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POSTSECONDARY EDUCATION AND WORKFORCE READINESS PROGRAMS IN K-12

A white paper discussing postsecondary education, career and workforce readiness as a major component of K-12 education.

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Introduction

Many initiatives for school-aged children incorporate workforce development preparation by promoting the importance of postsecondary education and providing students with career readiness programs. Clearly, those programs are greatly needed. With unemployment rates high, lifelong learning is more important now than it ever was before. Students can begin to ready themselves for their future occupations and prepare for postsecondary occupations through these programs. Workforce development initiatives can provide students with more adequate preparation than they are currently receiving enabling them to make more appropriate and mature choices about their futures.

The goals of postsecondary education and career readiness programs are complex and may be challenging for some to grasp. Most people equate postsecondary education with a traditional four-year college or university. This is one option, albeit not the only way, to prepare young people to meet the demands of the changing economy. Additional solutions are needed to bridge the gap between education and the workforce. However, what is clear is that students do need a postsecondary education that will prepare them to work in careers that are currently in high demand or will be so in the near future. Furthermore, students also need to be provided with a K-12 education that will prepare them for a variety of future education and career options and allow them to function as independent adults. It is important to recognize that not all high school students are candidates for four year colleges or universities. For some, focus must be shifted away from traditional college entrance and completion and broadened to include other forms of education, such as trade schools or certificate programs. The point is that a high school degree alone is not sufficient for more jobs and careers.

Currently, there is a gap locally between what skills employers are looking for and what skills job applicants are able to provide. That gap has resulted in structural unemployment. Many local businesses are in need of highly educated individuals, but employers are often unable to find such individuals to fill job openings. This is most noticeable in health care. Consequently, the United States could lose its place as a world power. This nation is falling behind other countries in terms of education and achievement. A change in the school system is needed if the US wishes to remain competitive with other nations in today's global economy.¹ Indeed, the strength of the economy in the United States is contingent on educated, prepared, and confident young workers. One way to ensure that students become such workers is to increase enrollment in postsecondary education and incorporate workforce readiness programs throughout the K-12 public education system.²

Career-ready individuals know more than just specific skills for a certain job. Similarly, they are equipped with more than just a general understanding of important workplace

behaviors, such as punctuality and teamwork. Individuals who are truly career-ready know how to connect their education with a career. Career-ready individuals are adaptable, understanding that they will most likely have to change jobs at some point in their lives. As such, a career cannot simply be defined as a job. Rather, a career is a pathway of different jobs that require similar knowledge, personality characteristics, and skills. A commitment to lifelong learning is necessary to successfully handle the various job changes an individual can be expected to make. That learning is often focused on an academic or technical subject useful to that individual's career, but can also include instruction on goal setting, communication skills, critical thinking, and decision-making, as those are all necessary for successful careers.³

Literature Review

Because all students are different, postsecondary education and workforce readiness is a complex issue. Workforce readiness, which involves having the skills necessary to do a job, is another important component of the equation because postsecondary education alone is insufficient to prepare people for the working world. Individuals who show evidence of workforce readiness choose a course of higher education that will lead them on a pathway to a specific occupation or a related group of occupations. Additionally, these individuals are prepared with the general knowledge and skills – such as motivation and collaboration – that are needed in any occupation. Traditionally, high schools have focused student preparation on meeting the criteria necessary to be admitted to traditional two or four-year colleges. However, a student who is accepted to and enrolled in a postsecondary institution is not necessarily ready for that level of education requiring remedial coursework that must be completed before the student can proceed on their career path. Instead, a student should be able to exhibit postsecondary education readiness avoiding thereby the extra time, effort and costs attached to enrollment in additional remedial classes at the student's postsecondary institution.⁴

Improving the K-12 experience is necessary to reduce the large number of students that must take remedial classes once they begin their postsecondary educations. These classes are needed for students who graduate from high school unprepared to complete college level work, as noted by poor entrance exam grades or low grade point averages. In general, these remedial classes allow students to improve their skills in math or writing. The credits earned in remedial courses may not count toward the credits needed for graduation. Therefore, while these classes are most certainly helpful for students who need them, they consume students' limited resources: time and money. As a result, students forced to take remedial courses may find themselves in a greater financial debt at the beginning of their career than they would if they could maintain the scheduled academic pace; additionally, they may have to graduate later. If K-12 schools could prepare students for college with a renewed focus on

postsecondary readiness, fewer individuals would be placed in remedial classes or need an extra year of coursework and expense because they failed to take the courses necessary early on to their career pursuit. Instead, they could use their resources for more worthwhile endeavors and, thus, would be more likely to graduate from postsecondary institutions.⁵

There must be alternative ways to promote postsecondary education and career readiness among high school students. While ensuring that students understand traditional academic disciplines, learning skills and techniques, and postsecondary entrance procedures, other cognitive skills are crucial for postsecondary education and workforce readiness. Adequate preparation for higher education and a career hinges on a student's abilities regarding research, problem solving, interpretation, communication, and accuracy. To promote these cognitive skills, teachers should adjust their teaching methods, the assignments they give out, and the material that they teach. With the explicit instruction of thinking skills, students will be better prepared for postsecondary educations and careers.⁶

Regardless of the type or level of academic preparation students receive in high school, they will be unable to further their education in a postsecondary institution if they are unaware of the steps they need to take to gain admission into such an institution. Many students, particularly low-income students and those who aspire to become first-generation college students, lack this knowledge; even worse, these same students often do not have support for their goals from their families. Clearly, these students must face the difficult – and often impossible – challenge of negotiating the postsecondary application, admission, and financial aid processes alone, unless their schools step in to help out. Guidance counselors and other similar professionals can instill such college knowledge among high school students. Besides helping students complete applications, these professionals can also create and promote a school culture that focuses on the importance of furthering one's education beyond high school. To create this culture, at a minimum high schools must offer career ready college preparatory classes and provide students with opportunities to explore different careers and occupations through shadowing, internships and other opportunities; tour college campuses; and meet with postsecondary education admissions officials. High schools can also promote the importance of postsecondary education by encouraging study skills and maturity among students. A high school that stresses the importance of postsecondary education creates lifelong learners among its students.⁷

It is well established that a high school culture focused on postsecondary access is most successfully implemented in small schools or in small learning communities within larger schools. High expectations are more likely to be enforced by educators in smaller schools. For example, educators in smaller schools are more likely to take attendance and encourage class

participation. The low enrollment also allows students to have more opportunities for interaction with school personnel; consequently, students enrolled in smaller educational environments can establish closer relationships with their educators. With fewer students, educators can get to know the students better and are thus able to help them prepare individually for postsecondary educations and careers. Indeed, a low number of students allows for increased one-on-one meetings and tutoring sessions. Students enrolled in small schools do not have to seek out help; rather, the assistance comes to them. Additionally, a tight-knit community of students and educators often translates into a respectful and caring environment, which can only further improve students' chances of applying and gaining admission to postsecondary institutions. Students who feel supported by the staff at their high schools report persistence with their high school academics and a desire to further their education. These small learning environments are particularly helpful for students who need extra support, such as those who come from low-income families.⁸

As mentioned before, students who benefit most from this type of high school culture are those who, traditionally, are unlikely to enroll in postsecondary education programs upon graduating from high school or, if they do enroll, to complete their programs and earn degrees. Perhaps one of the reasons why certain groups of students are less likely to enroll in postsecondary institutions than some of their peers is that they have not been adequately prepared for higher education. Students who come from low-income or minority backgrounds tend to be enrolled in larger high schools that have limited funding. Additionally, their teachers and guidance counselors may not encourage them to consider education options beyond high school, going so far as to withhold information from them that could be useful in their preparations for college admissions. These iniquities disappear with a high school culture that stresses the importance of postsecondary access for all students.⁹

Some high schools have instituted special programs in hopes of enabling more students to attend postsecondary educational institutions. While the programs differ greatly, many similarities do exist. All of the programs provide students with a rigorous college preparatory curriculum. Additionally, these initiatives expose students to postsecondary institutions through campus tours and/or dual enrollment opportunities. Most importantly, though, is the support that educators provide to the students and their aspirations. Early college high schools, typically located on community college campuses, allow students to earn a high school diploma and an Associate's degree concurrently and are one example of a special programs designed to promote postsecondary educational achievement. These high schools also build academic tutoring and college application assistance into the school day. Another program, Washington State Achievers, provides high schools with College Preparatory Advisors who help the students navigate the postsecondary admissions and financial aid application processes. These advisors

also help students acquire family support. Every year, five hundred students from participating Washington Star Achievers high schools receive college scholarships and are provided with mentors for the last two years of high school and the first two years of college. Students are chosen based upon factors such as resilience and leadership. Another program, Citizen Schools, targets middle school students through after-school programs that allow the students to take field trips to postsecondary institutions, museums, and nature centers and to learn about the actions to take in high school that will better prepare them for acceptance into postsecondary institutions. Citizen Schools also provide students with opportunities to form mentoring relationships with the education professionals who volunteer through the program.¹⁰

Even high schools that lack such special programs recognize the importance of introducing students to postsecondary institutions; as such, many school districts have instituted dual enrollment initiatives. Through dual enrollment, students with at least basic academic competency can take college courses in place of high school courses while earning both high school and college credits. Besides gaining academic knowledge, students who participate in dual enrollment programs gain insight into the culture of postsecondary institutions and learn about the social behaviors and study skills necessary for success in such environments. In essence, dual enrollment students get to rehearse the roles they will be expected to play as they further their education past high school. Dual enrollment eases the transition from high school to college for participating students because the students will not have to spend their first few months at college becoming accustomed to the culture and its expectations. The hands-on learning experiences that dual enrollment students are provided with cannot simply be replaced by a lecture on the lifestyle of postsecondary education students.¹¹

Postsecondary education must be understood broadly. While a bachelor's degree from a traditional college or university is one mode of workforce preparation, there are a variety of other options. Indeed, a four year college degree is not the solution for everyone. Some jobs in the science, technology, engineering, and math (STEM) field do not require a college degree. However, individuals looking to attain such a career will need job-specific technological knowledge. To obtain the knowledge and skills necessary to work in their chosen fields, these workers often go through certification programs, two year degree programs or apprenticeship programs depending on the job. Some, like registered nurses, must complete programs at a community college or trade school. At the very least, STEM jobs that do not require a Bachelor's degree do mandate significant on-the-job training periods.¹²

In a recent Brookings Institution report it states that on average, individuals without Bachelor's degrees working in a STEM field make \$53,000 per year. Those wages are about 10

percent higher than those earned in non-STEM jobs with similar education requirements. Besides the competitive wages, these STEM careers are attractive for another reason: they are growing quickly. Interested workers can expect to find openings in many STEM jobs that do not require a college degree.¹³

