	77.9
<b>HS 5</b>	62.4	59.7	1.5	10.7	22.0	71.6
<b>District</b>	58.5	66.2	4.8	9.1	26.1	19.9
<b>State</b>	49.9	60.2	17.5	8.5	17.1	22.2

## Quantitative

The quantitative portion of this study included students who were enrolled in CTE courses at the Academy and students enrolled in CTE courses at the five traditional comprehensive high schools in the school district. Given that the Academy had just opened its doors in the fall of 2013, this study allowed for establishing a baseline of data that may be used in follow-up studies by computing the comparison school's deviations from its own baseline trend. Also, because the CTE Academy was in its first year of operation, the data was limited to the 90 students who attended the Academy and were identified as tenth or eleventh grade students enrolled in at least one CTE course. Ninety students from each of the other high schools, enrolled in at least one CTE course, were randomly selected and included in the study. First, student level data was then explained by both academic and behavior performance as defined by GPA, standardized academic assessment scores, number of CTE course credits earned, and attendance rates was assessed. Second, school level data for the Academy helped to identify

operating expenditures and human capital as defined by professional staff, educational aides, students per teacher, and teacher years of experience.

The independent variables were the educational settings, which included the Academy and the five traditional comprehensive high schools that offer CTE courses in the participating school district. To answer research question one, only student-level data for the 2013-2014 school year, of students enrolled in one or more CTE courses from the Academy and the five traditional high schools were used in the analysis.

The dependent variables included the following:

- Student demographic data: ethnicity/race, gender, and grade level.
- Student grade point average: cumulative high school grade point average (GPA)
- State assessment scores: In 2012, the State of Texas Assessments of Academic Readiness (STAAR) replaced the Texas Assessment of Knowledge and Skills (TAKS). The STAAR program “emphasizes ‘readiness’ standards, the knowledge and skills that are considered most important for success in the next grade or course subject as well as for college and career” (Texas Education Agency, n.d.). The STAAR program includes annual end-of-course (EOC) assessments for English I, English II, algebra I, biology, and United States history. It must be noted that the scores of first time test takers for English II and U.S. history EOCs as well as students who were required to retest in any of the five content areas were used in this study.
- CTE course credits earned: This included the number of career and technical education courses completed at the ECHS-CTE Academy compared to the number of CTE courses completed at the traditional high schools by the end of an academic year.

- Attendance: Under the §25.085 (Compulsory Attendance) a student of at least six years of age to his/her eighteenth birthday, must attend a public school (TEA, 2012).

In order to answer research question two, data that described the extent to which resources were being allocated to the Academy as compared to the traditional comprehensive high schools in the same district was gathered and used. This data, measured by operating expenditures and human capital, was collected from the Texas Education Agency (TEA) through the Texas Academic Performance Reports (TAPR) for 2013-2014.

### **Qualitative**

For the qualitative portion of this study, three individuals who were directly involved in the decision to create and open the Academy were interviewed. Non-probability, or purposive, selection was used to choose the participants. Purposeful sampling is the practice of selecting participants from a known sample that is rich in useful data for a particular study (Merriam, 1998; Patton, 2002). The first participant, Steve, was the Superintendent at the time of the Academy's development and inception. Steve's involvement with the Academy dates back to the first ECHS opening in the district years before. He envisioned building on the success of that original school, which motivated him to pursue an opportunity to open a second campus, albeit one with a CTE focus. The second participant, Theresa, is the Director of both the original ECHS and the Academy. Her understanding and knowledge of the early college initiative was essential in the expansion and implementation of the new campus. The final participant, Priscilla, the Dual Credit Officer and liaison between the district's ECHSs and the college partner, provided an in-depth perspective from the college partner. It is essential to understand how the college partner perceives the relationship between the ECHS and the college as well as the dynamic of the partnership and how they function in unison to provide the best high

school/college experience possible for the students.

Due to limited data, it was necessary to deliberately select specific participants. According to Uprichard (2013), because of the relationship between the knowledge of the population and the cases within it, purposive sampling is essential. Jick (1979) also states, “Because the goal of qualitative research is enriching the understanding of an experience, it needs to select fertile exemplars of the experience for study” (p. 140). For these reasons, the selection of the participants for this study was purposeful and relevant to the research purpose and questions. These selections were imperative for gaining an understanding of how and why this type of school was created. I was able to gain access to information that would have surely been missed by a less selective process. Furthermore, due to the newness and limited number of schools of this type, the site that fit the criteria for this study was very specific to a school district in South Texas.

### **Data Collection Procedures**

The data collection began in the spring of 2015 and continued through the summer. Presented below are the means used to collect the different types of data as they relate to the two research design components.

#### **Quantitative**

The quantitative methods made use of the data collected from targeted schools within one district that met the criteria of this research. Permission was requested from the school district to use the data from the Public Education Information Management System (PEIMS), which included GPAs, standardized test results from the State of Texas Assessments of Academic Readiness (STAAR) End of Course (EOC) exams, CTE course credits earned, and attendance.

Additional data related to resource allocations were collected from various TEA reports, including the TAPR and the Academic Educational Information System (AEIS).

All student-level data from TEA for the 2013-2014 school year provided by the school district were masked, meaning that all identifiers indicating the identity of students and the campuses themselves were hidden. Archival data reported by TEA was collected from the TEA website. The campus academic and financial reports provided by TEA included an extensive selection of information on the operating expenditures of each campus and the human capital involved. These campus-level reports from each school identified in the population were accessed, and data points related to operating expenditures and human capital were collected and entered into a spreadsheet.

### **Qualitative**

The majority of data collected for the qualitative component was obtained through interviews and archival documents such as campus reports and school board minutes. The data collection process for the qualitative approach began with conversational interviews during the spring semester 2015. Jick (1979) describes the conversational interview as the most open form of interviewing that offers “maximum flexibility to pursue information in whatever direction appears to be appropriate” (p. 342). It was essential that the potential participant felt comfortable about his or her role in the study. By creating a relaxed environment for the interview, the participants were afforded the opportunity to ask any questions and/or freely discuss any concerns without stress or pressure. At the initial meeting, the purpose of the study was explained and a brief description was provided to the potential participants. Then, the participants were informed of the expectations and were offered consent forms and informational material to take home and review. The purpose of providing as much information as possible



during the introduction of the study was a strategic attempt to gain the trust of the participant. According to Jick (1979):

Without rapport, even the best-phrased questions can fall flat and elicit brief, uninformative answers. Rapport means more than just putting people at ease. It means convincing people that you are listening, that you understand and are interested in what they are talking about, and that they should continue talking. (p. 665)

A follow up meeting with each participant occurred to elicit responses to research question three, which could then be analyzed. The conversation continued while incorporating the following semi-structured questions:

What are/were your roles as a key stakeholder?

How did you define the mission, vision and expected goals for the Academy?

What were some of the enabling and constraining factors encountered during the establishment/functioning of the school?

Each interview, which lasted approximately one hour, was recorded and transcribed. During the transcription process, significant events were noted and follow up questions were generated. The participants were contacted via phone or email to elaborate or clarify their initial responses.

## **Data Analysis and Management**

### **Quantitative**

The JMP statistical software program was used to compute and analyze the data. One-way ANOVA was utilized to compare the Academy with the other five high schools to identify any statistical differences. Categorical data analysis using Pearson chi-square tests were also used to determine equality of distribution of gender and ethnicity, more specifically the number

of Hispanics at each school. Abecasis and Wigginton (2005) assert that the crucial first step in analysis is the meticulous description of the data and establishing familial correlations for quantitative traits. When statistically significant findings result, a determination of the effect size or practical importance of the findings can be performed. Effect size provided data about whether or not a difference was present between the performance indicators of an ECHS-CTE compared to a traditional high school offering CTE courses.

For research question two, a separate statistical analysis was conducted on each of the sub-questions.

### **Qualitative**

Qualitative research inherently lends itself to open interpretation. Therefore, it offers a variety of options for analyzing the data. Qualitative content analysis has been defined by Jick (1979) as “a research method for the subjective interpretation of the content of text data through a systematic classification process of coding and identifying themes or patterns” (p. 1278). The goal throughout the analysis process was to dig deeper into the topics that had been briefly discussed in the interviews. It is rather elementary to simply look at the data and derive surface meaning, but it is the researcher's job to search for deeper meaning within the descriptive statistical data and the participants' perceptions of the decision-making process to open the Academy.

In order to manage and maintain the information from the interviews, the first step was to transcribe and code the data using descriptive and in-vivo coding, which according to Saldana (2009), is a very simple form of coding in which basic topics of a passage or set of data are summarized in short phrases which maintain the participant's voice. By implementing codes, the researcher was able to create chunks of information that allowed me to focus more on specific

aspects and patterns. For each transcription, the researcher employed one-word descriptions as well as phrases directly from the participant to identify categories and ultimately themes throughout the data (See Appendix B for first round of coding). After the initial codes were sorted, themes began to surface. The researcher continued to read through the transcripts and continuously sifted through the first cycle of coding. From this round of coding and categorizing, three major themes emerged that could be used to explain the perceptions of the participants. With these themes in mind, sub-themes began to surface in the first cycle that allowed for effective categorization of the thoughts of the participants.

In order to gain a complete understanding of the data, it was important to add the qualitative component of the study. This study could have been solely quantitative (though the available data was limited); however, the findings would not have had the depth of the qualitative component which gives a richer understanding of the data. The perceptions of the participants in the qualitative component were essential for explaining some of the rationales behind the quantitative data. Hence, the quantitative data was triangulated in part by the qualitative findings.

An example of this was when the participants discussed the importance of students establishing a sense of connection with their school, and that the Academy has a reputation of being cool. This directly connects with the higher attendance rates clearly shown in the quantitative component. Additionally, the quantitative data seemed to indicate that the opening of the Academy might not be a financially responsible decision; however, the interviews with the participants explained these numbers in a way that would not have been available in a strictly quantitative study. For instance, the data showed that the Academy's operation on the campus and on the student-level was much higher than the traditional high schools, but as one of the

participants explained, the initial startup of any program of this magnitude will be more expensive and will level out over time as enrollment increases. Again, the qualitative component added to the depth of understanding of the quantitative data. Without the qualitative approach, the study would have only consisted of statistical data and would have lost some of its interpretative depth.

For the quantitative component of this study, there was a very small sample size as well as very limited data or empirical studies that could add to the findings. Therefore, the qualitative component played an essential supplementary role because the quantitative component would not have made sense on its own. As the data were compiled, it became apparent that the findings were present in both approaches. The findings in the qualitative component provided rigor to the study as well as an enriched explanation of the statistics while supporting the concepts of the Input-Environment-Output and Cost-Benefit Analysis models. The combination of the methods allowed for further understanding and other discoveries. If the two methods had not been utilized, some essential insights may have been overlooked.

### **Trustworthiness and Rigor**

Considering the nature of this study and the complexity it entailed, it was critical to maintain all the data in an organized fashion to allow for easy access when necessary. The participants were assigned aliases to protect their identities and had full access to all notes, their individual recordings and reports that were generated for the study.

Rigor, as explained by Jick (1979), “generates theoretically adequate conceptual frameworks, raises theoretically interesting issues and chooses appropriate research settings and methods for empirical examination of research questions” (p. 78). Stewart and Barrick (2012), explain that rigor allows for confidence in the research, but a lack of rigor makes the research

meaningless and useless. In order to incorporate rigor, the researcher utilized strategies such as data records, member checks, confirming information and findings with the participants, and peer debriefing whenever possible.

Trustworthiness was integral to this study. The participants were asked to share their thoughts and perceptions on why they felt it was important to proceed with the ECHS project. If a sense of trustworthiness had not been established, they may have been hesitant to divulge all of their views, for fear of how the information would be reported. The participants were asked to review the report and were given the opportunity to edit, retract, or add to it.

### **Conclusion**

The data collected was used to examine the differences between the inputs of operating expenditures and human capital resources and the outcomes of students taking career and technical education courses at an early college high school career and technical education academy compared to students taking CTE courses at the comprehensive traditional high schools that offer career and technical education courses. Specifically, this study explored statistical factors such as grades (GPA), academic assessment scores, course credits earned, and attendance in the context of perceived costs and benefits. This study also incorporated a case study identifying the thoughts, experiences, and perceptions of participants who were directly involved in the decision to open such a school. The intent of this research is to assist other school districts in determining the cost-benefit of providing this type of opportunity for their students.

### **Chapter Summary**

The quantitative portion examined the factors describing the data correlating to the groups of students in their respective environments and how those environments affected the outputs. The qualitative case study provided a deeper understanding of why such a program

would be relevant and beneficial for the community. The findings may assist school districts in considering and planning for whether or not an ECHS-CTE Academy would be viable and beneficial for their district.

## CHAPTER IV: RESULTS

The purpose of this study was to explore a South Texas school district's implementation of an innovative school design to provide an alternative pathway for preparing students for college and career. The study was broken into two sections. The first focused on the differences between students taking career and technical education courses at an Early College High School Career and Technical Education Academy and those enrolled in CTE courses at traditional, comprehensive high schools in South Texas. This was followed by an analysis of the perceived cost-benefit of the school in an era of increasingly high standards and financial constraints. This chapter compares the outcomes of these programs both quantitatively and qualitatively.

The findings of this chapter are presented in two sections. The first section consists of the quantitative component, which presents detailed statistical factors regarding the extent of differences in student academic and behavioral performance between the ECHS-CTE Academy (the Academy) and the other five traditional high schools as measured by: (a) student demographics (ethnicity/race and gender); (b) GPA; (c) state assessment scores; (d) CTE course credits earned; (e) and attendance. The next section includes the findings that describe the percentage of allocated resources, as measured by (a) operating expenditures and (b) human capital. This information was collected from each campus's 2013-2014 Public Education Information Management System (PEIMS) and the Budget Financial Data TAPR from the TEA.

The second section presents the qualitative component and offers descriptions of the benefits of establishing the Academy, according to school and district administrators. A case study, grounded in interpretivist theory, guided the process of analyzing the data provided by three individuals who were instrumental in the conception, design, and development process of the Academy. This component was also guided by Astin's Input-Environment-Output model (I-

E-O) and Mishan's (1972) CBA Cost-Benefit Analysis (CBA). A case study was included as a technique for presenting qualitative data from the three participants to clarify the learning outputs and the perceived effectiveness of the Academy.

