

Career-Focused Education:  
Evaluating Career Academies in a Large Midwestern District

By  
© 2019

Anna-Lynn Morris  
Master of Educational Technology, 2002  
Master of Education, 2011

Submitted to the graduate degree program in Education Leadership and Policy Studies and the Graduate Faculty of the University of Kansas in partial fulfillment of the requirements for the degree of Doctor of Education.

---

Chair: Argun Saatcioglu

---

Deborah Perbeck

---

Eugene Parker

---

Thomas DeLuca

---

Thomas Skrtic

Date Defended: 22 March 2019

The dissertation committee for Anna-Lynn Morris certifies that this is the approved version of the following dissertation:

**Career-Focused Education  
Evaluating Career Academies in a Large Midwestern District**

---

Chair: Argun Saatcioglu

Date Approved:

It is generally agreed upon that in order to be an effective, contributing member of society one must work. The current axiom in education today revolves around preparing students to be college and career ready, with the ultimate goal of preparing students for the workforce but very little research has gone in to identifying the most effective way to do this. The purpose of this study was to analyze data collected from students in one Midwest Suburban School District to determine if Career-Focused Embedded Academies improve student success as noted by the likelihood to take the ACT and a students' GPA compared to students of same gender and similar racial, socioeconomic, and academic history using propensity scoring. Looking at this data, it was determined if there is a statistically significant difference between a student who attended an academy versus a student who did not. This research identified an effective way to prepare a student for both college and career, ultimately preparing them for the future work force as an effective, contributing member of society.

## Table of Contents

Chapter I: Introduction .....	1
Research Questions .....	2
Significance of the Problem .....	3
Overview of Methodology .....	5
Organization of the Study.....	5
Study Site & Key Findings.....	6
Chapter II: Literature Review.....	7
Career-Focused Education: The Problem.....	7
Educational Reform: Vocational Learning.....	9
The Opposition Speaks.....	16
Career-Focused Academies .....	20
Chapter III: Methods .....	25
Cause and Effect.....	29
Research Design .....	29
The propensity score methodology as a remedy .....	30
Overview of the Instrumentation.....	31
Chapter IV: Results .....	33
Grade Point Average .....	38
ACT .....	41
Chapter V: Discussion.....	43
Considerations for Future Research .....	57
References .....	60

## **Chapter I: Introduction**

The current adage in education today revolves around preparing students to be college and career ready, with the ultimate goal of preparing students for the workforce. Historically, the growth of a nation was essential to having a skilled workforce, and equally important was the need to have a literate one as well. This need still exists today; and in order to effectively provide a literate workforce, the education system must answer the question, how can “work” effectively be integrated into education? And ultimately, how can this integrated work sustain motivational value that transcends into authentic learning and prepares students for the future? The idea that work is not only essential to the economy, but essential to the human condition is one that education should not ignore.

Even 40 years ago, it was recognized the great weakness of academic education is when it is detached from life. The improvements being made today are a result of the growing strength of the general education curriculum in its connectedness to life. Everyone must work, so everyone must learn to work. If schools are to teach students to become the next generation of productive members of society, they must be attentive and receptive to their community. They must find a balance between traditional liberal arts education and work-based education.

In an attempt to remedy this problem, several types of education have emerged. Vocational education, as defined by the Carl Perkins Act of 1990, is “organized educational programs offering a sequence of courses which are directly related to the preparation of individuals in paid or unpaid employment in current or emerging occupations requiring other than a baccalaureate or advanced degree (“Key Questions: Vocational Education in the United States: The Early 1990s,” n.d.).” In most instances, vocational education is now referred to as Career and Technical Education. These courses are either offered as singleton classes via a

comprehensive high school or siloed in an offsite location. Both educational methods have proven to keep close contact with reality; and yet still have not managed to gain the same prestige as a more classical approach. In spite of the claims of these “work-connected” programs, most people still believe the route to a successful life is via a traditional academic program. For many, a strongly classified curriculum is based upon the separation of academic subjects and is often associated with strong framing giving teachers control over what occurs in the classroom. The same people argue competence-based approaches to teaching and learning are characterized by weakly classified curricula often with weak pedagogical framing offering greater scope and autonomy in what and how subject matter is taught and learned (Bernstein, 1999). Clearly the value of formal schooling has been apparent for a long time, and the conventional wisdom about “learning to earn” has found it difficult to root itself in the traditional landscape (Grubb, 1996).

### **Research Questions**

1. What are the success rates for students who attend Career-Focused Academies embedded in comprehensive high schools compared to a traditional comprehensive track (as noted in GPA and the likelihood of taking the ACT)?
2. Vocational/Career-Focused education has existed since the beginning of education. Is there a communicated value?
3. How can career education be integrated in a universally accepted way?
4. How are current and planned efforts evaluated, when integration remains a reform for many purposes, with multiple goals and different expected outcomes?

## **Significance of the Problem**

Currently, research is unclear as to the effectiveness of career and technical education but supports its motives. Most people still believe successful students will complete a high school experience that involves traditional course work preparing them to attend a four-year university. While it appears the two are odds with no true winner in sight, there is opportunity to evaluate, not an alternative, but a blending of both, in Career Academies. Career Academies are schools within a school where curriculum simultaneously trains students in occupational fields while preparing them for college. These academies direct their attention on blending Career-Focused education with traditional learning as a mechanism to make meaning out of school. This method of learning appeals to students' practical interests but does not limit their future career opportunities. It encompasses a set of career options ranging from jobs that require little to no post-secondary education to ones that require four-years and beyond (Stern, Raby, and Dayton, 1992). However, there has been no research to support the effectiveness of Career Academies.

The purpose of this study is to determine if a Career-Focused curriculum embedded in comprehensive high schools are statistically more significant than a traditional comprehensive track (as noted in GPA's and the likelihood of taking the ACT). It will not examine the effectiveness of traditional vocational programs which are often housed in separate buildings, nor will it be evaluating career and technical courses that are often offered as a single hour elective within a traditional high school. While there is extensive literature on the positive effects of career and technical classes, as well as vocational programs, there is little research to support these Career-Focused programs embedded in a traditional high school. Since most research points to the need for work-related curriculum, and yet most still support the traditional comprehensive high school track, it is crucial to the long-term success of schools to find a way to

provide a traditional education at the same time offering students the tools and skills to succeed in the work force.

Philosophical ideas about the purpose of education vary because they are driven by ideological positions. Teachers are, on the one hand faced with increasing pressures to ensure their pupils have the skills and abilities to meet the challenges of living, working and contributing to society now and in the future and, on the other, providing them with academic qualifications relying on a traditional curriculum and pedagogy (Byrne, Downey, & Souza, 2013). John Dewey said, “the history of educational theory is marked by opposition between the idea that education is development from within and that it is formation from without” (Dewey, 1951).

There are two types of knowledge: profane and sacred (Durkheim, 2015). Both are equally valid, like Right and Left Directed thinking, but different. According to Daniel Pink (2005) L(left)-Directed Thinking is sequential, literal, functional, textual and analytical; qualities tending to be taught in traditional schooling. The other approach is the R(right)-Directed Thinking, which is controlled by the right side of the brain. R-Directed Thinking is simultaneous, metaphorical, aesthetic, contextual and synthetic (something usually seen with hands-on, authentic instruction). While L-Directed Thinking works well for the knowledge age (think accountants, stockbrokers, computer programmers), Pink gives evidence society is moving away from the knowledge age and into what he calls the “Conceptual Age.” To excel in the Conceptual Age, one must become proficient in R-Directed Thinking and master aptitudes high in concept and high touch. The problem is education has been trying to instruct these two types of learning as two separate entities (CTE/Votech vs. comprehensive traditional). A few have tried to marry them but did so without fully supported research. Career Academies is one

possible way to see the two necessary skills blended into a single type of learning preparing a student both for academics and the necessity of work.

### **Overview of Methodology**

The purpose of this study was to analyze data collected from students in one Midwest Suburban School District to determine if Career-Focused Embedded Academies improve student success as noted by the likelihood to take the ACT and GPA compared to students of same gender and similar racial, socioeconomic, and academic history. Using propensity scoring, a data set was identified to determine the tendency for a student to go to an academy. Next, students who completed the Career Academies from the last year were compared with students who had the propensity to go to an academy but did not. Each student's high school GPA and decision to take the ACT were then compared. Looking at this data, it was determined if there is a statistically significant difference between a student who attended an academy versus a student who did not.

### **Organization of the Study**

Chapter one of this study presented an introduction to the problem and defined the scope and context of the study. Chapter two delves into a review of the existing literature on vocational/CTE education, work as a necessary element to learning, and how both could be blended into a Career Academy. Chapter three is an analysis of the methodology of the study and describes the specific tests used to measure the data against the research questions. Chapter four reveals the results of the hypothesis testing. Chapter five offers an analysis and summary of the study as well as recommendations for further research and implications for further action.

## **Study Site & Key Findings**

The Midwest Suburban School District, whose data was analyzed, enrolls around 29,000 students with over 8,000 in their high schools. Of these students, about a third identify as non-white and around 10% are considered low socioeconomic status.

This district is home to several, what research would call, Career Academies housed in each of the district's five high schools. A Career Academy is a personalized small learning community within a high school, selecting a subset of students and teachers for a two-, three-, or four-year span. Students enter through a voluntary process; they must apply and be accepted, with parental knowledge and support. The academies within this school district were devised to provide specialized coursework, industry standard specialized equipment, clearly identified content themes/strands, opportunities leading to specific post-secondary career opportunities, a senior capstone project or PLE (professional learning experience), co-curricular opportunities and community outreach, regular connections to an advisory team of industry professionals and post-secondary training/education leaders, connections to business, a high school four-year plan of study and the opportunity to graduate with guaranteed employability skills. These academies enroll 20% of the district high school population and its most recently accepted student group reflected the district SES and racial demographics with a 26% non-white student population and 14% Free and Reduced population.

Using the Propensity Scoring Method and analyzing data from over 1,000 students, this study found that students who attend a Career-Focused Academy embedded in a comprehensive high school are statistically more successful based on higher averaged GPAs and a greater likelihood to take the ACT than those who did not attend an academy.

## **Chapter II: Literature Review**

### **Career-Focused Education: The Problem**

While Career-Focused education has been around for decades, in the most liberal form, centuries, there has been no comparative evidence of its success. Most of the data used to advocate for its success has been anecdotal with selection bias. The success of these programs has been noted by data collected directly from CTE themselves and never directly correlated to a similar population of general education students. 94% of high school students take at least one Career and Technical Education course. CTE data says the average high school graduation rate for students concentrating in CTE programs is 93 percent, compared to an average national freshman graduation rate of 80 percent (ACTE Online). However, these numbers do not discuss the correlation between those who have taken CTE classes with students of similar demographics and those who do not. If the numbers are comparing the six percent who do not take CTE classes with the 94 percent of those who do, how do we know there aren't alternative factors involved in the six percent. In addition, most states require some form of CTE class for graduation. For example, the state of Kansas requires six elective credits for graduation. Most of these elective courses are considered career and technical, unless they are in the fine art or performing arts. One specific Midwestern suburban school district requires a communication credit and a technology credit. Almost all technology classes are considered career and technical. As a result, identifying who is really not taking CTE classes compared to those who aren't is a weak argument.