Some examples of STEM occupations that do not require Bachelor's degrees are Welders, Cutters, Solderers, and Brazers; Plumbers, Pipefitters, and Steamers; Machinists; Computer Systems Analysts; Electricians; Carpenters; Automotive Service Technicians and Mechanics; and Registered Nurses. There are more Registered Nurses (2,724,570) than there are employees in any other job from that list. Computer Systems Analysts enjoy the highest wages out of those working in the occupations listed, earning an average of \$82,320 annually. Furthermore, the highest percent growth from now until 2020 is expected among Registered Nurses and Plumbers, Pipefitters, and Steamers. Both occupation segments are expected to grow 26 percent in that time period.¹⁴

Each of the occupations listed requires different levels of postsecondary education. Welders, Cutters, Solderers, and Brazers are more likely to be hired if they have completed formal training programs. Plumbers, Pipefitters, and Steamers, on the other hand, tend to complete apprenticeships that include on-the-job training and career-specific math and science classes. Similarly, Machinists, Electricians, and Carpenters go through apprenticeship programs that include both on-the-job training and technical school components. Automotive Service Technicians and Mechanics learn their trade at special postsecondary training programs. Additionally, many hold Associate's degrees. Registered Nurses need either an Associate's degree or a diploma from an accredited nursing program; however, many Registered Nurses do hold Bachelor's degrees. Likewise, most Computer Systems Analysts obtain Bachelor's degrees, although they are not required to do so.¹⁵

Many of the education requirements for STEM careers that do not require Bachelor's degrees can be fulfilled at a high school that focuses on career and technical education, more commonly known as a Career and Technical Center (CTC). Since the focus of a CTC is workforce skills, CTC graduates are better prepared for the school-to-work transition when compared to their traditionally educated peers. In other words, graduates of CTCs exhibit workforce readiness. This readiness is exhibited through their career adaptability. When CTC graduates are unable to find work in their chosen fields, they find work in another field using the transferable skills they learned in high school. Instead of viewing the career change as a loss, they tend to reframe the experience as a shift in career goals. Some students enroll in CTCs to learn vocational skills as a backup plan in case their other career plans do not pan out. Considering a viable backup plan at such a young age is another symbol of a CTC student's

workforce readiness and career adaptability. Through these programs, students gain real-world work experience in their chosen fields while earning high school credit. Frequently, students are asked to continue working at their jobs on a full-time basis upon graduation.¹⁶

While CTCs are a great option for many students, some drawbacks exist. For instance, graduates of these schools are more likely to leave their postsecondary institutions without graduating or to not enter into any form of postsecondary education at all, thus limiting their job prospects. Many CTC graduates lack the financial resources to attend college, as many come from low-income backgrounds. Not only do they find postsecondary education too expensive in and of itself, but they also believe that they cannot afford to lose the income that they will miss from working. Furthermore, CTC graduates often feel unprepared for college-level STEM coursework because their high schools did not require them to take college preparatory math and science classes. This lack of postsecondary education options leads some individuals who struggle to find jobs in the fields that they have studied at CTCs to switch to unrelated careers that require only on-the-job training. Coupled with these issues is a lack of support at some CTCs. Numerous CTC graduates report that they lost support for their education and career goals once they left high school because they subsequently lost contact with teachers and guidance counselors. Without support, many former CTC students find it challenging to pursue higher education or to continue a stressful job search.¹⁷

Some STEM occupations do require workers to hold Bachelor's degrees, with some even requiring graduate degrees. Colleges and universities in Pennsylvania are educating plenty of students who hope to attain careers in STEM fields. In 2004, Pennsylvania's four-year postsecondary institutions granted 13,209 STEM-related Bachelor's degrees to students. However, many of these degrees were earned by students from other states who came to Pennsylvania to attend college. Regardless, the number of STEM degrees granted by colleges and universities in the state grew 23 percent in one decade (from 1994 to 2004). The state's postsecondary institutions seem to be responding to employers' needs for knowledgeable employees skilled in specific technological areas. Yet, the willingness of colleges and universities to train students in these high-demand fields does not mean that students from Pennsylvania have been prepared in high school to enter STEM postsecondary education programs, nor does it indicate that the students understand the career opportunities available to them with STEM-related degrees.¹⁸

More students will seek postsecondary STEM-related training, certification, and degrees if they are exposed to STEM more often and effectively during their K-12 schooling. K-12 students are especially in need of additional exposure to engineering, which is a STEM field seeking many qualified employees. Engineering could easily be brought into the classroom

through an inclusion in math and science curriculums by adequately trained teachers. The knowledge and skills sets learned through engineering instruction at the K-12 level are transferable into all occupations, thus proving useful even for students who do not want to consider a career in engineering or another STEM field. For example, engineering instruction teaches children lessons on problem-solving and collaboration. Additionally, engineering is one avenue through which students can gain an adequate science education, as it provides a basis for educators to ensure that the material they are teaching to students meets government standards. For instance, the process of scientific reasoning is a crucial skill that all individuals must learn, and engineering provides many opportunities for students to practice that form of thinking. Through engineering, students learn to form, test, and evaluate various theories. Science and math instruction focused, at least in part, on engineering can influence students' career choices. Students may very well find that engineering careers appeal to them since various engineering disciplines exist that can provide an outlet for an individual's work-related talents and interests. With that in mind, K-12 schools can introduce students to the various forms of engineering, such as biomedical, chemical, civil, electrical, and mechanical.¹⁹

Robotics is one aspect of engineering that can easily be applied to K-12 school curriculums in a way that will interest many students. Furthermore, students will increase their technology skills through hands-on work with robotics. Robotics also introduces students to other fields of science besides engineering, such as earth science and physics. For this initiative to be effective, though, teachers must be properly educated. Instruction on robotics specifically and engineering in general should be required for all postsecondary students seeking certification to teach science in any K-12 classroom. Ideally, an increased level of engineering-related instruction at the K-12 level can inspire young people to pursue a STEM career.²⁰ The challenge with implementing these types of issues is cost.

While STEM occupations are very in-demand right now and will continue to have an important presence in the economy in the future, employers in other fields are also looking for workers with varying educational backgrounds. Regardless of the specific field or the type of educational background employers are looking for, all employers want to hire individuals with the basic skills needed to work. These skills include honesty, punctuality, dependability, and persistence. Employers want individuals who are ready for a career. Many businesses that are looking to hire new employees are partnering with postsecondary institutions of all types in hopes of securing quality workers. These institutions recognize both the needs of employers and the desires of students. As such, many postsecondary institutions are offering training in leadership and in management. Additionally, many postsecondary programs are now steering toward providing students with the specific knowledge and skills sets that are needed for in-demand careers. These schools are also beginning to offer online programs, making it easier

for individuals who work fulltime to further their education and, ideally, study their way toward a better career.²¹

Issues

Postsecondary Education Data

In years past, students graduating high school felt as if they had to make a choice based on two options; they could either enroll in a four-year college or they could enter directly into the workforce and follow family or community tradition. Many times, however, the student’s decision is based on their own or their family’s socio-economic status. Today, the choice is more complex than ever. While students can choose one of the traditional routes – enroll in a four-year university or get a job – they can also enter a trade school, two-year college, or certificate program. Furthermore, college graduates frequently continue to further their education with master’s, doctoral, or professional degrees. Clearly, students need guidance to decide properly among the many choices.

Many students in Pennsylvania drop out of school before graduation. During the 2011-2012 school year, 16,999 students in eighth through twelfth grades dropped out of school, accounting for 2.04 percent of all students enrolled in Pennsylvania’s public schools. The percentage of drop outs from Charter Schools and AVTSs while higher in percentage, have a smaller number of surveyed students. In Lackawanna County, 1.37 percent were dropouts and in Luzerne, 1.87 were drop outs during the year.²²

	Number Surveyed	Enrollments	Male Dropouts	Female Dropouts	Dropouts	Dropout Rate
Charter Schools	2,282	54,460	994	1,288	2,282	4.19%
Comprehensive AVTSs	464	14,380	278	186	464	3.23%
School Districts	14,253	762,755	8,300	5,953	14,253	1.87%
	16,999	831,595	9,572	7,427	16,999	

Students drop out of school for a wide variety of reasons. These reasons provide insight into the issues that prevent students from obtaining an adequate level of education. Among students who provided a reason to explain their decision to drop out (50.15 percent gave no reason), most attributed their choice to exceeding the maximum age allowed by law or failing to complete the education program approved by the school district and/or state (14.78 percent). A large percentage of students dropped out because they disliked school (14.05 percent). Other reasons listed for dropping out include academic problems (6.83 percent), behavior problems (6.05 percent), wanting to work (4.06 percent), expulsion or running away

from home (2.25 percent), and a need to care for children (1.82 percent). Clearly, a multitude of reasons exists to explain why students drop out of school before graduation; however, the most common reasons, by far, are a failure to complete the government-mandated education programs and a dislike of school. Those two issues are the ones that need to be made primary among legislators seeking to implement postsecondary education and career readiness programs into the K-12 school system. After all, if students are not graduating from high school, they will not participate in lifelong learning. More importantly, they are unlikely to be earning family sustaining wages.²³

Most students who graduate from high school in Pennsylvania wish to matriculate into some form of postsecondary education program. According to data from the 2011-2012 school year, 73.9 percent of graduating high school seniors are postsecondary bound to a two-year or four-year college or university, a specialized associate degree-granting institution, or a postsecondary institution that does not grant degrees. Out of the total number of high school graduates, 68.6 percent were planning to enroll in a traditional two-year or four-year institution, while 2.7 percent reported enrolling in a specialized associate degree-granting program. The remainder (2.5 percent) of postsecondary bound students planned on enrolling in a postsecondary institution that does not grant degrees. Indeed, high school graduates in Pennsylvania want to continue their educations. The benefits of postsecondary education have been well documented, whether it is a four-year degree, two-year degree, or certificate program. Lifetime earning potential grows significantly as individuals increase their education. According to 2012 Census Bureau estimates, 9.1 percent of adults 25-64 in Pennsylvania with only a high school diploma were unemployed, while that number drops to 7.6 percent for those with some postsecondary training or an associate degree. For Pennsylvanians with bachelor's degrees, the unemployment rate was a mere 4 percent in 2012.²⁴

