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Professional Studies Programs: Impacts and Implications for College and Career Preparation

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PROFESSIONAL STUDIES PROGRAMS:

IMPACTS AND IMPLICATIONS FOR COLLEGE AND CAREER PREPARATION

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APPROVED

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Abstract

This review of literature examines the effects of professional studies programs and industry relationships on students' college and career preparation. High schools can no longer place students on an academic or vocational track, as 21st century students need to be prepared for both postsecondary education and entrance to the workforce. The opportunities for observation and experiential learning provided through such programs can offer students a variety of benefits, including immediate impacts to their high school career, clarification of career goals, postsecondary preparation, development of employability skills, and improved employment prospects. However, the extent to which these benefits are experienced varies by program. Programs that have been able to successfully maximize these benefits were found to have a strong framework in place, served appropriate students, obtained a strong commitment from all parties involved, included industry mentorship, and emphasized reflection and refinement. By implementing these various components, professional studies programs can improve a students' preparedness for college and career.

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CHAPTER I: INTRODUCTION

College and career readiness have traditionally been viewed as two distinct ideas throughout most of the 20th century, with students placed on a path to either prepare them for college or to enter the workforce directly. However, recent research on the topic has concluded that this conventional model of thinking has become obsolete. In 2006, a study conducted by ACT found substantial overlap between the skills necessary for success in college and success in career, and ultimately concluded that college readiness and career readiness were essentially one and the same (ACT, 2006). In a similar study (Conley & McGaughy, 2012), materials obtained from both college and career-oriented courses displayed a pattern of cross-disciplinary standards that were "substantially comparable" (p. 30) to both paths. As these researchers concluded, both paths require core academic knowledge; technological, problem-solving, and communication skills; initiative, and adaptability (Conley & McGaughy, 2012). However, while Conley and McGaughy agree that college and career readiness are far more similar than different, they caution that the two are not exactly the same. As they explain, college and career readiness may not always look the same. Instead, one's level of readiness should also consider the skills necessary for their particular field of interest and the specific requirements of the postsecondary path that the student will need to take (Conley, 2012).

While the degree of similarity between college and career readiness is still debated, the idea that they are far more similar than different is strongly agreed upon. Fortunately, this means that schools no longer have to choose between preparing students for a career or college and develop separate programs for various aspirations as they had in the past. Instead, because students who intend to pursue either college or a career path need many of the same

skills, all students should be challenged with both a rigorous academic education and introduced to specific skills that align with their individual career interests (Conley & McGaughy, 2012). Students who are prepared for both college and career not only have greater postsecondary options, but are also prepared to excel in the workplace and advance in their career. This makes sense, as students pursuing college are presumed to eventually pursue a career, and students pursuing a career may need additional education or training to qualify for advanced positions (ACTE, 2010). In fact, research from the Center for Education and Workforce at Georgetown University suggests that in the future, two-thirds of all jobs will require additional education or training beyond a high school diploma (Brand, Valent, & Browning, 2013).

Preparation for both college and career is essential for the 21st century. According to Conley's 18 years of research and study on the topic, a student who is college and career ready is one who 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" (Conley, 2012, p.1). As Conley further explains, a student's level of such readiness is determined by four key factors: their development of cognitive skills, content knowledge, skills and techniques for learning, and their understanding of and ability to act on the requirements necessary to make the transition out of high school. Unfortunately, a student's presumed college and career readiness is often instead heavily based on their grade point average in courses that may or may not be relevant to that students' actual goals, or on a single test score, such as the SAT or ACT (Conley, 2012). While academic performance is important, it alone is not enough. In fact, researchers found no statistical

significance between high school grades or their scores on standardized tests and postsecondary success (Pomykalski, Dion, & Brock, 2008). Unfortunately, this strong emphasis on scores over knowledge and skills appears to have created a false sense of preparedness among high school graduates.

Current Issues in College and Career Readiness

Statistics on actual college and career readiness of recent high school graduates is rather dismal. In the US alone, roughly 1 million students drop out of high school each year (Symonds, 2012). Of those that do graduate college, only half are actually prepared for success. In a study that examined over 23,000 transcripts of 2013 high school graduates from across the United States, 47% of students did not complete either a core set of rigorous academic courses or multiple courses in a particular career field (Bottoms & Sundell, 2016). Only 8% of students in this study completed both, and were effectively prepared for both college and career.

According to the same study, despite only 39% of graduates actually completing a college-preparatory curriculum, college was still the most popular destination for these graduates. In fact, over 61% of the students who were found to be unprepared for either college or career still planned to attend a four-year college. Unfortunately, many of these students will end up needing to take additional remedial courses. However, less than 10% of students who enroll in more than one remedial college course are able to complete their certification or degree program (Bottoms & Sundell, 2016). It is not surprising that even 10 years after high school graduation, only 30% of Americans have actually completed their bachelor's degree (Symonds, 2012). This cultural tradition of attending a four year college after high school is arguably steering many students onto a path where they will struggle to be

successful. Ironically, at the same time that so many students are struggling in college, the United States economy is also struggling to fill over 30 million skilled jobs with a median pay of $55,000 or higher that do not require a bachelor's degree (U.S. Department of Education, 2019).

In addition, the majority of young adults, whether they attended college or not, are unprepared to transition into the workforce. In a recent study, over 400 employers from various industries were asked to rate their recent-graduate hires on 17 different skills essential to career success (Hart Research Associates, 2015). Scores were overwhelmingly poor, with a tie for the best score of only 37% employers agreeing that their recent hires were well prepared to work with others in teams, and that they were up to date with current technology. Unfortunately, young adults who are unprepared to work as professionals may find themselves underemployed relative to their qualifications. Over the past few decades, low wage jobs that used to be available for individuals without work experience or postsecondary education have increasingly been filled by more experienced and educated applicants (Bottoms & Sundell, 2016). Ultimately, for those entering adulthood inadequately prepared for a career, "the American Dream may just be an illusion. The quality of their lives will be lower, the costs they impose on society will be higher, and many of their potential contributions to society will go unrealized. This is a troubling prospect for any society and almost certainly a recipe for national decline" (Symonds, Schwartz, & Ferguson, 2011, p.38). Addressing college and career preparation should not only be a priority for the education system, but for all Americans.

Career and Technical Education

One potential solution to addressing the lack of college and career preparation has been proposed through the use of career and technical education in high schools across the country. Originally referred to as vocational education (Kazis, 2005) and primarily focused on preparing students for home-making and industrial occupations (ACTE, 2019), career and technical education has recently expanded to encompass a variety of occupational fields (Gentry, Peters, & Mann, 2007). The evolution of career and technical education is hardly an overnight change, and rather has been over a century in the making.

In the late 1800's, the common perception of the current public school system believed that it was irrelevant to American life (ACTE, 2020). As a result, The National Society for the Promotion of Industrial Education was founded in 1906 with the goal of promoting vocational education in the nation's schools. Eventually, the Smith-Hughes Act of 1918 was passed, providing federal funding for vocational education in the public school system. Students were subsequently placed on either an academic, college-bound path or a skills-based, vocational path (Aliaga, Kotamraju, & Stone, 2014). Under this approach, students who were placed on the vocational path only spent 25% of their time at school in basic academic subjects, the rest related to learning a trade. Subsequently, students who struggled academically were also placed on this track, creating a perception of vocational education as inferior to academic education for nearly a century.

Over the course of the next several decades, vocational education continued to grow. With the presence of World War II, the demand for technical skills became especially high. Funding continued to rise, and as did the scope of industries represented increased. In addition

to industrial trades, students could also study other fields, such as agriculture, business, and nursing. In addition, The Vocational Education Act and its subsequent amendments were passed during the 1960's and 1970's, providing increased opportunities and funding specifically for female, disabled, and academically or economically disadvantaged students (ACTE, 2019).

However, by the 1980's, attitudes toward education, and vocational education in particular, had begun to change. In 1983, The National Commission on Excellence in Education released a report entitled *A Nation at Risk*, which illustrated a grim picture of high schools and their ability to prepare graduates for competitive jobs and a high standard of living (Bishop & Mane, 2004). Not only did students demonstrate a poor performance on educational achievement tests, but employers also expressed concerns about the lack of skills among young adults in the workforce and America's competitiveness in the global economy (Pearl, 2016). As a result, many states increased their standards for graduation and required students to take specific credits, primarily concentrated in traditional academic subjects (Aliaga, Kotamraju, & Stone, 2014). Around the same time, research by Stern et al., (1986) found that students who had participated in a series of vocational education courses had a 3% greater unemployment rate than their peers on an academic track. The recent increase in academic graduation requirements and poor outcomes among vocational students created a crisis for the field, further stigmatizing it as inferior to academic studies (Castellano et al., 2017). In 1988, a third publication was released by William T. Grant Foundation, titled *The Forgotten Half: Pathways to Success for America's Youth and Young Families* (Pearl, 2016, p.26). Based on a two year study, this book challenged the recent emphasis on college-preparatory academics, stating that less than half of American students actually went to a four year college, and of those that did, a

third of the students did not complete their degree. This book criticized the educational system for prioritizing an academic path that many students would not take and demanded more equitable increased attention on preparing students for additional paths.

By the 1980's, it had become clear that "the traditional dichotomous classification of students as academic of CTE is no longer useful or responsive to the reality of students' high school experiences in the 21st century" (Aliaga, Kotamraju, & Stone, 2014, p.129). Instead, all students need to meet various academic course requirements for graduation regardless of their plans to pursue either a college or career trajectory. In 1984, The Carl D. Perkins Act passed to address the various concerns that had arisen, and began to steer vocational education in a new direction. The term *vocational education* was retired and replaced with the term *career and technical education*, in part to highlight the increased emphasis on academic integration and college preparatory curriculum now in these courses. Additional reauthorizations of this act have presented increased accountability measures, alignments with postsecondary education and industry partners, and the development of career-centered programs of study (ACTE, 2019).