There has been very little differentiation between vocational education programs, today's career and technical education, and Career Academies. Since so many classes can be connected to a career pathway, and as a result, many are being funded under Carl Perkins grant money,

there has been no distinctness on the differences. These programs have had excessive overlap and very little exactitude. While each program claims success, there has been little empirical evidence to support these claims.

The current axiom in education today revolves around preparing students to be college and career ready, with the ultimate goal of preparing students for the workforce. Since the founding of the United States, work has been one of the most respected and respectable single words in the American language; for the good and the bad. Although the value of the word may have evolved to some extent throughout history, Edwin A. Lee, the dean of the School of Education, at the University of California, Los Angeles in 1940, defined the word to mean all gainful occupations applied to a community, done by individuals (Barlow, 1976). This definition, as stated by modern dictionaries, has not changed. Work continues to have a high value in society and the goal of most compulsory education is still to prepare students for “work.”

Historically, the growth of a nation was essential to having a skilled workforce, and equally important was the need to have a literate one as well. This need still exists today; and in order to effectively provide a literate workforce, the education system must answer the question, how can “work” effectively be integrated into education? And ultimately, how can this integrated work sustain motivational value that transcends into authentic learning?

Originally, creating a workforce, whose skills reflected the current needs of industry, began with apprentices and has since evolved into what is now referred to as Career and Technical Education. Proponents of Career and Technical Education (CTE) believe it is helping the nation address key challenges—from workforce development to student achievement, from economic vitality to global competitiveness and at the same time keeping work an integral part of the human condition (Chalofsky, 2010). The opposition believes work education creates tracks

specifically created for the working class and leads those enrolled down a path away from the opportunities a four-year university would provide.

### **Apprenticeship to Trade School. The Beginnings of CTE in the New America**

Since the beginning of the colonies, literacy had been a common goal. For some, it was about social equity; for others, it was about spiritual indoctrination. For most, however, it was not about the success of the individual but the success of the state. In order to be a competitive workforce, citizens must be educated. The belief was that education should be available to all at the public's expense and the labor movement supported this belief (Barlow, 1976). The general position of communities was that the combination of studies and labor contributed to the development of better citizens. As the country evolved, so did the education system. Late in the 18th Century, the rising merchant and trading classes began to press for a more appropriate education. The need for trade, commerce, and business skills in modern languages, navigation, surveying, and accounting were necessary in the new emerging cities and the elements of life they demanded (Barlow, 1976). This transition was an early indication of what America was going to be: an open, fluid, mobile society where the lines of social stratification would be softer and more permeable than they had been in the past and schools would reintroduce people to a more conjoined life of work and learning.

### **Educational Reform: Vocational Learning**

As the ongoing debate of how to integrate work and school continued, the development of vocational education began. Agriculture and industrial instruction combined with elements of literary instruction proved to have strong social implications. The institutions implementing this form of learning were not only meeting the community's needs of a skilled labor force and the intellectual needs of a literate society, they were meeting the social needs of the individual.

Vocational Education was the understanding of the evolutionary need to work and learn in the same environment with survival as the end goal.

Children in these institutions were properly clothed and fed, their manual labor activities in agriculture were related to their studies and provided a direct connection to work and their authentic interests and offered interaction with skilled craftsman. This innovation in education was the first example of real-world experiences in an authentic learning environment with ongoing partnerships with business (Barlow, 1976).

However, the critics, like Samuel Johnson, English biographer, essayist, poet, and lexicographer, regarded as one of the greatest figures of 18th-century life and letters ("Samuel Johnson | Biography - English Author," n.d.), argued "Our intercourse with intellectual nature is necessary; our speculations upon matter are voluntary and at leisure." Robert Lowell, another writer and poet of the era believed "University is a place where nothing useful is taught." However, many other great minds of the time argued for the two-sided coin of education. Calvin Woodward, the dean of the school of engineering at Washington University in St. Louis, argued for a liberal education. In his opinion, it should be one in which the focus of study is the method as much as the subject and where the method is broad, deep, generous, and comprehensive. He believed it must recognize infinite uses both far and near and aim at the artist rather than the artisan; the engineer, not the craftsman; the freeman not the slave (Woodward, 1901). Woodward, like so many other innovators of his time, believed technical schools were where the most valuable education would occur. He recognized why there would be resistance to this new education. He said,

"It is easy to see the source of a widespread prejudice against technical training. The history of civilization has been the history of masters and slaves, of castes, of contempt

for labor and for all useful arts...the engineer is by nature an iconoclast. He has small respect for the traditions. He bows not down to the 'tyranny of the ancients.' His loyalties are in the future. He looks forward not back (Woodward, 1901)."

This technical education, Woodward advocated, was not meant to destroy the forward progress being made but rather add a new dimension in its methods. Understanding the nature of people and their desire and physical needs to be active, vocational education at its inception was acknowledging the need for work and play, and the shared time between mental and physical exercise were necessary for optimum learning.

Once again, it was realized the need to work was an essential part of the human being and incorporating "play" into work was essential to survival. The Sloyd System, which had its roots in the Scandinavian countries, was a system that did just that. It aimed to instill a love for work and a respect for honest labor. It proposed to develop self-reliance, independence, and habits of order, exactness, and neatness (Barlow, 1976). These key elements are still in existence in technical education today and yet for some, in opposition to traditional methods of learning.

### **Trade School**

Once the realization that work and play needed to go "hand-in-hand" and that technical education was a key component in a successful society, education began the concept of a trade school. The principal behind a trade school was a place to learn the trade itself. The founders believed it was ideal to create a school geared to reflect accurately trade conditions and environment.

As Trade Schools continued to grow, the federal government continued to see value in vocational education, particularly with the onset of World War I. The United States was unprepared for this battle with an untrained and inexperienced work force. Vocational Education

came to the rescue and as a result, several Acts of Congress proceeded, offering funding and support for this training.

By 1942, the total enrollment in all vocational education programs exceeded 2,600,000 students and the overall federal funding authorizations were over \$21,000,000 between two different acts. With classes/training being offered in all-day, evening, and part-time schools, the options allowed great flexibility for those involved (Barlow, 1976).

### **Vocational Education: It's Value**

Vocational Education continued to grow over the next several decades and questions of its overall value were being asked. After the major wars were over and public education seemed to be getting its stride, people were asking if the United States still needed this “alternative” educational opportunity. By the mid 1970's it was clear, however. Edwin A. Lee, the president of AVA (American Vocational Association) and dean of the School of Education, University of California, Los Angeles recognized the necessity.

“Education is a coin, one face of which is vocational, the other non-vocational; for some the latter may be avocational, for others intellectual self-improvement, for still others purely leisure-time activity. Without both faces there is no coin, no legal tender, no true education. Even more accurately, it is true that what for one man may be a liberal education is for another indubitably vocational education (Barlow, 1976)”

After a century of exploring and developing the notion of vocational education a set of six basic assumptions came to be:

1. Work, as the necessity it is, meant all gainful occupations. Everyone needs to “work” in order to be a contributing member of society.

2. Public education must be free, accessible to all, and should provide occupational orientation and vocational guidance for all who attend.
3. For many, complete occupational training can be provided while in these schools and there are an unlimited number of possibilities where business/industry and schools can collaborate to provide success in these areas.
4. Career Readiness includes not only orientation and training but also induction into the job. It must require the instruction on how to get a job, how to get started in the job, how to grow and progress, and how to continue education and training once the position is acquired.
5. A quality vocational education requires cooperation from a variety of education, non-school agencies and groups to be successful (Barlow, 1976).

Even 40 years ago, it was recognized the great weakness of academic education is when it is detached from life. The improvements being made today are a result of the growing strength of the general education curriculum in its connectedness to life. Everyone must work, so everyone must learn to work. If schools are to teach students to become the next generation of productive members of society, they must be attentive and receptive to their community. Vocational education has proven to keep this close contact with reality; and yet still has not managed to gain the same prestige as a more classical approach.

### **Career-Focused Education**

One of the prominent educators of the Progressive Era was David Snedden, the Massachusetts Commissioner of Education. He was one of the most articulate advocates of social efficiency in the approach to design of educational programs combining the demands of the industrial society with the capabilities and interests of students. Snedden essentially began the

fight for separate vocational education from the efficiency perspective (Tröhler, Schlag, & Osterwalden, 2011). True vocational education still exists but as a result, mainly in silos today. They are often housed in off-site buildings and usually boast of “state-of-the-art”, “industry reflected” facilities connecting students with real-world opportunities. These programs can vary from traditional content like auto collision, construction trades, culinary, and welding or to more current career trends like engineering, human services, medicine and business and technology.

While support for vocational education waned in the years following the 1983 “A Nation at Risk” when the U.S committed to providing every American with an academic education and abandoned work-based programs in schools, it was revitalized with the Carl D. Perkins Career and Technical Education Act of 2006. Since, career and technical classes have continued to gain enthusiasm and support. This Act continues to be a principle source of federal funding to states and provides discretionary grants for the improvement of secondary and postsecondary career and technical education programs across the nation. The purpose of the Act is to develop more fully the academic, career, and technical skills of secondary and postsecondary students who elect to enroll in career and technical education programs. But unlike Vocational Education, CTE is usually a single class available to students as an elective included in their overall graduation requirements. These courses are aligned to stated pathways directed by the state and funded by Carl Perkins dollars. For example, the national organization for CTE (The Association for Career and Technical Education) identifies 16 career clusters that include foci in areas such as education and training; architecture and construction; law, public safety, and security; manufacturing; and marketing, sales, and service.

Traditionally, these career and technical education classes provide students with the opportunity to produce real goods and services. Through their coursework, they run restaurants

and retail stores, manage banks, grow crops and raise livestock, repair cars, and operate child-care centers. Many students who take these courses are placed in paid jobs outside the school and have been provided the real-world contexts to learn work-related problem-solving skills.

All of these different types of Career-Focused educations claim success for students. With more than 12.5 million students nationwide, CTE programs tout themselves as institutions who are leading change, transforming expectations and making a difference ("CTE: Learning That Works for America," n.d.). They define themselves as cutting-edge, rigorous and relevant Career and Technical Education (CTE) preparing youth and adults for a wide range of high-wage, high-skill, high-demand careers. According to the Association for Career and Technical Education, students who are involved in CTE coursework are more engaged, perform better, and graduate at higher rates. CTE includes high schools, career centers, community and technical colleges, four-year universities and more. It educates students for a range of career options through 16 Career Clusters and 79 plus pathways. By featuring high school and postsecondary partnerships, enabling clear pathways to certificates, and degrees, and integrating with academics in what they believe is a rigorous and relevant curriculum, students are prepared to be college and career ready through core academic skills, employability and technical, job-specific skills ("What Is CTE?," n.d.).