Furthermore, acceptance into and enrollment in a postsecondary educational program does not necessarily indicate that a student is prepared academically for the challenge. ACT has established College Readiness Benchmarks in English, reading, mathematics, and science. By meeting a benchmark, a student has a 50 percent chance of earning a grade of B or higher and a 75 percent chance of earning a grade of C or higher in a college course on that subject. In 2011, 66 percent of students met the benchmark for English and 52 percent met the benchmark for reading. The statistics were not so promising in math and science, with only 45 percent and 30 percent of students meeting the benchmarks, respectively. A mere 25 percent met the benchmarks in all four subjects, while 28 percent of students met none of the benchmarks. Research continually shows a direct relationship between the benchmarks and retention, progress, GPA, and degree completion in postsecondary educational programs. With the data in mind, one could rightly assert that many students are leaving high school largely

unprepared for success in postsecondary institutions. According to the data regarding College Readiness Benchmarks, most high school students do not have the knowledge and skills sets to perform well in college classrooms, particularly in math and science courses.²⁵

Though it is important that students are eligible to pursue postsecondary education by meeting academic requirements, eligibility must be distinguished from true readiness. Beyond academic preparations, there are other factors that contribute to a student's readiness to succeed in college. These non-cognitive factors include academic behaviors like paying attention and doing homework, ability to persevere and maintain self-discipline, positive attitude, study skills, and social skills.²⁶ This type of mental asset is described in *How children succeed: Grit, curiosity, and the hidden power of character*:

“Non-cognitive strengths allow for cognitive flexibility as one thinks about and negotiates and functions in the messiness of the real world. In everyday situations, individuals with such attributes *realize* that mistakes are a natural part of continuous learning, *persevere* when faced with difficulty, *remain* calm yet productive during times of uncertainty and ambiguity, *listen* with empathy, *seek* constructive feedback, *think* about their thinking (metacognition), and *manage* impulsivity.”²⁷

In order to facilitate post-graduation success, these necessary qualities must be cultivated in students.

Students who enroll in postsecondary educational institutions do not always have career plans in mind. In fact, approximately 60 percent of college students nationwide enter college without a defined major. These “undeclared” students, as they are often called, lack specific career plans.²⁸ Entering college without declaring a major may be a wise decision, as it allows the student time to explore classes in a variety of majors so he or she can discover what major would be the best fit. At the very least, undeclared students are able to take the core classes required of all postsecondary students. Yet, while entering college undeclared is a great decision for some students, it is not the right decision for everyone. In fact, students who choose majors that align with their interests are more likely to persist in college, remain in their major, complete their degree in a timely manner, and earn high GPAs. Thus, students should be encouraged to choose a major that relates to their interests and abilities, rather than enter college undeclared.²⁹

While many students do eventually set career-related goals and choose a major, others do not. In fact, 65 percent of college students do not graduate with a Bachelor's degree within four years, while 43 percent do not graduate within six years. Many students who begin at postsecondary educational institutions never graduate at all. These statistics indicate that

students are leaving high school unprepared for what comes after. Not only are they unsure of what career path they should take or what kind of education is most appropriate for their desired careers, but they are unable to complete their education. The large percentage of students failing to complete their postsecondary educations in a timely fashion, if at all, represents an opportunity for school districts to better prepare students for life after high school.³⁰ Career Readiness in K-12 may increase the number of high school graduates with a more defined plan for postsecondary education including specific majors. Nationally, many students do not complete their postsecondary education. In fact, a large percent of students do not even reenroll in college following their first year. In Pennsylvania, about 38 percent of students who enroll in public 4-year colleges fail to graduate within six years. For private 4-year colleges, about 27 percent do not graduate within six years. For 2-year colleges, graduation rates are even lower.³¹ These findings indicate that a sizeable portion of students are wasting precious resources, like their time and money, on taking courses that will not help them in obtaining a degree or a career. After all, many employers are looking for individuals with a degree or certificate of some kind as a form of proof that the individual is prepared for a specific career. While there are many reasons why someone may be unable to complete a postsecondary education program, the lack of a degree or certificate may signal to potential employers that the individual lacks persistence and dedication, both necessary skills for success in the workforce.³²

Coupled with the varying reenrollment rates at the different types of postsecondary institutions are the College Readiness Benchmarks met by students who choose to enroll at those institutions. The fewer benchmarks a student meets, the more likely that student is to enroll in a two-year college and the less likely he or she is to choose a public or private four-year institution. Out of the students who met all four benchmarks, 52 percent enrolled in a four-year public college or university, 27 percent enrolled in a four-year private college or university, and only 6 percent enrolled in a two-year college. On the other hand, 25 percent of students who met none of the benchmarks enrolled in a two-year college, while 18 percent enrolled in a public four-year institution and 5 percent enrolled in a private four-year college or university. With those statistics in mind, one can assert that students who are better prepared for college choose to matriculate into programs at four-year colleges and universities, while their less-prepared peers enroll at community colleges. The varying levels of preparation and their relationship to the type of institution students choose may very well impact the disparate reenrollment rates between two-year and four-year institutions. Perhaps if more students met the benchmarks, there would be higher reenrollment rates for students entering their second year of college. Moreover, the reenrollment rates for students at community colleges would increase if students were better prepared for college-level academic work.³³

Of the individuals who do enroll in a postsecondary institution, many are required to take remedial courses. Between 50 and 70 percent of all students who enter community colleges in Pennsylvania are required to take complete some form of remedial coursework. Furthermore, one out of every six students enrolled in one of the four-year colleges and universities in Pennsylvania that offer remedial courses (not all of them do) is required to take at least one remedial class. Many of the colleges that do not offer remedial courses are partnered with community colleges so students can obtain coursework at a two-year school as a form of remediation before matriculating to a four-year school. Postsecondary institutions allocate approximately 10 percent of their annual budget to remedial courses, pilfering resources that could be utilized in other ways were those courses not needed. The need to spend funds on remediation is also part of the reason behind astronomically high tuition rates. While remedial courses do enable many students to attain a postsecondary education, those courses should not be necessary in the first place. Indeed, remediation is a way of teaching students skills that they should have learned in high school. Clearly, school districts in Pennsylvania can do more to prepare students to be lifelong learners.³⁴

Socioeconomic Implications

Some groups of students leave high school exhibiting higher levels of postsecondary education and workforce readiness when compared to other groups of students. For example, low-income students and potential first-generation college students are less likely to further their educations than their wealthier peers. Some of these students lack the financial resources needed to attain a postsecondary education, while others are unsure of how to apply to institutions of higher learning. Without a college degree or some form of postsecondary certification, these individuals tend to have lower paychecks and are less active in their communities.³⁵

Research has shown that, in the state of Pennsylvania, students who come from lower-income families are less likely than their higher-income peers to plan to attend postsecondary education programs. A survey from 2006 provided statistics on this issue, showing that only 64 percent of students from counties reporting the lowest family income quartile and 65 percent of students from counties that make up the second lowest family income quartile planned to further their education past high school. Those percentages significantly increase as family income increases. Among students from counties accounting for the second highest family income quartile, 74 percent planned to enroll in postsecondary institutions. Finally, 75 percent of students from counties reporting the highest family income quartile report postsecondary education plans. Note that those statistics provide information only on students' plans, not their actual achievements. Additionally, the dataset lacks analysis of income levels and their relationships to college graduation rates. However, this study does reveal that income levels definitely affect students' plans for after graduation. If a student does not plan to attend a

postsecondary institution, he or she will not apply. Clearly, a student who does not even fill out an application has no chance of attaining a postsecondary education that could be beneficial to his or her future career.³⁶

Race and ethnicity are also related to career plans and postsecondary educational achievement. During the 2011-2012 school year (the last school year for which statistics are available), African American and Hispanic students dropped out of school in Pennsylvania at the alarming rates of 4.63 and 4.79 percent, respectively. Those statistics reflect a much higher dropout rate than the 2.04 percent state average. Students considered multiracial also dropped out of school at a particularly high rate (2.44 percent). With a dropout rate of 2.22 percent, American Indian and Alaskan Native students are also more likely than average to drop out of high school. Race and ethnicity alone do not reflect career plans and postsecondary achievement. Poverty plays a key role as these students are most often in low performing schools. These statistics are especially alarming when noting the relatively low dropout rates among Caucasian students (1.24 percent). Additionally, Asian students and Native Hawaiian or Pacific Islander students experienced below-average dropout rates of 1.16 and 1.80 percent, respectively.³⁷

While 73 percent of Caucasian students in Pennsylvania plan to further their education at some form of postsecondary institution, only 64.8 percent of African American students, 60.9 percent of Hispanic students, and 67.6 percent of multiracial students are making similar plans. Even more shocking are the statistics concerning American Indian and Alaskan Native students. Only 59.7 percent of students from that minority group report plans to enroll in postsecondary institutions. All of the minorities listed report future education plans at rates lower than the state average of 71.4 percent. On the other hand, Asian students and Native Hawaiian or other Pacific Islander students are more likely than average to report education among their post-graduation plans, with 83.3 percent and 77.9 percent, respectively, planning to enroll in some form of a postsecondary institution.³⁸

Navigating the Postsecondary Path

As noted above, many students find the college application process to be confusing. To enter into postsecondary education, students must take entrance tests, apply for financial aid, choose institutions to apply to, fill out college or program applications, and then finally select one institution from among the ones to which they are accepted. The process can baffle any student, but it is especially overwhelming for students who do not have adequate family support, such as potential first-generation college students. Students would greatly benefit from additional school support in this area. First, students must be informed about the standardized tests required by many colleges for admission. High schools could offer entrance

test preparation courses during non-school hours. Additionally, guidance counselors can relay information about test dates and deadlines to students through class visits and informational handouts. Students also must determine to which institutions they will apply. This task can be daunting, so help from school personnel is often highly welcome. School staff can coordinate individual meetings with students to help the students consider factors that are important to them. These factors include majors, geography, admission requirements, and school size. To encourage parents to visit college campuses with their children, guidance counselors can provide families with the contact information of college admissions offices and itineraries of key places to stop by when visiting any college campus. Schools can also coordinate visits from college admissions representatives. Additionally, school officials can also plan one-on-one meetings or small group workshops with students to help them write their college essays and complete their applications. At the very least, school staff could disseminate timelines that enable students to better plan their personal application process.³⁹

Financial aid is another essential component of that assistance. Guidance counselors and other similar professionals should educate students and their families on the financial cost of college and on the types of financial assistance available to those wishing to pursue postsecondary education. Students can also be given advice on selecting an institution they can afford in order to reduce the amount of debt students must take on to achieve their career goals. Additionally, students should be able to attain assistance in applying for financial aid, as it can be a highly confusing process. For example, schools could host workshops where students and their parents can obtain assistance in completing a FAFSA from a college financial aid representative or a trained member of the high school staff.⁴⁰