## **Quantitative Results**

The quantitative component of this study was guided by the following questions:

1) To what extent do the differences in academic achievement and behavior impact student performance as measured by:

- 1.1) grade point average (GPA),
- 1.2) state assessment scores,
- 1.3) the number of CTE course credits earned,
- 1.4) attendance rates?

2) What percentage of resources are being allocated to an ECHS-CTE Academy

- 2.1) as measured by operating expenditures,
  - 2.1a) by function
  - 2.1b) by program?
- 2.2) As measured by human capital
  - 2.2a) professional staff
  - 2.2b) educational aides
  - 2.2c) number of students per teacher
  - 2.2d) years of experience for educators?

A comparison between the campuses was performed to determine if there was a significant difference in student achievement between the two settings. Statistical analyses were conducted using JMP Statistical Discovery by SAS.



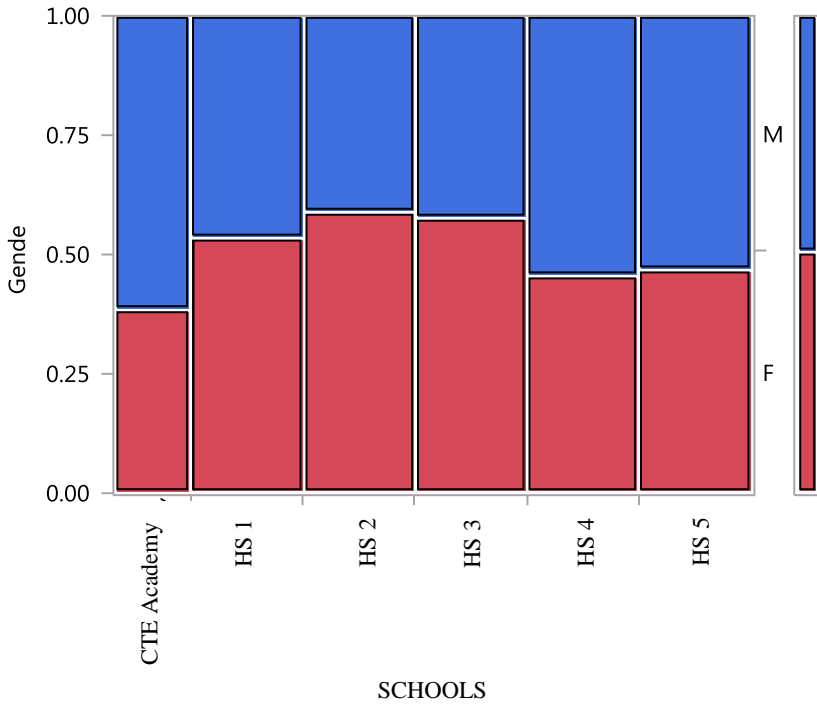
## General Description of the Population

The population for the study consisted of 512 students, 100% of whom were enrolled in CTE classes during the 2013-2014 school year at one of six high schools - the Academy and five traditional, comprehensive high schools that offer CTE courses in a South Texas School District. The population only included students in tenth and eleventh grades because the Academy only enrolled those respective grades in its first year of operation. Table 3 shows the number and percentage of females, males, and Hispanics at each campus.

Table 3  
*Number and Percentage of Female, Male, and Hispanic Students*

	N	Female	%	Male	%	Hispanic	%
<b>Academy</b>	62	24	38.71	38	61.29	52	83.87
<b>HS 1</b>	90	48	53.33	42	46.67	63	70.00
<b>HS 2</b>	90	53	58.89	37	41.11	65	72.22
<b>HS 3</b>	90	52	57.78	38	42.22	78	86.67
<b>HS 4</b>	90	41	45.56	49	54.44	81	90.00
<b>HS 5</b>	90	41	46.67	48	53.33	77	85.56

Female (260) students, who made up 51% of the population, slightly outnumbered the males (252), who encompassed the other 49%. The majority of the students were Hispanic, who made up 81% of the population. The categorical data analysis shows that the distribution of gender was equal across the schools (See Figure 3). The Pearson chi-square test showed that  $\chi^2$  (5, N=512)=9.57,  $p=.08$ ,  $p>.05$  indicating that there is no significant difference and that gender does not depend on the school.



*Figure 3. Categorical Data Analysis of Gender*

The contingency analysis of Hispanics shown in Figure 4 illustrates that the distribution of Hispanics was not equal across the schools. The Pearson chi-square test presented that  $\chi^2 (5, N=512)=19.92, p=.001, p<.05$  indicating that there is a significant difference. HS 1 and HS 2 had less Hispanics than the other schools.

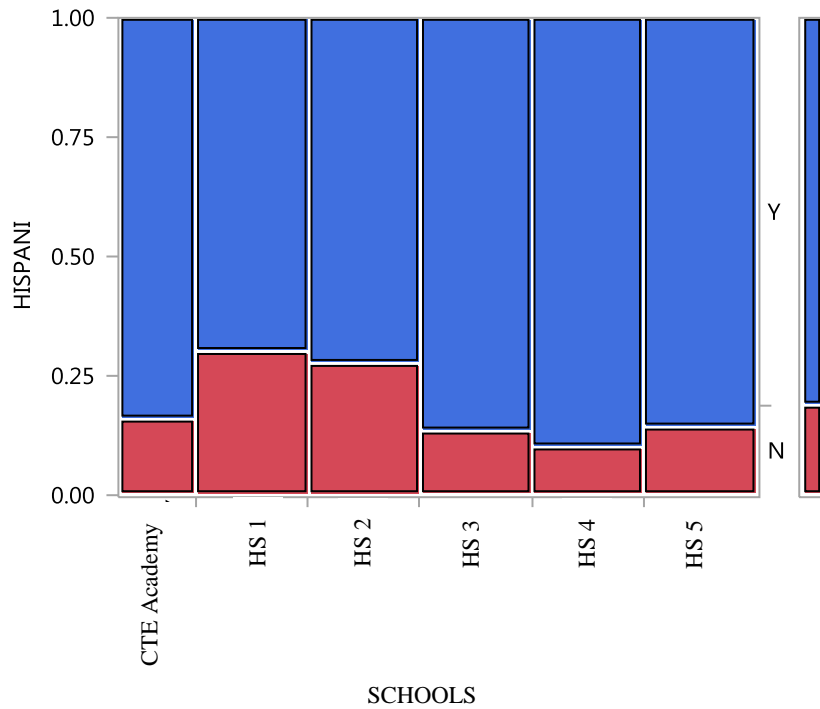


Figure 4. Categorical Data Analysis of Hispanics

### Student Academic and Behavioral Performance Results

One-way ANOVA was used to compare the Academy's student academic and behavioral performance with the five high schools based on the following variables:

- Student grade point average: unweighted cumulative high school grade point average (GPA).
- State assessment scores: In 2012, the State of Texas Assessments of Academic Readiness (STAAR) replaced the Texas Assessment of Knowledge and Skills (TAKS). The program “emphasizes ‘readiness’ standards, the knowledge and skills that are considered most important for success in the next grade or course subject as well as for college and career” (Texas Education Agency, n.d.). The STAAR program includes annual end-of-course (EOC) assessments for English I, English II, Algebra I, Biology, and United States

history. Scores for first time test takers of English II and U.S. history EOCs as well as retest scores in any of the five content areas were also included in this study.

- CTE course credit earned: number of career and technical courses offered and completed at the Academy compared to the number of those offered and completed at the traditional high schools by the end of an academic year.
- Attendance: Under §25.085 (Compulsory Attendance) a student of at least six years of age must attend a public school until his/her eighteenth birthday (TEA, 2012).

A one-way ANOVA was conducted to compare statistical differences between the Academy and the five traditional high schools. Requirements for ANOVA, homogenous variances and a large sample were satisfied.

### **One-way ANOVA**

One-way ANOVA was used to determine if there were any significant differences between the means of the Academy and the five traditional high schools. GPA, standardized test scores, and attendance were found not to be statistically significant at a value of .05, while CTE course credits earned were statistically significant at a .05 value.

**Grade point average.** A one-way ANOVA was calculated on participants' grade point average. There was not enough evidence to reject the null hypothesis of the equality of means,  $F=1.89$ ,  $p=.095$ ,  $p>.05$ , such that the grade point averages for the Academy ( $\mu=82.01$ ,  $Sd=5.01$ ) was slightly lower than the other five traditional high schools as seen in Table 4.

Table 4  
Means and Standard Deviations-Grade Point Average

	N	Mean	Std Dev
<b>Academy</b>	62	82.01	5.01
<b>HS 1</b>	90	84.90	6.03
<b>HS 2</b>	90	83.67	6.80
<b>HS 3</b>	90	83.93	5.75
<b>HS 4</b>	90	84.43	6.45
<b>HS 5</b>	90	83.53	6.08

Figure 5 also shows that there was no statistically significant difference among the means for GPAs. Students attending the Academy are not likely to earn higher GPAs compared to students who attend a traditional high school.

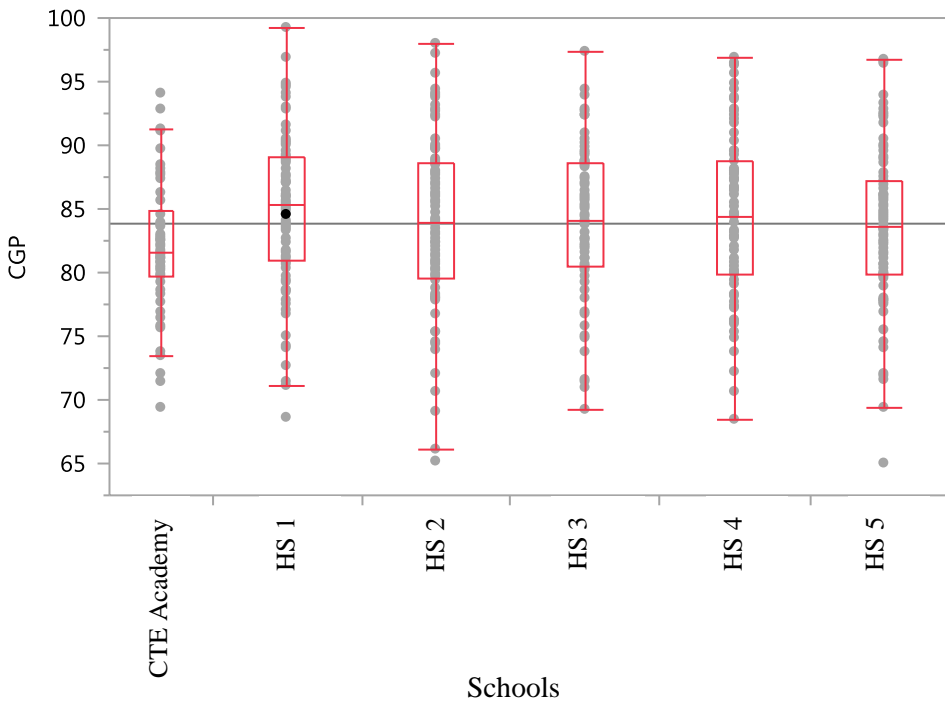


Figure 5. One-way ANOVA of Grade Point Average by School

**State assessment scores.** A one-way ANOVA was calculated on students' state assessment scores not showing enough evidence to reject the null hypothesis of the equality of means,  $F=2.08$ ,  $p=.07$ ,  $p>.05$ . The standardized test scores for the Academy ( $\mu=3842.32$ ,  $Sd=307.47$ ) were lower than the other five traditional high schools as seen in Table 5 indicating there was no statistically significant difference among the means.

Table 5  
*Means and Standard Deviations-State Assessment Scores*

	<b>N</b>	<b>Mean</b>	<b>Std Dev</b>
<b>Academy</b>	62	3842.32	307.47
<b>HS 1</b>	90	3993.90	483.76
<b>HS 2</b>	90	3980.64	489.39
<b>HS 3</b>	90	3850.05	458.45
<b>HS 4</b>	90	3860.19	437.48
<b>HS 5</b>	90	3855.72	450.53

Figure 6 shows the standardized test scores for each school, indicating that there was no statistical difference in the means. Based on these findings, students who attend the Academy are not likely to score higher on state assessments.

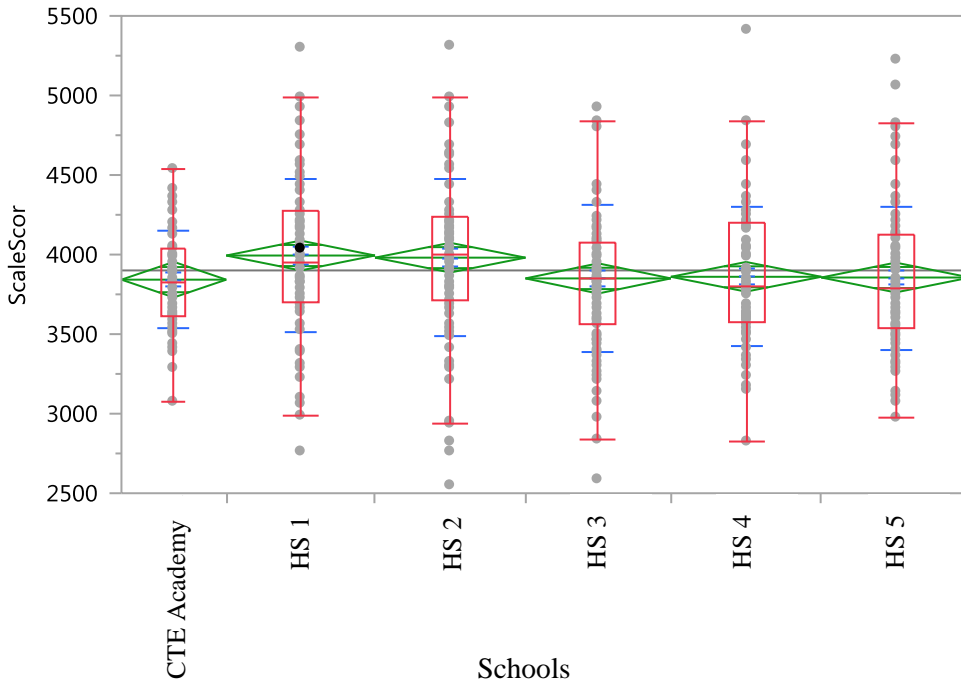


Figure 6. One-way ANOVA of State Assessment Scores by School

**CTE credits earned.** The number of CTE course credits earned by students at the Academy ( $\mu=4.00$ ,  $Sd=1.86$ ) was higher than the five traditional high schools, indicating that there was a significant difference in the means of the number of CTE course credits earned at the .05 significance level (see Table 6). Figure 7 shows that the analysis of variance yielded a main effect for CTE course credits earned,  $F=26.61$ ,  $p<.0001$ .