The latest reauthorization of the Perkins Act, The Strengthening Career and Technical Education for the 21st Century Act, occurred in 2018 and is expected to be fully implemented by the 2020-2021 school year. Commonly referred to as Perkins V, this act was largely passed in response to a "critical critical workforce challenge" (n.d.) that had begun to develop between the specific job openings in the workforce and the number qualified applicants to fill them (U.S. Department of Education, 2019). This act provided additional funding for CTE programs, recognizing their importance in preparing students for a variety of roles and occupations

demanded by the country's economy. According to the U.S. Department of Education, "CTE provides an important avenue for young adults to gain these skills beginning in school… [and] to connect with and lead to postsecondary programs of study or additional training after high school" (2019).

Experiential Learning

Today's CTE programs are heavily based on the concept of experiential learning (Symonds, Schwartz, & Ferguson, 2011). This strategy is based on the theory that "learning is the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p.38). As this theory explains, truly effective learning is a four stage process, beginning with a concrete experience, reflection, creation of new ideas or modification of old ideas, and application of the new ideas. Research has supported this idea, concluding that adolescents learn better when material is presented in context (Castellano, et. al, 2017). Other research has expanded on this idea of context, suggesting that the traditional classroom setting may not always be the ideal learning environment. Instead, students learn better in (Kazis, 2005) and respond more favorably to authentic learning experiences, where they can experience content in real-world situations and environments (Nicaise, Gibney, & Crane, 2000). This is particularly important to postsecondary preparation, as other studies have found that struggling students often commented on an inability to see a connection between what they are learning in school and how it translated into the workforce (Symond, Schwartz, Ferguson, 2011).

Issues Faced by Career and Technical Education

Despite the many recent improvements and utilization of experiential learning, there are still significant challenges faced by career and technical education. Today's CTE programs

face prejudices created by lower quality programs from the past, are challenged to find quality instructors and stay current with industry trends, and compete with rigorous academic course requirements necessary for graduation.

Reputation. Unfortunately, the lower quality programs of the past have created negative stigma for career and technical education (Symonds, Schwartz, & Ferguson, 2011). Despite the research of the similarity between career and college education and the need to be prepared for both, there is still a perception among students that CTE is not for the college bound (Gaunt & Palmer, 2005). In addition, many parents, who are more likely familiar with the older model of CTE, are often unsupportive of their child's interest in pursuing a CTE course or field any school counselors are not as familiar with CTE courses and their connection (Brand, Valent, & Browning, 2013). Similarly, many school counselors either lack the time (Symonds, Schwartz, & Ferguson, 2011) or understanding of current employment needs to appropriately direct students to opportunities available through CTE (Brand, Valent, & Browning, 2013). This can create a vicious cycle, as these negative or neutral perceptions make it increasingly difficult for programs to receive adequate support and funding, creating a self-fulfilling prophecy with low quality programs with outdated resources and equipment (Symonds, Schwartz, & Ferguson, 2011).

Quality of programs. Many CTE programs are in fact outdated, either no longer aligned with current industry standards and equipment (Bottoms & Sundell, 2016) or the current needs and expectations of the workforce and postsecondary institutions (Symonds, Schwartz, & Ferguson, 2011). Even for those programs that provide more current resources, it can be a struggle to find quality instructors to not only teach the various CTE classes, but ultimately grow

the program (Brand, Valent, & Browning, 2013). CTE teachers must not only have education certifications, but also be trained in a particular industry or technical concentration. In some states, this may mean obtaining additional certifications. In addition, with the increased emphasis on integration with rigorous academics, CTE teachers must also be comfortable working with additional academic subjects at a high level. Unfortunately, these various requirements make it difficult to find candidates to fill these positions. For anyone potentially interested in doing so, they face an additional hurdle, as many colleges with educational programs do not offer CTE concentrations.

Scheduling conflicts. Various studies and publications released during the 1980's exposed many shortcomings among America's high school graduates, causing a shift in the current educational system. As graduation requirements for traditional academic courses increased over the past decades, scheduling conflicts may leave students with little time for CTE courses or other electives (Aliaga, Kotamraju, & Stone, 2014). Completion of a full track in CTE has become increasingly difficult, and as a result, many programs and courses have disappeared altogether (Kazis, 2005).

Purpose and Guiding Question

With the crisis in college and career readiness among today's youth and the realization of CTE's potential in postsecondary preparation, these challenges must be overcome. While the backing from recent legislation is a start, significant change is going to require "true systemic reform" (Symonds, 2012, p.38). Many schools have turned to their communities for support, putting forth extensive efforts to utilize the expertise of various organizations and professionals in the workforce. With the potential for detrimental consequences to the nation

if improvement does not occur, the purpose of this literature review is to evaluate the effectiveness of such an undertaking. To investigate this purpose, the following guiding questions will be researched:

1. How do experiences with industry professionals impact college and career preparation of high school students?
2. What are the implications for the design and enhancement of professional studies programs?

By understanding the answers to these questions, schools will have the knowledge to utilize their resources more efficiently and ultimately re-route the trajectory of the nation's youth.

Definition of Terms

The following terms, as defined below, will be referenced in answering the guiding questions:

At-risk - "[students] with GPAs and test scores well below the median" (Kazis, 2005, p.12).

Authentic learning - "the idea that learning revolves around authentic tasks - real-world problems and simulations that are closely related to the field under study… help[ing] students to become aware of the relevancy and meaningfulness of what they are learning" (Nicaise, Gibney, & Crane, 2000, p.80).

College and career readiness - the ability to "qualify for and succeed in entry-level, credit-bearing college courses leading to a baccalaureate or certificate, or career pathway-oriented training program without the need for remedial or developmental coursework" (Conley, 2012, p.1)

Career and Technical Education (CTE) - "an educational strategy for providing young people with the academic, technical, and employability skills and knowledge necessary to

pursue postsecondary training or higher education and enter a career field prepared for ongoing learning" (Brand, Valent, & Browning, 2013, p. 2).

Employability skills - "the skills most critical to workplace success in the 21st-century economy… includ[ing] but not limited to critical thinking, adaptability, problem solving, collaboration and teamwork, creativity, responsibility, professionalism, ethics, and technology use" (ACTE, 2010, p. 1-2).

Experiential Learning - "a learning process initiated by a concrete experience" (Peterson & Kolb, 2018, p.231).

Industry - "fields such as finance and business; health science and medical technology; building and environmental design; and arts, media, and entertainment" (Hoachlander, 2008, p.23).

Mentorship - "learning partnership between a more experienced and less experienced individual; a process involving emotional and instrumental functions" (Coles, 2011, p.1)

Postsecondary - "any formal setting in which an individual pursues additional instruction beyond high school, including colleges, licensure programs, apprenticeships, or the military" (Conley, 2012, p. 1).

Workplace Exposure - "the opportunity to work with local employers, learning directly from those who have already established their careers… [which] allows students to learn employability skills, see how academic content is applied in real-world settings, and collaborate with adults on authentic work projects" (Brand, Valent, & Browning, 2013, p.9).

Vocational Education - the term used until 2006 to describe agricultural, homemaking, trade, and industrial education (ACTE, 2020).

Chapter Summary

Preparing students for life after high school is arguably the most important role of their high school education. Unfortunately, splitting students into either a college or career trajectory is not only antiquated, but risks depriving these students of the complete education necessary for success in adulthood. As research has indicated, a large number of high school graduates are not equipped with the skills and knowledge necessary to pursue postsecondary education, whether through college attendance or a direct career path. While legislatures and schools have turned to career and technical education to address this issue, there are still challenges to overcome before these programs can operate at their full potential. It is essential for schools to understand how to best address these current issues so they can begin implementing the most effective strategies for improvement.

CHAPTER II: LITERATURE REVIEW

This review of literature explores how students' interactions with industry professionals, most often through authentic experiential learning and mentoring relationships, impacts their postsecondary preparation. In addition, this review of literature will address ways in which schools can maximize any of the benefits observed through such interactions as they continue to develop and refine their professional studies programs.

Explanation of Process and Search Parameters

Several databases were utilized to obtain relevant peer-reviewed studies and professional publications, including Google Scholar, EBSCOhost, Academic Search Premier, and CLICsearch. Google was also used to find official websites and additional information on various existing programs. Search terms used across these databases included many phrases combining terms such as *industry partnerships, professional relationships, mentors, college preparation, career preparation, CTE programs, experiential learning, career academies, pathways, CAPS, POS, career and technical education*, and *vocational education*. Because of significant changes in CTE over the past several decades, research findings and professional publications of more recent publications and frequently cited older publications were emphasized. In addition, many studies focused on either college students or paid work experiences, and with the exception of use in building a background knowledge base or a hypothesis, these studies were not included in the review of literature.

This chapter is organized as follows. First, literature on the connection between industry experience and postsecondary preparation is reviewed. Then, the chapter concludes with literature on implications for maximizing the benefits of a professional studies program.

Part I. Industry Experience and Postsecondary Preparation

This section will begin with an overview of various professional studies programs currently in existence across the United States. The discussion will then address the effects of high school students' experiences in programs that integrate industry relationships and professional settings and their levels of preparedness for life after graduation. These effects can begin to be observed while the students are still in high school, as they define their career goals, consider postsecondary options, begin to transition into employment, and improve their employment prospects within the professional realm.

Program Overviews

In effort to maximize industry exposure and professional relationships, many schools have turned their focus from single events to the development of professional studies programs. According to the Association for Career and Technical Education (2009), these programs "engage a cohort group of students and staff in smaller learning communities built on the foundation of rigorous college-prep academics and career and technical education. These programs integrate relevant career themes across the curriculum… [and] engage business industry leaders in the education process" (p. 1). Commonly referred to as CAPS (Career and Professional Studies), HSTW (High Schools That Work), POS (Programs of Study), Career Academies, Pathways, and Linked Learning, these programs all share a common goal of integrating academics and industry influence to help students develop career-specific knowledge and skills in a particular field of interest. Because there are many similarities among these types of programs, many are referred to by numerous and overlapping titles. However, there are slight differences in the technical definition of each:

High Schools That Work is a program in many southern US states that combines academics, career-specific applications of content, and professional experiences. These programs are sponsored by the Southern Regional Education Board (SERB) and the National Research Center for Career and Technical Education (NRCCTE), which it created specifically to study career-focused programs (Southern Regional Education Board, 2020; Young, et al., 2011).