Supporters of CTE argue the average high school graduation rate for students concentrating in CTE programs is 93 percent compared to an average national freshman graduation rate of 80 percent. In addition, they contend more than 75 percent of secondary CTE concentrators pursued postsecondary education shortly after high school ("What Is CTE," 2017).

The Association for Career and Technical Education reports that 81% of dropouts say relevant, real-world learning opportunities would have kept them in high school. In addition, the

average high school graduation rates for students concentrating in CTE programs is 13 percent higher than those who do not. The evidence for the success of CTE extends from high school graduation rates to post-secondary successes to the benefits on the economy and business ("What Is CTE," 2017).

For example, four out of five secondary CTE graduates who pursued a postsecondary education after high school earned a credential or were still enrolled two years later compared to three out of five for the average high school graduates who pursued a post-secondary education. CTE is generally all-encompassing by reaching 94 percent of all high school students of all genders, races, income levels and ethnicities ("What Is CTE," 2017). CTE promotes themselves as an opportunity for male students; students from smaller, lower income or rural schools; students who have disabilities; and students who enter high school with lower academic achievement. However, the data is limited to the perception of those advocating for the program. Additionally, they are speaking to *all* forms of CTE (both vocational courses, siloed programs and single elective courses), not specifically one style. The CTE facts listed included all types with no differentiation between them.

### **The Opposition Speaks**

Unfortunately, as much as CTE would like to claim success, much of their results are non-experimental and anecdotal in nature with data that not only includes research bias, but a large generalization of what is considered CTE. For example, many studies show little or no differences between CTE participants and comparison groups in terms of academic achievement, high school graduation or college enrollment. Those that do show CTE programs having higher employment and earnings than demographically-similar peers in the short run, but do not necessarily have better academic outcomes in the long run (Jacob, 2017). Daniel Kreisman and

Kevin Stange in a recent study found that CTE participation is not strongly associated with educational attainment. According to their study, CTE students are marginally less likely to enroll in college but no less likely to earn a degree. While they did find higher earnings among students taking more upper-level vocational courses – a nearly 2% wage premium for each additional year, they did not find any gains from introductory vocational courses. They concluded that policies limiting students’ ability to take vocational courses may not be welfare enhancing, and the benefits of vocational coursework only accrue to those who focus on depth over breadth (Kreisman & Stange, 2017).

In addition, most research on CTE has focused on relatively short-run outcomes. Many believe there must be a trade-off for students enrolled in career and technical education; while they are learning a narrower set of technical skills providing short-run benefits, they are doing so at the expense of learning more fundamental skills that will better serve them in the long run (Hanushek, 2017).

Plagued by unreliable data, this type of education is still praised by the “unsophisticated”, shunned by the upwardly mobile, and criticized by professionals; it has been tolerated and occasionally patronized by the establishment, and never really accepted (Gray, 1991).

To most people, even those who believe in the idea of a career and technical education, it is still considered a second-rate education created for the “working class.” The stereotypes of vocational education have been reinforced as a “dumping ground” for students who may not succeed in a more traditional school environment and who are not seen as on track to attend a four-year university. They only offer entry level skills; and they often give lip service to the promotion of opportunity and equality for vocational education, while in reality creating

inequalities in the workforce (Kincheloe, 1995). As a result, it is often considered a second-choice education rarely leading to a higher education.

According to Professor Kenneth C. Gray of Penn State, upwardly mobile parents are not encouraged to send their students to vocational education schools because it isn't the route to achieve the American Dream (Gray, 1991). In many circles, vocational education is a system created by the empowered elite to perpetrate the subservient status of the working class. Mainstream society refuses to value job preparation status of work-related knowledge. Our society treats vocationally educated students as if they are deficient and incapable of thoughtful behavior. In the last several decades, even businesses have started to criticize traditional career and technical education by saying many of the students in heavily focused CTE courses were missing key instruction and learning in basic academic skills like reading, writing, math, and science. This curriculum reflects a social bias against those who perform non-professional work now viewed as not as a source of opportunity but an irreversible path to second class occupations (Gray, 1991).

The status of education programs is still determined by the status of the jobs for which they are preparing students. To most, career and technical education is a failure. These programs often have a track-based method. By the time students enter high school, many are sorted into separate classes by ability, with the more demanding classes leading to college. Classes of students deemed as “non-college-bound” tend to be stigmatized as second rate. In addition, college has become the popular choice and students, who choose vocational education, are often labeled, ridiculed, and harassed by their peers (Gray, 1991).

This mindset teaches society that the difference between occupational and educational achievement is the consequences of ability variations among individuals. Even as an advocate of

career and technical education, Anthony Carnevale, the professor and director of the Georgetown University Center on Education and the Workforce said, “CTE is still the red-headed, illegitimate child at the family reunion in many ways. The path from high school to Harvard is still the one we all honor more, and that is a very academic pathway (D. Firestone, 2013).” There is still a large bias against vocational education. Because these programs have often been defined by law as preparation for occupations not ordinarily requiring a baccalaureate or advanced degree, many ambitious students and their parents have avoided such classes, thus perpetuating their bad reputation (Stern, 1992).

As much as supporters of vocational and career and technical education as a separate track for students advocate for the benefits they provide, it is still stigmatized and therefore not an effective means to compare to the traditional comprehensive high school path. Finally, the biggest challenge in evaluating CTE is students typically self-select into such programs, or student choices are circumscribed by the types of programs offered in nearby schools. In either case, it is likely that students participating in CTE are different in many ways than other youth who do not participate in CTE – in terms of their personal abilities and interests, family background, etc.

Eric Hanushek, senior fellow at the Hoover Institution of Stanford University believes even if the mindset shifted to view and accept expanding of vocational education, the problem of obsolescence remains. Unlike its European counterparts, the American model of providing vocational training to those who do not like or do not do well in general curriculum does not bode well for adaptation when new skills are required. Even though some employers appreciate the idea of vocational training because it reduces immediate demands to train new employees,

ultimately, when skills change, it is easier to return to the entry-level market than retrain their existing workforce.

The argument has been made that the need is not for continued vocational or career and technical education for a variety of reasons, but instead for a more general trained workforce who have cognitive skills providing students with the ability to adapt to new circumstances and new jobs (Hanushek, 2017).

### **Career-Focused Academies**

Long before the term, “College and Career Ready” became a buzzword in the lexicon of academia, people in CTE knew this meant preparing individuals to make decisions and choices involved in planning a future, building a career and being ready to implement those choices successfully. The implementers of the past knew a vocation is only one of the tools required to live constructively and acceptably in society. Basic social capital (mental and emotional stability, good health, a sense of belonging, an understanding of social purposes) is required to be a contributing member of society.

The question became, “for whom, in what, and where should this education be provided?” The answer is still not clear. For the advocates of Career and Technical education, everyone who can work needs a vocational education; and it should be available to all. For the realists, the need of a middle path with a different kind of pedagogy focused on real-world knowledge but blended with the rigorous content of a traditional classroom is key. However, there is still a generally held belief that the tried-and-true path in America is high school to Harvard. And until society invests enough to build an alternative pathway and respect real work in the U.S., the norm will still be directed away from career and technical education.

The problem, therefore, lies in the fact that many college bound students take courses with strong academic rigor but little direct application to tasks outside the classroom while others find practical relevance in their courses without much rigor or coherence. Most would argue the content of education should be determined by the interests and capabilities of the learner and by the demands of current industry/societal needs. People should acquire the skills to work where they can do so most economically in terms of time, energy and money and where the environmental influences will be such as to make them desirable social beings as well as social workers. Ultimately, this should be school. The big picture question is if there is one “best practice” that can accomplish this?

Some theorists believe that learning by doing is a superior way to teach all subjects and all students. This school of thought reasons that to improve student learning for all, it is helpful to apply principles traditionally embodied in vocational education and to introduce the material for all subjects in a practical context. Historically, learning and work have been amalgamated. The many varied forms of Career-Focused learning are grounded in the notion of work, and as creativity is emphasized, work becomes the most fundamental way people express their humanity, as it is a communally shared process (Stern, Ruby, and Dayton, 1992).

Career Academies began in the 1960’s and 1970’s and now enroll more than 22,000 high school students. While only 7% of the students in the United States participate in these academies, much of their pedagogy revolves around the idea that learning and work should coexist in school (Stern, Raby, and Dayton, 1992). Supporters believe they have found the best of both worlds.

Career Academies are schools within a school where curriculum simultaneously trains students in occupational fields while preparing them for college. These academies direct their

attention on blending Career-Focused education with traditional learning as a mechanism to make meaning out of school. This method of learning appeals to students' practical interests but does not limit their future career opportunities. It encompasses a set of career options ranging from jobs requiring little to no post-secondary education to ones requiring four-years and beyond. By providing students with both sets of skills, it keeps their options open, provides courses required for college admissions, prepares them for the ACT and SAT, at the same time demonstrates relevance to career fields.

Career Academies address the concerns some have with vocational and career and technical education by making real world connections, offering job shadowing and meeting the needs of all student's career interests while preparing them for college. The connected coursework allows students to see content as necessary and interconnected with a focus on more problem-solving skills and less of content mastery. Career Academies believe foundation and competency cannot be taught in isolation. An academic education partnered with a vocational education ultimately blurs the distinction between practical knowledge and theoretical knowledge. The U.S. Department of Labor Commission in the report on "Achieving Necessary Skills" said, "good jobs depend on people who can put knowledge to work" and concluded with cognitive science acknowledging the most effective way of learning skills is in context: placing learning objectives within a real-world environment. Students do not need to learn basic skills before problem solving skills; the two go together.

Countless surveys report that most people do not like their jobs and most students don't like school (Chalofsky, 2010), mainly because independent thought and creativity have been removed. Both learning and work have lost their sense of purpose, trust and an overall value in life. Terrence Powderly, the Grandmaster Workman of the Knights of Labor wrote, "... [people]

no longer carried the keys of workshops--for the workshop, tools, and key belonged not to them, but to the master (Phelan, 2000).” The implication is when people live, work and learn in “villages/communities” there is an intimate connection between the work being accomplished and the community benefiting from the products and services. When work and learning are moved into separate institutions, separated from life (the ultimate purpose and meaning of work), the individual is, therefore, deemed meaningless (Chalofsky, 2010).

Academies ultimately argue that work and learning cannot be detached from each other; they are a part of the human condition. William Tolman believed in order for people to be happy in their work, they must be fit for it, they must not do too much of it, and they must have a sense of success in it (Briskin, 1998). Career Academies agree and form a hybrid attempting to address the criticism of vocational education and implement the value of work and learning as one. Academies hold the assumption that student’s overall success improves while at the same time preparing them for work or for college: the ultimate college and career readiness. Academies claim to improve student attendance, instigate an improvement in GPA, guarantee larger completion rates, and prevent dropouts. While vocational education courses and career and technical classes allege similar results, academies assert they are enabling students to go to college, improving their overall standardized tests scores, and increasing scholarship opportunities (Stern, Raby, & Dayton, 1992).