Table 6  
*Means and Standard Deviations-CTE Course Credits Earned*

	<b>N</b>	<b>Mean</b>	<b>Std Dev</b>
<b>Academy</b>	62	4.00	1.86
<b>HS 1</b>	90	2.01	0.97
<b>HS 2</b>	90	1.84	1.12
<b>HS 3</b>	90	2.08	1.16
<b>HS 4</b>	90	2.48	1.41
<b>HS 5</b>	90	2.09	1.14

Students at the Academy earned almost twice the number of CTE credits compared to the other students at the five traditional high schools (See Figure 7). There is enough evidence to reject the null hypothesis at the .05 significance level,  $p=.0001$ . Students who attend the Academy will most likely earn more CTE course credits than students who attend the traditional high schools.



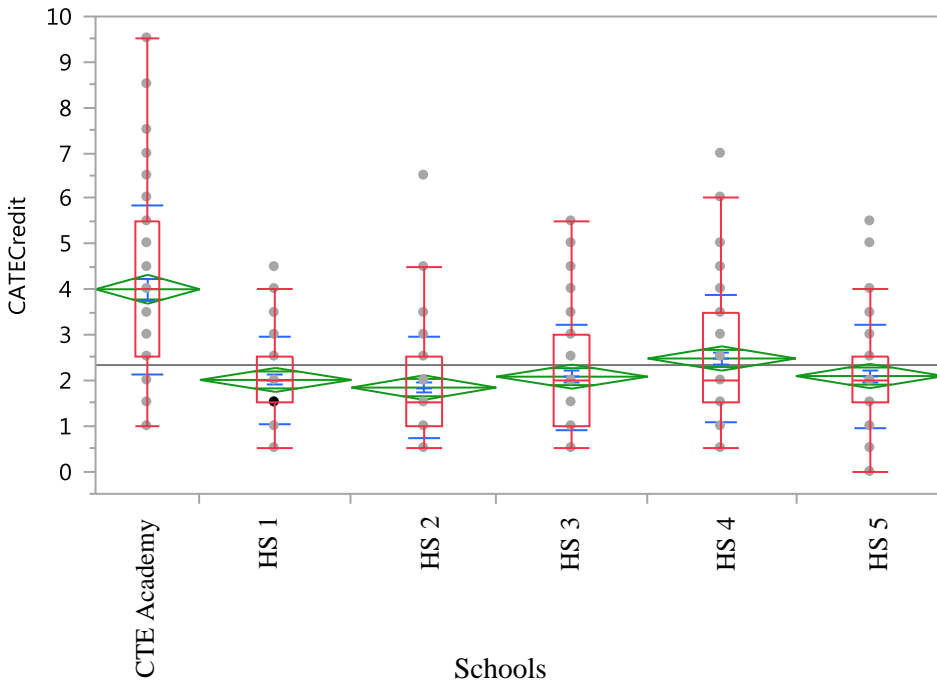


Figure 7. One-way ANOVA of CTE Credits Earned by School

**Attendance.** The analysis of variance for attendance,  $F=2.13$ ,  $p=.06$ ,  $p>.05$ , such that the number of absences for the Academy ( $\mu=6.29$ ,  $Sd=7.43$ ) was lower than the five traditional high schools, which indicates that there was no significant difference in the means of attendance between the two types of schools, as seen in Table 7.

Table 7  
*Means and Standard Deviations-Attendance*

	<b>N</b>	<b>Mean</b>	<b>Std Dev</b>
<b>Academy</b>	62	6.29	7.43
<b>HS 1</b>	90	8.59	8.27
<b>HS 2</b>	90	9.86	8.57
<b>HS 3</b>	90	10.29	11.22
<b>HS 4</b>	90	10.70	10.40
<b>HS 5</b>	90	10.61	11.41

Figure 8 shows the attendance for each school, indicating that there was no significant difference in the means. However, the *p-value* was close to .05; therefore, further research may be required in future studies. Therefore, a larger sample size will be needed for further research. Based on this information, students who attend the Academy are not likely to miss more days compared to students who attend the traditional high schools.

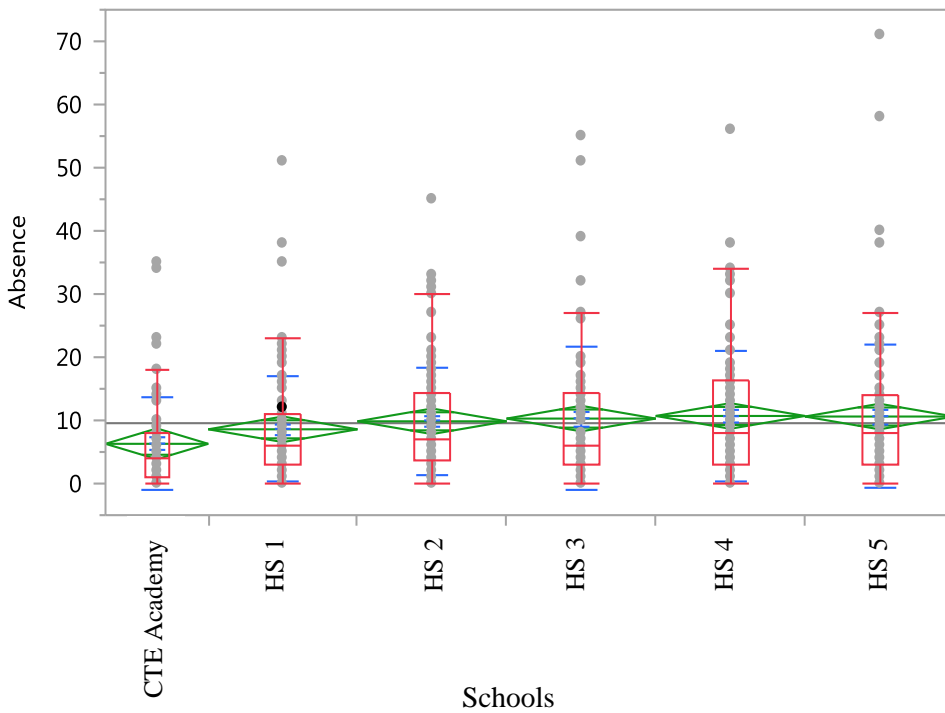


Figure 8. One-way ANOVA of Attendance by School

## Resource Allocation

For the purpose of this study, resource allocation was defined as the process and strategy through which a school district must decide how to most efficiently distribute scarce resources. These may include the level of funding a program receives in order to continue to operate and the number of resources allocated to the human capital aspect (e.g. the number of teachers, administrations, and paraprofessionals assigned to a school). The resource allocation data for this study was obtained from each campus's 2013-2014 PEIMS Budget Financial Data report from the TEA.

**Measured by operating expenditures.** The data in Table 8 shows the operating expenditures by function for each campus. It is first broken down by millions of dollars, then by percentages within each function. High School 2 had the most significant allotment (12.54

million dollars) while the Academy operated on approximately \$860,000. Surprisingly, the Academy spent the smallest percentage (55%) of its overall budget on instruction while the remaining five high schools spent an average of 69%, with HS2 spending the most at 71%. In addition, the five traditional high schools spent on average more than twice the percentage that the Academy spent on instructional leadership. Also, the table shows that the Academy spent 27% on school leadership while the traditional school closest to the Academy (H4) spent only 8%. Lastly, the Academy had zero expenditure in the co-curricular function while the traditional high schools spent 6.37, 6.67, 7.63, 8.51, and 6.69 percent of their budgets respectively. Because there were no data for money spent on food, security/monitoring, and data processing services, these categories were excluded from this table, although they were included in the TEA report.

Table 8  
*Operating Expenditures by Campus by Function (2013-2014)*

<b>Campus</b>	<b>CTE Academy (in millions)</b>	<b>%</b>	<b>HS 1 (in millions)</b>	<b>%</b>	<b>HS2 (in millions)</b>	<b>%</b>	<b>HS3 (in millions)</b>	<b>%</b>	<b>HS4 (in millions)</b>	<b>%</b>	<b>HS5 (in millions)</b>
<b>Total Operating Expenditures</b>	.86	100	12.54	100	12.63	100	10.48	100	8.30	100	11.49
<b>Instruction</b>	.47	55.08	8.81	70.29	8.91	70.58	7.05	67.33	5.61	67.59	7.93
<b>Instruction Res/Media</b>	.0001	0.10	.16	1.27	.18	1.40	.15	1.44	.12	1.41	.16
<b>Curriculum/Staff Development</b>	.002	0.18	.05	0.43	.05	0.37	.17	1.65	.04	0.42	.06
<b>Instructional Leadership</b>	.01	1.31	.03	2.69	.35	2.80	.24	2.25	.20	2.35	.40
<b>School Leadership</b>	.23	27.25	.09	7.36	.96	7.63	.81	7.73	.68	8.13	.85
<b>Counseling</b>	.07	8.64	.08	6.21	.72	5.73	.73	6.93	.50	6.02	.70
<b>Social Work Services</b>	.001	0.14	.008	0.66	.09	0.73	.05	0.48	.02	.24	.09
<b>Health Services</b>	.001	0.13	.13	1.05	.12	0.99	.11	1.05	.89	1.07	.10
<b>Co-curricular</b>	0	0.00	.84	6.73	.84	6.67	.80	7.63	.71	8.51	.77
<b>Plant Maint/Operations</b>	.06	7.16	.41	3.30	.39	3.11	.37	3.51	.35	4.25	.42

Table 9 shows the operating expenditures by campus and by program for the 2013-2014 school year. The Academy spent 85% of its budget on its regular education program, while the five traditional high schools spent approximately 68%, 70%, 61%, 65%, and 63% on this program. The Academy did not spend any budgetary funds on their Gifted and Talented program as well as the Students with Disabilities and Bilingual programs. However, HS3 spent more (21.33%) on CTE than the Academy (15.14%). High School 5 was not far behind, allocating 14.04% of its budget to CTE. Lastly, the Academy was the only school that did not receive Title I Part A funds. In Table 9, although the Non-disciplinary Alternative Education Program- (AEP) basic services, Discipline Alternative Education Program (DAEP) basic services, DAEP Supplemental, High School Allotment, and Pre-kindergarten were included in the TEA report, they were not included in the table because there were no data available and/or the data was not applicable to the campuses in this study.

Table 9  
*Operating Expenditures by Campus by Program (2013-2014)*

<b>Campus</b>	<b>CTE Academy (in millions)</b>	<b>%</b>	<b>HS 1 (in millions)</b>	<b>%</b>	<b>HS2 (in millions)</b>	<b>%</b>	<b>HS3 (in millions)</b>	<b>%</b>	<b>HS4 (in millions)</b>	<b>%</b>	<b>HS5 (in millions)</b>
<b>Total Operating Expenditures</b>	.80	100	11.28	100	11.39	100	9.31	100	7.24	100	10.30
<b>Regular</b>	.68	84.52	7.68	68.10	8.00	70.24	5.71	61.36	4.68	64.58	6.47
<b>Gifted &amp; Talented</b>	0	0.00	.014	0.13	.014	0.12	.014	0.15	.014	0.20	.41
<b>Career &amp; Technical</b>	.12	15.14	1.33	11.81	1.13	9.90	1.99	21.33	.84	11.63	1.45
<b>Students with Disabilities</b>	0	0.00	1.68	14.90	1.60	14.00	1.00	10.78	1.35	18.64	1.42
<b>Accelerated Education</b>	.003	.34	.44	3.86	.52	4.60	0	0	.0006	0.01	.43
<b>Bilingual</b>	0	0.00	.001	0.01	.003	0.03	.003	0.03	.003	0.04	.004
<b>T1 A School wide- St Comp ≥50%</b>	0	0.00	.13	1.19	.12	1.10	.42	4.56	.35	4.89	.12
<b>Athletic Programming</b>	0	0.00	0	0	0	0.00	.17	1.79	0	0.00	0

Table 10, shown below, illustrates operating expenditures for each campus per student by function and program. This table compares the amount of money spent on average for each student at each campus. It is clear that the Academy spent more than twice the amount of any of the five traditional high schools. The Academy spent \$13,058 by function and \$11,756 by program as compared to an average of \$6,775 and \$5,110 respectively for the traditional high schools.

Table 10  
*Operating Expenditures by Campus per Student (2013-2014)*

<b>Campus</b>	<b>By Function</b>	<b>By Program</b>
<b>Academy</b>	\$ 13,058	\$ 11,756
<b>HS 1</b>	\$ 5,927	\$ 5,105
<b>HS 2</b>	\$ 5,992	\$ 4,524
<b>HS 3</b>	\$ 8,156	\$ 5,306
<b>HS 4</b>	\$ 7,142	\$ 5,505
<b>HS 5</b>	\$ 6,662	\$ 5,111

The allocation of operating expenses by both function and program was much higher for the Academy versus the five traditional high schools. High Schools 3 and 4 offer specialty programs such as STEM, welding, and fire science, which require additional funding; hence, the operating expenses by function (\$8,156 and \$7,142 respectively) were higher than the other three schools.

**Measured by human capital.** Personnel employed by the Academy included six content teachers, one aide, one instructional technologist, one director, one assistant principal, one counselor, one secretary, one registrar, and one attendance clerk to serve 62 students. However, capital is typically first described as a type of financial gain or asset. According to Becker



(2008), economists now regard expenditures such as education and training as aspects of capital because they raise earnings or add to a person's marketable skills. These aspects are all considered to be part of human capital. For this study, human capital was examined with regards to average CTE teachers, educational aides, students per teacher, and teacher years of experience. Table 11 shows the human capital allocations for each campus.

Table 11  
*Resource Allocations as Measured by Human Capital per Campus*

<b>Campus</b>	<b>CTE Teachers (N)</b>	<b>CTE Teachers %</b>	<b>Educational Aides (N)</b>	<b>Educational Aides %</b>	<b>Students per Teacher</b>	<b>Teacher Experience (avg. years)</b>
<b>Academy</b>	1.1	17.6%	1.0	11.1%	11.4	8.9
<b>HS 1</b>	14.8	11.9%	16	9.9%	17.8	13.5
<b>HS 2</b>	14.4	11.1%	21.2	12.2%	19.5	12.9
<b>HS 3</b>	10	12.5%	13.6	12.2%	17	11.5
<b>HS 4</b>	22.2	20.7%	15.1	10.7%	15.8	12.9
<b>HS 5</b>	17.5	15.0%	16.8	10.8%	17.3	13

The Academy had significantly fewer CTE teachers on their campus; however, due to the lower number of teachers, the percentage was actually higher than that of the traditional high schools, with the exception of HS 4. High Schools 1, 2, and 3 were similar in overall percentage of CTE teachers on staff. Although there was a large disparity between the Academy and the five traditional high schools with regard to the number of educational aides, the percentages are similar in all other aspects. Surprisingly, the number of students per teacher and average years of teacher experience were both lower for the Academy as compared to the other schools.