One way to implement these changes into schools is through hiring a college adviser. While guidance counselors have traditionally helped students prepare for college, many school counselors today are overwhelmed with students and cannot meet the needs of students who need extra assistance making preparations for college. The National College Advising Corps (NCAC) serves as one model of a successful initiative to assist high school students in college planning. The NCAC provides persistently low-performing high schools with recent college graduates who serve as full-time advisers. These advisers help students with every aspect of the college application, matriculation, and financial aid processes. Additionally, advisers foster a school-wide culture that promotes the importance of college access. The NCAC program has been widely successful. For example, schools served by the program have seen an 8-12 percent increase in the number of students who enroll in college following graduation. Furthermore, students from these schools receive \$1 million more overall in college scholarship funds than do students from similar schools not being served by the program. Finally, students at NCAC partner high schools are more likely to visit colleges, attend college fairs, complete FAFSA

applications, and register for the SAT and/or ACT. These advisers are paid through the AmeriCorps program. The results prove that hiring a college adviser is far worth its price.⁴¹

While school districts play an essential role in preparing students for postsecondary education and readying them for careers, these school districts cannot act alone. Besides partnering with area colleges (as mentioned previously), school districts can also work with policymakers, businesspeople, and community members to ensure that students are ready for the world of work. Policymakers can lobby the government to adopt standardized career readiness measurements to be given to students. If schools have a means of determining and ensuring readiness, students will have an easier transition from high school to college or another education program and then to work because they will be adequately prepared. By partnering with businesspeople, education programs can be developed around the types of employees that local businesses need most. These businesses can also provide students with job-shadowing opportunities and internships. Finally, communities can create resources and programs that align with the workforce readiness goals of local K-12 school districts.⁴²

Postsecondary Choices

Traditional secondary school options do not work for all students. While many students thrive in traditional public high schools, other students find that a conventional education does not meet their needs. Students with varying types of abilities, interests, and goals may find that an education from a Career and Technical Center (CTC) is the best option for them in terms of a high school education. However, many families shy away from that option because of misconceptions about the type of education that a CTC can provide. Contrary to popular belief, all students enrolled in CTCs receive a core education similar to that of students enrolled in conventional public high schools. Besides instruction in subjects like math and English, students at CTCs also take classes that focus on specific skills related to a career of the student's choosing. Through the career-related classes, students learn what it is like to work in the occupation for which they are training. For example, students in cosmetology programs get to cut people's hair and students in automotive maintenance programs get to repair vehicles. Inherent in this workforce training is instruction on skills, such as time management and problem solving, that will transfer into any workplace. Students in these types of high schools are being trained to meet the needs of their local, regional, and state economies.⁴³

Typically, students are initially exposed to CTC courses of study in middle school. During the junior high years, students are often given the opportunity to participate in experiential learning related to the occupational preparation programs at their local CTC. CTCs can train high school students through programs from among seven occupational areas: Agriculture, Business, Family and Consumer Sciences, Health Occupations, Marketing, Technology, and

Trade and Industry. Additionally, many CTC students are provided with opportunities during high school that take them outside of the physical school building to introduce them to the workplace. Cooperative programs allow students to work at actual jobsites in exchange for training, compensation, and high school credit. Some CTCs also offer job maintenance clubs. At club meetings, students learn how to maintain their jobs through instruction on various necessary skills, such as social skills and meeting employer expectations.⁴⁴

CTC students are also provided with a host of extracurricular opportunities to further enhance their level of career-readiness. Through participation in federally funded Career and Technical Student Organizations, students increase their self-confidence and improve their decision-making and problem-solving abilities while enhancing their employability all at the same time. Students who become members of these organizations spend additional social and educational time with their teachers and classmates, gain leadership skills, and travel to jobsites, potentially to even participate in a job shadowing experience. Furthermore, these organizations often sponsor conferences where students can compete in skill demonstrations and meet with like-minded peers and teachers from other schools. The Career and Technical Student Organizations recognized and funded by the federal government are as follows: Distributive Education Clubs of America; Future Business Leaders of America; Family, Career, and Community Leaders of America; National Future Farmers of America; National Young Farmer Education Association; National Postsecondary Agricultural Student Organization; National Health Occupation Students of America; SkillsUSA-Vocational Industrial Clubs of America; and Technology Student Association.⁴⁵

Students enrolled in CTCs are succeeding in high school and beyond. When compared with their peers enrolled in traditional public high schools, CTC students have higher attendance rates and GPAs. Individuals with the kinds of vocational training offered by CTCs tend to enjoy well-paying careers, job security, pride in their work, and occupational satisfaction. Additionally, the CTC students of today often defy the stereotype that students enrolled in vocational education do not obtain any education beyond high school. Laws require that CTC students be prepared to enter postsecondary institutions, and many do matriculate into postsecondary technical programs, community colleges, or four-year colleges or universities. In fact, CTC students who plan to further their education after high school graduation can enroll in a Tech Prep program. Through those programs, students are provided with a specific curriculum of classes in math, science, communications, and technology. Additionally, Tech Prep programs are linked with postsecondary educational programs, so students can spend two years at the CTC before transferring to a postsecondary institution for another two or four years of education. The Tech Prep program successfully trains students for employment in an occupation that is currently seeking highly-skilled individuals. Examples of

such in-demand and well-paying fields include nursing, computer programming, and carpentry.⁴⁶

While CTCs provide a solid vocational education for many students, there are various drawbacks associated with such an education, as noted in a section above. However, there are steps CTC personnel can take to ensure that students will have a better chance at success. Since many CTC students stay on at their co-op job after graduation, CTCs could consider extending the co-op programs for a year after graduation for all students. Surely, this move would provide students with a smoother school-to-work transition. Additionally, it would allow more CTC graduates to attend postsecondary education, as many employers in technical fields provide education reimbursement to employees who have worked at the job for a certain period of time. Furthermore, CTCs could host programs and workshops, like traditional high schools do, to help students understand and navigate the postsecondary admissions and financial aid processes. These schools could also provide students with dual enrollment opportunities. Finally, CTCs could establish a system of mentoring relationships between older alumni and recent graduates. Those relationships will provide for general support, as well as assist recent graduates in their jobs search.⁴⁷

For these suggestions to be implemented, proper funding is needed in areas where it has not already been granted. In order to ensure that the proper level of funding is granted, political officials need to make education a top priority. The governor, particularly, is responsible for defining the budget agenda each year. Governors have great influence over other state politicians and the general public. As such, the governor can be instrumental in ensuring that enough money is allocated in the state budget for education. Other state politicians help in this process by promoting budgets that prioritize education. Additionally, the state Secretary of Education can suggest policies that would improve education in the state. Indeed, politicians can work together to better public education in hopes that more students will graduate from high school prepared for postsecondary educations and/or careers.⁴⁸

Various avenues exist that politicians can use to promote the importance of postsecondary education and workforce readiness. At one extreme, the governor and other state politicians can amend the state's constitution to note that every individual has the right to a postsecondary education. While a measure that significant is not likely in the near future, other provisions have been made to assist students in their goals to attain education past high school. For example, the state provides grants to low-income students, establishes community colleges, and regulates other colleges and universities in the state. While all of those factors are important, the most crucial factor is funding. Without proper funding, few students will be able to attain postsecondary educations. Funding is also important at the K-12 level. If school

districts are not receiving enough government funding, they will have to cut back on important programs, leaving fewer students ready for postsecondary educations and careers.⁴⁹

Several areas exist on the path to postsecondary education and career readiness that can use government attention. First, the government can adopt measures to promote postsecondary education attainment among traditionally underserved populations, such as minorities and low-income individuals. More individuals from these populations will attend postsecondary education programs if they are provided with a better high school education and if they have better access to community colleges. The government can help by establishing community colleges in counties that are currently lacking such facilities. Alternately, the government could assist already existing community colleges expand their distance education programs so students in other counties could have access to low-cost education. Next, the government needs to tackle the high costs often associated with postsecondary education through financial aid education for high school students and grants for college students. Third, the government can play an active role in increasing the number of students graduating with degrees in STEM fields from state-run universities. In order to accomplish this goal, the government will need to divert special funds toward helping postsecondary institutions improve their science, technology, math, and engineering programs. Similarly, the government can provide special funding to K-12 school districts so the school districts can improve their math and science curriculums. Students who are not proficient in math and science in high school are unable to attain STEM degrees at the postsecondary level.⁵⁰

Additionally, the government can reward community colleges that operate successful remediation programs. Since remediation is currently necessary for many Pennsylvanians, the government should ensure that the funds it diverts to such efforts are used wisely. If community colleges are viewed, in part, as centers of remediation, students in need of such services will be less likely to go into unnecessary debt by taking those classes at a more expensive four-year college or university. With less debt, students will be more likely to graduate from college and will be in a better position financially when they finish their education. However, the main goal should be to ensure that fewer students need remediation in the first place. To do this, the government needs to establish a high school curriculum that prepares students for postsecondary education. In sum, the government needs to carefully invest its money in specific areas of education, rather than just blindly increase education funding overall.⁵¹

Once students enroll in a postsecondary educational institution, they still need support to help them achieve their goals. While there are many ways that institutions could assist their students, some options are better than others. Community colleges are more likely to retain

students if they offer tutoring and provide students access to learning assistance centers, such as math, writing, and reading labs. Additionally, community colleges that place students in courses based on entrance test scores and that require remedial coursework for students who need it have higher student retention rates. Other ways that community colleges can retain students include offering programs for first-generation students and increasing the amount of academic, financial aid, and career planning advisors and advising resources available to students.⁵²

Private and public four-year colleges and universities can also employ strategies in hopes of increasing student retention rates. Public four-year colleges with the highest retention rates offer academic advising centers, learning assistance centers, supplemental instruction, programs for first-generation students, tutoring, programs for honors students, residential living/learning communities, programs for international students, and summer bridge programs. Additionally, these public colleges provide special assistance to first-year students through required on-campus housing and integrated advising/transition programs. For four-year private colleges, the best strategies for increasing student retention rates include offering academic and financial advising, learning assistance centers, tutoring, and programs for first-generation students and honors students. Private colleges looking to increase retention rates should also require first-year students to live on campus and partake in an integrated advising/transition program.⁵³

Current Legislation

The No Child Left Behind Act is federal legislation that has witnessed a considerable amount of widespread attention. This legislation was intended to improve the academic achievements of the disadvantaged; improve basic education; create prevention and intervention programs for children considered to be neglected, delinquent, or at-risk; prepare, train, and recruit high-quality teachers and principals; enhance education through technology; provide language instruction for English Language Learners; create safe and drug-free schools; promote informed parental choice programs; construct public charter schools; and assist magnet schools. Also included in this legislation were specific allocations for education funding. Funding was provided for initiatives involving elementary and secondary school counseling, character education, smaller learning communities, book distribution, gifted and talented students, teacher training, foreign language assistance, physical education, technology centers, economic education, children's mental health, the arts, parental assistance centers, domestic violence prevention, private schools, education of homeless children, and equality in education. A well-known and controversial portion of this act rests in its emphasis on standardized tests. Through the No Child Left Behind Act, school districts are held accountable for students'

academic performance on these tests. If students do not achieve levels of proficiency on standardized tests, school districts risk losing some of their government funding.⁵⁴