Dr. Neal Chalofsky, Associate Professor of Human and Organizational Learning at George Washington University and author of countless books on the subject, writes that work is one of the primary ways of furnishing identity and reason for functioning as a human being. The importance of supporting students in finding meaning in work should be the focus of learning. Most of his principles for finding a meaningful workplace and work align with the essence of

Career-Focused education. Work and learning must be seen as one. They must exist in a space filled with human relationships based on similar values of caring, supporting, collaborating, and commitment instead of just a place to go work and learn (Chalofsky, 2010). If work and learning are meaningful in and of themselves, and the organization is a place where the worker/student feels safe, valued, and treated well, then work and schools will no longer need to find additional motivators for students to want to work and learn. Career Academies contend they do just that: they provide a way for students to express meaning and purpose in their lives through the activities (work/learning) that take up most of their waking hours, ultimately leading to overall improved academic success.

Critics of career and technical education believe that although they may help some students stay in school, they do not support the minority students who feel school has no serious interest for them. “Ultimately, schools should exist to help students locate themselves in history, obtain the ability to direct their own lives, understand the ways power influences the production of knowledge, appreciate the nature of good work, become smart workers and connect with a cognitive revolution that leads to a deeper understanding of themselves and the world (Kincheloe, 1995).” The goal of Career Academies is to guarantee students find themselves in a passionate pursuit of meaningful work and learning while acknowledging this as truth.

Although most schools have historically valued the mental for the manual, centuries of Career-Focused Education proponents, like John Dewey, argue that growth occurs in natural contexts and schools must unify the mental and the manual. Career Academies profess to do just that.

## **Chapter III: Methods**

The purpose of this study was to analyze data collected from students in one Midwest Suburban School District to determine if Career-Focused Embedded Academies improve student success as noted by their likelihood to take the ACT and overall GPA compared to students of similar racial, socioeconomic, and academic history. An ACT Score and GPA are both required for attendance to most post-secondary educational institutions (Colleges and Universities). In order to determine if Career Academies effectively integrate work into education and sustain a motivational value transcending into authentic learning by preparing them for the future, one of the most reliable data points to determine this is the two most required and looked at parts of college/university admittance (ACT and GPA).

The Midwest Suburban School District, whose data was analyzed, enrolls around 29,000 students with over 8,000 in their high schools. Of these students, about a third identify as non-white and around 10% are considered low socioeconomic status.

This district is home to several, what research would call, Career Academies housed in each of the district's five high schools. A Career Academy is a personalized small learning community within a high school, selecting a subset of students and teachers for a two-, three-, or four-year span. Students enter through a voluntary process; they must apply and be accepted, with parental knowledge and support. While academies vary in size, they usually have from one to three sections of students at each grade level, or 100-300 students in all (Stern, Raby, & Dayton, 1992). The academies within this school district were devised to provide specialized coursework, industry standard specialized equipment, clearly identified content themes/strands, opportunities leading to specific post-secondary career opportunities, a senior capstone project or PLE (professional learning experience), co-curricular opportunities and community outreach,

regular connections to an advisory team of industry professionals and post-secondary training/education leaders, connections to business, a high school four-year plan of study and the opportunity to graduate with guaranteed employability skills. These academies enroll 20% of the district high school population and its most recently accepted student group reflected the district SES and racial demographics with a 26% non-white student population and 14% Free and Reduced population.

These academies originated in this school district in 2002 and like many elements of education had an alternative motive. The district was opening its 4th high school and facing boundary and enrollment issues. In an attempt to attract students to the new high school, even out the populations of the other three, and encourage a cultural shift in some of the more aging facilities, they implemented Career Programs. These programs were Career-Focused in nature and embedded within the structure and content of the comprehensive high school. For example, one had a focus on skills and careers in the fields of animation, graphic design, video and web and another in Aerospace and Engineering. These programs were transfer programs where students would apply for acceptance and once invited to attend, would transfer fully to the high school it was home to and spend at least two hours a day for all four-years, plus extracurricular components, studying in these areas alongside their traditional coursework and graduation requirements.

While every academy varies to some extent, each requires one to two elective courses relating to the specific academy. These courses are only available to academy students and are taught by academy instructors. (Many academy instructors have also spent time working in the industry in a field related to the academy focus: i.e. the Public Safety Facilitator is a retired Police Officer, one of the Media Instructors is a former TV News Anchor.) For example,

students enrolled in the Engineering Academy would take Intro to Engineering as a Freshman, Engineering Drafting CAD I & II as a Sophomore, Principles of Applied Engineering as a Junior, and an Engineering Capstone as a Senior. Each class would fulfill one credit of the graduation requirements.

Students in the academy would also be required to take four years of advanced sciences (Honors Biology and Chemistry, Advanced Placement Physics, and another AP/College Science course). These courses may or may not be taught by academy instructors and will also house general education students in them as well. Students attending this comprehensive high school as a general education student are only required to take three years of science and the level of difficulty is a personal choice. Students then fill their academic schedules with courses available to all students to fulfill their graduation requirements (just like non-academy students): four years of English, three to four years of math, a performing arts elective, a fine arts elective, etc.

While academy students, like non-academy students participate in extracurricular activities together (athletics, marching band, debate, student government etc.), each academy has additional opportunities only afforded to those in the academy. These opportunities lead to a levels of *endorsement*, an additional benefit to academy students as they graduate. While attending an academy by default allows students to advertise on resumes and college applications the advanced experience and focused learning, students who endorse are given additional recognition. They are corded at graduation and provided with extensive recommendations, scholarship opportunities, and apprenticeship other students may not have access to. Students who choose to endorse at the highest level in the Engineering Academy will also take at least two advanced placement/college level English courses and will choose to take another elective in Computer Programming, Engineering or CAD.

Additionally, students who choose to endorse in an academy (the general expectation for academy students is to endorse at least at some level with a goal of 100% endorsement) also will spend between 200 and 400 hours outside of the regular school day working in extracurricular activities like First Robotics and Battlebots, interning at local Engineering Firms, or doing their own research project related to a specific field of their choosing.

Over the years, these, what are now called “Academies” expanded to 15 housed in what is now five different comprehensive high schools. This district has invested time and money into the “renewal” of the academies (changing the name from Programs to Academies), rebranding each, developing alignment between them focusing on college and career readiness, particularly professional soft skills, and updating facilities. While they appear to be wildly successful, there has been no data collected to support this conclusion or the investment of money and resources.

This study identified students from each of the original academies over the last year and compared them to students who were not enrolled in the academies with similar racial, socioeconomic, and academic history. There have been around 400 students who have attended the academies in this time.

Chapter three describes the research design and specific procedures used to conduct the study. This chapter is presented in several parts: research design, population and sample, sampling procedures, instrumentation, measurement, validity, reliability, data collection procedures, data analysis and hypothesis testing and limitation.

## Cause and Effect

X=Cause	Why/Journey	Y=Effect
Career-Focused Academy	<ul style="list-style-type: none"> <li>● Students are more engaged in the academic process because they have developed community/ accountability/relationships.</li> <li>● Students have a career focus and therefore appreciate the content; therefore, student performance improves.</li> <li>● Students must meet minimum requirements to stay in the program (GPA) therefore incentivizing them to keep an overall higher GPA.</li> <li>● Students are involved in more generally challenging academic content.</li> </ul>	<p>Improved GPA</p> <p>Improved ACT</p>

## Research Design

The proposed project expands existing research by demonstrating the advantages of propensity score reweighting (PSR) methodology. PSR helps implement an “experimental” approach in the analysis of observational data. According to this analytic strategy, observations for students enrolled in Career-Focused Academies will be reweighted based on their propensity to enroll in an academy versus someone who did not.

The PSR method has proven highly effective in examination of other limitations in labor markets. I propose to implement this innovative approach in the context of Career-Focused education to resolve the prevailing problem of selection bias.

The proposed project relies on the restricted-use district provided data, a dataset that includes 398 students in a Career-Focused Academy with the same number of students who did not enroll in an academy.

### **The propensity score methodology as a remedy**

If variables such as gender, race, socioeconomic status and prior academics play a role in determining if a student will apply and/or be accepted into an academy, a method is needed that takes this into account and utilizes an “experimental” design for analysis. This would ideally involve examining this, for students with a given SES background, race, gender, ELL and SPED identification, and prior academic experience, when he/she is enrolled in an academy and the outcome when he/she is not enrolled in an academy. Since such an experiment cannot be conducted, an alternative is to find, for each academy student, a non-academy student comparable in terms of SES, race, gender, ELL and SPED identification, and prior academic experience to serve as a counterfactual case. This insight is central in remedying the issue of question-method misalignment in existing research on the effectiveness of a Career Academy.

A number of alternative methods have been proposed along these lines, including various multi-stage decomposition methods (e.g., Oaxaca & Ransom, 1994; Juhn, Murphy, & Pierce, 1993), sample selection adjusted regression models (Heckman, 1978, 1979), and applications of quantile regression techniques (e.g., Machado & Mata, 2000, 2001; Melly, 2005). However, extensions of the propensity score method are most promising, though underused until the last decade (compare, for instance, National Research Council, 2004, pp. 146-147 to Fortin,

Lemieux, & Firpo, 2011). In this vein, the propensity score methodology is discussed briefly and addressed how it applies to the examination of the effects of a student enrolled in a Career Academy compared to one who is not. Next, a version of this method will be described that will be implemented in the proposed project, namely propensity score reweighting.

### Overview of the Instrumentation

Interest in propensity score methodology has increased in recent years due to the growing popularity of propensity score matching (PSM), an approach to implementing the experimental design framework to the analysis of observational data. The objective in PSM is the unbiased estimation of an average treatment effect (ATE) based on the difference in outcomes between the experimental and control conditions (Rubin, 1974, 1977; Rosenbaum & Rubin, 1983).

This study relies on a more recent and more efficient application and PSR remedy. Attending a Career Academy is considered a “treatment effect” which is potentially conflated with individual indicators (like race, gender, ELL and SPED identification, prior academic success, and socioeconomic factors), and is thus endogenous. Therefore, R is specified in the first step as a Career Academy dummy (e.g., 0=non-academy Student, 1=Academy Student), and propensity scores represent estimates of the likelihood to be attend an academy conditional on a vector of individual indicators, including SES, gender, race, ELL and SPED identification and 8<sup>th</sup> grade GPA(S):

$$\log\left(\frac{P(A)}{1 - P(A)}\right) = \alpha + \gamma Si + \varepsilon i$$

The propensity scores can then be used to reweight career and noncareer in a way that recreates PSR’s strategic match.  $\hat{p}$  is used to create group weights (See Nichols, 2008).