Career Academies consist of a cohort of students who take various college-preparatory courses together that are centered around a particular career theme. They share many of the same attributes of a POS but have a stronger emphasis on partnerships with employers and professionals in the community. Students participating in a career academy typically spend half of their day at their career academy course, frequently located off their high school campus (Castellano, et al. 2017; Stern, Dayton, & Raby, 2010). One popular example of a career academy is Project Lead The Way, which focuses on introducing students to engineering careers (Symonds, Schwartz, & Ferguson, 2011).

Linked Learning programs, popular in the western part of the US, are similar to career academies but have a stronger focus on work-based learning (Stam, 2011; Castellano, et al., 2017), equity (Linked Learning Alliance, 2020), and student support services, such as counseling (Symonds, Schwartz, & Ferguson, 2011).

Pathways Programs combine a college-preparatory, academic core curriculum with a sequence of courses along a particular pathway. In these programs, the degree of industry engagement typically increases with each course in the sequence (Bottoms & Sundell, 2016).

National Academy Foundation is a branch of career academies focused on finance, hospitality and tourism, engineering, or information technology. Unlike yet often confused with other programs, this program is centered around a paid capstone internship (Symonds, Schwartz, & Ferguson, 2011), and for that reason is not included in this review of literature.

CAPS (Center for Advanced Professional Studies) is a national program where students typically spend half of their day fully immersed in a professional field, working alongside current employees and utilizing industry technology (CAPS Network, 2020).

POS (Programs of Study) referees to federally funded programs aligned with post-secondary standards and that lead to industry-recognized credit, certification, or degrees (Castellano et al., 2017).

Despite their slight differences, all aforementioned programs share one essential component: an authentic connection to industry. This connection is so important that according to Donna Deeds, founder of numerous CAPS programs, for a program to even be considered high quality, it must be integrated with and driven by industry (Abamu, 2017). This review of literature will address the larger umbrella model of all programs that include authentic industry experiences and professional relationships, referring to all programs collectively with terms such as pathways, academies, or programs.

Immediate Impacts

The immediate impacts of industry experience on high school students can lead to increased opportunities post-graduation. Common effects are seen in participating students'

increased levels of interest and engagement at school, improvements in confidence and behavior, academic achievement, and graduation rate.

Interest and engagement. Studies have shown that interest and engagement among students is extremely important. In one study of math and science students, interest and engagement in their high school math and science classes respectively was a more accurate predictor of later postsecondary enrollment and achievement than their GPA or stated career projections (Schernoff & Hoogstra, 2001). In fact, many students with higher GPAs and stated intentions to pursue a career in STEM but with low measures of enjoyment and engagement in their current math and science classes were no longer interested in pursuing that field several years later. This finding led the researchers to believe that instead of focusing on measures of performance, "teachers should look for ways to create learning environments that offer opportunities for authentic engagement" (p. 86).

Other research comes to a similar conclusion, observing that when these types of learning environments are present, interest and motivation increases. Gentry, Peters, and Mann (2007) observed and interviewed 54 students participating in an offsite CTE program as part of their school day in effort to compare that experience with their traditional high school experience. These students had 20 options of industry-integrated programs to choose from, in fields such as business, health care, education, information technology, and industrial manufacturing. The researchers observed that when students had the opportunity to utilize the skills they were learning with actual patrons - such as their own automotive shop, child care center, or IT services organization - they displayed increased motivation and a desire to perform. Because of their high levels of performance and engagement, 16 students were

identified as gifted by their program instructor, despite only 2 of those already having been identified by their traditional high school teachers. The potential and interest that was displayed in these students may not have been realized had they been confined to traditional academics. In addition, the overall narrative from student interviews and classroom observations demonstrated other positive patterns among students in their CTE programs, including an increased sense of autonomy, stronger relationships with their teachers, interactions with like-minded peers, and authentic hands-on learning experiences.

Experiential industry programs, especially with a professional mentoring component, can also be a great way to challenge gifted students who may otherwise be bored in the classroom (Bisland, 2001). Bisland, known for her research on gifted students, explained that professional mentoring can also create a more comfortable environment for gifted students, whose academic abilities and maturity levels may be more closely aligned with adults than their peers.

Confidence and behavior. Similar effects were observed among high school students from Alberta, Canada, who participated in a CTE program with direct industry interaction. In a longitudinal case study of seven program participants from their sophomore year through their second year post-graduation, many of these students initially demonstrated issues with behavior and low levels of self-esteem. However, as their time spent in the CTE program increased, so did their reported and observed levels of confidence and maturity. In fact, the effects on students after just one year in the program were so great that the school's program was named one of the top CTE programs in Alberta (Beggs, 1995). In a similar study, it was also observed that as students were engaged in hands-on learning with real-world experiences,

their disciplinary reports decreased, while attendance and interest in school increased (Stam, 2011).

Academic performance. While research regarding CTE program participation and a positive correlation with high school academic performance is somewhat mixed, no research could be found to support a statistically significant negative relationship between the two. Castellano, et al. (2012) observed 1,957 9th and 10th grade students from a large school district in the western part of the United States who were participating in an industry-linked CTE program of their choosing. They compared the academic performance of these students with that of 509 of their peers who had wanted to participate in the program, but due to limited space availability and a lottery selection system, could not. They also observed 376 CTE program participants from a large school district in the eastern portion of the United States. Because there was space for all students who wanted to participate, a random sample of 752 students from the same district who matched the demographics and academic achievements of the program participants was used for comparison in the study.

While there was no statistically significant difference in GPA between the two groups in the western district, the higher scores obtained by program participants on statewide reading, math, and science tests was statistically significant. Program participants were also 6.4% more likely to be on track for an on-time graduation. In the eastern district, program participants had statistically significant higher GPAs by 0.11 points and were 8.4% more likely to be on track for an on-time graduation. However, there was no significant difference in state test scores among the two eastern district groups. In a follow up study on students from the western school district, while there was still no effect on GPA, the actual on-time graduation rate of

program participants was 11.31% higher than that of non-participants (Castellano, et al., 2017). In addition, similar research from Bishop and Mane (2004) found no reduction in test scores in students with a heavy emphasis on CTE courses.

Aliaga et. al (2014) also analyzed academic achievement among CTE students and non-CTE students. Utilizing data obtained from the Educational Longitudinal Study of 2002 and its follow-up observations, the researchers were able to examine the transcripts of close to 2.7 million graduates from the class of 2004. They observed slight decreases in GPA among students taking a single CTE course or multiple, non-related CTE courses. However, students who completed a series of at least three courses in the same occupational concentration were the only group of students to show a statistically significant increase in overall GPA when compared to the rest of the students. They also observed that 12.2% of students who enrolled in at least one higher level math course (calculus or higher) and 14.1% of students who enrolled in at least one higher level AP science course had also completed a series of 3 or more CTE courses focused on one occupational area. While the researchers concluded that these findings "contradict claims regarding the incompatibility of taking CTE and advanced math and science courses, suggesting the benefits of a high-intensity CTE credit-taking experience for all students" (p.149) he also acknowledges that course offerings and requirements may vary among schools and may influence a student's decision to enroll or not to enroll in a particular CTE program.

Similar effects were also seen among students enrolled in other CTE programs. Gentry, Peters, and Mann reference a similar study by Stone (2004) that found that students enrolled in CTE programs took higher levels of math courses than students who were not in such programs

(2007). In another example, Hoachlander found that students enrolled in a pathways program often passed California's high school exit exam at much higher rates than non-participants, and were 13% more likely to meet the course requirements for admission to the University of California and California State school systems (2008).

Graduation rate. Lastly, participation in CTE programs often correlates with increased rates of graduation (Bishop & Mane, 2004). Katherine Hughes, assistant director at the Institute on Education and the Economy and the Community College Research Center, mentions the numerous comments she has received from teachers and principals who credit professional studies programs for the increased graduation rates seen among the most at-risk students (Kazis, 2005). Furthermore, the conclusions she made after her extensive review of research into career exploration and CTE programs agreed with these claims. Similarly, in a study by Kemple and Snipes (2000), students identified as at-risk who participated in career academies had better attendance and graduation rates than at-risk students who did not. Despite beginning their programs already behind schedule for graduation, "the academies not only prevented students from dropping out but also helped a number of students close their initial gap in credits and meet graduation requirements" (p.89). A similar longitudinal, international study came to a similar conclusion, observing that students who spent at least one-sixth of their time in high school in occupation-specific had higher attendance and graduation rates than those who did not (Bishop & Mane, 2004). As previously discussed, Beggs' (1995) study of program participants in Alberta, Canada, and additional observations by Brad Stam of ConnectEd, also support these findings.

Though many of these effects are observed in high school students' immediate performance, it can be argued that increased interest and engagement in a field of study, improved behavior and self-esteem, higher GPAs, and increased likelihood of graduation open more doors of possibilities for students after graduation. Even if such was not always the case, Kazis (2005) remarks that there does not seem to be any significant negative incomes on participants' academic or educational progress as a result of participation in such a program.

Clarify Career Goals

In addition, participation in a CTE program with direct ties to industry professionals can help students clarify their career goals and postsecondary aspirations. These interactions with professionals in the field are especially important because the lessons they teach about various industries are difficult to replicate in the traditional classroom. As they work alongside professionals, students are provided with opportunities to further clarify their career goals, such as authentic industry experiences and professional perspectives and guidance.

Authentic experiences. Participation in a CTE program with direct connections to industry professionals and workplaces can provide students with valuable information on a particular career path. In fact, according to Donna Deeds, founder of numerous CAPS programs across Missouri, programs not aligned to realities experienced in industry are simply inadequate (Abamu, 2017) and feedback from students tends to agree. In a study by Gentry, Peters and Mann (2007), 49 out of 51 students who participated in an off-site, CTE program spoke overwhelmingly in favor of their CTE program when compared to their traditional high school classes. One of the top reasons for this preference was their ability to engage in authentic hands-on learning and knowing that they were learning from teachers with actual

industry knowledge and experience. As a parent of one student participating in an early program observed, “conversations with and casual comments by the [industry] hosts sometimes do more to fix concepts and dispel misconceptions than theoretical, structured, classroom activity and dialogue” (Milam & Schwartz, 1992, p.13). In addition, this type of learning environment is not only heavily utilized, but often required, for various professional degrees or certifications, such as careers in the medical field (Symonds, Schwartz, Ferguson, 2011).