## **Qualitative Results**

The following are the results of a case study describing the perceptions of three participants who were directly involved in the inception of the Academy in a South Texas school district. A description of its development was derived from interviews in which each participant shared his or her experiences throughout the process. The qualitative component of this study was guided by the following question: What were the benefits of creating an ECHS with a CTE focus, according to school and district administrators?

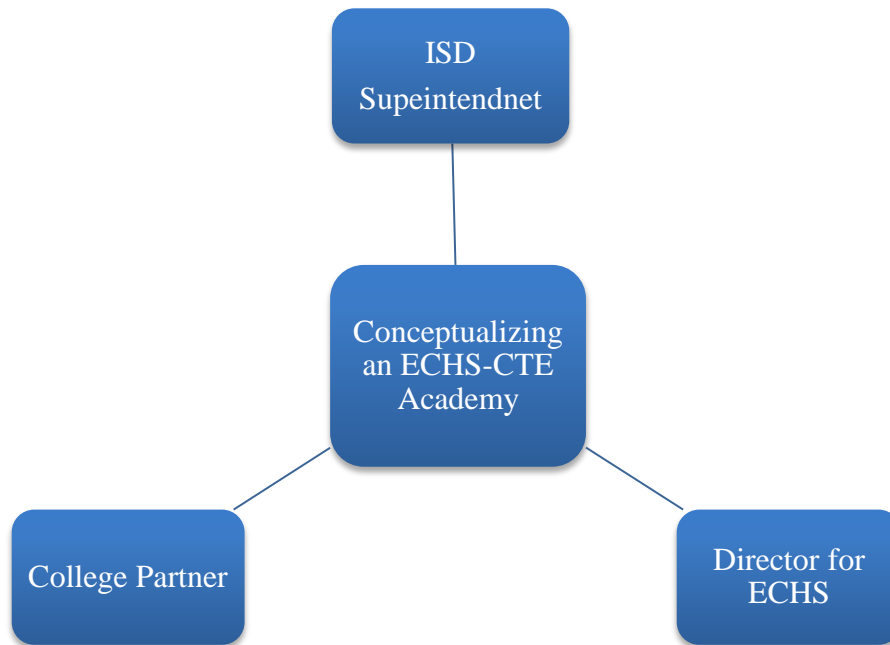
To facilitate the research, the interview questions were designed to engage the participants in a discussion of their perceptions about alternative education and their decisions to establish an Early College High School Career and Technical Education Academy (see Appendix A). Through this process of discovery, many commonalities were revealed, which can be categorized into various themes. Although there were thematic consistencies, their perceptions differed with regard to the specific roles they played in the development of the school.

### **The Participants**

The participants, who were purposefully selected for this study, were relevant to the research purpose and helped to gain an understanding of how and why a district would opt to open this type of school. As indicated above, the participants were selected by non-probability, or purposive, selection. Purposive selection allowed the researcher to gain access to information that could have been easily overlooked if a less selective process had been used. Jick (1979) states that purposely selecting data sources entails choosing people as well as documents from which the researcher can substantially learn about the experience of the study. Uprichard (2013) posits that because of the relationship between the knowledge of the population and the cases within it, purposive sampling is essential. Furthermore, due to the newness and the limited

number of schools of this type, the participants' exclusivity brought a unique dynamic to the results. Their positions within the district and partner college provided direct insight into the planning, development, and implementation of the Academy.

Participant one, Steve, was the Superintendent of the school district at the time of the Academy's inception. Being involved with the first Early College High School opening in the district motivated him to open a second campus emphasizing Career and Technical Education. Participant two, Theresa, was the Director of both the original Early College High School and the new Academy. Her insight and expertise with regard to the early college initiative was vital in the expansion and daily functioning of the new campus. Although the scope of her involvement was uncertain at the beginning, the magnitude of work that lay ahead made it obvious that she was the right person to be at the helm of this project. The final participant, Priscilla, represented the perspective of the partner college in the study. Priscilla was the Dual Credit Officer and liaison between the Early College High Schools and the college. Her point of view was valuable for understanding the dynamics of the partnership between the two institutions and how they functioned in unison to provide the best high school/college experience possible for the students. Figure 9 shows the roles of the three participants and how each of their unique expertise and perceptions were integral to the conceptualization of the ECHS-CTE.



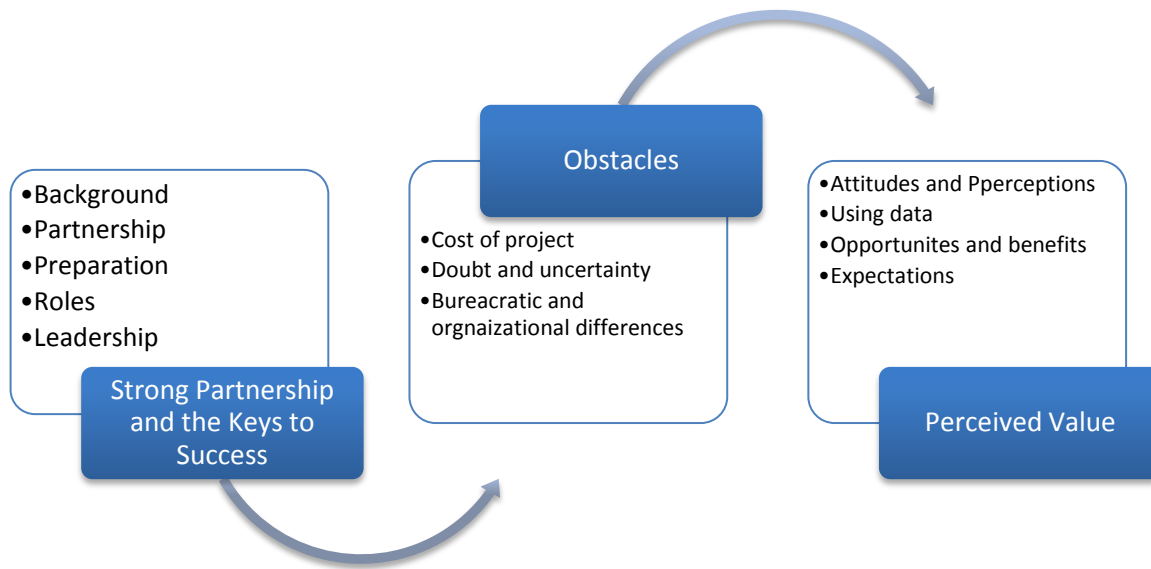
*Figure 9. Conceptualization of the ECHS-CTE Academy*

Each participant in this study played a very specific role within the process of creating the Academy. Steve and Theresa were the originators of the idea. Steve also informed the school board of all the advancements within the project (planning, development, and implementation) as they occurred. He was responsible for maintaining the long-standing relationship with the college partner in order to expand from the original early college high school by adding the CTE model which, at the time, was the first of its kind in Texas. Due to his understanding of the sensitivity of this new concept and the importance of its success, Steve was able to draw upon his experience as Superintendent. Theresa, Director of the Early College, was brought in to do what was necessary to get the Academy off the ground. She was able to utilize her experience of opening the first early college predatory high school in the area. Theresa was the pinnacle of the entire process. Working with limited data due to the newness of the concept, Theresa was taking an enormous financial risk on behalf of the school district. Her role was to

establish a plan by forming panels of individuals who would ultimately assist in bringing this idea to reality. Priscilla was a significant asset to the planning process, because, as college partner, she played an integral role in the academic planning. As such she was a bridge between the college and the school district. Priscilla had to make certain that graduating with college hours leading to an industry certificate and possibly an Associate Degree in Applied Science would actually be an attainable goal for students through this new program. All three participants were responsible for building a sense of trust within the school between the school district, and college community.

### **Qualitative Data Collection and Analysis**

Qualitative data were derived from individual interviews with the three participants, which were digitally recorded, reviewed and transcribed. The transcriptions were then coded by hand and sorted into categories and compared to the environmental component of the I-E-O model and concepts of the CBA model. From this comparison, the following three themes emerged: strong partnerships and the keys to success, obstacles, and perceived value, as illustrated in Figure 10. These aspects will become evident and will be further addressed throughout the analysis of the findings. Each participant had an opportunity to review the transcripts and add, delete, or edit any of the information provided.



*Figure 10. The Emergence of the Three Themes*

The first theme, strong partnerships and the keys to success, encompasses the participants' perceptions of the importance of strong partnerships and the impact they had on the success of the CTE Academy. The second theme, obstacles, uncovers the hurdles that presented themselves during the process and how the participants were able to overcome them to bring the Academy to fruition. The final theme, perceived value, encompasses the participants' perceptions of the desired outcomes and benefits the Academy provides for the students and the community.

### **Strong Partnerships and the Keys to Success**

**Background.** In the inception phase, the Academy rode on the coattails of an already successful early college high school program in the area. That particular program was an example of the traditional ECHS model in which students pursue an Associate's Degree in Liberal Arts or complete core classes (42 core college credits). The participants were well aware

of the increasing shortage of skilled workers and the anticipated influx of businesses and industry moving into South Texas. Therefore, after graduation the students must be employable by these entities, according to representatives of the local port and construction industries (Steve, interview, 2015). Steve stated, “The idea was to provide another venue to make a higher wage” while understanding that not every student was set up for or desired to pursue a four-year baccalaureate degree.”

According to Steve, there was “a lot of talk in the community of having some sort of enhanced CTE school.” He added that the public’s idea was still focused around the “vocational” concept, which emphasized such courses as automotive education, welding, cosmetology, and other traditional “vocational” fields. Steve continued that “business and industry were pushing” for an increase in career-based courses. Therefore, “timing was of the essence” to create an ECHS-CTE. Aware of the lack of CTE options throughout the school district and the difficulty and expense of implementing more programs, district leaders sought to provide viable alternatives. On the other hand, Theresa spoke of “identifying students with a different need.” Her familiarity with the early college initiative gave her a slightly different perspective. Due to her extensive experience with students in the ECHS, she realized that there needed to be a different option for those who were becoming disinterested in seeking an Associate’s degree through the traditional ECHS model. Theresa went on to say that there were a number of students from the original ECHS system who “could have benefited from this type of a program.” This observation stemmed from her work with students “needing remediation due to failing college courses.” She realized that there needed to be a quicker, easier way for those students to have gained a skill set and some college hours upon graduation from high school. The idea of offering certificates through the existing college partnership became more

popular because it would be a tremendous opportunity and pave the way for the creation of more CTE programs. Priscilla, the College Liaison, added that the Academy would “be another delineation of the existing early college high school.” This program was so successful that it “had become a part of the norm” on the college partner campus. For the college, it made sense to expand the program to their other campus, which would help boost their enrollment and marketability to the public sector.

All three participants concurred that based on the positive experiences with the original ECHS, the timing was perfect and was an enormous factor in selling the idea of an ECHS-CTE. Based upon the success of the already existing ECHS, the community was ready, but no one had any idea of how to proceed. Steve thought back to the summer of 2008 when the initial conversations began. The school district leaders decided to use their available property approximately a block away from the college’s second campus. From that point forward, it would be a mere five years before the Academy's opening in the fall of 2013.

Central to developing strong partnerships between the two entities was how well the district could prepare and plan for a new and innovative program, as well as help each other to define the roles of each entity. These ideas became what the participants considered to be the keys to success.

**Partnership.** At the core of the Academy's success was the partnership between the Academy and their college partner. Steve clearly emphasized that the Early College High School models would not have been successful without this essential factor. At the time, while conversations commenced, both the school district and the college partner had similar but slightly different ideas. Although the district administrators' goal was to expand the CTE programs throughout the district, they knew it would not be cost effective in the long run. Steve



recalled thinking that “we had the need and the students, but we didn’t have the infrastructure or the resources” to pull it off district-wide. The district leaders also were aware that the college wanted to expand and increase enrollment. Theresa emphasized that the “data showed from the other district campuses that there were no significant resources being funneled to the completion of certificates.” She went on to state that “the district did not have the materials and resources needed to create a [stand-alone, magnet] CTE school.” Relying on the college’s equipment and resources “just made sense.”

Due to the success of the original ECHS, the College President and the Superintendent both strongly believed that this project would be welcomed. Steve went on to state that “the College President was more than supportive” of the idea and it quickly became a part of his vision for the college. The partnership would serve students in a variety of circumstances, who have differing aspirations. Going forward, the only worry the Superintendent had was the future of the College President and the Board of Regents. He stated that “Boards and Presidents are transient, and visions and priorities change which makes the partnership that much more essential.”

Form the college's point of view, Priscilla stressed that a “strong partnership minimizes a great deal of bureaucratic red tape.” She also mentioned that the partnership promoted growth for them on the college campus. She stated that this is “huge for us because it guarantees a range of enrollment.” Although there was an eagerness for growth, Priscilla explained that “we want to grow it big, but not too big.” At first, the college was hesitant about its ability to accommodate such growth. Slower growth would facilitate “adaptation on the college side,” forcing them to plan for expansion.

**Preparation.** According to Theresa, while conversations occurred at the state level, the college and school district administrators began to have planning meetings. In order to develop a program such as this Steve shared, “you have to have more than the Superintendent and the President of the college just saying, ‘we’re going to do this’”. Steve stressed the importance of having the “right” groups of people involved on both sides. Theresa added that an important part of the process was to evaluate the CTE programs currently offered throughout the school district and compare them to those that would be offered at the college. This analysis served to inspire future discussion.

**Roles.** Many individuals within each organization played vital roles in the establishment of the Academy. The two original masterminds of the process were the Superintendent of the school district and the President of the college. Although Steve referred to himself and the College President simply as “symbols,” he stated that they needed to “continually make sure that senior staff knew we were going to do this.” They were essential in paving the way at the beginning of the process and intentionally minimizing their involvement towards the end. During the five years from idea to establishment, the Superintendent and College President were responsible for ensuring that all who were in the position to make the final decision had the necessary information to move forward.