Academy= $\hat{p}$

$$\text{Non-academy} = \hat{\beta}$$

The next step was to regress outcomes on academy membership adjusted by PSR weights.

$$\text{Outcome}_i = \alpha + \beta \times \text{Academy}_{(iw)} + \varepsilon_i$$

## **Chapter IV: Results**

The Propensity Scoring method is illustrated by analyzing a set of students from a large suburban, mid-western school district. The base year (students in the 8th grade in the year 2013) cohort includes 1,673 students. The focus was placed on students in Career Academy pathways (Art and Design, Human Services, Human Health, and Sciences (total base year n=460)). For this purpose, student's GPA and if they took the ACT were addressed. These two data points are important because every student either did or did not take the ACT and the school system tracks a student's academic success with grade point average.

Research consistently points to a high GPA as a direct indicator of a growth mindset. Author/professor, Dr. Carol Dweck's research of thousands of children's behavior has led to the terms "fixed mindset" and "growth mindset" to describe the underlying beliefs people have about learning and intelligence. When students believe they can get smarter, they understand that effort makes them stronger. Therefore, they put in extra time and effort, leading to higher achievement. Higher Grade Point Average is usually indicative of a student with a growth mindset who demonstrates will-power when faced with consistent high-demands on their time and abilities, as well as better self-regulation (Job et al, 2015).

The ACT is a college entrance exam designed to measure students' skills and help colleges evaluate how ready students are for college-level work. The choice to take the ACT is usually an indication of a student who has post-secondary plans requiring at least some college. Students with an understanding of what is required of them to meet their career goals and then proceed with the college entrance exam usually take the ACT. However, a student with a strong focus on a career path not requiring a college degree, may choose not to take the ACT.

A student who is college and career ready can qualify for and succeed in entry-level, credit-bearing college courses leading to a baccalaureate or certificate, or career pathway-oriented training programs without the need for remedial or developmental coursework. Career Academies train students in occupational fields while preparing them college. The focus of the research was to answer the questions:

1. How can work be effectively integrated into education?
2. How can this integrated work sustain motivational value transcending into authentic learning while preparing students for the future?

Comparing GPAs and the tendency to take the ACT of an academy student with a non-academy student using the propensity scoring method will address these questions since both are required for college entrance, and a high GPA is indicative of a growth mindset (something necessary for success in any career field).

## T1 Presents Key Findings

Table 1

	OLS Coefficients for GPA		Odds Ratios for ACT	
	PSR weighted	Unweighted	PSR weighted	Unweighted
All Academy				
Students	0.117 *** (.044)	0.455 *** (.049)	1.06 (.056)	0.927 (.064)
Art & Design	0.136 *** (.048)	0.269 *** (.015)	0.94 (0.06)	0.133 (0.022)
Human Health	0.058 (.048)	0.504 *** (.108)	0.94 (.062)	0.908 (.064)

Human				
Services	-0.241	0.628 ***	0.96	0.911
	(.053)	(.108)	(.063)	(.064)
Science	0.205 ***	0.677 ***	0.98	0.123
	(.048)	(.081)	(.061)	(.019)

---

Table 1 illustrates the importance of the propensity scoring method for selection correction because every coefficient is different from the unweighted and unadjusted version. While some of the differences are larger and some are smaller, this suggests there is a selection process involved for a student who attends an academy, and attending an academy is not a random event. As a result, there is the need to eliminate these variables and control for the selection by observables such as gender, 8<sup>th</sup> grade GPA, ELL, SPED, and SES status.

The OLS Coefficients for GPA with the PSR weighted category, indicate that for all academy students collectively, and all but Human Services, GPAs improve when enrolled in an academy. The odds ratio for the ACT implies that students enrolled in academies are more likely to take the ACT than those who are not.

One unit of GPA increase in academy, increases the GPA by .12 units. Academy students on average have a .12 greater GPA than non-academy students. A similar dynamic is observed for students in Art & Design and Science Career Pathways, where students in specific Art & Design focused academies on average have a .14 greater GPA than non-academy students and students in Science focused academies have a .20 greater GPA than non-academy students. Enrollment in a human health focused academy has a much smaller impact on average GPA with only a .06 greater GPA than non-academy students, and a student's enrollment in the Human

Services Career-Focused Academy, on average have a lower GPA than non-academy students. This anomaly may be the result of this particular academy's pool of students and varied acceptance qualifications. This academy was the only one at the time (and based on data, was changed to be the same as the others), only allowing students in the boundaries of the high school the academy was housed in to apply.

The propensity scoring method indicates a student in an academy has an average .12 GPA above those of a non-academy student. Students in Career Academies often select an academy based on interest, ability and aptitude. Research on the development of talent has long demonstrated that aptitudes are good predictors of the quality of adjustment of individuals to both work and leisure activities. To succeed in particular work settings and to gain the most out of leisure, however, one cannot rely only on raw undeveloped aptitudes. One has to develop specific skills. An extremely successful and talented individual in one field may share similar core aptitudes with another (similarly successful and talented) person in a quite different field, but these people may rely on entirely different skills that they have built on an identical set of aptitudes. Aptitudes tell something about what sort of skill might be readily acquired, given sufficient training opportunities, but they are not sufficient to predict the precise sets of skills individuals will ultimately develop.

While it is likely, students in a given academy may have an aptitude for the skill sets needed to be successful in an academy, there must be more than aptitude to explain the overall improved GPA's of students who attend academies compared to those who do not. The research in Investment Theory and Growth Mindset support the additional skills needed for success in an academy. Achievement, interest, and non-limited will-power can all account for improved GPA. Studies show students performing better with more motivation when they believe they are

capable (Wigfield & Eccles, 1992). Similarly, students who view will-power as a non-limited resource, rather than harming them by leading them to waste their resources, stay focused on their goals even with a heavy workload and increasing demands on their time and ability.

The average academy student's GPA is 0.117 greater than the non-academy peer. This data is important because it shows that the non-PSR estimate is even greater (0.455) because this means substantial selection (upward) bias is corrected.

Interests provide a direction to the development of one's habits and activities. They are foundational for the development of skills, but in a different manner than aptitudes. Interests serve primarily to select, out of a mix of potential activities, the ones in which an individual will engage. The smoothest and surest means of developing skills lies in the intersection of aptitudes and interests: that set of activities for which an individual has both the raw native talent (aptitude) and the desire (interests). Career Academies likely do this unintentionally. Career Academies seem to direct a student's attention on blending Career-Focused education with traditional learning as a mechanism to make meaning out of school. This method of learning appeals to students' practical interests but does not limit their future career opportunities. It encompasses a set of career options ranging from jobs requiring little to no post-secondary education to ones requiring four-years and beyond (Stern, Raby, and Dayton, 1992). This may also explain the difference in the likelihood of a student to take the ACT. As students hone in on interests and aptitudes, they are given the opportunity to be very specific in their post high school choices. As a result, some students choose a path not requiring the ACT and therefore forego this assessment.

## **Grade Point Average**

### **Art and Design GPA**

The Art & Design career pathway includes academies with academic focus in areas like design, video, animation, web, and programming. Many students drawn to these types of academies are less inclined to invest in traditional academics. A study conducted by Matthew Mayhew and his colleagues at NYU (Mayhew, 2012) found a possible relationship between what innovators prioritize in their college environment: taking on new challenges, developing strategies in response to new opportunities and brainstorming new ideas with classmates and their GPA. What he posited was that time spent in these areas might really benefit innovation, but not necessarily GPA. Additionally, findings elsewhere suggest innovators tend to be intrinsically motivated – that is, they are interested in engaging personally meaningful pursuits but might not be immediately rewarded by others. As a result, as a general rule, students in the creative fields would have lower GPAs than those who are not. However, this research also noted that grades, by their very nature, tend to reflect the abilities of individuals motivated by receiving external validation for the quality of their efforts. In a Career Academy focused on art & design, it would therefore make sense for students to have higher GPAs. Their focus is on creativity and innovation and students enrolled in these academies are both intrinsically and extrinsically motivated.

Students in these specific Career Academies have on average .14 higher GPA than those who are not in an academy. Their coursework is dominated by classes requiring creativity and innovation. While traditionally, students who are more creative tend to have lower GPAs, in a program where each is given the opportunity to pursue creativity and innovation in courses that meet their personal interests and goals, it appears their overall GPA is likely to be higher as the

data suggests. Countless surveys report that most people do not like their jobs and most students don't like school (Chalofsky, 2010), mainly because independent thought and creativity have been removed. William Tolman believed in order for people to be happy in their work, they must be fit for it, they must not do too much of it, and they must have a sense of success in it (Briskin, 1998). Students in the Art & Design pathways find a sense of success in their work and are therefore statistically successful in it.

### **Human Health GPA**

Students who attended academies in the human health career pathways had on average a .058 higher GPA than those students who did not attend an academy. Human Health Academy courses included students studying coursework in Sports Medicine and Medical Professions. In order to effectively provide a literate workforce, the education system must answer the question, how can “work” effectively be integrated into education? And ultimately, how can this integrated work sustain motivational value that transcends into authentic learning? Career Academies have done this by providing students with this type of opportunity. For example, students in the sports medicine program work all athletic events alongside professional athletic trainers. Students in the Medical Professions intern at local hospitals and area clinics and work alongside university level researchers studying current health-related problems. “Extracurricular activities serve the same goals and functions as the required and elective courses in the curriculum. However, they provide experiences that are not included in formal courses of study. They allow students to apply the knowledge that they have learned in other classes and acquire concepts of democratic life” (Hattie, 2010).

Snedden, the Massachusetts Commissioner of Education was one of the most articulate advocates of social efficiency in the approach to design of educational programs combining the

demands of the industrial society with the capabilities and interests of students. This combination adds to the motivation of students. Their coursework is more intentional than the general education program addressing the question of work and education integration. This integration supports the higher GPA for those in these academies.

### **Science GPA**

The Science academies involved Engineering, Animal Health, and Geoscience. Students in these academies have on average a .21 higher GPA than those not attending an academy. While other academies have a mix of foci, some with post-high school opportunities requiring an advance degree, others not, the Science foci areas, if pursued after high school do require some post-secondary education. As a result, students in these academies likely place a higher value on their GPA for college admittance, raising their overall GPA. While some students work to achieve higher GPA's for intrinsic reasons, most do so because they plan to attend college. Since these career areas require some university/college training, it would be logical for these students to achieve a higher-grade point average.

### **Human Services GPA**

Human Service Academy (which included the Professional Careers Academy, a basic business and finance focus) was the only grouping where students had an average GPA of .24 lower than those who did not attend an academy. At the time, this academy grouping was unique. While all other academies selected students from across the district, this academy only selected middle school students who were already going to attend the high school in which the academy was located. The pool of applicants was much smaller than those for other academies. The academy grouping has since expanded to include all students in the district and four focus areas (Business Finance, Public Safety, Future Educators, and Civic Leadership). According to Dweck

and her colleagues, students holding a nonlimited theory of willpower facing consistently high demands would display better self-regulation resulting in higher grades than students holding a limited theory facing similar circumstances (Job, et. Al 2015). Since application and admittance into the Human Services Academy was less competitive, it may have resulted in more students with limited will-power being admitted. These personalities are more inclined to have lower GPA's than their non-limited counterparts.