Students in similar programs across Philadelphia also appreciated the authenticity of their learning as they participated in job shadowing, professional mentorships, internships, and eventual work experiences (Pawlowski, 2010). While internships and work experience may be more familiar, and thus preferred, Harding (2018) argued that authentic experiences through job shadowing or developing relationships with professionals provides many of the same benefits as internships or work experience. In addition, job shadowing and mentorship programs provide opportunities for students, such as high school students, who otherwise may not be able to make a larger commitment to time, transportation, or financial constraints (Harding, 2018).

While introducing high school students to a career path and helping them find a sense of direction for life after high school is great, it is important to keep in mind that the focus of high school should be career exploration. According to Conley and McGaughy (2012), high school students "need to be exploring more college and career opportunities earlier on so they can understand what content knowledge, learning skills, and cognitive strategies are necessary to succeed in a particular career pathway of college major" (p.31). Mentorships and job

shadowing with professionals provides a safe space for students to explore college and career options (Coles, 2011) especially among students with multiple interests and talents (Bisland, 2001). One example of this can be seen in Hillsborough County, Florida, which offers two career-oriented programs for high school students, the Executive Internship Program and the Laboratory Experience Program. Both of these programs are so heavily focused on industry experience as a method for career exploration that students spend 80% of their time in the field with their mentor and only 20% of their time in a classroom seminar (Bisland, 2001).

Professional perspectives. Along with providing an example of an authentic career environment, industry professionals can also provide encouragement and career guidance from their personal perspective. Unlike other advanced nations, providing career guidance is often a low priority for US school counselors. With the national student-to-counselor ratios as high as 500:1 (Symonds, Schwartz, & Ferguson, 2011) and immediate academic, behavioral, and psychological concerns, there are few resources left for career counseling (Brand, Valent, & Browning, 2013). While hiring more counselors may not be realistic for many schools (Brand, Valent, & Browning, 2013; Symonds, 2012) fortunately, there may be a better and much more affordable alternative. Industry-specific mentors can not only fill this void in career guidance, but can arguably offer better information than a school counselor and prepare students for common pitfalls because of their actual, first-hand experience in the field. It can also provide students with a more realistic and broader view of the world (Coles, 2011). As one pathway student explains, “all learning cannot come from a book. There are things that I have learned at my mentorship that you would never learn in a classroom… It has helped me become more decisive and has given me valuable insight in[to] the field” (Milam & Schwartz, 1992, p.12). In

addition to being a good resource for students as they plan for life after high school, professionals can also serve as role models, demonstrating the standards and expectations necessary for success in that particular career and as proof that completing whatever obstacles may be encountered on that path are in fact possible to overcome (Conley & McGaughy, 2012). In addition, students are also highly receptive to professional perspectives. As one student participant from an industry driven CTE program explains, “it makes a difference knowing that he’s done this type of work [and] likes it” (Gentry, Peters, & Mann, 2007, p. 338).

While confirming students’ interests is valuable, realizing that a particular career path is not what they envisioned could be even more significant for students. The Mentorship Program, developed back in the 1980’s, was an early success story of a program that integrated industry and the classroom for high school students (Milam & Schwartz, 1992). In this yearlong program, students spent time conversing with and job shadowing their mentor, interviewing their mentor’s co-workers, and completing a special interest project of their choosing, guided by regular feedback from their mentor. Through the variety of experiences in this program, some students discovered that the particular career they thought they were interested in pursuing was not a good fit after all. Despite those realizations, they still however highly of their experience and found value in learning what path not to pursue.

College and career preparation, including an individualized plan for success, should be a primary goal for the U.S. education system (Symonds, Schwartz, & Ferguson, 2011). While these plans can be a work in progress and should change alongside students’ interests (Young et al., 2011), they are essential in helping students transition out of high school as “young adults simply can’t chart a course if they don’t have a goal” (Symonds, Schwartz, & Ferguson,

2011, p.28). However, regardless of what path they choose, Hoachlancer (2008) observed that students in industry-linked programs are more likely to continue with some sort of postsecondary education. The sense of clarity that can be offered through authentic industry experiences and professional perspectives can provide invaluable assistance to students as they look to create a plan for their future.

Postsecondary Preparation

Regardless of the path students choose to pursue, their direct experience with industry can help prepare them for postsecondary success. This claim can be supported by a 2004 report from The National Assessment of Vocational Education, which was presented to Congress analyzing the impacts from the latest Perkins legislation. In this report, the researchers concluded - and further addressed as one of their key findings - that "secondary students who participate in vocational programs have increased their academic course taking and achievement, making them better prepared for both college and career than were their peers in the past. In fact, students who take both a strong academic curriculum and a vocational program of study… many have better outcomes than those who pursue one of the other" (Silverberg et al., 2004, p. xvii). Students are prepared for a variety of postsecondary options through career pathways programs as these programs expand the high school curriculum, challenge students with higher standards, increase academic aspirations, and serve as a direct launching pad into actual postsecondary education or career programs.

Curriculum expansion. Despite the best intentions of teachers, many may not have the resources to provide a high level, differentiated curriculum to every student. Even if such was the case, the teacher's level of knowledge in a particular field may be limited by their own

education and experiences. As Castellano et al., explains, “it is uncommon for high school teachers to know enough about the subject matter they teach to act as practitioners… especially demonstrating the use of tools” (2017). Partnering with industry could offer a solution to these limitations, providing additional resources and learning opportunities to address the various interests and talents of all students. By doing so, students who are otherwise not interested in or challenged by the current curriculum can receive a more relevant and individualized education (Bisland, 2001; Dubin, 2014). Students can also be confident that what they are learning is both important to and current with industry standards and practices (Milam & Schwartz, 1992). In addition, the supplemental curriculum can provide students who typically struggle in the traditional high school setting with an alternative opportunity to be successful (Hoachlander, 2008).

Benefits of curriculum expansion can also be seen in research. In one study, Carroll (2018) completed a series of interviews with 10 students who had participated in an industry-related experiential learning program while in high school. All 10 students perceived themselves as better prepared for college or career than if they had just taken regular high school classes, crediting the authentic and in-depth exposure to the content they experienced as part of their program.

Other programs have been able to take curriculum expansion to the extreme, utilizing industry partnerships to bring content to high schoolers that would otherwise be inaccessible. In fact, one program in New York City developed such strong connections to the local aviation industry that they received their own 727 aircraft, donated specifically for students in the aerospace career academy program (ACTE, 2010). This particular opportunity to explore an

industry in such detail would be extremely difficult to replicate if students were confined to just traditional classrooms and teachers.

Higher standards. In addition to expanding curriculum and allowing students to pursue their specific interests, industry exposure can also hold students to higher standards for both learning outcomes and behavior (Stam, 2011). Students who are not challenged by their regular coursework can be challenged to apply what they have learned to more complex scenarios (Dubin, 2014). In addition, students can also be evaluated beyond the high school level and instead, based on industry standards. As a core component of the pathways model, students work on projects guided by and assessed by professionals from the field (Hoachlander, 2008). Other students have also challenged themselves further, participating in various competitions in fields such as entrepreneurship (Wilbanks, 2013), social science (Zaveri, Pedisich, & Greene, 2000), automotive technology (Peckham, 2012) under the guidance of an industry mentor.

In addition to high standards for academics, students in some programs are also held to higher standards of behavior that mirror what they can expect in a professional workplace (Eaton, 2019). These students are continuously evaluated on their level of professionalism and awarded Professionalism Points for demonstrating workplace readiness. Even with the bars for success being set higher, students are still expected to demonstrate excellence in their programs. In the High Schools That Work model, high expectations for all students, regardless of their desire to pursue college or not, is listed as the number one *Key Practice* of the program (Southern Regional Education Board, 2020).

Academic aspiration. The same culture of high expectations can also be observed among students' other courses. Students who participate in pathways programs are more often enrolled in other challenging academic courses and are more likely to meet academic admissions requirements (Hoachlancer, 2008). Castellano, et al. (2012) observed this to be true in one of the school district's they studied, where students who completed a CTE program also completed more AP courses than their peers. In addition, as previously discussed, students enrolled in a series of industry-related courses were more likely to also be enrolled in an advanced math or science course (Aliaga, Kotamraju, & Stone, 2014). This is not surprising, as industry mentors are often a source of encouragement for students and provide them with advice on college preparatory curriculum and the admissions process (Coles, 2011). The connection between enrollment in other advanced courses and industry programs is worth noting, as enrollment in higher level courses was found to be the most influential factor in predicting student placement in college or career after high school (Pearl, 2016).

Career acceleration. The only other significant variable in Pearl's study was participation in a CTE program of study. Many students who participate in these programs continue to pursue those fields after high school (Stam, 2011; Symonds, Schwartz, & Ferguson, 2011). In one example, 80% of participants in an engineering pathway program intended to pursue a career in the field. Their chances of achieving that goal are high, as students who participate in engineering pathways or extracurriculars have higher retention rates in STEM programs (Symonds, Schwarz, & Ferguson, 2011). While this statistic is a strong accolade for the pathways experience, finding one's career path is not necessarily the goal in high school. Possibly more impressive, 96% of graduating seniors from a STEM-focused pathways program

in Toledo, Ohio decide to continue into postsecondary education (Dubin, 2014). Dubois, et al., (2002) also observed that students who had previously not shown any interest in attending college become more open to the idea if their mentors went to college. In addition to exposure to a career field and professional environment, students' confidence about this ability to be successful may also be affected. As one student commented about his pathways course, "it gets you ready for college. High school doesn't do that" (Gentry, Peters, & Mann, 2007, p. 391).

Students looking to pursue a career path directly out of college are also set up for success with the immersive, hands-on style of instruction common to pathways programs. Employers looking to hire place a higher value on a candidate's "ability to demonstrate and apply their knowledge than their specific program of study" (Hart Research Associates, 2015). Graduates from an industry program of study not only can speak of real-world application but could potentially have a portfolio of work to share as well. As designed, the skills students obtain through their pathways experience are highly valued among employers. According to one industry hiring manager, students who participated in an industry-related project would be more attractive to him and would significantly differentiate themselves from the candidate pool (Harding, 2018).