Other key stakeholders involved in the planning process were the school board, the assistant superintendents for the college, the central office staff, the Board of Regents for the college. Steve stressed that each group “had to understand that this was not just another ‘vocational’ program.” The College President had to convince the Board of Regents that the success of the original ECHS could be replicated through a different type of early college program without compromise. However, according to Steve, “There was significant resistance

from certain key individuals,” which created hesitation about the expense/cost of the original ECHS. Once all were in agreement, the school board called a bond election, which passed in 2008.

**Leadership.** As the idea came to fruition, everyone involved knew that leadership would be the most important component to the success of the program. It was no secret that the current director for the original ECHS was a viable candidate to run the new Academy; however, there was some concern about whether or not she could manage both schools. In the end, Steve was convinced that the Academy needed someone who “knew all the ins and outs of navigating both institutions.” Therefore, he appointed Theresa to the position of principal for the Academy while she maintained her position at the original ECHS. Once the leadership piece of the puzzle was in place, the more technical aspect of ground-work began. Theresa’s role was to continue to build upon the success of the original ECHS. Steve described her as the “lynch pin” between the two institutions; the number one thing that binds everything together. Along with the college liaison, Steve stressed the significance of the cooperation between Theresa and Priscilla. He emphasized that they worked to ensure that the “bureaucratic idiosyncrasies were minimized” so that the process would not be hindered in any way. Both women facilitated committees and planned the curriculum, course sequencing, and feasibility for student completion.

### **Obstacles**

The second theme that emerged from the data was that of obstacles encountered, such as the cost of the project, time to complete construction, allocating space, facing unknown factors, resistance from people involved, lack of data to support the effort, and maintaining funding. These concerns were reflected in their discussion of establishing the other ECHS and the effort to ensure the Academy's viability in the future.

**Cost of the project.** The partnership established between the school district and the college allowed for significant fiscal savings for the district. Steve related that because of the partnership, the Academy had access to existing college facilities, which included specialized classrooms with state of the art software and equipment, as well as professors/instructors with the academic and professional experience to provide a rigorous, relevant curriculum. He added that those intimately involved with the project understood the financial benefits, although “resistance from key players was still extremely evident because of the anticipated cost.”

**Doubt and uncertainty.** Beyond the cost of operating a program such as this, there were other less tangible factors which affected the process, namely doubt and uncertainty. Many questions arose as to whether or not students could complete the programs of study, uncertainty about whether it would be successful, and whether or not students could be enrolled in specific programs of study considering their age and legal requirements for industry certifications.

The college representatives also had concerns of their own. Priscilla spoke about issues regarding space and section availability. There were, and still are concerns that the college would struggle with rapid growth and the ability to keep up with the demand for certain majors. The district leaders had similar worries about the availability of popular courses and access to desired career paths. At the time of the preliminary discussions, there was no way to accurately predict enrollment in particular courses.

The most fearful aspect of the process was venturing into the unknown regarding recruitment. Considering that the Academy was planning to enroll only tenth and eleventh grade students, the team had the daunting task of recruiting students who had already established themselves and convincing them to leave their comfort zones to try, as Steve put it, “something different and foreign to all involved.”

**Bureaucratic and organizational differences.** Steve also pointed out that the differences in the bureaucracies between the college and the school district also caused some “hiccups” in the process. The differences in the use of certain terms were largely to blame. To achieve success, it was necessary for each group to be as open and transparent as possible. For instance, the Director of the Academy was given full autonomy to make decisions on behalf of the district with regards to the campus. However, Priscilla had to gain support from academic departments, deans, the business office, etc. Although the Academy students were enrolled in the college and had full access to the campus, there were still some logistical issues to overcome in that the faculty and staff at the college campus had to become familiar with the processes and allow the Academy students appropriate access. Scheduling of classes is very different at a high school than it is on a college campus. Classroom space and the number of sections available to Academy students were limited because the college also was also required to serve their traditional students as well. As a result, the Academy leaders were forced to be more creative in their scheduling process, which brought up concerns about course sequencing. To counter this issue, Priscilla met with the college deans and department chairs to convince them to make room for the Academy students or even persuade them to provide extra sections.

Planning and communication became that much more important as the Academy administrators attempted to forecast the number of students in specific courses, and in turn, the college had to figure out a way to accommodate them.

### **Perceived Value**

The third theme of perceived value is linked to the other themes of strong partnerships and keys to success and obstacles. Perceived value is built on the participants’ discussions of opportunities, benefits, and expectations from the state, from industry, school leaders as well as parents and students.

**Attitudes and perceptions.** Attitude is defined as how we *see* situations and then *behave* toward that situation (Pickens, 2005). Perception, on the other hand, relates in part to a person's awareness of particular stimuli, (such as the establishment of the Academy). Receptiveness to the idea of establishing an alternative school may be highly selective and in fact may be limited by a person's existing beliefs, attitudes, motivations and personality (Assail, 1995).

According to Steve, the key stakeholders were required to account for differing attitudes and perceptions, especially as these were perceived as obstacles. Of particular concern to Steve were the perceptions of the chief financial officers who questioned the cost effectiveness of the program. Still others insisted, "This can't be done, the schedule won't work, and the kids aren't mature enough to be in college classes." As a result, Steve, Theresa and Priscilla were forced to work feverishly to inform and educate stakeholders so that misinformation would not temper the momentum of establishing the Academy, nor influence how others in the community view the need for the Academy. Interestingly, he went on to mention that those who raised concerns about costs, logistics and such were the same people who questioned the opening of the original ECHS.

**Using data.** Interestingly, all three participants agreed that there were limited data and no exemplars to draw from when they first began discussions of opening the Academy. Because this was the first ECHS-CTE Academy in Texas, the designers had little to go by other than what they had experienced with the original ECHS. Steve explained that they used workforce data from the port industries in the local area to determine need. This included financial data (cost over time and construction of the facility) and budgetary information. These data sources were then used to help explain to others the necessity of such a program. There were conversations with industry leaders regarding "the future careers that would be appealing, fulfilling, and well-paid opportunities here in the local area."

Theresa discussed the research conducted to determine how many CTE programs were offered throughout the school district. Special attention was given to how many students were graduating with at least one certificate. Theresa recalled that this data were slim to none. Therefore, graduation requirements anticipated by the Texas Education Agency also primarily drove the discussions. With the implementation of the new HB5 looming, the plans fell into place.

The fear of designing and implementing anything of this magnitude typically is caused by uncertain funding. Finding the funds for the Academy was a daunting task for any school district to confront. Steve stated that “unlike the [original ECHS] where there was grant money, there was a more strategic approach for [the new Academy] because grant money did not exist to open this school.” He went on to mention that the start-up expense is “always higher per pupil considering the numbers [enrollment vs. number of teachers].” This is mostly due to the initial imbalance of the cost of salaries for faculty, administration, and support staff with regard to student enrollment. It was anticipated that circumstances such as this would lead to imbalances that would eventually level out over time as the enrollment increased. Steve went on to say that the Academy has “costs you don’t see at a traditional high school.” Some of these costs may include other fees incurred by the college, such as uniforms, testing fees, and some required supplies/equipment for specific courses. Furthermore, trying to “piecemeal” something like this throughout the school district and “bring it to scale would be much more expensive than centralizing it at one school.” With all things considered, the expense of teacher salaries, equipment, resources, facilities, etc., it is only logical to create a hub that would be accessible to all students.

**Opportunities and benefits.** Early college high schools provide opportunities for students to earn college credit up to an Associate's degree while still in high school. In creating the Academy, Steve stated that all involved knew that they "wanted a program where there would be the same important components as in a traditional early college high school such as rigor, strong support systems, and small learning communities." Theresa added that a school such as this "provides a different venue for kids to access what they love." The students have access to millions upon millions of dollars of equipment and resources not otherwise available to the school district. Steve noted, "We would not have been able to build these types of facilities [CTE] or offer the number of courses that are offered [at the college] if we attempted this at a traditional high school. Furthermore, we would not be able to affect the masses if we attempted to spread this out amongst the other high schools." Due to the flexibility in scheduling and high quality, relevant experiences for the students, this type of programming fits in perfectly with the college setting and allows students to specifically focus on CTE and their future careers.

Ironically, the conversations about the Academy came well before discussions of HB 5, which catapulted CTE into the spotlight by requiring students to take at least two upper-level CTE courses to graduate with an endorsement. This meant that students attending the Academy would comply with the new Texas graduation requirements without disruption or rearrangement of their graduation plans. Theresa reiterated that the difference in structure, course offerings, and hands-on experiences created college tracks that are more relevant to the students attending the Academy. She continued by stating that it "makes learning real for them and attaches a skill set," producing even more opportunities after graduation whether they chose to continue their education or go directly into the workforce.



Beyond the academic and relevant experiences offered, there is also a broader opportunity. Although a smaller learning environment was created for the students, both Theresa and Steve agreed that the great things happening at the Academy could be spread district wide. They hoped that other professionals in the district could learn from its success. Others have the “opportunity to learn from what teachers, students, and staff are doing” at the Academy. Steve candidly admitted that he did not believe that the district had done a good job of capitalizing on those opportunities or “taking them and replicating them” on a larger scale and “the opportunities for replicating are priceless.”

There are numerous opportunities for the college as well. Priscilla highlighted that the college has an opportunity to grow also. The college leaders learn how to provide an effective learning environment rather than the traditional model and experiences fiscal growth that comes with it. The college also benefits from the opportunity the students have “of taking college courses while in high school, opening the window for job opportunities through their college classes they may not have at their high schools, and gaining financial freedom at an early age.”

When describing the benefits of the Academy, all participants agreed that the school is still in its infancy and the long-term impact remains to be seen. Steve, Theresa, and Priscilla all believe in the various types of benefits that will be realized based on their individual perceptions which are dictated by their role within the process. Steve recognized the immediate benefit this program had on students. For example, he argued that “students who are otherwise disengaged, disconnected, and disenfranchised are now connected.” The Academy’s attendance rates are the best in the district and the business/industry community is showing an interest as the school's reputation builds within the district.

The benefits can also be identified through numerous factors such as attendance rates, attrition, completion, grades, etc. Benefits can also be measured financially by exploring variables such as in-kind contributions, mentorships, partnerships, and direct donations. Traditional schools do not have access to these types of support systems.

Theresa asserted that the community also reaps the benefit of the Academy by building a skilled local workforce, which will eventually promote growth within the city. She added that the Academy will become a natural training center area, which businesses and industry can invest in to provide prospective employees.

**Expectations.** Each participant had various expectations for this innovative school. Based on the interview questions, the expectations could be broken down into four categories: state expectations, industry expectations, expectations of parents, and expectations of students. The participants stressed that some of these were universal, such as for students to graduate, to earn a certificate, and to be prepared for the workforce. Despite these similarities, the participants did perceive some differing expectations.

All agreed that they did not believe the state officials knew exactly what to expect considering the newness of the program. Most likely, the state had similar expectations to those of the original ECHSs, which according to Steve include that ECHS students are expected pass the STAAR and graduate at higher rates. Steve and Theresa were both frankly stated that they were certain “TEA is not interested in the same things we are.” Both expressed that those directly involved were impressed by terms such as “student engagement, student outcomes, and lessons learned” through the process. However, Priscilla was more concerned with the college’s accountability to the state. She was adamant that state officials be informed as to “what services the college is providing, how effective they are (the college), and what do the numbers look

like?” This perception varied from the ISD due to the various accountability components the college was responsible for reporting to the state.

One of the main purposes for creating the Academy was to provide students with an alternative route, not only to high school graduation, but also to earning an industry certificate, which would make each student immediately employable upon graduation. As a result, the industry has certain expectations of graduates from the Academy. Steve expressed that upon graduation, Academy students should have “skill sets for the trades and careers,” and there is an industry expectation of “content knowledge around specific career paths,” including, most importantly, soft skills such as verbal and written communication, work ethic, etc. According to Theresa, some industries are expecting future students to graduate with an Associate's Degree in Applied Science, which would open up numerous other doors. But due to the newness of the program, a great deal of collaboration must occur to determine more specific industry needs for employability. She also believes that the Academy should be more proactive in promoting their processes and products to the industry leaders. This, in turn, would create a stronger industry/business partnership, which would also result in more job opportunities for their graduates. Priscilla proposed that the success of the Academy would assist in maintaining the longevity of the companies and in replacing a retiring workforce. Training would be essential to maintain the industry. Industry leaders would expect the Academy students to be proficient in soft skills as well as have the ability to write reports. All expect that the Academy students would be graduating with a strong foundation in their craft. This would lessen the amount of time and money a business would need to contribute to employee training.

Steve stated that parents generally expect the same things from the Academy that they would from every other school. “Parents expect their students to be safe and to be cared for.”

More importantly, he stressed that parents expect “a customized experience for their kids and a chance to get a good paying job with college hours behind them.” He explained that parents probably have the “Starbucks mentality.” For example, each student is a different flavor depending on their needs, wants, and desires.

Of course, the student is the most important factor in this complex equation. Each student has his/her own individual expectations and reasons for attending a school such as this. Steve explained that the perceived expectation is that of rigor, challenge, and a supportive school culture; however, the students think of it as a “cool” place to be; mostly because they can be college and high school students at the same time.

### **Conclusion**

Chapter four provided a description of the quantitative data analysis procedures used to compare student outcomes between the Academy and the five traditional, comprehensive high schools in the school district. The quantitative variables for the study included: GPA, state assessment scores, CTE course credits earned, and attendance. The study depended on various analyses to desegregate data.

The study used JMP software to conduct all analyses. A one-way ANOVA was run for each variable to determine the statistical significance amongst the schools. The first research question explored the extent of the differences in student academic and behavioral performance in reference to the Academy and the five traditional high schools in the district that offer CTE courses. Data were analyzed by performing one-way ANOVAs on grade point averages, state assessment scores, the number of CTE course credits earned, and attendance rates. The second question assessed the percentage of resources that were allocated to the Academy as compared to the five traditional high schools. Data analysis included allocations as measured by operating

expenditures, which were broken down by function and by program. The resource allocation data was also measured by human capital, i.e. professional staff, educational aides, students per teacher, and years of experience for the educators.

The research also included a qualitative analysis of the perceptions and experiences of three participants from the school district and partner-college. Individual interviews were used with each participant to gain a sense of his or her perceptions. The interviews were transcribed, coded, and categorized into the following themes: strong partnerships and the keys to success; obstacles; and perceived value, which guided the reporting of the data. Aspects of past, present, and future perceptions were evident throughout the discussions. Overall, the themes provided a description of the participants' perceptions of the process of creating, developing, and the daily functioning of the Academy.