## **ACT**

Students in every academy were more likely than their peers to take the ACT College Entrance Exam. Students in the Art & Design Academies were on average .94 times more likely than a non-academy student to take the ACT. While many careers in this field do not require a college degree, the focus on the academic side of Art & Design likely motivated these students to take the ACT and pursue a post-secondary education in the fields. The students in the Art & Design Academies were less likely than most of their academy peers to take the ACT. This may directly relate to the realization that many of these careers do not need a post-secondary degree to pursue. While they were still more likely than their non-academy peers to take the ACT, they were less likely than their academy peers to take the test.

Students in the Science's Academies were on average .98 times more likely to take the ACT. Students who enter an academy and then finish high school as a member of an academy likely either built significant relationships with their peers and instructors motivating them to stay in or/and identify an area of study they not only enjoy but are likely good at. Most career fields connected to the Science Academies require at least a college degree. Since most colleges and universities require an ACT or SAT college entrance exam score to attend, students in the Science Academies would be more inclined to take the ACT

Students enrolled in the Human Health Academies were on average .94 times more likely to take the ACT than non-academy Students. However, they were less likely than most of the academy peers to take the ACT. This may be a similar reason as to why Art & Design Students were a little less likely to take the ACT. There are some health professions (Certified Nurses Assistants, Nurses, Medical/Dental Technicians) that do not require training from a four-year university. As a result, not all students pursuing careers in Health Professions need to take the ACT. However, there are many health care professions requiring an advanced degree. This need for a four-year university degree is likely why students in these academies are more likely than their non-academy peers to take the ACT.

The majority of careers in Human Services require a college degree. Since college admittance usually involves submitting an ACT score, students wishing to continue training the Human Service Profession likely take the ACT. Students in the Human Service Academies were on average .96 times more likely to take the ACT than their non-academy peers and the second largest academy group, second only to the Science Academies.

## Chapter V: Discussion

There is no doubt the value of education; it is a fundamental human right and essential for the exercise of all other human rights. It provides individual freedom, empowerment, and connects people by offering common moral values. It offers opportunities that would otherwise be forfeited. The conflict, however, ensues, when the “type” of education is discussed.

Within the American Education System there are many choices for education, both public and private and within each of those even more. Each style offers unique benefits all in search of the “perfect recipe” of instruction. While there will never be a “one-size-fits-all” education, most would agree the purpose of education is to prepare the future citizen. Someone who will acclimate to the current work environment, perform his/her civic duties, and support economic growth. In order for this to happen and society to thrive, there must be a productive work force. Work has, and always will be, an integral part of society and therefore, a key component of education. From hunter/gatherer to horse and wagon to today’s technologically advanced careers, each generation has altered work but always required it.

Literature reports work-connected education supports improved student achievement and economic vitality related to global competitiveness (Chalofsky, 2010). Society has interminably known it must work and it must learn. The purpose of this study was to identify if an educational means to do this effectively could be identified, supporting today’s educational anthem of “college and career readiness.”

The study used the PSR method as a means to avoid selection bias and did so successfully. In the statistical analysis of observational data (in this case the GPA’s and likelihood to take the ACT of students enrolled in a Career Academy vs. one who is not) propensity score matching is a statistical matching technique that attempts to estimate the effect

of a treatment, policy, or other intervention by accounting for the covariates that predict receiving the treatment. Since there is no real way to compare a statistically identical and random student enrolled in an academy with another who is not, in order to perform unbiased comparison, the PSR method was used. However, while the research acknowledged and addressed selection bias, it must be recognized there are some dangers in running academies and any educational institution where students are choosing to attend by application process and the institutions themselves are selecting students based on their prior ability and interest. Any time humans determine outcomes, some sort of bias will be introduced. While the research method accounted for the creaming effect and successfully controlled for it, it cannot be ignored that there will be limitations for the ultimate success of these academies if not every student has the means and opportunity to participate. It is likely that in many areas of actual practice of selecting and comparing students within an academy, the administration and policy makers would simply look at raw mean differences between academy and non-academy students without accounting, or in reality, even caring much about the selection bias. Without accounting for selection bias, like this research did, people comparing the academy students with non-academy students would ultimately identify significant differences that have little to do with the academy itself.

While the research successfully concluded, while accounting for selection bias using the PSR method, that students who attended Career Academies had higher GPAs and were more likely to take the ACT than non-academy students, it did not answer why. However, anecdotal evidence supplied by both teachers and students in an academy support research that says one of the most significant elements of successful learning happens as a result of positive relationships. Students in academies join as Freshman. Most academies offer a multitude of opportunities for

students to acclimate to high school and meet people prior to the start of the school year. These students essentially are placed in a cohort and will study, learn, and work together for the next four years. Their high school experience is extended beyond the walls of the physical building into evenings, weekends and summers. Research supports this time together and relationship consistency supports their overall academic success (Baker et al., 2008; Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998; McCormick, Cappella, O'Connor, & McClowry, in press). Studies report students who love school and have healthy relationships with adults have a strong sense of belonging. They know they matter. When they feel teachers, administrators, and really anyone who plays a supportive role in a school, likes them as individuals, they in turn like their teachers, their school, and ultimately learning. As a result of this relationship, they are cooperative and motivated to work hard (Inlay & Tassione, 2014; Baker et al., 2008; O'Connor et al., 2011; Silver et al., 2005).

These students develop a strong sense of self-efficacy. Self-efficacy is the idea that through mastery experience (the attempt to do something and find success), vicarious experience (learn by doing, as well as watching similar people succeed at the same task), verbal persuasion (encouragement from others), and somatic and emotional states (the physical and emotional benefits created by thinking and undertaking a new behavior) a person develops a belief in his/her own ability to successfully accomplish something (Bandura, 1994).

Students in each academy have successfully applied and been accepted into the academy. Students in the academies looked at in this study must have completed an online application, written three short essay questions, submitted three teacher recommendation forms, and submitted their 7<sup>th</sup> and 8<sup>th</sup> grade GPAs. While the students in this study did not all complete interviews as part of the application process, all students do now. Ultimately, most academies

admit the majority of students who apply, however, students who perform lower in the required areas of the application may not be accepted. Additionally, students who are not interested in academies or who are less likely to be academically focused to begin with likely do not apply to academies. As a result, students who are accepted into academies have developed a mastery experience, one of the most effective ways to boost self-efficacy. Bandura suggests people are more likely to believe they can do something new if it is similar to something they have already done. Students in the academy have higher GPAs and are more likely to take the ACT because from the beginning of the academy experience, they proved to themselves they were capable.

While the PSR method pairs students with like-students and accounts for this bias, ultimately, the academies, unless they are able to accept every student who applies, will never have perfectly reliable data to support their successes. Additionally, much of the recruitment process for academies is done in English. Thirty-three percent of the student population in this midwestern suburban school district is from a non-English speaking household. Many of these same families would also be considered low socio-economic status. Communicating the benefits of academies to these families and providing them with the opportunity of academies in a supportive and non-intimidating manner is essential to remove bias in recruitment. These elements of bias can be accounted for and removed in the future if those in charge choose to pursue this best practice. There are many correlations between a student's academic success and their income level and ethnicity. Data supports that students from minority households (African-American and Hispanic) and those in poverty (and in many cases both), perform much lower on the ACT and other college readiness indicators than their white/Asian and wealthier peers (Poverty and Race, 2017). The research supports an improved GPA and likelihood to take the ACT for students of any background enrolled in and academy. In order for these elements of bias

to be removed for the policy makers and those evaluating applicants, students of poverty and minority status must be given equal opportunity to not just apply but to be accepted as well.

One of the most important aspects of a Career Academy is the connection to work. The idea that in order to have a successful society, students must learn to work. Providing opportunities for people to gain mastery is the reason work-shops, training programs, internships, and clinical experiences are offered. However, mastering new tasks are not always easy. According to the self-efficacy theory, if a task is always relatively simple and similar to previous ones already mastered, and difficult, unfamiliar ones are avoided, self-efficacy does not develop. A difficult task must be attempted, and obstacles worked through to truly develop self-efficacy. This opportunity to face difficult task and work through obstacles is a key component of instruction within an academy. Students are given daunting tasks, provided the skills and resources and then offered verbal persuasion to continue.

When people are verbally persuaded to achieve/master a task, they often do so. This positive affirmation goes a long way in supporting a person's belief in him/herself. Not only are instructors in academies offering these words of encouragement, the students support each other in the same way. Students in academies are often encouraged to mentor younger grades, offer encouragement, modeling, and a vicarious learning experience.

Part of developing a strong sense of self-efficacy is through these vicarious experiences. Vicarious learning is at the core of academy instruction. The instructor demonstrates a skill via classroom instruction, peer-modeling, authentic experiences, and internships; in turn, the student then independently replicates the process. Students in academies have opportunities for vicarious learning that students in the general education setting do not. For example, students in the Media Academy work on movie sets with industry professionals and then using their experiences and

observations spend six to nine months writing, producing and showcasing their own feature film. Students are watching, observing, and then copying what is done for them. Not only is this experience preparing them for the work-force, it is building their own self-efficacy, something required for long-term success in all areas (academic and career).

These opportunities, not afforded to students outside of the academies, allow students within academies to become proficient at new skills, both preparing them for future work, as well as increasing their overall self-efficacy.

While vocational and Career-Focused education have been around since the beginning of education, the communicated value has been frequently challenged. The overall paradigm pendulum swings decade to decade, but the reality is that traditional, common, and “normal” is what most people tend to hold on to as ideal. However, if research supports the need for work-based education, can the education system offer a comprehensive four-year high school allowing the traditional plan of study to remain in place, while offering rigor with relevance to the work force by embedding career-focused learning into the traditional instead of forcing one to choose between the two? This research looked at Career-Focused Education as a means to address these challenges and answer this question.

One of the most pressing arguments against Career-Focused Education is its inability to prepare students for both college and career. For the most part, students who previously pursued a career-focused education did so by leaving the traditional college tract to attend a vocational school with a focus on middle to low income wage careers like auto-mechanic and welding. They rarely took action to maintain high GPAs, nor saw much value in taking a college entrance exam like the ACT. Students who wanted to attend college, did so at the expense of practical skills preparing them for the work force. A high-grade point average and taking the ACT are two

main factors required for successful admittance into college. Career Academies are the connection for career-focused learning and college readiness. By improving these two elements for students enrolled in a Career-Academy, the value can be more clearly communicated.

Literature already supports the “work” value of Career and Technical based programs (“What Is CTE,” 2017). Career-Academies ability to also instruct the more “academic” side of school, addresses the concerns of the opposition who believed this was missed in traditional CTE and vocational programs.