One of the primary goals of a school and industry partnership is preparing students for some form of postsecondary education. By expanding the options and depth of the current high school curriculum, challenging students to go beyond their perceived abilities, encouraging rigorous academic pursuit, and opening doors to career paths and fields of study, pathways students are more equipped to be successful in whatever path they choose.

Desirable Skills for Employment

Whether students are looking to pursue a career path shortly after high school or plan to attend college first, participation in an industry-based program can help them develop other skills to set themselves apart as they begin to look for a job. In addition to academic and technical skills, true career readiness requires various employability skills (ACTE, 2019). In a survey across leading employers in multiple industries, four traits appeared to be universally desired in employees: personal skills, people skills, workplace skills, and applied knowledge (Conley, 2012). These next sections will discuss observed effects of participation in an industry-related program study as they relate to these four desired characteristics of employees.

Applied knowledge. As recently discussed, one of employers' primary considerations when deciding whether to hire a candidate is their ability to apply knowledge (Hart Research Associates, 2015). While education and training are important, there is little if anything that can substitute for actual experience. Pathways graduates cover much of the same academic knowledge as students in a classroom setting might, but the way in which they are taught that information is what sets them apart (Stam, 2011). Students who participate in industry-linked programs have stronger resumes (Harding, 2018) than those who do not because instead of simply theoretical knowledge, these students "master[ed] academic learning outcomes through the power of real-world application… they learn[ed] by being presented with authentic problems and situations that are part of the modern workplace" (Stam, 2011).

Workplace skills. To succeed in the workplace, students must understand the differences between an academic and workplace environment. Research by Bailey et al. (2004) suggests that industry experiences can help students with this transition as they observe how

professionals define problems, balance multiple goals and objectives, make decisions with limited information, navigate social relations within the workplace (Kazis, 2005). In addition, the greater emphasis on project-based learning and increased use of relevant technology typical of pathways programs (Castellano et. al, 2012) is also more closely aligned with the professional realm than traditional high school classrooms. Not to mention, the ability to job shadow provides a great example for students of the patterns and norms in the field. In addition, Stam (2011) also noted an increase in problem-solving skills, critical thinking skills, and media and information literacy and interpretation skills among students in a California Linked Learning program.

Personal skills. Professionalism, work ethic, and mindset are examples of personal skills that can be developed through career pathways programs. As an example, students in one program were expected to dress professionally every day as if they were going to work, whether or not they were actually interacting with professionals that day (Castellano et al., 2012). Not only did this increase students' levels of comfort with this often new type of attire, it also provided opportunities for them to receive feedback on the appropriateness of their choices in a safe environment.

Students who interact with professionals, especially those further along in their career paths, will get a sense of the level of work that will later be expected of them if they hope to advance in their career as well (Conley & McGaughy, 2012). Castellano (2015) observed the effects of this in a study of current employees who had participated in an experiential learning and mentorship program while in high school. As anticipated, these former industry program participants showed twice the engagement in their current jobs and were described as highly

sought-after employees in their field. Similarly, graduates from another program are also heavily recruited due to their higher levels of efficiency and their openness to learning new skills in the workplace (Dubin, 2014). In another study, when compared with students who did not participate in a pathways program, students who did showed decreased disciplinary issues and were observed to be more self-regulated learners at the end of their program (Stam, 2011).

Lastly, other programs specifically address mindsets that will be necessary for postsecondary success. In one Boston area health care program, despite the goal to prepare students for college and career, students understand that that is not the goal of their program (Eaton, 2019). Instead the goal is to "equip them with the habits of mind that will prepare them to graduate college with the skills needed for a STEM-related career of their choosing" (p.4). In addition, this particular program uses opportunities to job shadow and collaborate with professionals to help students visualize themselves in those roles and working those settings.

People skills. The ability to communicate, work as part of a team, and maintain healthy personal relationships is also crucial to employers. Based on partnerships with multiple teachers and industry professionals, even the design of industry-linked programs offers students a model of what collaboration in the workplace is like (Dubin, 2014). Combining that with additional exposure to collaboration at professional workplaces, it is not surprising that many graduates of pathways programs demonstrate significant improvements in their own ability to collaborate (Stam, 2011) and to communicate in a professional setting (Dubin, 2014). Bailey et al., (2004) found similar results in their research, crediting industry observations and interactions with students' improved abilities to understand social norms (Kazis, 2005).

In another program, students developed their professional communication skills by writing cover letters, which they ultimately sent out to industry professionals they were hoping to recruit as their mentor. They also discussed communicating with professionals, as they were required to meet with their potential mentor before finalizing the match (Milam & Schwartz, 1992). In addition, because many of these students had not had significant exposure to upscale dining, they also practiced dining out for a lunch meeting, addressing topics such as table manners and appropriate body language. Reflecting on the overall program experience, a parent described this additional focus of teaching appropriate behavior around professionals as one of the most beneficial aspects of the program.

Other studies of undergraduate students also suggest additional benefits between an industry mentor and student relationship. Because the goal of industry academy programs is to prepare high school students for success in the postsecondary world, the experiences of college students with similar industry experiences is worth noting. In one mentoring program for aspiring entrepreneurs, Gimmon (2014) noted that students described an increased comfort in their ability to build cross-generational relationships as a result of their mentoring experiences. This is an essential skill for youth to develop, as they are often surrounded with and likely accustomed to only building relationships with their peers. In another study, teams of other aspiring entrepreneurs from the United Kingdom partnered with business professionals as part of a business plan competition. As a result, these students developed an increased confidence in a number of interpersonal skills, including their ability to interact with team members, their mentor, and external stakeholders (Bell & Bell, 2016).

By increasing their ability to apply knowledge and operate in a work environment, and by strengthening their intrapersonal and interpersonal skills, career academies can develop students into some of the most sought-after employees. As students develop these skills, it is not uncommon for them to find actual paths to employment.

Employment Prospects

Once considered a "dumping ground" for students destined to lower class trades (Aliaga, Kotamraju, & Stone, 2014, p.131), today's CTE programs can instead be a pathway to the middle class, as many programs are established to meet the needs of the educated workforce (Bottoms & Sundell, 2016). CTE programs that integrate relationships with current professionals can help students establish a professional network, ease the transition to the workforce or other postsecondary opportunities, and increase their earnings potential.

Industry network. Because one of the core components of a career pathways program is the partnership with local companies and professionals, students also receive a jump start on developing their professional network. Site visits to local businesses (Castellano, et al., 2012), mentorships and job shadowing (Milam & Schwartz, 1992), collaboration on projects (Brand, Valent, & Browning, 2013), and presenting work to company leadership (Hoachlander, 2008) can all serve as opportunities to meet and build relationships with current professionals in the field. This can be especially useful for students from low-income families and communities, as they may not have as great of an exposure to working professionals in their daily lives (Eaton, 2019). Fortunately, many students who build connections during their program continue to develop those relationships even after the program (Milam & Schwartz, 1992). One program in

Toledo, Ohio, also strives to make sure all graduates leave with a portfolio of work samples and letters of recommendation from their industry partners (Dubin, 2014).

Employment opportunities. Graduates of industry programs have been highly sought after (Castellano, et al., 2017; Dubin, 2014) and some students have found actual employment opportunities from their newly established network. One example can be seen among graduates from a Toledo, Ohio, program who were heavily recruited by local employers. The work that had been done by these students was so highly valued that many industry partners extended offers of employment, either pending completion of their postsecondary education or as a part-time job while in college (Dubin, 2014). Other students were pleasantly surprised to receive actual offers of employment while participating in what was supposed to be a mock interview with local professionals (Castellano, et al. 2012). Research into employment outcomes also supports this trend, suggesting that participation in pathways programs increases one's options for employment (Symond, Schwartz, & Ferguson, 2011). This is not surprising, considering additional research which suggested that employers highly valued real-world, project-based learning (Harding, 2018). Additionally, for students who chose to enter the workforce immediately, the specific skills they learned through CTE courses helped them compete for higher paying jobs that did not require a college degree (Bishop & Mane, 2004).

Increased earnings potential. Along with increased opportunities for employment, participation in career academy programs has also been associated with an increased earnings potential. By starting their career education while still in high school, students who choose to continue in their pathway are often ahead in their education. Consequently, these students will require less time to earn their credential and will be able to begin earning income sooner

(Symonds, Schwartz & Ferguson, 2011). In fact, Kemple and Willner (2008) found that eight years after high school graduation, young men who participated in an career academy program earned 17% more on average and had greater employment stability than students who did not participate in a program (Stern, Dayton, & Raby, 2010). Similar results were found in an international study, with alumni from professional studies programs earning an average of 8% more than their peers seven years after graduation (Bishop & Mane, 2004).

Preparing students for postsecondary education is essential. By simply completing an occupational certification or associate degree, students can expect to earn 24% more over the course of their lifetime than they otherwise would with just a high school diploma (Baum, Ma, & Payea, 2010). With a bachelor's degree, they can expect an extra 66% in earnings. However, there is substantial overlap between earnings potential for the two levels of education, and completion of a four-year degree does not necessarily equate to higher earnings. In fact, 27% of individuals with only a postsecondary license or certification actually earn more than the average bachelor's degree graduate (Symonds, Schwartz, & Ferguson, 2011) and graduate with little to no debt (ACTE, 2020). As the cost of a traditional four-year degree continues to rise alongside a competitive job market, students must also be prepared to be successful in more affordable, alternative postsecondary options.

Whether they choose to pursue college or a career, experience gained in a career academy can offer graduates significant advantages over their peers. By helping students develop a professional network, exposing them to future employment opportunities, and positioning them for higher earnings, career academies can provide an excellent foundation for students as they prepare for a variety of postsecondary options.

Research has shown that CTE programs that combine academic rigor and industry integration can have many positive effects on the students who choose to participate. Whether helping students by increasing their immediate academic performance, clarifying their career goals, preparing them for postsecondary education, developing desirable skills for employment, or leading to actual employment, the benefits of career academy programs can be enormous. However, not all professional studies programs are created equally (Abamu, 2017). To maximize the benefits that these programs can provide, it is important to understand the various factors that influence a program's success. The second half of this chapter will discuss the various components of industry-linked programs, as well as the implications for improving current and future CTE professional studies programs.