Chapter five will provide a discussion of the major findings, implications, and recommendations for future research.

## CHAPTER V: DISCUSSIONS AND IMPLICATIONS

In this final chapter, the researcher will discuss the study's major findings relative to the three research questions. This study was designed as non-experimental using both quantitative and qualitative research methods based on the research questions. The quantitative method was used to provide a description of the population under study to compare the Academy to the five traditional high schools in the participating school district, and to compare and describe the resource allocations for each of the schools. The qualitative component facilitated exploration of aspects by a case study which cannot be statistically measured, such as the perceptions of the participants regarding opening the Academy and its first year of operation. Furthermore, the individual interviews of the participants helped to shed light on the quantitative statistics.

### **Discussion**

As explained in Chapter 1, school districts across the state are struggling to function amidst financial constraints. In order to meet the ever increasing demands of academic standards, administrators and school district directors seek cost effective options to ensure that high school graduates are prepared for college or the workforce. One of those options was the creation of Early College High Schools (ECHS). Over time, ECHSs have found great success. Berger et al., (2014) reports that students who attend ECHSs were significantly more likely to earn a college degree than their counterparts in traditional high schools. This initiative addressed a specific sub-group of students that historically has been underrepresented in college. However, as originally designed, the ECHS only offered a degree plan leading to an associates degree of liberal arts with a completion of the core courses (English, math, science, and social studies). The traditional ECHS design failed to address the needs of students who were not necessarily interested in attending a four year university but wanted to go straight into the

workforce. These particular students needed a head start and specific training to give them better career opportunities once they had graduated from high school. Recognizing the current and future trends of industrial needs in South Texas, one school district leveraged current state policy to launch an ECHS with a career and technical education emphasis.

Originally, ECHSs were created to give underrepresented students, (at-risk) access to college-level course work while they were still in high school. Studies, as mentioned earlier in the study, show this program has increased their chances of earning a bachelor's degree from a four-year university. The ECHS-CTE Academy afforded these students not only the college option, but also the chance to attain an industry certificate by the time they graduate from high school. They also had the option of transferring some college course work if necessary; however, at the very least, they would have the certificate and training necessary to go straight into the workforce.

Although studies (e.g. Edmunds, 2012; Thompson & Ongaga, 2011) have shown that ECHS students have been outperforming their counterparts who attend traditional high schools, the question still remained whether this would be true for students attending the new ECHS-CTE. There were no significant differences in GPA, state assessment scores and attendance rates; however, there was a significant difference in the number of CTE credits earned by the Academy students, suggesting that although results were mainly comparable, students who attend the Academy will walk away with more CTE credits than their counterparts. The case study also revealed that although the cost of opening and operating the Academy was proportionally more expensive than operating CTE programs within traditional high schools, the benefits far outweighed those factors. Further discussion will explain the results in more detail.

## **The Differences in Student Academic and Behavioral Performance: RQ1**

Research question one asked to what extent do differences in academics and behavior impact student performance as measured by:

- 1.1) GPA,
- 1.2) standardized academic assessment scores,
- 1.3) the number of CTE course credits earned,
- 1.4) and attendance rates?

when comparing the ECHS-CTE Academy and the five traditional high schools in the school district. It is important to note that the student groups from the traditional high schools for comparison were randomly selected from all those enrolled in CTE courses. There were no statistical differences in GPA, standardized academic assessment scores, and attendance. However, students were likely to earn more CTE course credits at the Academy as compared to those enrolled in the five traditional high schools.

Although there was only one variable with statistical significance, the results were not surprising as students who attended the Academy entered as tenth and eleventh graders and were still transitioning from their home high schools to the Academy. It was a challenge for students to adjust to the new environment and more stringent expectations of the Academy, which included the rigor of taking a full schedule of advanced placement and college-level courses their first semester. Students were required to follow an intense study regimen and stricter attendance policies. These aspects may have had an impact on their academic outcomes with regards to GPA, state assessment scores, and attendance.

**Grade point average (GPA).** The data showed no statistically significant difference in student GPAs between the two types of schools. It was not necessarily surprising that student



GPA's at the Academy might have dipped a bit when compared to the other well established campuses. This dip was anticipated for two reasons. First, all students at the Academy were faced with more rigorous requirements to take pre-advanced placement (PAP) courses as their core curriculum in preparation for college-level courses. Interestingly enough, most of these students had not been enrolled in any PAP courses at their prior schools.

The second reason for the dip in GPA was that the Academy students were forced to contend with a rapid transition from being a regular high school student to becoming a college student. Even students who take the traditional path to college experience challenges in their academic and behavioral performance in the first year of college. For instance, Earnest and Dwyer (2010) report that college freshman may encounter academic and social stressors as they adapt to the college learning environment. The means of transitioning from one environment to another is critical to retention rates. With the more traditional college pathways (that now include EHCS), students often enter as freshmen and have more time to settle in during their first semester before taking any college courses. However, at the new Academy in its first year of operation, newly registered students were thrust into college classes immediately without any typical early college preparation. Given these elements, the lack of statistically significant differences between the Academy and the five traditional high schools is actually good news. Neither the traditional high schools nor the Academy outperformed the other. At the same time, evidence to explain the dip in GPA for the Academy students given the above factors may be attributed in large part to the school environment and the individualistic nature of the teaching and learning at the school which is typically not found at traditional high schools due to their higher enrollments. Support mechanisms were in place to help Academy students pass the college level courses and their PAP high school courses. Despite the demands of a new and

different schedule, according to Theresa, teachers were able to encourage students to become more independent and responsible for their academic success.

At the same time, the district and college leaders expect the Academy student's GPA to eventually exceed those of the traditional high schools. This is how they hope the Academy will grow. For instance, Theresa shared that, as the Academy begins to take in ninth graders, teachers will be able to appropriately train and prepare their students. As a result, they anticipate that the GPAs of students at the Academy will begin to move ahead of their peers at the traditional high schools. This expectation corroborates research from Castellano et al. (2014). In their study that included more than 6,000 students from urban school districts in the United States, the researchers found that by increasing the number of CTE courses and placing the students in career oriented programs of study (or pathways), these students outperformed their peers by earning more credits in STEM and AP classes while attaining higher GPAs in their CTE classes.

**State assessment scores.** The Academy's mean score (3842.32) was slightly lower, which was probably due to the fact that this was the Academy's first year of operation. As a result, the faculty had worked with their students for less than a year, from August to April, before students were tested. Hence, the mean scores are an accurate depiction of the other five traditional high schools, from which the Academy students originally attended, finding no significant difference. Longitudinal research tracking over time will eventually provide a better sense of the effectiveness of the Academy with regards to standardized testing. Longitudinal data might eventually include pass rates, re-tests, and a study on what strategies are used by the Academy to address achievement deficits, if any. For now though, first year data are important elements for school district leaders to consider and use as they move forward in building a coherent system that has the capacity to use data for improving student experiences and

achievement (Halverson, 2010). The extent and speed to which less traditional learning succeeds remains unclear (Shepperson, Reynolds, & Hemmer, 2013). Yet, it is important to note that first year data provide a baseline for subsequent analyses.

**Number of CTE course credits earned.** The number of CTE course credits earned was the only variable that showed a statistically significant difference. This may be due to Academy students being enrolled in college courses with no preparation (so long as they met the TSI requirements). On average, during their two to three years at the Academy, students will have taken approximately 12 to 36 college hours which equates to 4-12 CTE college classes. The regular class sequence for a student taking CTE courses at a traditional school during their four years is approximately four to eight classes. The Academy will always offer more CTE course credits than traditional schools due to its emphasis on workforce preparation and partnership with the college. On average, the students at the Academy are earning almost twice the number of CTE credits (four per year) as their counterparts at the traditional high schools (average of 2.1 CTE credits earned per year). This trend is likely to continue and increase over time as the Academy is now accepting ninth grade students in its second year of operations.

Even though the data indicates that more CTE credits are earned at the Academy than at the traditional high schools, it is interesting to note that these CTE credits are often considered college credits at the Academy. All of the CTE courses taken at the Academy are through the college partner; hence, the students at the Academy will earn CTE credit as well as college credit. This is advantageous for Academy students in two ways. First, students attending the Academy graduate from high school with more college hours than their peers at CTE-focused schools. Second, this particular pathway to college allows Academy students to transfer their

CTE credits to count toward an associate's degree in applied science or even a bachelor's degree in applied science (depending on the courses and major).

Understandably, this may have had an impact on the outcome, since this study did not identify what level of courses the students were taking at the traditional high schools. The highest level credential a CTE student at a traditional high school might earn would be an articulated credit which would not count for college credit; whereas the college credits earned by the students at the Academy may be transferred to four-year universities.

At the time of the study, given that the Academy was in its first year of operations and Academy students began the program during their tenth or eleventh grade year, district leaders anticipated that students would only be able to complete Level I industry certificates. Now, in its second year, the Academy has opened its doors to include incoming ninth grade students

**Attendance.** Although the test showed no significant difference, it was evident that the Academy students on average missed fewer days per year (6.29) than all of the traditional high schools. The other high schools missed an average of approximately 10.01 days for the year. However, a few factors must be considered when analyzing this data. First, students who attend the Academy went through an application process; therefore, the Academy is considered a school of choice. It was been suggested that students in such schools benefit from a distinct image and reputation created and nurtured by teachers and principals (Hill, 1996).

It can be deduced that over time, the attendance rates at the Academy will most likely improve due to increased interest in the Academy and the fact that attendance is stressed in this program. The Academy follows the same state mandated attendance laws as all other schools, but the college CTE courses mandate much stricter attendance requirements due to the nature of the courses. Most of these courses require a set amount of "seat time," and any missed days

could set the student back to the point where he or she could not complete the program. This additional requirement is not typically found at the traditional high schools.

Another reason for the Academy's better attendance rate could be the culture and expectations of the school itself. With only 68 students enrolled in the first year, teachers and administrators were able to create a small, intimate learning environment, in which they had much greater influence on the students than they would have in a regular classroom. Smaller class sizes and personal attention goes a long way when pushing students to higher levels of academic success, which also improves attendance. In fact, Horyna and Bonds-Raacke (2012) have shown that students enrolled in schools with smaller populations are more likely to have higher rates of attendance because of this individual attention.

As mentioned in Chapter 4, Steve, the Superintendent of the participating school district, mentioned that parents generally expect “a customized experience for their kids and a chance [for their child] to get a good paying job with college hours behind them.” He mentioned the term “Starbucks mentality,” meaning that each student has an individualized educational experience and graduation plan to earn their college credits. This results in an increased perceived value of their academic experience. Furthermore, Kidger et al. (2012) suggests that school characteristics, or features, such as school size, class size, and quality of interactions within the school impacts student success. By creating a smaller learning environment, it is easier for students, teachers, and parents to develop positive relationships which aids in the implementation of a rigorous and relevant curriculum. Creating this scholarly environment would be much more difficult within a large, traditional high school (Smith et al., 2012) which, then, contributes to students wanting to be accepted into the Academy. Students will want to be at a school where they feel emotionally safe and connected and where they believe they have a

vested interest in their academic success. If these factors are present, it could be presumed that as the Academy grows, it will continue to experience higher than average attendance rates.

### **Overall Impressions**

Considering the fact that all students must adapt to the new course requirements and higher expectations, there is overarching support from the literature that suggests that a scholarly culture and a small school environment may, in fact, influence student achievement and behavior. Reflecting on Astin's I-E-O model, presented in Chapter 2, the students' experiences in the new instructional setting, that included organizational setting, culture of the school, structures, teaching styles, class sizes, and resources, was all a part of their transition from a traditional, comprehensive high school to the Academy. Graham (1998) affirms that a student's academic success, performance, and retention are all associated with high levels of engagement with faculty, peer groups and specific academic pursuits. Thurmond and Popkess-Vawter (2003) assert that educational assessments should provide a clearer understanding of causal connections between the practice and outcomes of education. According to House (1999,) the I-E-O model allows the researcher to evaluate the effects of the input and environmental variables on student outcomes. This is important when analyzing the effects of the environment that ECHSs creates for the students. When taking into account the smaller class sizes, the higher expectations as a college student, and the specific support systems that are put in place, students who attend an ECHS-CTE have a vastly different experience that would affect student outcomes.

### **The Extent to Which Resources are Being Allocated to the Academy: RQ 2**

Research question two explored the extent to which resources were being allocated to the Academy as compared to the five traditional high schools. The resource allocations were measured by the operating expenditures of function and program. Second, the resource allocations were measured by human capital, in this case, professional staff, education aides, and

the number of students per teacher. The expense of operating the Academy was high during its initial inception due in large part to the imbalance of a small student population and the faculty/staff salaries. Over time, although the Academy will continue to be more expensive than programs at the traditional high schools, the financial disparity is likely to be much smaller as the ratios will tend to balance out. During the interviews, all participants emphasized that creating the Academy was expensive; however, Steve clearly stated that although there was a need for an alternative pathway to college for district students, the school district did not “have the infrastructure or the resources” to pull it off district-wide. Theresa emphasized that the “data from the other district campuses showed that there were not significant resources being funneled to the completion of certificates;” therefore, a viable option needed to be created. She went on to agree with Steve’s stating that “the district did not have the materials and resources needed to create a [stand-alone, magnet] CTE school.” Instead, a viable financial option for the district was to partner with the community college. This partnership gave the district students access to some of the more expensive equipment necessary for CTE courses. In addition, the school district was not burdened with the extra expense of specific tools and equipment. According to Theresa, “It just made sense to rely on the college’s equipment and resources.” So even though the cost of operating the Academy seemed quite high on paper, the actual expense of operations was less, when considering the amount of money saved by not having to purchase major equipment and allocate it throughout the school district.

**Operating expenditures by function.** The operating expenditures by function included the total operating costs and specific categories of instruction, curriculum/staff development, instructional leadership and school leadership. However, analysis of the data showed that in the 2013-2014 school year, each of the five traditional high schools had higher operating

expenditures than the eight hundred thousand dollars that was budgeted to the Academy.

Noticeably, the Academy administrators spent only 55% of their overall budget on instruction as opposed to the 69% the five high schools spent on average, with HS2 spending the most at 71%. This disparity may be due to the fact that the Academy students take a portion of their courses at the college, which allows for a reduction in staff, facilities, and some materials at the Academy. Steve shared that because of the partnership with the college, the Academy students already had access to existing college facilities, specialized equipment and classrooms, state of the art software and equipment, and professors/instructors who have academic and professional experience; none of which can be provided by the school district alone.