The No Child Left Behind Act has been criticized for a number of reasons. Instead of teaching material they feel is interesting and important, teachers have to instruct students on the material included in the high-stakes standardized tests. Other opponents criticize the act for having set unrealistic goals. For example, not all students are going to test at or above grade level in all subjects. Students have differing academic abilities that, while allowing them to perform very well in some subjects, prohibit them from performing at grade level in others. Additionally, some students might be poor test takers or resistant to the standardized testing format. With these reasons and many others in mind, various individuals have found fault with the No Child Left Behind Act.⁵⁵

Despite the criticisms of the No Child Left Behind Act, it has been credited for some progress among school students in America. Since the act passed in 2001, standardized test scores have increased, the overall achievement gap between minority students and their white peers has decreased, and more classes are being taught by highly qualified teachers. Additionally, hundreds of thousands of students have benefited from free tutoring services and other similar forms of academic assistance. However, the act leaves ample opportunity to improve outcomes. The increasing standardized test scores do not indicate that students are leaving high school better prepared for postsecondary education programs and/or the workforce. Since teachers are often teaching to the test, students are simply better prepared to take specific standardized tests. They are not necessarily being adequately prepared with the well-rounded knowledge base, interpersonal skills, and creativity that they will need in the future. The improved test scores may not even indicate that students have improved reading and math skills in general. Rather, students have just improved overall in taking standardized reading and math tests. Writing PSSAs and science PSSAs were implemented in 2006 and 2008 respectively. With so much emphasis on reading and math scores in previous years, other subjects suffered. The writing and science PSSA results demonstrated that fact. Furthermore, the No Child Left Behind Act is holding all students to the same standard without recognizing that all students are indeed not the same. The act is also promoting the importance of several subjects at the costs of other important subjects.⁵⁶

The federal government shapes policy to help individuals attain postsecondary education. For instance, this level of government is responsible for financial aid and college loans. With hopes of enabling more individuals to continue their educations past high school by lowering the cost of a college education, the federal government passed the Higher Education Opportunity Act in 2008. First under this act, the federal government will withhold certain funding to states who fail to fund higher education at a level equal to or greater than the level

of the previous five years. This act also includes provisions regarding Pell Grants. Under the Higher Education Opportunity Act, Pell Grants will increase \$400 each year until the 2014-2015 school year. Additional Pell Grants will be awarded to colleges and universities that limit net tuition increases. The Secretary of Education is now required to publish an online list of the postsecondary institutions that have increased their tuitions and/or net prices the most. Schools that appear on this list are required to report the reasons behind the hefty increases, as well as their plans to prevent any future increases. Also available on the Secretary of Education's website is a calculator that potential college students can use to estimate the cost of a postsecondary education based on income levels and family situations.⁵⁷

Various policies concerning loans are also part of the Higher Education Opportunity Act. These laws are intended to promote transparency and eliminate conflicts of interest. Under this act, postsecondary institutions are required to provide loan-seeking students with counseling before they sign their first master promissory note. This counseling includes information on indebtedness, sample monthly repayment amounts, approximate starting salaries, repayment options, and default consequences. Part of the transparency requirements includes mandating postsecondary institutions to provide students with a list of preferred lenders and the reasons why the institution considers those lenders to be preferred. Students must also be informed that they have a right to choose lenders who do not appear on the list. Perkins Loan limits were also increased through this act. Undergraduate students can now borrow up to \$5,500 annually and graduate students may borrow up to \$8,000 annually as compared to the previous annual limits of \$4,000 and \$6,000, respectively. In the aggregate, students who have completed at least two years of study may borrow up to \$27,500 and graduate and professional students may borrow up to \$60,000. All other students can borrow a maximum of \$11,000.⁵⁸

Other provisions were made possible by the Higher Education Opportunity Act, as well. This act includes provisions on textbooks, which are a major expense for most students. Publishers are now required to disclose to faculty the prices, formats, copyright dates, and substantial content revisions of textbooks. Additionally, postsecondary institutions are required to provide students with the prices and ISBN codes of the textbooks they will need for class. Thanks to that stipulation, students can now search online for a better price rather than pay the high cost of textbooks from the school bookstore. Finally, the law made improvements to the Federal Application for Free Student Aid (FAFSA). In an effort to streamline the FAFSA process, the application is now available in both paper and electronic formats. Students currently need to provide less information when completing the FAFSA, and some information can even be retrieved directly from the Internal Revenue Service. Additionally, a simplified FAFSA is available for low-income individuals.⁵⁹

The original version of the Higher Education Act was passed in 1965, and amendments were made to that act in 1998. These amendments are still in place today. These amendments involve enhancing teacher quality and improving institutional aid. Like the Higher Education opportunity Act of 2008, a large part of the 1998 amendments to the 1965 act ensure the affordability of a college education. Amendments to the act increased funding for scholarships, grants, and Trio and Gear Up programs. Additionally, funds for childcare access for parents in school were included in the act. Also incorporated in the 1998 amendments to the Higher Education Act of 1965 are provisions regarding student loans, federal work-study programs, and needs analysis (used in determining the amount of financial aid students will receive). Indeed, the Higher Education Act of 1965 and the amendments made to it in 1998 have been instrumental to ensuring that more students can attain a postsecondary education.⁶⁰

The state of Pennsylvania has also passed education legislation in the form of the public school code in an attempt to promote postsecondary education and career readiness. For example, one section of the public school code establishes science technology partnerships between school districts and postsecondary institutions. These partnerships foster knowledge of STEM subjects and give school students access to postsecondary institutions. Both of those factors promote education and career readiness. Another way that the state government promotes STEM education is through the New Economy Technology Scholarship. An individual wishing to earn this scholarship must be enrolled in a special technology program that trains individuals for employment in occupations currently in high-demand. Other legislation provides grants to school districts that engage in concurrent enrollment partnerships with nearby postsecondary institutions. Through concurrent enrollment partnerships, high school students can enroll in college courses for which they earn both high school and college credit. The State Board of Education is also responsible for community colleges, as well as postsecondary technical institutions located at public vocational-technical high schools.⁶¹

State legislation provides educational opportunities for underserved individuals. For example, the Board of Education funds Community Education Councils that bring postsecondary educational opportunities to economically disadvantaged and/or rural communities. The board also provides a grant for postsecondary institutions to provide these communities with two-year occupational training programs. Additionally, the Higher Education Equal Opportunity Program supports equality in education for traditionally underserved populations. Another important piece of state legislation that promotes equality in education is the Pennsylvania Fair Educational Opportunities Act. This act prevents discrimination in education based upon sex, age, race, and/or creed. Furthermore, the Pennsylvania Department of Education has established adult and family literacy education programs for underserved

populations. These programs are aimed at uneducated or undereducated adults and their families, as well as at adults who speak different language. Children whose parents lack proper education often fall behind in school because they do not receive adequate support at home. With these adult training programs, more parents will be able to improve their own careers, as well as encourage their children to succeed.⁶²

The Board of Education and similar entities promote postsecondary education by establishing the Pennsylvania State System of Higher Education, which creates and provides funds to public colleges and universities. Coupled with this establishment are various common courses that are transferable between the different public institutions of higher learning. Additionally, older Pennsylvanians can enroll through the Agency on Aging in courses at these institutions free of charge. This agreement promotes postsecondary education to individuals who may have been previously unable to attain instruction past high school and is especially important in today's economy, when workers are retiring later and living longer.⁶³

The State Board of Education and Department of Education work together to make postsecondary education more financially feasible for students. Not only have they created a committee to address the issue of textbook affordability, but they have also established a fund for economically disadvantaged graduate school students. The Pennsylvania Higher Education Assistance Agency provides financial support for college students and appropriates money for private institutions that do not receive other state funding.⁶⁴

Some legislation promotes workforce readiness. Workforce Development Boards throughout the state provide grants so individuals can be trained to work in jobs currently in high-demand. To dually promote K-12 educations and career readiness, loan forgiveness programs have been created for first-year teachers who are working in certain school districts. These programs attract highly qualified teachers to the neediest areas of the state. Similar loan forgiveness programs are also available to early childhood education professionals. These programs allow more individuals to attend college, as part or all of their debts are forgiven. Without the loan forgiveness programs, many potential educators would be unable to afford postsecondary education.⁶⁵

Besides initial recruitment, government officials also want to maintain qualified teachers. Thus, the state has established a ranking system for its educators. Included in the rankings are measures considering a teacher's personality, preparation, and technique, as well as the opinions of the students that the teacher has taught and/or is currently teaching. School districts can use this ranking system to monitor their teachers and ensure that the educators employed are providing students with an excellent education.⁶⁶ However, given the intangible

qualities that make up an effective educator, there are some inherent challenges in measuring teacher quality that have not been fully resolved.