Part II. Implications for Professional Studies Programs

To maximize benefits of a professional studies program, it is essential to study the workings of other similar programs. Fortunately, research into both the successes and shortcomings of various industry-linked high school CTE programs presents several patterns. Successful programs had a clear framework in place, served the right students, received strong commitments from all parties, included an industry mentor, and valued reflection. The remainder of this chapter will address these common themes and the resulting essential components and specific implications they present for professional studies programs.

Framework

The framework of a program can predestine it for success or failure before it even takes off. It is essential for program leaders to have a clear sense of purpose and direction, include a strong academic foundation, provide opportunities for authentic learning environments, and offer students support before they even consider enrolling in a program. This section will address each of these elements that contribute to the structure and design of a professional studies program.

Clear focus and organization. In a meta-analysis of industry mentorship programs, Coles (2011) concluded that one of the biggest keys to success was ensuring a clear focus and specific goals from the program. To achieve this, program facilitators must seek input from beyond the school walls and include postsecondary institutions and programs, business leaders, and the community in creating the vision for their programs (Bottoms & Sundell, 2016). School and business professionals must be committed to working together. As leaders in one program

eventually learned, their program could not take off until both parties are in communication and can find a way to collaborate (Dubin, 2014).

Programs must also be developed in accordance with student interests and the needs of the workforce to ensure that students are being provided with opportunities to explore career pathways in high demand (Bottoms & Sundell, 2016; Coles, 2011). If done correctly, this can create a positive experience for all parties and ultimately create a more successful and sustainable program. One of the more successful programs based out of Toledo, Ohio, was created with a simultaneous goal of helping professionals in their local community (Dubin, 2014). This region has a strong manufacturing industry but was struggling to find talent to fill positions. By partnering with the school, professionals were not only able to ensure that students were learning the skills for the jobs they were struggling to fill, but were able to also build relationships with and a network for the students, which increased their chances of staying local. By focusing on the needs of local businesses as well as students, both parties were able to benefit, and the symbiotic relationship that was created among the school and the community further strengthened the overall program.

Strong academic foundation. All pathway options should also provide a strong, core academic foundation in addition to technical skills and knowledge. As Gene Bottoms, founder of High Schools That Work, explains, students will not receive the maximum value of their program if they do not also receive a rigorous, college-preparatory level of instruction (Kazis, 2005). While there may be a temptation to cut academic rigor or requirements in favor of technical skills, this will only be doing a disservice to students (Dubin, 2014). Many programs

encourage students to utilize time over the summer to make sure they do not miss out on any essential content (Kazis, 2005).

Authentic learning environments. Career academy programs should also incorporate authentic learning environments when teaching industry-specific skills and knowledge. Learning in a job-like setting is strongly appreciated by students (Gentry, Peters, & Mann, 2007; McCarthy & McCarthy, 2006) as it proves a more informative depiction of the particular field (Carroll, 2018; Gentry, Peters, & Mann, 2007; Nicaise, Gibney, & Crane, 2000). Other students report increased levels of engagement, interest, and ability to connect with their like-minded individuals from a more authentic setting. Many of these same students choose to become even further involved by participating in extracurricular activities that enable them to expand their experiential learning (Gentry, Peters, & Mann, 2007). In addition, learning in an authentic environment also demonstrates relevancy for students (Dubin, 2014). Not surprisingly, students in one industry mentorship program that struggled spoke of difficulties in connecting what they were learning in their classes with their chosen pathway (Lang, 2010).

Early support and preparation. To help prepare students for success in career academies, program facilitators can also consider implementing support at the younger grade levels. One school found success in offering introductory, industry-related courses at the middle school level (Dubin, 2014). Students in these courses were not only exposed to various industries they could later explore in a pathways program but were also equipped with foundational knowledge on which to build if they did later choose to enroll. Other districts advocate for providing a challenging middle school to ensure students are preparing students for high school and the academic rigour of professional studies programs (Bottoms & Sundell,

2016). Schools should also actively support these students once they are freshmen in high school and make sure they are able to transition and get off to a good start academically (Young et al., 2011).

Students

The students who are enrolled in a professional studies program can also contribute to its success. It is crucial that not only do the right students enroll, but that they must also receive guidance in their decision-making process and understand the expectations and commitment that will be required of them.

Open to all. Career and Technical education used to be targeted to students who were not interested in attending college. However, with the development of academically rigorous, industry-linked programs, such is no longer the case. Unfortunately, many schools still tend to overlook college-bound students when recruiting for CTE programs (Bisland, 2001). Stern et al. (2010) explains that career academy programs should be open to all students because any student can be the right student. As he explains, "even students who are determined to go to the most selective four-year colleges can benefit from a career academy, because they can gain a better understanding of academic subjects when… applied to problems and situations in which the students are interested" (p.22). As the goal of these programs is to prepare students to enter college or career, they can provide benefits to many students who are interested in a variety of different paths (Castellano, et al., 2017).

Authentic desire and commitment. A student's desire to participate and willingness to commit to the program is more important than their previous academic record (Beggs, 1995). According to Gentry, Peters, & Mann (2007), it is important for students to join an academy-

type of program based on their own choosing to maximize their experience, and often success, in the program. Students must also have a level of maturity where they will be comfortable with industry professionals in professional settings (Bisland, 2001). They must also be willing to take ownership in increasing parts of their education, such as taking the initiative in their mentor relationship (Milam & Schwartz, 1992; Symonds, Schwartz, & Ferguson, 2011). They must understand the higher performance standards and expectations that their teachers and industry partners will have of them, in academics, technical skills, and professionalism (CAPS Network, 2020; High Schools That Work, 2020). As a result, numerous programs have an application and interview with students to ensure the program will be a good fit for them and they will be able to represent the school and their program well (Dubin, 2014; Milam & Schwartz, 1992.)

Guidance and time for exploration. In order to help students understand what they are committing to and that the particular path they are interested in studying will be a good fit, it is necessary to provide some sort of guidance to students before they make a decision to participate. While students should not be expected to have a specific career goal in mind prior to a program, or even after they complete it (Symonds, 2012), having an interest in exploring the field will be beneficial. Gaylor & Nicol (2016) collected feedback from a variety of students placed in a job shadowing program and noticed that the stronger the students' interest was in the field, the more they got out of their program. While students can arguably still receive benefits by working with any professional (Milam & Schwartz, 1992), the opportunity to spend a significant amount of time learning about and making connections in an industry that they are actually considering for their future can be extremely worthwhile.

Program leaders, teachers, and counselors must work together to introduce students to various industries and career paths before they commit to exploring one in greater depth (Bottoms & Sundell, 2016). Because many students are not even fully aware of the postsecondary options and fields available to them, a little bit of counseling can go a long way in steering them toward a path aligned with their interests (Symonds, 2012). In addition, schools should also be cautious about placing students in a program they are not particularly interested in, as this can also create less than ideal experiences for the students (Gaylor & Nicol, 2016) and their presumed lower levels of enthusiasm can dilute the quality and reputation of the program among industry professionals (Gentry, Peters, & Mann, 2007).

Commitment

Schools, communities, and businesses are all essential components to consider when implementing a professional studies program. This next section will look at the roles of school administration, program staff, teaching staff, parents, community, and industry and their unique contributions to students' experiences in a career academy.

School administration. Success in a school and business partnership starts at the top and requires the support of school administrators. Fortunately, in a study of 105 high school principals from Illinois, Kaufman (2015) found that 100% of principals agreed or strongly agreed that businesses can support the development of 21st century skills, and 91.3% believed that a business partnership can prepare students for college and career. The 8.3% who did not agree or strongly disagree with that statement, just simply felt neutral. However, establishing these relationships with outside partners can be very time consuming and could easily be a full-time position itself (Brand, Valent, & Browning, 2013). To build these various partnerships,

principals must find the best leaders and instructors they can ensure the design and structure of their program is specifically tailored to their students and community (Bisland, 2001).

Program staff. Having the appropriate staff and leadership in a professional studies program should also be a top priority (Bisland, 2001). It is crucial that relationships with outside partners are managed and nurtured for the program to grow since many partners who have a good experience tend to participate again (Milam & Schwartz, 1992). These leaders must also be willing to listen to and incorporate the needs of the students and the various industry partners create a win-win opportunity for everyone (Coles, 2011). Additionally, even though they may be hard to find, professional studies programs are best staffed by teachers who understand both the field of education, content knowledge and technical skills in a particular industry, and who are able to effectively collaborate and partner with current industry professionals (Brand, Valent, & Browning, 2013; Dubin, 2014).

Teachers. Teachers must also be committed to continuous learning and willing to partake in professional development. Because industry can often change rapidly, it is important for teachers to be informed and understand the most current trends to ensure that what they are teaching in the classroom is aligned with what students are learning in the field (Young et. al, 2011). Because knowledge, technology, business partnerships, and industry mentors can vary from year to year, it is important for teachers to be in constant communication with other teachers in the program, business professionals, and students and be willing to adapt as necessary (Milam & Schwartz, 1992).

Financial support. Operating an industry-linked CTE program with quality leaders, instructors, and technology can be costly, so it is important for schools to allocate enough

funding to financially support their programs (Coles, 2011). Though CTE courses and programs are often times more expensive per student than traditional academic courses (Kazis, 2005), they should still be prioritized and viewed instead as an investment (Castellano, et al., 2017; Symonds, Schwartz, & Ferguson, 2011). As the first half of this chapter laid out, quality professional studies programs have shown to increase college and career preparation in numerous ways, and not investing in them may actually turn out to be more costly.

Parental and community support. Similarly, it is also important to find support from parents and the local community, as the best systems and programs for vocational education typically have a strong financial and societal investment (Symonds, Schwartz, & Ferguson, 2011). In fact, financial backing and community perceptions are often correlated. Parents should also be informed on what their student is doing in their professional studies program so they can be available as a support (Coles, 2011). However, in preparing students for adulthood, it is best for parents not to be directly involved with their students' professional relationships. In addition, the community can also be a good resource for identifying potential business partnerships and industry mentors.