The differences in operating expenditures may also be attributable to fewer core curriculum teachers at the Academy due to a much lower enrollment. However, it is anticipated that as enrollment increases, so will instructional expenditures. Though, there should always be a small disproportion between the Academy and the traditional high schools because Academy students take their college courses on the college campus. The expenditures also show that the Academy spent 27% on school leadership while the closest to the Academy was HS4 at a mere 8%. This particular difference in expense was due to the ratio of the number of students served and the two administrators assigned to the campus. Again, it is likely that as enrollment increases, the percentage of money allocated to school leadership will decrease over time. The five traditional high schools also spent on average more than double the percentage that the CTE Academy spent on instructional leadership. This, in part, is due to the traditional schools having many deans of instruction and instructional aides, as opposed to the Academy that only had one instructional aide. This obviously accounted for the small percentage paid by the Academy.



Nevertheless, since it was the Academy's first year, its operating expenses were greater per student than each of the traditional schools. Over time, some of the expenses will lessen as some supplies and textbooks can be re-used. However, the total expense will remain higher due to the requirement that all students take college courses. The cost of tuition, college text books, additional equipment and supplies directly impacts the overall expense. It also must be considered that the staffing, due to lower enrollment for the first few years, will also inflate the numbers. Over time, further longitudinal research will be required to track the expenditures and determine how and when they will become more proportional.

**Operating expenditures by program.** The operating expenditures by campus and by program for the 2013-2014 school year included allocations for the regular education program as well as special programs, such as gifted and talented, CTE, students with disabilities, accelerated education, bilingual, and athletic programming. The findings showed that the Academy's expenditures were noticeably higher for the regular education program, which was approximately 85% of budget. The five traditional high schools spent approximately 68, 70, 61, 65, and 63% on their regular education programs respectively. This reason for this was the Academy received no funds from Title I. Interestingly enough, the Academy did not spend any budgetary funds on either the gifted and talented program, or students with disabilities. These special programs are largely absent from the Academy for several reasons. First, Academy students are already taking college-level courses at the college campus, which are often used by high schools in place of a separate gifted and talented program. Second, because of the low enrollment and highly specialized college curriculum, special education services and bilingual services are limited at the Academy.

Although this ECHS is focused specifically on career and technical education, HS3 did spend more (21.33%) on CTE courses than the Academy (15.14%). HS5 was not far behind, allocating 14.04% of its budget to CTE. The difference in percentages between the Academy and the two high schools mentioned above would most likely be due to the higher expense of supplying the resources to run the specialized program at the high schools whereas the Academy was able to utilize the resources provided by the partner college.

**Operating expenditures per student by function and by program.** From the analysis of the operating expenditures for each campus per student by function and by program, it became evident that the Academy spent more than twice the amount of the five traditional high schools. The Academy spent on average \$11,756 per student versus an average of \$4,049 for the five high schools, with HS 3 and HS 4 operating at \$8,156 and \$7,142 respectively. It should be noted that HS3 and HS4 both offer specialty programs unique to the school district.

**Expenditures by human capital.** As presented in Chapter four, expenditures such as education and training are now considered aspects of capital because they eventually raise a student's earnings or add to his or her marketability (Becker, 2008). Also, during the 2013-2014 school year, there was only one CTE teacher for all 62 of the Academy students. Over time, the student to CTE teacher ratio will increase as enrollment increases. Higher student enrollment will necessarily change staffing patterns. All other CTE courses are at the community college campus. Since college professors are employed by the college, that number will never affect the professional staff percentages as reported by the school district. The Academy only has one educational aide, which is again, due to lower enrollment and need during the first year. The student to teacher ratio per class is lower (11.4) for the Academy as compared to the five traditional high schools, which were 17.8, 19.5, 17, 15.8, and 17.3 respectively. The core

teachers also served all 62 students in multiple grade levels. For example, the English teacher taught both English II and III. The science teacher taught both chemistry and physics. All teachers taught both the respective sophomore and junior level courses. As presented in chapter two, according to Haimson (2014), many studies show that large class sizes directly affect student achievement by way of engagement, motivation, achievement levels, graduation rates, and time on/off task. Smith et al. (2012) argues that creating a smaller learning environment makes it easier for students, teachers, and parents to develop positive relationships, which increases student success more than in the traditional high school setting. Therefore, it stands to reason that as the Academy expands, district leaders will be looking closely at whether increased enrollment changes the culture of the school in a negative or positive manner that may be reflected in student achievement and performance.

### **Connecting Themes to Theories**

#### **The Benefits of Creating an ECHS with a CTE Focus: RQ3**

The characteristics of the explanatory and descriptive theory of the Input-Environment-Output model and the Cost-Benefit Analysis model were prevalent in this study as they were used to explore the perceptions of three individuals who were directly involved with the design and implementation of an Early College High School Career and Technical Education Academy (the Academy). Booth, et al. (2000) stresses the importance of social and environmental influences which are determinants in perception and behavior. As the participants drew from their own expertise, they emphasized that the needs of the community heavily influenced their decision making. Using the Input-Environment-Output model as a conceptual framework allowed me to describe the perceptions of the participants and their explanations of the purpose of the Academy with regard to serving a need for a population of students interested in attending

college, and ultimately obtaining career skills and knowledge, by way of a different path. A cost-benefit analysis was also used conceptually to explore the rationale and justification that district leaders used to launch this new program. Together, these concepts were interwoven throughout the case study when discussing each of the themes that emerged from the data.

**Strong partnerships and the keys to success.** Steve, Theresa, and Priscilla all agreed that the partnership between the Academy and the community college was pivotal for the success of not only the implementation of the school, but also for the students who attend the Academy. The attributes of the I-E-O model were evident in their perceptions of the partnership as they explained their experiences with it. For them, it was clear that the school district did not have the infrastructure or the facilities to develop a program of this magnitude without the assistance of the community college partner. Both the school district and the community college were eager to expand the programs and understood the implications it would have on the students and community. All relied on their past experiences of the first “traditional” early college high school to push forward with the new idea and uniformly develop a vision for how the new campus would operate.

There were several key players in the process of developing this Academy. Each individual or group played an important role in the process. Although the Superintendent and the College President were the originators, Theresa, the Director, had a vision long before the discussions took place. Yet, once the venture was put into play, there had to be clear communication as to the purpose of the new program. All agreed that there were many risks and expenses for both parties, and it was up to the Superintendent and the College President to convince the naysayers of the benefit of implementing a program of this nature. It had to be explained that it was possible to replicate the success of the first early college using a new

platform. It would have a different focus and provide an alternative pathway for college and career.

**Obstacles.** There were a number of obstacles to be overcome when the partnership launched the original ECHS. Taking note of these previous obstacles, the key stakeholders of the Academy worked to minimize the impact of present day hurdles such as cost, deadlines, finding the ideal space, the unknown, naysayers, and lack of funding had on convincing the community and students about the benefits of the new program. Undoubtedly, the cost of a program such as this would be more than the normal operation of a traditional high school. This was evident in the quantitative data provided which painted a clear picture of the expense of the Academy. Steve was very forthcoming in stating that there was no way that the school district could provide the resources, facilities, and opportunities that were available through the college partner. The school district would not have been able to provide the high caliber faculty that the college already had on staff. Of course, the startup cost of these programs would exceed the day to day expenses. Furthermore, the shops, the equipment, the constant updating of resources due to industry trends would turn out to be far more expensive than utilizing what the community college could already provide.

A concern of the college was whether or not the high school students would be able to complete the program. Although completion was a concern, the fact that the Academy could increase the enrollment of some of the colleges dwindling programs proved to be very enticing for the college. This prospect inspired conversations about how to make use of the available space at the college. The need to serve both the traditional students and the Academy students brought up issues regarding staffing and space. College administrators were forced to put a cap on enrollment for popular programs such as welding. This created issues for the Academy when

it came to recruiting for those programs, especially in the second year of operations when more high school students became interested in the program. This will continue to be a problem in the foreseeable future unless the college partner also expands their programs.

The fear of the unknown is not uncommon when beginning a process without sufficient data, empirical studies, or existing models to use as a guide. When considering risk factors, such as cost and growth in opening a new program, the Academy was required to consider the recruiting process. Asking students to leave their traditional neighborhood schools for a purely academic school with minimal extracurricular activities and no athletic programs was a daunting task. As previously stated, the Academy only admitted tenth and eleventh grade students the first year. According to Steve, Theresa, and Priscilla, there were three specific reasons for starting with these two grade levels. First, they all agreed that the students needed to come into the Academy with enough time to complete a certificate program. Therefore, because a year was not a sufficient amount of time to complete the program, seniors were not considered for the Academy. Second, reflecting on the establishment of the first ECHS, it was concluded that freshmen would not be prepared to choose a career path at such an early age. Last, everyone agreed that it was necessary to start with a smaller number of students to work out any issues of implementation. Interestingly enough, as they assessed the cost-benefit of this program at its inception, more attention was paid to the social components of ensuring student success rather than the financial issues of opening and operating the program.

The discussions revealed that similar objections as those of the district's first ECHS still lingered. Opponents continued to say that high school students are too young. They also questioned the maturity level of high school students to be taking college courses. Unfortunately, at the time of the discussions, there was limited data and no exemplars to model.

The only models operating at the time were magnet schools which utilized their own faculty to teach the CTE courses. This is very different from the Academy in which the students would actually be enrolled and taking the CTE courses at the community college. Instead, the key stakeholders relied on workforce data, data from the port industries in the local area, financial data, and district budgetary concerns to inform the discussions of opening an ECHS-CTE. Theresa noted that the district's CTE programs at the high schools were a major part of the debate. Although this data was limited, it was enough for a decision to be made. For them, addressing the needs of the community and creating future job openings in the area far outweighed operating expenses. The school district recognized that their current CTE options were limiting and felt obligated to not only provide more opportunities for students, but seize the opportunity to have a deep impact on the community as a whole. Educating and training these young adults would lead to more prosperous opportunities for them in the future. Moreover, in turn, it would have a financial impact on the community and benefit the school district in the long run.

Even though much emphasis was placed on the human and socio capital component, a large part of the decision making process did include funding. The original ECHS began under a grant supported by the Bill and Linda Gates Foundation, which provided start-up money to open the school. In addition, the school district decided to fund the program upon the expiration of the grant. The Academy was a different case. There was no grant; therefore, there had to be a more realistic approach to funding a program of this magnitude. Because the startup is always higher than at a traditional school, the financial component appeared to be highly imbalanced and very intimidating to stakeholders. The initial inflated expense was mostly attributed to administrative, faculty, and staff expenses. Over time, those expenses would begin to balance out with increased

student enrollment. Other expenses would include the purchase of textbooks and other recyclable resources that would not be purchased annually. This would, eventually decrease those expenses. As implied by Steve, to launch an operation such as this without the resources provided by the college would be far more expensive. If the district had chosen to replicate what the community college offered, the district would have had to consider adding more facilities; the expense of teacher salaries to teach the additional CTE courses; the equipment needed to be purchased, maintained, and updated as necessary which would also necessitate specialized maintenance employees to service the equipment any additional resources otherwise provided by the college. These might include tutoring services, academic advising, etc. Again, looking at the cost-benefit analysis, the district leaders were required to consider their own capacity and willingness to invest in creating these types of opportunities for their students. Also, they were forced to address the long-term impact and positive outcomes on various levels.

**Perceived value.** Perceived value, as described by Ryu, Lee, & Gon Kim (2012), is the personal comparison between overall benefits and the costs associated with those benefits. Perceived value is driven by one's own personal experiences and how one views a given opportunity. While drawing from concepts of the Input-Environment-Output model, and the Cost-Benefit Analysis model as it pertains to the perceived value, the researcher identified four subcategories that were addressed by the participants. The aspects of overall opportunities, the impact of the Academy, as well as the expectations of the state, industry, parents, and students were discussed.

Opportunities were described in several forms and for different entities and individuals. Early colleges in and of themselves provide a tremendous opportunity by giving underrepresented students a chance to earn college credit while still in high school. But the



participants all agreed that there needed to be an option for those students seeking to go straight into the workforce. An example of this was when Theresa identified students in her early college high school that would benefit from career and technical education courses. She noted that these courses and certificates would provide a brighter future for these students who had ultimately decided that a four-year university was not right for them. By creating the Academy, the opportunity to gain college hours in a specific industrial field would place these students ahead of those who attended a traditional high school who would not graduate with the credentials of an Academy graduate. Graduating with an industry certificate and training allows the Academy graduate to be more marketable and possibly create opportunities for a better paying job than a graduate of a traditional high school. Another opportunity created is that the Academy graduate can also transfer his or her earned college credits to a four-year institution, in most cases, towards a bachelor degree in applied science. He or she could also choose to continue at the partner college to attain an associate's degree in applied science. Regardless of the route chosen, Academy graduates are miles ahead of their peers from traditional high schools.

The implementation of the Academy gave the school district the opportunity to offer a wide variety of options for students interested in getting a jump-start on their careers. Admittedly, Steve explained that the district did not have the financial assets to implement these programs throughout the district. If the school district were to attempt to implement these programs districtwide, this would restrict the number of students who could take advantage of the programs to the respective campuses the students attended. By developing the Academy, the district was able to create more opportunities for more students on a much wider scale. Also, the students who commit to this program are given more freedom, which allows them, in some cases, an opportunity to focus more specifically on their interests. The district officials have the

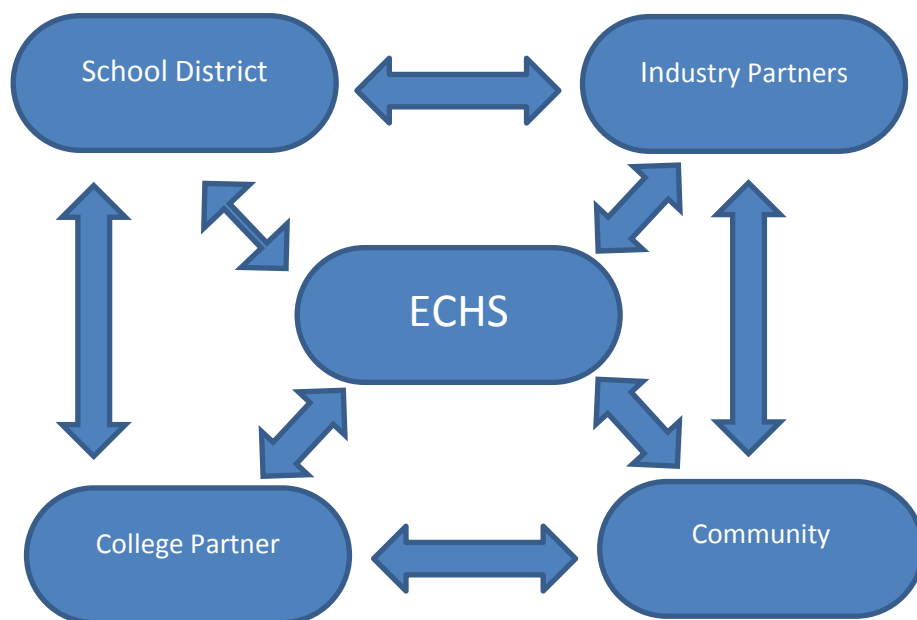
opportunity to learn from the Academy through their instructional practices and strategies implemented in the small learning community. According to Steve, being able to replicate this type of environment on a larger scale would be priceless.