At the high school level, the state has issued legislation in hopes of ensuring that students are prepared for postsecondary educations and/or careers. First, the state requires compulsory school attendance through age 17. Exceptions to the law are permitted when 16 year old students are working at least 35 hours per week or when students aged 14 and older have been approved by the school district to work on a farm or in a private home. Additionally, the state has set instruction time at a minimum of 180 days per year. In an attempt to ensure that students are learning material considered to be necessary, students are tested in reading, writing, and math through the Pennsylvania System of School Assessments. Students must attain a level of proficiency on the assessments in all three subjects before they are permitted to graduate from high school.⁶⁷

To promote education for the youngest students, the Pennsylvania state government has established early intervention programs for children identified as being at-risk. Through these programs, the development of young people is supported in such a way that enables them to take full advantage of educational opportunities at a level similar to that of their peers. State legislation also includes provisions regarding the instruction of students who are homeless, incarcerated, in residential treatment facilities, or considered English Language Learners. Furthermore, the state government has commissioned studies of students who are pregnant or parenting so provisions can be made to best serve that population. When people who need extra help are able to get that assistance, they have a better chance of succeeding in their endeavors. Without these intervention programs, many more individuals would be unable to attain postsecondary educations or gainful employment.⁶⁸

Not all children are enrolled in a traditional public school. Indeed, many students are educated through a charter, cyber, private, or parochial school, while others receive their schooling at home. Like all other individuals, though, these students should still be expected to graduate from high school ready for postsecondary educations and/or careers. To ensure that all types of schools are properly educating students, the state government does monitor non-public schools to a certain extent. The state provides various levels of funding to these types of schools, which are subject to many of the same laws as the public schools. Additionally, students enrolled in charter, cyber, or home schools must take the standardized assessments that are given to students in traditional public schools.⁶⁹

Recommendations

In order to engage in postsecondary education, students need to be prepared to enter such an educational program by the time that they graduate from high school. Most school districts begin preparing students in this way through college preparation classes when students start high school. However, not all students are placed in these preparatory classes. Even some students who are enrolled in college preparation courses are still inadequately prepared for college, leaving many to argue that preparation for careers and postsecondary education should begin long before a student starts high school.⁷⁰

In order for students to take full advantage of the courses offered by their high schools, however, the students must be advised before they start high school of what courses will be beneficial to them as they plan for college or other form of postsecondary education or training. Additional follow-up outreach should be targeted to at-risk students. High schools can also schedule meetings with individual students and guidance counselors or teachers who can assist the students in selecting the most rigorous course schedule appropriate. At these meetings, students, their parents, and the school officials work together to develop a personalized learning plan for the student to ensure that he or she will be appropriately prepared for the type of postsecondary education he or she desires. This suggestion also means that teachers, guidance counselors, administrators, and other school officials must have access to the knowledge.⁷¹ Without access to initial career readiness programs in middle school, many students may not know what their postsecondary plans are, so it is advisable that students take more than the minimum required coursework. More advanced students should be given opportunities to enroll in AP/IB courses or courses at a local college.⁷²

Some argue that not all students are going to be able to handle the rigor of such an environment. While that may be true, all students must be prepared for some level of postsecondary education, even if they initially choose not to further their education beyond high school. Therefore, efforts to prepare students to handle some element of postsecondary education should be developed. This is critical given the growing need for postsecondary job training, degrees, and certifications required of jobs that formerly required only a high school diploma. In order to determine if students are on track to being prepared for postsecondary education upon high school graduation, high schools should carefully evaluate the current assessment measures to determine and resolve the academically weak areas of individual students. Examples of assessment measures that can be used for this purpose include college or community college placement exams, college admissions exams (e.g., PSAT, SAT and ACT), and statewide or local assessments. School districts can also look to the GPAs and course schedules of individual students to attain this information. Individualized plans can then be created for students who are not on track to enter their desired level of higher

education. To help students who are having difficulty succeeding, school districts can offer peer tutoring programs, homework assistance, and summer school instruction. High schools can determine if their efforts are successful by statistically monitoring the number of graduates who successfully matriculate to institutions of higher education.⁷³

In all aspects of class work and testing, educators must foster and reinforce non-cognitive skills development. This should begin in elementary school and like, critical thinking skill development, these concepts are as integral as the fundamentals and subject matter.

School districts should foster a culture of postsecondary educational access. This notion means that teachers, administrators, and other school professionals talk openly and often about the importance of a postsecondary education and lifelong learning. These individuals support students' ambitions and help them determine appropriate career plans. As part of this culture, community professionals or postsecondary college students can visit high schools to mentor students there. Besides serving as role models, these mentors can also monitor students' academic progress and provide students with postsecondary application assistance. Mentors and students generally meet on a regularly scheduled weekly or monthly basis, as well as at school-sponsored social events. As often as possible, middle and high schools should try to collaborate with local postsecondary institutions. Not only would this provide college-aged mentors, but it would also open up possibilities for students to learn more about life after high school. School clubs could plan a visit with a postsecondary equivalent, and groups of students could visit an institution of higher education together. Schools can also offer peer groups for students interested in pursuing postsecondary educations. Examples of these peer groups include college access programs, debate teams, honor societies, and community service clubs. If possible, school districts can provide students with hands-on experience in career fields that are of potential interest to them. For instance, students can listen to speakers, participate in a day of job shadowing, or even obtain an internship.⁷⁴

Besides getting students excited for college and fostering positive attitudes about the value of postsecondary education, high schools should help students explore possibilities for majors. If students know what they want to major in – or at least have a few majors in mind – they will be able to choose wisely the school that they want to apply to based on the majors or special programs offered at the school. High schools need to be aware of and promote understanding of the breadth of careers available so that students can find the spark of interest that will sustain motivation. This is not a passive but active endeavor and requires training, career readiness curriculum and resources. For example, a student who wants to become a nurse would not want to apply to a postsecondary educational institution that did not offer a nursing program. Moreover, students who wisely choose majors based on their interests are

more likely to be successful in their collegiate endeavors. Various possibilities exist for school districts to help students make career-related decisions. High school guidance counselors have served as trouble shooters and identify strong college ready students. Their role could be expanded. High school guidance counselors could provide students with interest inventories and meet individually with the students to discuss the results. Additionally, high schools could hold seminars or workshops where students could learn how to choose a career that matches their strengths, interests, and abilities.⁷⁵

Although the Pennsylvania state government is already heavily invested in postsecondary education and workforce readiness, various areas exist where ideas for improvement have been noted. First, the state government needs to recognize the importance of lifelong learning for employment in the modern economy. Options for increasing lifelong learning opportunities include establishing an online portal where students can access personalized education plans, postsecondary institutions, occupations, skills, and employers. While that online portal would service mostly adults who have previously graduated from high school, the state may consider exploring numerous options to target students in grades K-12. Enhanced college and career counseling and financial literacy education can be provided to students who need extra support when making educational and career decisions. Preexisting dual enrollment programs should be grown, with priority given to basic, transferrable classes in STEM fields (e.g., introductory biology or computer courses). These dual enrollment programs benefit students, postsecondary institutions, and businesses alike, and are thus well worth the cost. Contrarily, additional funding should be set aside for postsecondary students in need of remedial education. Without remedial services, many individuals would be unable to attain postsecondary education and would have a more challenging experience finding employment.⁷⁶

Another avenue the state government could explore involves making postsecondary education more accessible and affordable. This effort should be supportive of trade schools, technical centers, and community colleges as well as traditional colleges and universities. Although the state and federal governments already have laws in place to support higher education, the cost of postsecondary education has hindered many Pennsylvanians from getting the skills and training they need to excel in a rapidly changing economy. The government can work with institutions of higher education to maintain tuition costs. For example, the state government can continue to provide funding to public institutions. Investment in distance education and other similar learning models that require fewer human resources can make the higher education system more efficient and save funds over time. The state government can also support collaboration among various institutions. These collaborations often lead to significant cost savings. For example, colleges that are near to each

other physically can share the cost of certain software programs. Colleges can also permit students to take courses at a “partner” institution for no additional charge.

Another way that the state government could promote postsecondary accessibility and affordability is through the establishment of a collaborative system among all types of postsecondary educational institutions in Pennsylvania, focusing especially on community colleges and career/technical centers. By working together, these institutions will be able to provide more students with the degrees or certifications they need to begin their careers in in-demand occupations. Even with such collaborations, many students will still lack access to higher education. Thus, the government can create legislation to promote access among various groups of traditionally underserved people. Non-profit Community Education Councils (developed by the state government) can provide individuals from rural or economically disadvantaged communities with educational opportunities. Through these opportunities, community members can learn, in two years or less, skills for jobs needed in their geographic area. The state government can also encourage veteran’s education and distance learning. Other ways to promote the accessibility of postsecondary education for underserved groups include clearly articulating educational and career pathways, as well as increasing grant availability.⁷⁷

To ease the transition for students from high school to college, the government can commit to ensuring that more students leave high school prepared for a postsecondary education. The government should consider supporting expansion of the network of community colleges to better serve students transitioning out of high school. When students enter institutions of higher learning unprepared, they often transfer or drop out entirely. Not only is this expensive for students, but it is also costly for the government and the institutions if those students are receiving financial aid and/or scholarships. Students who are better prepared for their postsecondary educations and who are supported during their transition are a solid investment for the future.⁷⁸

The government could also explore possible legislation that would take full advantage of the potential inherent in postsecondary institutions for elevating the economic vitality of the state. The state government can appropriate funds to research institutions and STEM programs. Additionally, the government can develop Innovation Centers to generate economic activity, fuel job growth, engage student talents, and advance Pennsylvania as a leader in employment progress. Through the centers, opportunities for job training and certification will be made available. More importantly, the high number of qualified employees will bring corporations to the regions where the centers are located. To highlight the importance of STEM fields for economic vitality, state government can provide tax incentives for businesses

that provide educational institutions (at all levels) with STEM-related monetary support and equipment. Similarly, the state government can allot funds for STEM-related professional development, field experience, and experiential learning to students of all ages.⁷⁹

A clear path needs to be forged to bridge the gap between education and careers. The government has many options by which they could provide assistance in this department. For example, the state government could create a user-friendly website where students and job-seekers can access recent and relevant data related to the status of postsecondary education and the workforce in Pennsylvania. This website would help individuals make better and more informed education and career decisions. Potentially, the state government could form a committee to foster connections and enhance lines of communication between the business sector and the education sector. If businesses can inform educational institutions of all levels as to the skills the businesses are looking for in employees, K-12 school districts and postsecondary institutions can train students appropriately. That way, students will graduate ready for careers that are in high-demand.⁸⁰

Recently, the Pennsylvania Department of Education began a partnership with The National Center for College and Career Transitions (NC3T) to create College-Career Pathways, or specific curriculums that connect high school students to postsecondary education programs and careers. The program that the affiliation created, known as the Pennsylvania Pathways Innovation Network (PA-PIN), will help five teams of school-employer partnerships develop action plans and locate resources in an attempt to formulate a set College-Career Pathways for students. PA-PIN recognizes that high schools are failing students. With dropout rates high, college degree completion rates low, and many students not engaged in learning at school, PA-PIN thinks that “Every teen should have a Dream and a Plan.” NC3T is currently seeking partners; interested schools can apply this summer.⁸¹

Like other similar programs, PA-PIN will be organized around a set of core principles, including a college preparatory curriculum, career-technical component, experiential learning in a work setting, and academic assistance. Through these principles, the program will ensure that students graduate high school with the skills they need to tackle postsecondary educations and careers. In collaboration with its five partner teams, PA-PIN will develop College-Career Pathways. These pathways will be structured as high school curriculums that emphasize academic knowledge and workforce skill sets in technical education, liberal arts, science, math, or fine/performing arts, depending on the interests and skills of individual students. Regardless of their specific pathway, all students will be required to reach standards in English, math, and technology, as those topics have various important real-world applications for every career

choice. College-Career Pathways available to students will be determined from among the sixteen career clusters determined by the National Career Clusters Framework.⁸²