This study noted an overall improvement of a student enrolled in a Career-Focused Academies GPA and likelihood to take the ACT. There are several theories supporting the idea that students enrolled in Career-Focused Academies housed in a traditional high school would have better grade point averages and more likely to take the ACT than those who chose not to attend.

The main goal of most educational institutions is to promote skill development in different academic areas. The most obvious areas are ones State Education Boards and local School Districts deem necessary for graduation. For example, most schools require four years of English-Language Arts credits, three years college level math (Algebra and beyond) credits, three years of Science credits, and two to three years of Social Studies credits. While the remaining required credits are considered electives, they are often in the arts (fine and performing: band, choir, orchestra, art, jewelry, photography), and basic technology and business. The career-side of courses are usually taken more minimally and without much long-term purpose (Family and Consumer Science, Graphic Design, Web/Programming, Computer Aided Drafting, Wood Shop, etc.).

Many educational institutions base their mission and vision statements on preparing students for college and career readiness, and yet their graduation requirements do not always reinforce this mission. It is difficult to communicate the shared value of work and career readiness when the career side is often so overlooked. However, Career Academies are implementing this work element into the graduation requirements. For example, students in the Geo-Science Academy spend time daily working in on-site aquariums, taking their mobile fish-tanks to elementary schools to do animal presentations, and travel to geological dig sites in the summer to study paleontology. Students plan to take career-based courses alongside their college preparatory courses, creating the college and career readiness needed for long term success.

The expectancy value theory of achievement behavior argues that having an expectancy of being successful in a task and having a value for engaging in the task ultimately creates success. According to expectancy-value theory, behavior is a function of the expectancies someone has and the value of the goal toward which he/she is working. While the results of this study support the success of a Career-Academies, this theory would suggest that because a student chose the academy and because they believed they had the largest possibility of success, their success was a result of choosing something with the largest combination of expected success and value. Expectancy-value theories hold that people are goal-oriented beings. The behaviors they perform in response to their beliefs and values are undertaken to achieve some end. However, although expectancy-value theory can be used to explain central concepts in uses and gratifications research, there are other factors that influence the process. The theory, however, supports that by offering students an academic focus area of interest alongside both college and career readiness standards and curriculum, the statistical probability of having a higher GPA and the likelihood to take the ACT improves.

Additionally, students who applied to an academy and were then accepted are more likely, according to this theory to succeed since they succeeded in the first step of application and admittance. They then continue into coursework they are interested in, see long-term value in, and therefore see value in the coursework leading to both college and career preparedness.

The Attribution Theory combines the expectancy value theory with the self-efficacy approach. This theory posits that individuals with specific expectations for success and perception of ability on tasks play an important role in the overall motivation to perform a specific task at an above average level. Individuals tend to do tasks they positively value and avoid tasks they negatively value. By pursuing a specific interest through academy attendance, a student would therefore be applying interest and effort to most of their high school tasks/expectations (Barron & Hulleman, 2015). Essentially, people do better in areas they find interesting and most students in academies are in them because they enjoy and see value in the content. For example, students in the Sports Medicine Academy are often interested in both the science of medicine and sports. While many may not be physically inclined to pursue a career as a college or professional athlete, their interests in sports motivate them. They have an interest in sports and their ability to pursue this interest in the academic focus of the Sports Medicine Academy is a possible cause for their overall academic success. Since many of the academies expect students to maintain a certain GPA while in the academy, this motivates them to work harder to maintain their GPAs leading to an overall higher GPA than that of their non-academy peers.

These theories support the finalized results that students who attend a Career Academy have on average higher GPA than students who do not, as well as are more likely to take the ACT.

Finding a balance between a traditional liberal arts education and a work-based education has been something those in education have been pursuing for decades. Society has been searching for ways to successfully integrate work and education, while at the same time sustaining motivation that transcends into authentic learning while preparing students for their futures. Are Career-Focused Academies the answer to the questions? While there are likely several factors leading to the results in this study, the overall research confirms that students enrolled in a Career-Academy have higher GPAs and are more likely to take the ACT than that of their non-academy peers.

This research set to find answer to the following questions:

- 1. What are the success rates for students who attend Career-Focused Academies embedded in comprehensive high schools compared to a traditional comprehensive track as noted by GPA and likelihood to take the ACT?*

Students who attend Career-Focused Academies embedded in comprehensive high schools are statistically more successful based on higher averaged GPAs and a greater likelihood to take the ACT than those who do not attend an academy. While the theories imply this could be the result of several factors, the success of students in academies addresses the concerns of CTE/Vocational opposition. Hanushek (2017) believed students enrolled in traditional Career-Focused Programs did so at the expense of learning more fundamental skills (like preparing for college). The research data addresses this criticism and notes that study in Career-Focused Education, ultimately a blend of “work” in Career and Technical Education and the “academic rigor” of an academy offers the “best of both worlds.” The development of Career Academies has created the “middle path” with a different kind of pedagogy focused on real-world knowledge but blended with the rigorous content of a traditional classroom. The success in

arduous coursework, with higher GPAs, and the likelihood to take the ACT allowed both college bound and non-college bound student's exposure to academic rigor, at the same time offering direct application to tasks outside the classroom.

John Dewey, one of the most significant educational thinkers of his era, and possibly even the 21<sup>st</sup> century was a reformer whose theories would support the Career Academy model. Dewey's concept of education emphasized learning being the execution of a meaningful activity and directly related to democracy. Unlike advocates of traditional education, Dewey argued curriculum should be relevant to student's lives and saw learning by doing and development of practical life skills crucial to a child's education. In his book, "The School and Society," he said,:

...an embryonic community life, active with types of occupations that reflect the life of the larger society and permeated throughout with the spirit of art, history and science.

When the school introduces and trains each child of society into membership within such a little community, saturating him with the spirit of service, and providing him with instruments of effective self-direction, we shall have the deepest and best guarantee of a larger society which is worthy, lovely, and harmonious (Dewey, John (1915).

2. *Career-Focused education has existed since the beginning of education. Is there a communicated value?*

Up until recently, it could be asked if Career-Focused Education was valued. This research into the success of Career-Focused Academies would say yes. Career Academies train students in occupational fields while preparing them for college. College preparedness involves receiving and maintaining above average GPAs, as well as the ability and likelihood to take the ACT college entrance exam. One of the biggest arguments against career-focused education was that it did not prepare students for college, these research results would say otherwise. This research

says that Career-Focused Academies, do in fact prepare students for college by offering higher GPAs and a greater likelihood to take the ACT. Additionally, most would agree the content of education should be determined by the interests and capabilities of the learner and by the demands of current industry/societal needs. Career Academies not only allow students to focus a large part of their academics in areas of interests, they do so in a way that exposes them to career fields requiring post-secondary schooling from a university or college and those that do not. Career Academies offered students to be an active part of their own learning, instead of a passive recipient of knowledge (Dewey). For education to be truly effective, students should be given learning opportunities enabling them to link present content to previous and future experiences and knowledge. These learning theories state that the optimum learning environment for any student (one who wants technical experience and one who wants a college-focused experience) is a balanced approach to learning where the teacher, students, and content are given equal importance in the learning. A teacher must be a facilitator offering students the chance to discover for themselves and develop as independent learners (Dewey, J. 2011).

The mindset of society is to have a skilled and literate workforce. In order to accomplish both, the education system must answer the question: “How can ‘work’ effectively be integrated into education?” Career Academies have accomplished coupling the two, recognizing work as essential not just to the economy but to the human condition. This data supports this, however, in order for it to be truly communicated it must become universally accepted and applied. Over 40 years ago, it was understood a competitive workforce must have educated citizens. Every citizen of the human race should therefore be guaranteed a free and appropriate education. In the United States, it is generally understood that a combination of studies and labor contribute to the

development of a better citizen. However, there is always a cost involved and a willingness to offer opportunity to all.

3. *How can career education be integrated in a universally accepted way?*

Career Academies provide students with both industry skills and college preparatory skills. By doing so, it allows students to keep all of their post-high school options open. Those opposed to career-focused education are so because of the stigma it placed on students. Since the universally accepted success path is through college, even though it can be achieved both financial and personally in some fields without it, Career Academies offer the best of both. Early reformers have urged manual training, science, nature-study, art and similar subjects be given precedence over reading, writing and arithmetic (the traditional three R's) in the curriculum. They believed the problems raised by the exercise of a student's motor powers in constructive work would lead naturally into learning the more abstract, intellectual branches of knowledge. This blending of traditional academics with authentic-real world learning in the form of a Career Academy has essentially been discussed and agreed upon since the early 20<sup>th</sup> century. Dewey opposed specialized training and technical segregation in public schools; Career Academies support the idea of hands-on, authentic learning while at the same time remaining connected and within the comprehensive high school (Warde, 1960).

Career Academies ultimately prove most successful, by providing students with both work-related and college preparatory skills. These academies allow students to keep their options open, provide courses required for college admissions, prepare them for the ACT and SAT, at the same time demonstrate relevance to career fields.

While vocational education courses and career and technical classes claim similar results, academies claim at the same time they are enabling students to go to college, improving their

overall standardized tests scores, and increasing scholarship opportunities (Stern, Raby, & Dayton, 1992).

Some may argue that not every student needs this type of training to be a contributing member to society. The more traditional route may be better for one student, and the more vocational route better for another. The success in Career-Academies resides in choice. Not every student chooses to attend a Career-Academy and not every student who chooses is given the opportunity. The traditional four-year comprehensive high school plan is still available for all students. Additionally, in forward thinking school districts, these students who choose the comprehensive track are still required to take career-and technical education to some extent. They are also afforded the opportunity to pursue a traditional vocational education that offers certification and training in high-demand/high-paying career fields that do not require a four-year degree. At the same time, encouraging students to be in the educational path that best suits their current learning styles.

The arguments against traditional vocational schooling resided in its stigmatism: the idea that it is a second-rate education created for the working class and a “dumping ground” for students who may not succeed in a more traditional school environment and who are not on track to attend a four-year university. Advocates would argue while this may be true, there is nothing wrong with identifying a student who is less likely to attend a four-year university and function as a working-class citizen. They would also argue that these career-fields may feel working class, but many are ab oworking class pay.

- 4. How are current and planned efforts evaluated when integration remains a reform for many purposes—with multiple goals and different outcomes?*

Ultimately, schools should exist to help students locate themselves in history, obtain the ability to direct their own lives, understand the ways power influences the production of knowledge, appreciate the nature of good work, become smart workers and connect with a cognitive revolution that leads to a deeper understanding of themselves and the world (Kincheloe, 1995).

It will continue to be a challenge to truly evaluate the effectiveness of Career Academies, however, because integration remains a reform with multiple goals and different expected outcomes. In order to truly identify if Career Academies are successful, implementation must be widespread, and research must continue.