Industry participation. Lastly, the direct connection to industry is one of the most important components of a professional studies program (Abamu, 2017; Hoachlander, 2008) and should be integrated throughout a program. In fact, without the continuous participation of current businesses and professionals, programs would have a difficult time ensuring that curriculum is still current and relevant to a particular industry (Coles, 2011). In some cases, these industry relationships proved crucial in obtaining access to current, industry-level equipment (ACTE, 2010; Brand, Valent, & Browning, 2013). Professionals and business leaders

need to be utilized in overall program advising, project partnerships, mentoring, job shadowing, guest speaking, and competition judging whenever possible (Castellano, et al., 2017). Others have helped develop extracurricular activities and participated in Career and Technical Student Organizations (CTSOs), creating additional opportunities for students beyond their program. However, to effectively serve students in various capacities, industry partners must also be willing to receive support and training from the program facilitators (Coles, 2011). In addition, professionals serving as mentors must also be willing to commit for an extended period of time, as higher quality relationships generally require at least six months to develop (Thomson & Zand, 2010). In fact, the relationships and the personalized guidance that industry professionals through individualized mentoring is so significant that it is a crucial component in itself.

Industry Mentorship

While all good programs have some sort of industry connection, the difference between good and great programs is their development and execution of a professional mentoring program. This section will explore the significance of mentorship and recommendations for successful application to high school industry academy programs.

Importance of mentoring. Professional mentorship is one of the defining characteristics of an industry studies program (CAPS Network, 2020). This is not surprising, as student feedback on the inclusion of a mentoring component to their experiential learning program has been consistently positive (Bell & Bell, 2016; Coles, 2011; Milam & Schwartz, 1992). Additionally, research also supports increased postsecondary readiness among mentored students. In one study, Pearl (2016) analyzed data from a variety of programs and observed

that students who had mentoring relationships with professionals were more likely to attend college than those who did not. Not surprisingly, other countries such as Germany, Switzerland, and Denmark, who currently surpass the United States in young adult educational attainment and employment rates, emphasize industry mentorship in their experiential learning programs (Symonds, 2012).

In addition, the mentoring component is especially important for students who may decide not to pursue a career in their current field of study. While the specific academic and technical knowledge from their program may not be as applicable to these students, they can still benefit from the program. In one study (Bell & Bell, 2016), mentors and students were not perfectly matched, but the mentors were still able to assist the students as they reflected on their various projects, provide examples from their own lives as learning opportunities, and helped the students develop their technical skills in a slightly different context. Other students who have decided not to pursue a particular field were still glad they participated in their program, largely due to the relationship they developed with their mentor (Milam & Schwartz, 1992).

Thoughtful selection of mentors. However, because not all relationships with mentors are equally beneficial, it is important for schools to implement a careful selection process (Thomas & Zand, 2010). While it may be tempting to utilize any professional who wants to mentor, schools are able to be somewhat selective. Bailey et al., (2000) found that the majority of individuals and organizations would be interested in participating as mentors to high school students. Given this large pool of candidates, students should invest time in identifying and selecting individuals who would be best suited to their students and program. If

mentors are carefully selected and appropriately matched with students, they will be able to benefit more themselves, and theoretically want to increase their investment in the relationship (Bisland, 2001; Coles, 2011). Creating some sort of benefit like this for the mentors will also make it easier to recruit a greater variety of individuals and businesses, as a lack of benefit for themselves was cited as the top concern among non-participating professionals (Bailey, Hughes, & Barr, 2000). In addition, schools should focus on more than just the industry knowledge and technical skills that a potential member can provide. It is important that these individuals also demonstrate patience, empathy, and compatibility with their potential mentee (Bisland, 2001; McNeven, McKay, & Main 2015).

Lastly, mentors must be willing to invest time in their mentee and commit to work with them for at least six months, if not the full duration of their program (Coles, 2011). While they should expect to make a difference in the lives of their mentee, they also need to be willing to continue to invest in the relationship even if results may not be seen right away. Preferably, they would be able meet in person with their mentee, but while not quite the same, tele-mentoring can also be an option if needed (Bisland, 2001). In addition, because they will be working with minors and as partners to a larger program, mentors should also be willing to participate in any training needed for their role (Lang, 2010).

Thoughtful pairing of students and mentors. Matching students and mentors should be done with intention, as the biggest factor in the success of a mentorship pairing is the depth of the relationship that exists between the mentor and mentee (Coles, 2011). The importance of this can be seen in a program that struggled. In this program, a common concern expressed by students was their inability to make a connection with their mentor because they did not

have any common interests or backgrounds (Lang, 2010). In one program with very positive feedback from both students and mentors, the students, mentor, and teacher all met before the program to assess whether the two would be a good fit for one another and to clarify what both the student and mentor were looking for in the relationship (Milam & Schwartz, 1992). In addition, the teachers also checked in regularly with both the student and mentor to make sure things were going well. Because this relationship is so crucial, consistent attention to any concerns that arise should be prioritized and adjustments made as needed. In fact, the ability to re-evaluate any aspect of the program is the last essential component of implementing a successful professional studies program.

Reflection and Refinement

Because of the precise alignment industry needs and student interests in professional studies programs, ongoing reflection and refinement it is essential to ensure that both of these considerations continue to be addressed. This process of reflection and refinement must be performed by both program leadership and advisors and students.

Reflection and refinement of the program. In order for professional studies programs to adequately prepare students for college and career, the programs must be current on industry trends, workforce needs, and student interest. As Stern et al. (2007) cautions, "it is essential for schools themselves to continuously gauge results of career academies and other educational programs, because even if such programs have been found to be effective somewhere, they are unlikely to be effective everywhere" (p.135). Program directors need to continuously assess the relevancy of their programs and ensure that these needs continue to be met (Coles, 2011). Unlike other academic subjects with curriculum that can be recycled each

year, such may not be the case for a professional studies program. Regulations, technology, and standard operating procedures can vary not just with time, but also within the fields of the various professionals who are able to participate each year. In addition, the skills and knowledge necessary for college and career preparation may change as society continues to evolve, and it is important to ensure the skills and knowledge being emphasized is still accurate (Brand, Valent, & Browning, 2013). While speaking with students and industry partners is valuable, it is also important to look at hard data and actual outcomes of program graduates. In fact, the use of student and teacher surveys at the end of a program is specifically referenced as one of the Key Components to the High Schools That Work program model. The feedback received from these surveys is heavily utilized in planning for the next school year (Young et al., 2011).

Reflection and refinement among students. Students should also be encouraged to spend time reflecting. According to Kolb's (1984) Experiential Learning Theory, reflection is one of the four stages of the learning process and must exist for active experimentation to be effective. As this theory explains, learning does not occur directly from experience, but rather the meaning a person gives to his or her experiences. It is only through reflection that experience can transform into knowledge (Peterson & Kolb, 2018). As students spend time immersed in a particular program, it is important for them to be continuously observing and reflecting upon what they like and dislike about their experiences. After all, one of the goals for students who participate in such a program is to help clarify their career goals and begin to plan out a path for themselves. However, as they go through the reflection process, it is important to not make students feel pressured to definitively decide whether or not the particular path

they are exploring is one they want to pursue later in life (Symonds, 2012). Instead, students should focus on some of the larger lessons they are taking away from their experiences, especially the unique insight their mentor can offer from the other side of postsecondary education (Bell & Bell, 2016). One program successfully approached reflection by incorporating a journaling component and provided students with a designated time and place to process their industry experiences (Bisland, 2001). Other programs utilized discussions, whether one-on-one with the teacher (Milam & Schwartz, 1992) or as a class (Bisland, 2001).

CHAPTER III: DISCUSSION AND CONCLUSION

Chapter II discussed numerous benefits and impacts that can be achieved through a school and industry-linked professional studies program. Immediate impacts that can be observed in student participants include an increased interest and engagement in their studies (Schernoff & Hoogstra, 2014; Gentry, Peters, & Mann, 2007; Bisland, 2001), improved confidence and behavior (Beggs, 1995; Stam, 2011), improved academic performance (Castellano, et al., 2012; Castellano, et. al, 2017; Bishop & Mane, 2004; Aliaga, et al., 2014, Hoachalnder, 2001), and increased graduation rates (Bishop & Mane, 2004; Kazis, 2005; Kemple & Snipes, 2002; Beggs, 1995). In addition, professional studies programs were observed to help students clarify their career goals through the use of authentic learning experiences (Abamu, 2017; Gentry, Peters, & Mann, 2007; Milam & Schwartz, 1992; Pawlowski, 2010; Harding, 2018; Conley & McGaughy, 2012; Coles, 2011; Bisland, 2001) and the professional perspectives they encountered while working alongside industry partners (Symonds, Schwartz, & Ferguson, 2011; Brand, Valent, & Browning, 2013; Symonds, 2012; Coles, 2011; Milam & Schwartz, 1992; Conley & McGaughy, 2012; Gentry, Peters, & Mann, 2007, Young, 2011, Hoachlander, 2008).

Students were also better prepared for postsecondary success through exposure to additional curriculum (Dubin, 2014; Bisland, 2001; Milam & Schwartz, 1992; Hoachlander, 2008; Carroll, 2018), challenges to pursue higher standards (Dubin, 2104; Hoachlander, 2008; Wilbanks, 2015; Zaveri, 2008; Peckham, 2012; Young, 2011), increased academic aspiration (Hoachlander, 2008; Castellano, et al., 2012; Aliaga et. al, 2014; Pearl, 2015), and the resulting launching pad that was created into postsecondary opportunities (Stam, 2011; Symonds,

Schwartz, & Ferguson, 2011; Dubin, 2014; DuBois, et al., 2002; Hart, 2015; Harding, 2018). Students were also able to develop additional skills and characteristics that were desired by employers across industries, including the ability to apply knowledge (Hart, 2015; Stam, 2011; Harding, 2018), workplace skills (Bailey, Hughes, & Barr, 2004; Kazis, 2005, Castellano et. al, 2012; Stam, 2011), personal skills (Castellano et. al, 2012; Stam, 2011; Castellano, 2015; Dubin, 2014), and people skills (Dubin, 2014; Stam, 2011; Bailey, Hughes, & Barr, 2004; Kazie, 2004; Milam & Schwartz, 1992; Gimmon, 2014; Bell & Bell, 2016).