PA-PIN has determined the steps necessary for establishing the various College-Career Pathways. Beginning in middle school, students will explore potential careers through hands-on activities and computer-based assessments. By identifying interests and abilities, these students will be matched with careers and provided with information regarding the skills, knowledge, and education needed to enter into those careers. Students will officially begin their individualized College-Career Pathways during their sophomore year of high school. All pathways will include some career component, such as workplace tours, job-shadowing, and/or internships. Students will also be provided with opportunities to earn postsecondary credits through dual enrollment opportunities, AP/IB exams, and skill certifications. Additionally, students from participating schools will be encouraged to communicate with students from other participating schools via meetings and webinars. The types of pathways offered will depend on the employment opportunities available or projected to become available in Pennsylvania, as well as in the specific region of the program partners.⁸³

A planning and advisory council at each site will conduct analyses to determine the success of PA-PIN. This council will be comprised of school staff, community members, and employers. Student success will be measured based upon their attendance, suspensions, hope, engagement, motivation, and career development. The engagement and satisfaction of the staff at the participating schools will also be measured. Through this analysis, PA-PIN partners will be able to determine if the program is meeting the expectations of families, schools, and employers. Students enrolled in PA-PIN partner schools will also be compared to students from schools not participating in the program to determine if there are any differences between the two groups of students.⁸⁴

The Education and Economic Prosperity (E2) summit was recently held in the region to promote the development of a career-readiness program. Through workforce readiness efforts, K-12 students will understand the importance of work for identity and development. Those participating in the E2 summit believe that K-12 education, in its current form, is leaving students ill-prepared to decide upon postsecondary education options and career choices. Consequently, many individuals switch majors multiple times, experiencing difficulties transitioning from postsecondary education to work, and hop from one job to another. With those issues in mind, education professionals in the region are hoping to create a curriculum for all K-12 students that is based around Pennsylvania's Career Education and Work Standards. A curriculum based on career development will prepare many more students for postsecondary

educations and careers. A major part of this program is an electronic career portfolio, which all students would be expected to have developed by their senior year of high school.⁸⁵

Recently, officials in Pennsylvania have decided to delay implementing national Common Core Standards, although they claim that the Common Core Standards (when implemented) will result in a curriculum that is more rigorous when compared to what most public school students are accustomed. Note that the Standards, although national, are not created by the federal government. Rather, state and regional officials in forty-five states have crafted the Common Core Standards to ensure that students across the country are receiving similar educations that will prepare them for postsecondary education and the workforce through adequate preparation in academic subjects, especially English and mathematics. Although the Standards are not in place in Pennsylvania's public schools yet, the graduation exams – known as Keystone Exams – test students based on the Standards, and the PSSAs will be updated to reflect the Standards.⁸⁶

The Common Core Standards were set to go into effect in Pennsylvania on July 1, 2013, but Governor Corbett delayed the implementation, citing an infringement on state and local rights regarding K-12 education, as well as the cost of implementing the changes into the curriculum. In September, the Pennsylvania state Board of Education is expected to make a final vote on the Standards. Despite the delay, local school districts are preparing for changes. The Northeastern Educational Intermediate Unit and the Dunmore school district, for example, are providing educators with training on the Common Core Standards. Should the Common Core Standards be required in all public school district curriculums, they will be implemented slowly over the next three to five years.⁸⁷

The state government must pass policies to ensure that K-12 schools are appropriately preparing students for postsecondary educations and careers. While many possibilities exist for meeting the needs of students in relation to this issue, some options stand out above others. These options are cost-effective investments that will improve the workforce and, consequently, the economy.

Curriculum is the first area that needs to be addressed. The current curriculum in some school districts is inadequately preparing students for postsecondary education and is not readying them for in-demand careers. Policymakers must ensure that all students receive a level of education that would prepare them for some sort of postsecondary education. Currently, all high school students are required to take 120 credit hours of English, math, science, social science, and arts and humanities. Students must choose at least five courses in music, art, business education, computer science, home economics, consumer education,

industrial arts, foreign language or vocational education. Students must also prepare a high school project to demonstrate ability in writing and research and use creative and critical thinking skills. Students must also pass the Keystone exams (subject based exams) which account for one-third of their grade.⁸⁸ It has been indicated that The Independent Regulatory Review Committee (IRRC) of the PA Department of Education could eliminate the high school project. The current career preparedness standards require a career portfolio (which can serve as a high school project). The high school project is a worthwhile component of the curriculum that enhances readiness for both the workforce and postsecondary education.

The current academic-focused curriculum is sufficient to ensure that all students are prepared to matriculate into a minimum of a two-year postsecondary educational program upon high school graduation. Students who are hoping to pursue postsecondary education at a four-year college or university should be required to take specific courses in math (algebra, geometry, trigonometry, and advanced mathematics), science (physical/Earth science, biology, chemistry, and physics), and social science (American history, world history, and civics) courses as part of a college preparatory track. Currently, curriculum guidelines offer few requirements on which specific courses high school students must take. As a result, some college-bound students lack the more advanced preparation that facilitates success in college-level math and science courses. Additionally, very advanced students should be encouraged to take AP or IB classes or to enroll in courses at a local college or university. Those efforts will help accelerated students prepare for their postsecondary education by allowing them to earn college credits and to become better prepared to handle college-level work. The state government can also provide funding for summer school, tutoring, and remedial assistance to give students the extra assistance that they need. Those forms of aid are more cost-effective, as well as better for students and their families, when compared to the traditional method of holding students back one grade.

Since STEM careers are in high demand right now and are expected to provide a great deal of job opportunities in the near future, policies can be implemented to improve the science and math curriculum for students in K-12 schooling. With additional funds, more science and math courses will be offered and students will be provided with increased access to additional science laboratory projects and field trips. Additionally, the increased funds and opportunities will attract qualified and highly-motivated instructors. If businesses need individuals prepared to work in STEM fields – and if students are hoping to receive postsecondary STEM-related training, certifications, and degrees – then K-12 school districts must be required to provide excellent science and math education to all students.

If the state government decides to strengthen the K-12 curriculum in public schools, then the government should also adjust requirements for college students studying to become teachers. As it stands currently, educators are doing an inadequate job of preparing students for postsecondary educations and careers. Perhaps this relates to the material the educators are required to teach or the methods of instruction that educators were taught in college. Regardless, teachers need to start teaching differently for more students to succeed in the workforce and for the economy to improve. Instructing potential educators in a different manner may help. While various possibilities for changes exist, future educators could be taught to celebrate the unique strengths of students and to prepare students specifically for postsecondary education. Educators need to be instructed to relate what students are learning in class to potential future career options. Furthermore, educators should be coached to integrate instruction on important job skills, like persistence and honesty, into their daily lessons.⁸⁹

In an attempt to save money, some schools have eliminated guidance counselor positions in an effort to reduce costs. Guidance counselors advise students on the courses they need to take for college. Similarly, guidance counselors create personalized learning plans for individual students, as well as special plans for students who are falling behind. Guidance counselors are also essential for ensuring that students enter into postsecondary educational institutions after they graduate from high school. By serving as college advisers, guidance counselors help students to complete complex applications for financial aid, higher education, and standardized tests. Furthermore, guidance counselors assist students in determining which postsecondary institutions to apply to and attend, provide career counseling, and educate families about postsecondary financing options. Without the help of guidance counselors, far fewer students would enroll in college. Guidance Counselors play a large role with students. Many schools across the country are adding Career Counselors to their payroll. This action, will address many of the issues identified in this paper with regard to students, careers and postsecondary education. Guidance Counselors would then be able to focus on the myriad of other issues they handle with students. As such, one suggestion for a state government education policy is to increase funding for the addition of career counselors and the maintenance of guidance counselors at the K-12 level.

The state government can also create legislation to assist K-12 public school districts in forging connections with postsecondary educational programs and local businesses. Postsecondary institutions could provide their students with the opportunities to serve as mentors for high school students in exchange for college credit. The partnership with postsecondary educational institutions could also be used to enable groups of high schools students to visit campuses or for admissions counselors to visit high schools. Through

partnerships with businesses, high school students could be given job-shadowing or internship opportunities, while business leaders could visit K-12 schools to give lectures on their occupations. Additionally, school districts could use partnerships with businesses to design educational programs to teach students the skills that the businesses are looking for most in new employees. Clearly, these partnerships will be of little cost to the government and will benefit everyone involved, including students, postsecondary educational institutions, and businesses. Legislation of this type would cost taxpayers very little, as all that the Pennsylvania state government would need to do is get the ball rolling. The government would need to help school districts connect to the postsecondary programs and to businesses.

The final and perhaps most important policy-related suggestion rest in the state budget. If policymakers want to prepare students for postsecondary educations and careers, they must make K-12 education a priority in the state budget. Government officials can pass very helpful education-related legislation, but if those projects are not funded, education itself cannot improve. The Pennsylvania budget needs to include more funding for K-12 education. Therefore, the Pennsylvania Legislature needs to examine how it funds education, levels of funding, and follow up on how the monies are expended. With additional funding, school districts will be able to provide enhanced opportunities for students in the forms of hands-on learning and field trips. Additionally, the increased funding could be used to hire well-qualified and motivated educators who are dedicated to ensuring an exceptional K-12 education. All of the possibilities associated with increased funding for education are far too numerous to list here. However, if the additional funding is utilized to better prepare students for postsecondary educations and careers, the return on the economy will far exceed whatever money is spent.

Business and industry need to be engaged in the entire process to ensure that workforce needs are met. From providing information on occupations, skills, and education to actually engaging students in hands-on experience within the work place.

Summary and Conclusions

Pennsylvania is in need of policies and practices that will better prepare students for postsecondary educations and careers. While the unemployment rate is currently high, it does not indicate that no jobs exist. Rather, many individuals in Pennsylvania are ill-equipped to fill the open positions. The K-12 system can do a better job preparing students for the modern workforce. For example, schools at all levels (K-12, as well as postsecondary institutions) can increase STEM-related education and training, as STEM fields have many open job positions

that pay workers relatively high wages. Additionally, K-12 schools can promote the importance of a postsecondary education for attaining a career goals and earning sustaining wages.

Yet, in order for individuals to succeed in attaining a postsecondary education and forging a career path for themselves, they need to be adequately prepared during their K-12 schooling. Each year, many Pennsylvanian students drop out of high school or decide not to pursue any education at all past high school. Students who do enter into postsecondary educational institutions are often in need of remedial classes before they can begin taking courses that will count for credit toward a degree. Students must not only be encouraged to enroll in postsecondary education institutions, but schools must ensure that they have all the knowledge and skills they need to thrive in those institutions and make the transition to the workforce.