Much about anyone's success is truly anecdotal in nature and completely subjective. In order for students to be truly successful in both work and school, they must be happy. Happy is somewhat arbitrary and requires a person be fit for the work/course, pursue it in moderation, and find a sense of meaning and success in it. Work and learning must be seen as one. They must exist in a space filled with human relationships and based on similar values of care support, collaboration, and commitment, instead of a place to work, learn, and make a living (Chalofsky, 2010). Finding data to support these elements are much more qualitative in nature.

### **Considerations for Future Research**

Further research into the true success of Career Academies will involve post-high school data: college admittance, college completion, employment, longevity of employment, and the very subjective aspect of "fulfillment." While most of the data could be qualitatively identified and analyzed, fulfillment will be more difficult to quantify. This research suggests further study by interviewing students who graduated from high school and evaluate "Where they are now?" Did they pursue a career related to the academy they attended in high school and answer why or

why not? Did their career require a college degree? Was the degree related to their time spent in an academy? Were they able to bypass traditional post-high school paths, like University and College Educations by pursuing technical schools, 2-year schools, or on the job training? Did they finish their schooling/training? Did they see their time in the academy as an essential part of their current success or failure professionally? If they don't feel successful, why? Could any part of their academy time have changed to further benefit them? Are they doing unrelated work but still feel the elements of the academy a beneficial part of their current career path? Would they attend an academy if they had to do it all over? Do they believe their high school GPA and ACT score or likelihood to take the ACT enhanced because of their time in the academy? A truly successful career academy would report adults who chose careers that were in high-demand and high-pay.

The research results seem to support the value of a Career Academy. As school districts across the nation look to identify what a graduate needs to be successful in the future, they must also recognize the value of this type of learning. If students in Career Academies have higher GPAs and are more likely to take the ACT than their non-academy peers, all students must have access to an academy or the type of learning present in an academy. They must seek to find ways to allow students exploratory opportunities in areas they find themselves successful in and in areas that will be considered either high demand careers or skills likely needed to succeed in the unknown careers of the future.

Strong self-efficacy would support a person's success regardless of what the future of work or education holds. The structure of relationships, relevance and rigor in an academy develop students' self-efficacy; as a result, anyone involved in education and education reform should consider the ramifications and opportunities afforded by the academies and seek to find

meaningful ways to either implement academies themselves or the elements of the academies that support overall student success.

There is really no question as to the value of an education, however, there will continue to be the debate about what that education looks like. While this research used an effective and unbiased method in the PSR method to determine if Career-Academies could be deemed successful by offering higher GPAs and a more likelihood to take the ACT, the debate as to what type of education is best will continue.

## References

- Baker, J. Grant, s., & Morlock, L. (2008). The teacher-student relationship as a developmental context for children with internalizing or externalizing behavior problems. *School Psychology Quarterly*, 23(1), 3-15.
- Bandura, Albert. *Self-efficacy: The Exercise of Control*. New York: W.H. Freeman, 1997. Print.
- Barlow, M. L. (1976). 200 Years of Vocational Education: 1776-1976: Coming of Age, 1926-1976. In *American Vocational Journal* (Vol. 51, pp. 63-88). Retrieved June 30, 2015, from ERIC.
- Barron, K. E., & Hulleman, C. S. (2015). Expectancy-Value-Cost Model of Motivation. *International Encyclopedia of the Social & Behavioral Sciences*, 503-509. doi:10.1016/b978-0-08-097086-8.26099-6
- Bernstein, B. (1999). Vertical and Horizontal Discourse- An Essay. *British Journal of Sociology of Education*, 20(2), b, 157-173. Retrieved November 29, 2017, from <https://www.scribd.com/document/290183151/Vertical-and-Horizontal-Discourse-An-Essay-BERSTEIN>
- Briskin, A. (1998). *The stirring of soul in the workplace*. San Francisco: Berrett-Koehler.
- Bronfenbrenner, U., & Morris, P.A. (1998). The ecology of developmental processes.
- Bronfenbrenner, U., & Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and desing*. Harvard University Press.
- Byrne, J., Downey, C., & Souza, A. (2013). Teaching and learning in a competence-based curriculum: The case of four secondary schools in England. *The Curriculum Journal*, 24(3), 351-368. doi:10.1080/09585176.2012.731008

- Chalofsky, N. (2010). *Meaningful workplaces: Reframing how and where we work*. San Francisco, CA: Jossey-Bass.
- Chalofsky, N. (2010). *Meaningful workplaces: Reframing how and where we work*. San Francisco, CA: Jossey-Bass.
- CTE: Learning that Works for America. (n.d.). Retrieved June 29, 2015, from <http://www.careertech.org/cte-works>
- Dewey, J. (2011) *Democracy and Education*. Milton Keynes: Simon and Brown.
- Dewey, J. (1951). *The influence of Darwin on philosophy: And other essays in contemporary thought*. New York: Smith.
- Dewey, John. *The School and Society*. Rev. ed. Chicago, Ill.: U of Chicago, 1915. Print.
- Durkheim, E. (2015). *Elementary Forms of the Religious Life*. S.l.: Quid Pro, LLC.
- Edlund, F. A. (1927). Beginning of Manual Training in the United States. *The Phi Delta Kappan*, 9(4), 106-113.
- Firestone, D. (2013, December 07). Q. & A. With Anthony P. Carnevale. Retrieved November 1, 2017, from <http://www.nytimes.com/2013/12/08/opinion/sunday/stem-qa-anthony-p-carnevale.html>
- Firpo, S., Fortin, N., & Lemieux, T. (2011). Occupational Tasks and Changes in the Wage Structure. *IDEAS Working Paper Series from RePEc*, IDEAS Working Paper Series from RePEc, 2011.
- Gray, K. (1991). Vocational Education in High School: A Modern Phoenix? *The Phi Delta Kappan*, 72(6), 437-445.
- Grubb, W. (1996). The new vocationalism: What it is, what it could be. *Phi Delta Kappan*, 77(8), 535.

- Hanushek, E. A. (2017, June 18). German-Style Apprenticeships Simply Can't Be Replicated. Retrieved November 1, 2017, from <https://www.wsj.com/articles/german-style-apprenticeships-simply-cant-be-replicated-1497821588>
- Hattie, J. (2010). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*; London: Routledge.
- Hulleman, Chris S., Kosovich, Jeff J., Barron, Kenneth E., & Daniel, David B. (2017). Making Connections: Replicating and Extending the Utility Value Intervention in the Classroom. *Journal of Educational Psychology, 109*(3), 387-404.
- Jacob, B. A. (2017, October 04). What we know about Career and Technical Education in high school. Retrieved October 30, 2017, from <https://www.brookings.edu/research/what-we-know-about-career-and-technical-education-in-high-school/>
- Job, V., Walton, G. M., Bernecker, K., Dweck, C. S., & King, L. A. (2015). Implicit Theories About Willpower Predict Self-Regulation and Grades in Everyday Life. *Journal of Personality and Social Psychology, 108*(4), 637-647. doi:10.1037/pspp0000014
- Juhn, C., Murphy, K., & Pierce, B. (1993). Wage Inequality and the Rise in Returns to Skill. *Journal of Political Economy, 101*(3), 410-442.
- Key Questions: Vocational Education in the United States: The Early 1990s. (n.d.). Retrieved November 29, 2017, from <https://nces.ed.gov/pubs/web/95024-2.asp>
- Kincheloe, J. L. (1995). Chapter 1: Undermining the Dignity of Work and Education. 7, 1-21. Retrieved November 1, 2017, from <http://www.jstor.org/stable/42974997>
- Kincheloe, J. L. (1995). Chapter 2: Education for Work: What Happened to the Democratic Vision? 7, 23-43. Retrieved November 1, 2017, from <http://www.jstor.org/stable/42974998>

- Kincheloe, J. L. (1995). Chapter 3: Building a Vision: Worker Identity and Good Work. 7, 45-73. Retrieved November 1, 2017, from <http://www.jstor.org/stable/42974999>
- Kincheloe, J. L. (1995). Chapter 8: Smart Workers. 7, 179-228. Retrieved November 5, 2017, from <http://www.jstor.org/stable/42975004>
- Kreisman, D., & Stange, K. (2017). Vocational and Career Tech Education in American High Schools: The Value of Depth Over Breadth. *NBER Working Paper Series*, 23851. doi:10.3386/w23851
- Machado, J., & Mata, J. (2005). Counterfactual decomposition of changes in wage distributions using quantile regression. *Journal of Applied Econometrics*, 20(4), 445-465.
- Mayhew, Matthew J. et al. (2012). Exploring Innovative Entrepreneurship and Its Ties to Higher Educational Experiences *Res High Educ* 53:831–859.
- McCormick, M., O’Conner, E.E., Capella, E. & McClowry, S. (Accepted). Teacher-child relationships and academic achievement: A multi-level propensity score model approach. *Journal of School Psychology*.
- Melly, B. (2005). Decomposition of differences in distribution using quantile regression. *Labour Economics*, 12(4), 577-590.
- Nichols, Austin. (2008). Erratum and discussion of propensity-score reweighting. *The Stata Journal*, 8, 532-539.
- O’Conner, E.E., Dearing, E., & Collins, B.A. (2011). Teacher-child relationship and behavior problem trajectories in elementary school. *American Educational Research Journal*, 48(1), 120-162.
- Q. & A. With Anthony P. Carnevale [Interview by D. Firestone]. (2013, December 6). *The New York Times*.

- Qualey, C. C. (1962). The Transformation of the School: Progressivism in American Education, 1876-1957. (Book Review). In *Political Science Quarterly* (Vol. 77, pp. 472-473).  
doi:10.2307/2146345
- Poverty and Race: How Do Student's Backgrounds Affect Their School Performance? (2017, September). Retrieved December 29, 2018, from <https://ed100.org/lessons/poverty>
- Rubin, D. B. (1974). Estimating causal effects of treatments in randomized and nonrandomized studies. *Journal of Educational Psychology*, 66(5), 688-701.
- Samuel Johnson | biography - English author. (n.d.). Retrieved June 30, 2015, from <http://www.britannica.com/biography/Samuel-Johnson>
- Silver, R.B. Measelle, J.R., Armstrong, J.M., & Essex, M.J. (2005). Trajectories of classroom externalizing behavior: Contributions of child characteristics, family characteristics, and the teacher-child relationship during the school transition. *Journal of School Psychology*, 43(1), 39-60.
- Stern, D., Raby, M., & Dayton, C. (1992). *Career Academies: Partnerships for reconstructing American high schools*. San Francisco: Jossey-Bass.
- What is CTE. (2017). Retrieved October 30, 2017, from <https://www.acteonline.org/cte/#.WfejytN96Ho>
- Wigfield, A., & Eccles, J. S. (1992). The development of achievement task values: A theoretical analysis. *Developmental Review*, 12(3), 265-310. doi:10.1016/0273-2297(92)90011-p
- Woodward, C. M. (1901). The Change of Front in Education. *Science*, 14(352), 474-482.