The impact the school will make over time cannot be measured yet because it is still in its infancy; however, Steve and Theresa both noticed the difference in the students since the Academy first opened its doors. Students who were not connected to their high schools found a new identity and a new home. As identified in the quantitative portion of the study, the impact can be seen through the high attendance rate and CTE course completion. Although the other comparisons were not significantly different, it was evident that students found success and were able to maintain similar grade point averages to their peers at the traditional high schools even while taking college courses. This is immensely important for students. As time goes on and the Academy begins to graduate more students, it will be interesting to see how many go off to a four-year university, how many continue on at the partner college, and how many are immediately employed upon graduation. At that point, the impact will move beyond just the students themselves. The impact would move into the wider community.

**Expectations.** Expectations include those of the state, industry, parents, and students. This was important, because all are impacted by the success or failure of programs such as this. Considering the newness of the Academy, all participants questioned whether the state really knew what to expect from the program because the state does not take into account the same factors that they do to determine the value or success of the Academy. The state focuses on the mandated state accountability system in place, but the district, college, and campus officials must analyze many more aspects. The district and campus leaders explore factors such as instructional practices, student engagement, and student outcomes to name a few. The

importance of this ties back to the impact that is being made by the program on the students and the stakeholders. As the school continues to operate, it will be interesting to see how this impacts the state designations of early college high schools that emphasize career and technical education.

Industry expectations drive some of the decisions made at the Academy. Therefore, constant communication among the high school the college partner, and industry leaders is imperative (see Figure 11).



*Figure 11. Channels of communication*

By providing insightful information to the school and college with regard to industry standards and training practices, it is expected that students who graduate from the Academy will be immediately employable and prepared to go into the workforce at above entry level positions. Students would also be expected to graduate from the Academy with essential soft skills such as

the ability to communicate well under many circumstances. Industry leaders expect to be involved with mentoring students who attend the Academy. Industry involvement and insight is key for the continued growth and development this type of program..

Steve and Theresa both agreed that parents expect the same things they would expect from every other school. They expect their children to get the best education possible in a safe, caring environment. Parents who have students who attend the Academy should also expect several other factors, which should be similar to industry expectations. Parents expect for their students to earn college credits and graduate from high school; however, they should also expect for them to be prepared to transition to the next step. For some students, the next step might be to go straight into the workforce or continue their education at the partner college or a four-year university. Whichever route the student chooses, the expectation would be that he or she would have the necessary skills and knowledge to find success. Parents should also expect a customized educational experience considering the vast opportunities that are being presented to the students who attend the Academy.

Expectations will vary from student to student, but overall, their expectations would likely be a blend of industry and parental expectations. These expectations may differ in the type of college/high school experiences they will encounter. These students are simultaneously college and high school students. They attend classes on the college campus with traditional college students and are expected to perform at the same level, which creates significant pressure. Many of them abandon their sports, extra-curricular activities, and most of their friends to pursue something a little bigger than what was available to them at their traditional high school. Each student sacrifices everything he or she has known about traditional education to venture into the early college experience. So, in essence, students expect to have a completely

different experience. They expect it to be rigorous and time consuming. They expect to get a jump start on life. In the end, they expect to be ahead of their peers they once shared classes with at their neighborhood school.

### **Recommendations for Future Research**

The limited data available and the nature of this study lend itself to the need for future research. The newness of the Early College High School Career and Technical Education Academy left a number of open opportunities for further exploration. First, because the Academy only enrolled sophomores and juniors it was assumed that they would not have enough time to complete their coursework for a degree. Therefore, once the Academy begins to enroll ninth grade students, they should be tracked for degree completion. Second, this study did not identify which or how many students stay at the high school or return back to their home schools and why. The study also was not able to identify how many students stayed at the partner college to complete their program, how many went into the workforce within their field of study, or how many enrolled at a four-year university. The study was also limited by the number of participants in the quantitative portion of the study. As the campus grows and reaches capacity, a follow up based on those numbers may create more significant findings as the upperclassmen will have been through the Academy's practices for a longer period of time. A qualitative case study involving teachers and students may include more aspects of the educational process at an ECHS-CTE Academy. As time passes and more schools of this type open, a comparison of schools would also help district leaders to determine whether or not this type of school would be an asset in their area. Further exploration is also necessary of the partnership and intricacies behind a successful relationship and implications this type of program has on the college partner.

## **Conclusions**

In this chapter, the researcher explained my perceptions of the data as reflected in the quantitative portion of the study. the researcher also discussed the information shared by the three participants who were directly involved in the creation and implementation of the Early College High School Career and Technical Education (ECHS-CTE) Academy through a case study, which made up the qualitative portion. Analysis of the data was done using the Input-Environment-Output model and the Cost-Benefit analysis model.

The findings of this study showed that the benefits of implementing this type of program far outweigh the cost. There are many more implications beyond the financial. For example, one cannot put a price on an opportunity for students to experience specific social development and college and career preparation. Given the opportunity to concentrate on a skill set while acquiring the necessary attributes that will help students become employable is something that cannot be offered everywhere. It would take a committed school district, a supportive community, an open-minded college partner, and devoted industry leaders to foster an environment conducive to developing a strong workforce. This is essential because most school district leaders would not have the finances or resources to operate a program of this size without a partner college. Over time, the expenses will lessen as all involved learn to streamline the process and minimize expenses. Inevitably, there will also be more models to study later. Until then, school district leaders should continue to explore the concept to determine if this would be the best program for them.

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## **Appendix A, Semi-Structured Interview Questions**

The following are the central issues to be explored:

The motivating factors to establish an Early College High School Career Technical Academy in this district.

I: Who were key stakeholders?

I: What are/were their roles?

I: What data were used and presented?

I: How long was the process in opening the school?

Defining the mission, vision and expected goals for the Early College High School Career Technical Academy?

I: What are the programmatic features?

I: What are the benefits of having this school in the district?

I: What impact has it made?

I: How do you measure the impact?

I: What do you think the state expects from the school?

I: What do you think parents expects from the school?

Identifying enabling and constraining factors encountered with the establishment/sustainability of the school?

I: What obstacles were encountered with the establishment of the school?

I: What is the support mechanism needed for the sustainability of the school?

I: What has surprised you the most since the school opened?

I: What suggestions do you have for other districts that are considering opening an alternative school?



## Appendix B, First Cycle of Coding

Codes	Categories	Themes
<p>Talk in the community</p> <p>Shortage of skilled workforce</p> <p>Success with original ECHS</p> <p>Push from business and industry</p> <p>Academic need</p> <p>Existing partnership with school district and college</p> <p>Offer another option</p> <p>Build skills and habits</p> <p>Provided another venue to make a high</p> <p>Noticed students from other ECHS could benefit</p> <p>College President supportive</p> <p>Timing was essential</p> <p>Branch of another delineation of the original ECHS</p>	Ideas	<p>Past, Present, and Future</p> <p>Strong Partnerships:</p> <p>Stakeholders</p> <p>Funding</p> <p>Functionality</p> <p>Partnership</p> <p>Benefits</p> <p>Obstacles</p> <p>Support</p> <p>Obstacles:</p> <p>Stakeholders</p> <p>Data</p> <p>Process</p> <p>Funding</p>
<p>School board—support planning and financing of project</p> <p>Board of regents—approval of expansion of ECHS</p> <p>Key central staff—assist with initial planning and development</p> <p>College partner—support in planning, development, and expansion</p>	Stakeholders	<p>Functionality</p> <p>Partnership</p> <p>Obstacles</p> <p>Support</p> <p>Perceived Value:</p> <p>Functionality</p> <p>Partnership</p>

<p>School district—support planning and financing of project</p> <p>College President—communicate with Board of Regents and Superintendent</p> <p>Superintendent—communicate with College President, the public, and school board</p> <p>Director—responsible for design and implementation of the program, recruiting, informing the public</p> <p>Business and industry leaders—input of workforce needs</p> <p>College liaison—work with Director of ECHS and College deans/faculty, creating access to ECHS students</p> <p>Deans at college—work with faculty and ECHS in support of student success</p>		<p>Benefits</p> <p>Impact</p> <p>Expectations</p> <p>Support</p> <p>Recommendations</p>
<p>Workforce data</p> <p>Data from research showing local business and industry moving to the area</p> <p>Financial data</p> <p>Budgetary data</p> <p>Data was limited</p> <p>Current CTE offerings throughout the district</p> <p>New state mandated graduation</p>	<p>Data</p>	

<p>requirements</p> <p>New course sequence alignments</p> <p>Course offerings at the college</p> <p>Industry trends and needs</p>		
<p>Previous bond</p> <p>Bond election coming</p> <p>Discussions between Superintendent and College President</p> <p>5 years from start to inception</p> <p>Steering committees</p> <p>Course offering decisions</p> <p>Phases of the process</p> <p>What was viable?</p>	<p>Process</p>	
<p>Bond dollars for building</p> <p>Allocations from general fund</p> <p>No grant money</p> <p>District funded</p> <p>Costs not seen at a traditional high school</p> <p>Operating through local funds</p> <p>One if not the most expensive operation</p> <p>CTE programs are more costly</p> <p>College waived tuition</p> <p>Students have total access to</p>	<p>Funding</p>	

college		
<p>Program same as standard ECHS</p> <p>Difference is course sequencing and time</p> <p>Flexibility in scheduling</p> <p>Create college environment</p> <p>Training center</p> <p>Relevant experience</p> <p>Attaches skill set to learning</p> <p>Keep students in the community</p> <p>City will attain trained workforce</p> <p>Would become a natural training center</p> <p>Businesses can recruit from the Academy</p> <p>Potential students help grow and maintain programs of study at the college</p> <p>Creates a mix of students in the college classes</p>	Functionality	
<p>Success from existing ECHS</p> <p>Facilities and infrastructure</p> <p>Natural pipeline to certificates</p> <p>Huge</p> <p>College wants to grow and foster</p> <p>Minimize bureaucracy</p> <p>Allows for adaptation and</p>	Partnership	

growth on college side		
<p>Number of program offerings</p> <p>Opportunities to learn from teachers and students</p> <p>Replication on other school campuses</p> <p>Provide a different venue for students</p> <p>Completers</p> <p>More educated individuals</p> <p>Experiences with resources students wouldn't otherwise have</p> <p>Integration and a little latitude with curriculum</p> <p>Students have choice and options</p> <p>Students who would not normally consider college now want to go</p> <p>Multiple certificates</p> <p>Creates a starting point</p> <p>Students have complete access to college</p> <p>College gains value from student enrollment</p> <p>Program growth for the college</p> <p>Financial gain for college</p> <p>Economic value for students</p> <p>Employment opportunities</p>	Benefits	

Gaining economic freedom for the students		
Ameliorating the dropout rate Reengage students Reconnect students Increase attendance rates Better relationship with the community Better grades More students completing certificates Students now have multiple options Now open up to 9 <sup>th</sup> graders who will seek an AAS Still an infant College shifting to offer traditionally evening classes to the day College hiring more staff College expanding options to other school districts Industry wanting more involvement	Impact	
Pass STAAR/EOC Higher graduation rates Students come out work ready Students build skills sets	Expectations	

Soft skills and work ethic Customized experience Chance to get good paying job A lot of technology Hands-on experiences Challenging Varied experiences College and/or career ready Anticipated 50% of first cohort to graduate with at least one certificate Limited data Certificate completion Industry involvement No longer one size fits all Relevance Results Accountability across the board Replace retiring workforce Attain soft and technical skills Opportunities students would not normally get at a traditional high school Be prepared for the true workforce		
Uncertainty of: programs, opportunities, completion, age	Obstacles	

<p>and legal requirements</p> <p>Space availability</p> <p>No prior data or exemplar</p> <p>College and school district beaurocracies</p> <p>Finances</p> <p>Attitudes of school district and college chief financial officers</p> <p>Resistance from key players</p> <p>Growing too fast or not fast enough</p> <p>Significant cost factors</p> <p>Other high schools in the district concerned with competition of programs offered at the Academy</p> <p>Maturity factor for high school students</p> <p>Assurances that students will complete</p> <p>Handling of multi-million dollar equipment</p> <p>How do we train the college faculty?</p> <p>Enough time to complete AAS</p> <p>Corresponding college courses with high school graduation requirements</p>		
Develop believers	Support	



<p>Those in charge in the operations</p> <p>Perception of value on both sides</p> <p>Keeping everyone informed</p> <p>Financial most important</p> <p>Evaluate programs and student workloads</p> <p>Which programs are more feasible than others</p> <p>Partnership with the college</p> <p>Time and space at the college</p> <p>Flexibility at the high school</p> <p>Counseling and tutoring from the school district and college</p> <p>Student college professor relationships</p>		
<p>Select a solid leader</p> <p>Significant leeway vs. traditional</p> <p>Be to let people work within the design</p> <p>Have a plan in place</p> <p>Give yourself time to plan</p> <p>Have a really good college partner</p> <p>Have to suffer through the “marriage”</p> <p>Start with higher education partner</p> <p>Is articulation possible through</p>	<p>Recommendations</p>	

<p>current programs</p> <p>Can you certify your own staff?</p> <p>Be strategic with the finances</p> <p>Community awareness</p> <p>Do your homework</p> <p>Transparent dialogues with people in the trenches</p> <p>Understand everyone's role</p> <p>Strong relationships</p>		
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## Appendix C, Identifying the Themes

Strong Partnerships	Obstacles	Perceived Value
Partnership	Cost	Opportunities
Preparation	Completion	Impact
Roles	Space	Expectations
	Unknown	
	People	
	Data	
	Funding	