Lastly, participating students were also observed to have increased employment prospects through their newly established professional network (Castellano et al., 2012, Milam & Schwartz, 1992; Hoachlander, 2008; Dubin, 2014), actual employment opportunities (Castellano, et al., 2017; Dubin, 2014; Symonds, Schwartz, & Ferguson, 2011; Harding, 2018; Bishop & Mane, 2004), and improved earnings potential (Symonds, Schwartz, & Ferguson, 2011; Kemple & Willner, 2008; Stern, Dayton, & Raby 2010).

In the most positively influential programs, several essential elements were consistently present. The framework for these programs included a clear focus and organization (Coles, 2011; Bottoms & Sundell, 2016; Dubin, 2014), a strong academic foundation (Kazis, 2005; Dubin, 2014), provided an authentic learning environment (Gentry, Peters, & Mann, 2007; McCarthy & McCarthy, 2006; Nicaise, 2000; Carroll, 2018; Dubin, 2014; Lane, 2010), and offered early support and preparation for future students (Dubin, 2014; Bottoms & Sundell, 2016; Young, 2011). In addition, the programs were open to student from a variety of academic backgrounds, (Bisland, 2001; Stern, Dayton, & Raby, 2010; Castellano, et al., 2017) so long as they presented an authentic desire and commitment to participate (Gentry, Peters, &

Mann, 2007; Beggs, 1995; Bisland, 2001; Symonds, Schwartz, & Ferguson, 2001; High Schools That Work, 2020; CAPS Network, 2020; Dubin, 2014), and were ideally provided with guidance and time for career exploration (Symonds, 2012; Gaylor & Nicol, 2016; Milam & Schwartz, 1992; Bottoms & Sundell, 2016; Gentry, Peters, & Mann, 2007).

Professional Application

Much has changed over the past decades with regards to both college and career preparation and career and technical education. The idea of placing students on a college-bound or workforce-bound track, and their difference in prestige, is no longer relevant. Instead, today's students need to be prepared for both postsecondary education and participation in the workforce. Because of their focus on strong academics and industry integration, "today's best CTE programs do a better job of preparing many students for college and career than traditional academics only programs" (Symonds, Schwartz, & Ferguson, 2011, p.25). In fact, education that is confined to the walls of a traditional classroom is simply not enough, as "[an] adequate high school education requires the presentation of multiple pathways to success, and a partnership with businesses and society" (p.23). Professional studies programs not only present students with multiple pathways to success, but actually prepare students for success on any pathway (ACTE, 2009).

Fortunately, attitudes toward career and technical education have been continuously improving, especially with the development of professional studies programs (Brand, Valent, & Browning, 2013). New programs are developing across the country each year, and existing programs continue to improve (Symonds, Schwartz, Ferguson, 2011). This is good news not

only for the United States, but specifically students, CTE teachers, and schools in the state of Minnesota.

Understanding the benefits and implications for professional studies programs is important to the entire country. "Based on current trends, by the mid-2020s, an even greater percentage of jobs will require some postsecondary education, meaning a credential, certificate, associate or bachelor's degree, or higher" (Bottoms & Sundell, 2016). With 65% of jobs already requiring postsecondary education and patterns of concern regarding the abilities of recent graduates, the educational system across this country can use this information on professional studies programs to fill the current demand in the workforce. In addition, the ability of professional studies to help clarify career goals can help students across the country make educated decisions when enrolling in postsecondary programs (Bottoms & Sundell, 2016). Lastly, because professional studies programs require a strong industry connection, an understanding the potential of these programs to drastically influence the country's economy can be useful in obtaining financial investments and commitment from the professional community.

This is also particularly important to the state of Minnesota. Consistently one of the top performing states in the nation for public school education (The Nation's Report Card, 2020), understanding and implementing professional studies programs across Minnesota will be crucial in maintaining this position. For the seven programs found that currently exist (CAPS Network, 2020), the extensive research on the benefits of these programs can help to provide suggestions of ways in which to strengthen their current programs and ultimately, further increase community investment and participation.

In addition, understanding the potential of professional studies programs and their essential features can also be beneficial to CTE teachers. Though perceptions have improved, career and technical education courses still face some stigma (Brand, Valent, & Browning, 2013; Gaunt & Palmer, 2005; Symonds, Schwartz, & Ferguson, 2011). In addition, because many of these courses are not required for graduation, the number of courses offered, and ultimately the job security for many teachers, depends on the number of students who choose to enroll (Symonds, Schwartz, Ferguson, 2011). By understanding the importance of professional studies programs and how to successfully implement them effectively, CTE teachers can not only continue to change the perception of their courses, but also increase their own employment opportunities.

Personal Professional Application

Lastly, as a future teacher in a professional studies program, I can personally apply the insights from literature to the continuous development at VANTAGE in Minnetonka, Minnesota. Fortunately, this program already incorporates many of the essential components for a successful program, including a strong framework, careful selection of students, support from administration and industry partners, a strong mentorship program, and a focus on reflection and refinement (Minnetonka Public Schools, 2020). The VANTAGE program has a clear focus: to "[engage] students in active, hands-on learning where they apply rigorous academic coursework in relevant, real-world settings across seven focus areas," including business analytics, design and marketing, digital journalism, global business, global sustainability, health sciences, and user experience design (n.d.). In addition, the program stresses rigorous academics, as emphasized by Kazis (2005), with many courses also preparing students for

various A.P exams. Authentic experiences are also a top priority, as students work on projects for various industry partners, experience guest lecturers from industry, and visit various sites related to their field of study. In addition, the school district also emphasizes academic rigor in all grade levels, which can help prepare younger students for the VANTAGE program (Bottoms & Sundell, 2016).

While the VANTAGE program is open to all students with a strong desire and commitment to participate, the level of guidance the students receive prior to enrolling is not clear. According to research, students should spend time exploring various career paths before enrolling in a program to ensure a good fit. Not only will this maximize their own experience (Gaylor & Nicol, 2016), but also improve the perception and potential of the program among industry professionals (Gentry, Peters, & Mann, 2007). As an instructor, I would want to emphasize the importance of guidance and exploration and help my students find any information they need to make an informed decision about what program, if any, to join.

VANTAGE is also fortunate to have a strong commitment from all parties. In accordance with recommendations from Brand et. al (2013) and Bisland (2001), administrators demonstrate a strong commitment to the program, having hired qualified individuals specifically to lead and develop the program. Teachers are also provided with recommended (Young, et. al, 2011) professional development time to update the curriculum each year. In addition, VANTAGE experiences a strong commitment from parents, community, and industry, continuously including these individuals in collaboration (Coles, 2011).

One of the core components to the VANTAGE experience is the one-on-one mentoring program between a student and an industry professional. In accordance with more successful

mentoring programs (Coles, 2011), the focus at VANTAGE is on building lasting relationships. Fortunately, careful consideration is given to pairing students and mentors to ensure they have common interests outside of just career interests. In addition, mentors are also expected to commit the program for the length of the school year.

Lastly, VANTAGE also includes the necessary component of reflection. Program facilitators are continuously seeking feedback from students, teachers, and industry partners and invest significant time in adjusting the program to meet any additional needs each year (Coles, 2011; Stern, et. al, 2007). Students also spend time informally discussing their experience and performance and are encouraged to always be looking for ways to improve (Peterson & Kolb, 2014). However, as an instructor, this is also one opportunity I plan to focus on to further improve the program. Because reflection on their greater individual career paths is so crucial (Symonds, 2012), I would like to incorporate additional reflection for my students. I would like them to look beyond their day-to-day observation and instead, spend some time considering their long-term plans and evaluating possible next steps in light of what they have learned during their program experience.

Limitations and Implications of the Research

Despite extensive research, there appear to be some limitations to the current understanding of professional studies programs. First, no research was found regarding some of the longer-term benefits of participation in a professional studies program throughout the development of one's career. Current research only appears to analyze the outcomes of professional studies program participants several years after graduation, but no studies continue to analyze any later effects. This is important, because "the true value of Programs of

Study can only be fully measured after high school" (Castellano, et al., 2017) Page 65. Bisland also strongly advocates for the importance of continuous follow-up, not only as students continue in their education and enter the workforce, but throughout their career (2001).

In addition, no research was found that compared outcomes among different industry paths. Many studies look at professional studies programs as a whole and do not analyze differences in outcomes between various industries. This is important to understand as programs continue to be developed, helping facilitators decide which industry strand to include or to focus on improving.

On a similar note, there does not appear to be any research on the components of industry programs in isolation. Many of these programs combine multiple aspects - such as experiential learning, smaller cohort communities, advanced academic instruction, and industry mentorship. However, it is important to understand the relative importance of each, as program facilitators presumably have a limit available on funding and resources. Though separating the individual effects of a particular component could be difficult, it is still important to understand in maximizing program efficiency (Kazis, 2005).

In addition, only professional studies programs with a focus on industry observation and experiential learning were included in this review. However, there are other types of programs available to students that offer work-based learning credit for jobs that do not require any postsecondary education or that offer paid internships. In an expanded review of literature, research could also look to compare the outcomes between professional studies programs and paid work-based learning programs.

Conclusion

The purpose of this review of literature was to examine the effects of industry and education and specifically to answer how experiences with industry professionals impact college and career preparation of high school students. In addition, this review also sought to determine best practices for the design and implementation of professional studies programs. Understanding the answers to both of these questions is not only necessary, but urgent, to increase the number of young Americans entering the workforce prepared to succeed in the global economy.

After an extensive review of literature, quality professional studies programs, inclusive of professional experience and relationships, appear to be extremely effective in preparing students for postsecondary success. In addition, it is also clear that successful professional studies programs do not happen by accident. Instead, they are the result of careful and intentional planning, strategic student participation, a strong commitment from both schools and industry, an emphasis on creating professional relationships, and continuous evaluation and improvement. In order for programs to maximize their potential to provide immediate academic impacts, help students clarify their career goals, adequately prepare students for a variety of postsecondary options, develop additional desirable skills, and create opportunities for future employment, all of these essential elements must be present. With the benefits of today's industry-integrated programs identified and the essential features to develop such programs identified, the vast utilization of professional studies has the potential to drastically increase the levels of future success for today's youth and the future of American society.

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