Clearly, there is room for improvement in the public K-12 school system. If students graduate from high school prepared to enter a postsecondary program that will then train them for an in-demand career, the unemployment rate will drop, the income level will rise, less people will need to be on government assistance, and the overall economy will improve.

To make necessary changes, public school districts will need help from the state government in the form of policy change and legislation. For instance, the state government can pass legislation that would allocate additional funding to K-12 school districts for the special purpose of improving postsecondary education and workforce readiness initiatives – essentially creating a seamless Pre-K – 12, postsecondary, and workforce system. With that funding can come instruction – again in the form of legislation – on how to create change in the classroom. Additionally, the government can be responsible for ensuring that students have access to postsecondary institutions that will train them for in-demand occupations and that it is financially feasible for students to attend since higher education is now an economic imperative – not a luxury. Although the government already does those things to a certain extent, school districts in Pennsylvania need more help from the state than they are currently receiving. Further, the policy should define career readiness and define benchmarks that will evaluate progress. These changes will only succeed if the focal point of K-12 education moves from PSSA performance to a more balanced system of developing proficiency in all subjects.

Case Studies

The Institute reviewed several case studies of high performing programs that demonstrate a strong track record of success. First, several high school career academies are profiled. Followed by, REACH – HEI, an initiative of The Commonwealth Medical College and

SHINE. REACH – HEI is a comprehensive longitudinal program for economically disadvantaged high school and undergraduates students designed to complement formal education and educate, inform, and prepare students for health-related careers. SHINE is an afterschool and summer program for Pre-K – 12. The program provides practical experience to students in STEM related fields while teaching various trades.

Academies of Nashville

Some school districts have created programs to direct students at the high school level toward potential careers and related postsecondary educational options. The Academies of Nashville, in Nashville, Tennessee, provide students in Metro Nashville Public High Schools with an education focused on one career theme. Besides a rigorous academic curriculum, students in the Academies are provided with work-related opportunities, such as classroom speakers, workplace visits, job-shadowing, and internships. Some students are even able to earn professional certifications before they graduate from high school. Students can choose from five different career clusters, including Arts, Media, and Communications; Business, Marketing, and Information Technology; Engineering, Manufacturing, and Industrial Technology; Health and Public Services; and Hospitality and Tourism. Since Metro Nashville Public High Schools have transformed into the Academies of Nashville, participating students have reported higher levels of engagement, understanding, and preparation. Indeed, the Academies are providing students with an education that prepares them for their postsecondary educations and careers.⁹⁰

California Partnership Academies

The California Partnership Academies also serve as examples of high schools that adequately prepare students for postsecondary educations and careers. These academies are small learning communities located within larger high schools. Academy students take core academic classes and career-themed classes together. Furthermore, these students are taught by the same group of teachers, thus opening up possibilities for course material to be linked across disciplines and throughout the years the students are in high school. Employers in the area provide Academy students with internship and other relevant career opportunities. While each of The California Partnership Academies are structured around one of fifteen different Career-Technology Education industry fields approved by the California Department of Education, the most popular career themes are Health Science and Medical Technology; Arts, Media, and Entertainment; Finance and Business; Engineering and Design; and Public Services. Students from California Partnership Academies score higher than students from traditional public high schools on English Language Arts and mathematics standardized tests. Additionally, students from the Academies have a higher than average graduation rate. Most students graduating from the Academies plan to further their educations at postsecondary institutions. These

statistics are even more encouraging when one notes that at least half of the students enrolled in the Academies are considered to be at-risk based on their attendance records, number of credits earned, motivation, family income level, standardized test scores, and/or GPA.⁹¹

Nathan Hale High School Career Academy

Like the Academies of Nashville and the California Partnership Academies, Nathan Hale High School's Career Academy in Milwaukee, Wisconsin, seeks to provide students with an education that will prepare them well for postsecondary educations and careers. Special to the Career Academy is its portfolio component. Students enrolled in the Career Academy are required to attend a three-hour long Employability Skills and Portfolio Workshop. As part of the workshop, they create a portfolio where they can organize their skills and accomplishments. This portfolio is helpful to students when they are preparing for job interviews. Besides individualized follow-up on the portfolios created at the workshop, students develop their portfolios through activities integrated in the classroom. Finally, students are invited to display their portfolios at a special event before they graduate from high school.⁹²

YES Prep

YES Prep is an example of a system of high schools that successfully prepares low-income students for postsecondary education. This public school system serves approximately 7,000 students across eleven schools in Houston, Texas. YES Prep students score higher than the state, region, and school district averages on reading, writing, math, science, and social studies standardized tests. Notably, 100 percent of its students graduate from high school and gain admission into a four-year college or university, and 72 percent of alumni either are college graduates or are currently enrolled in college. Those statistics are even more impressive when considering that YES Prep students come from communities where less than half of students graduate from high school and a mere 10 percent graduate from college.⁹³

The school system is built around a foundational belief that all students are capable of achieving high levels of academic success, as long as high expectations are set for them and they are provided with support systems. The support system in this case is fostered through small schools. As mentioned, YES Prep also sets high expectations for its students. Every student is required to take the SAT exam and at least one AP course, as well as to exceed the Texas educational standards. To ensure that these expectations are being met, students are assessed multiple times per year and interventions are provided for students who appear to be falling behind. YES Prep also provides students with longer-than-average school days and an extended school year. Furthermore, the school also offers students various enrichment activities throughout the year. Examples of these opportunities include college visits, service opportunities, and academic summer programs.⁹⁴

YES Prep takes a rigorous approach to college counseling. In order to ensure that every YES Prep student graduates from college, school counselors establish relationships with college admissions officials, coordinate the administration of all standardized tests, host college fairs, facilitate high school level seminar classes, and organize meetings where families learn about the college admissions process. Counselors at YES Prep also spend time meeting individually with students to help them apply for college, navigate financial aid, and search for scholarships. Through these counselors, students also learn about other pertinent components of transitioning from high school to college, such as time management and budgeting money. Most importantly, perhaps, is the support that YES Prep continues to give its students after they graduate. YES Prep graduates earn incentives for persisting in and graduating from college. Besides providing ongoing support, the alumni program also allows YES Prep alumni to stay connected with each other through newsletters and events. Indeed, YES Prep ensures student success by providing them with a challenging curriculum and a caring group of supporters in a high school culture focused on college access.⁹⁵

Regional Education Academy for Careers in Health (REACH-HEI)

The Regional Education Academy for Careers in Health – Higher Education Initiative (REACH-HEI) is a program developed by The Commonwealth Medical College (TCMC) to assist NEPA disadvantaged high school and college students who are interested in pursuing health science or medical-related careers. Northeastern Pennsylvania has a lack of physicians and other health professions. Further, the region has a low higher education attainment rate compared to other Pennsylvania regions, the Commonwealth of Pennsylvania, and the nation. TCMC has an emphasis on serving the local community and improving its overall health. TCMC has reserves space in its freshman class for local students in an effort to create more opportunity for economically disadvantaged students in northeastern Pennsylvania.

REACH-HEI's program is a comprehensive in class and online longitudinal in both after-school and summer formats for high schools students and an internship for college students. The programs provide a college and career ready curriculum in health-related fields, helps improve a variety of skills, such as math and science, coupled with structured mentoring.

History & Evolution

REACH-HEI began operations in January 2011 as a vehicle to create awareness of healthcare professions to the region's youth and support healthcare in the region. To meet the long-term goal of attracting a diverse group of physicians to NEPA, a medically underserved region, it was necessary to look beyond the local undergraduate pool of students. Facing the region's prevalent educational disadvantage (less than 30% of the region's Grade 11 students were proficient in science or mathematics), The Commonwealth Medical College (TCMC) quickly

realized that its first priority was to increase the pool of potentially qualified students in the region that could pursue a career in health. TCMC then set out to establish a pathway to higher education that could:

a) Address the needs of the region’s students who are primarily first-generation college students, economically disadvantaged, and/or from URM communities—especially Hispanic/Latino and African American;

b) Provide academic and experiential exposure to state of the art facilities and faculty that would motivate, excite and support their interest in science and math; and

c) Support their development with career information, exposure, networking and structured mentoring that would enhance their ability to succeed and their understanding of how to support their career interests.

Regional Education Academy for Careers in Health- Higher Education Initiative (REACH-HEI) was established to recruit economically disadvantaged high school students and offer them a longitudinal after school program to:

- a. Motivate and promote the pursuit of health related professions requiring at least a BS/BA, including post-graduate degrees.
- b. Provide academic support in science and math to increase their familiarity, excitement and pursuit of these subjects and de-stigmatize them among young girls, minorities and first generation students in general.
- c. Provide intensive career exposure and understanding to enable adequate preparation and enhance their opportunities for successful pursuit at College level.
- d. Increase their SAT/ACT scores with preparatory coursework and practice.
- e. Provide hands on exposure and experiences that will enrich their application portfolios.
- f. Provide exposure to state of the art labs, including gross anatomy, simulation centers.
- g. Provide shadowing experiences and exposure to professionals to expand their understanding of careers and inter-professional relationships.
- h. Create via use of social networking a personal and professional network that would cross county lines and provide the support necessary to sustain efforts and overcome structural challenges.
- i. Provide a structured mentoring and tutoring program where similarly situated medical and college students provide guidance and support to high school students.

In order to address the immediate need to recruit local medical students to TCMC, two additional elements were added. First, an undergraduate component targeting college sophomores, to encourage, support and facilitate their pursuit of health related careers. In addition to science and biomedical lectures, students are provided the opportunity to do research side by side with faculty and medical students in wet lab or clinical settings. These experiences are limited in the region, yet provide a substantial enrichment to the applicant's portfolio. Participants also receive structured mentoring, career advice, and GRE/MCAT preparation courses.

The last step added was TCMC interest in immediately attracting a diverse student body committed to serving medically underserved communities. A Summer Research Pre-Matriculate Program was created for those students willing to matriculate in TCMC. This program offers an 8-week research internship with clinical practices in the region and the opportunity to transition to medical school in advance to facilitate adaptation and socialization with this region. All three components—high school, undergraduate and pre-matriculate—created a long term pipeline built with strong and continued support to sustain interest, motivation and ability to pursue higher level careers in health and stem the continuous need to import talent at the higher levels of health care delivery.

In September 2010, the US Department of Health and Human Services announced that TCMC—one of only two medical colleges in the country selected that year—would receive a \$2.4 million dollar 3-year grant to establish REACH-HEI. The program was operational by January 2011. By summer 2011, REACH-HEI had two academic year programs- Monroe and Luzerne Counties- and two 4-week residential Summer School programs at TCMC for high school students. In addition, REACH-HEI had an undergraduate and pre-matriculate summer research program, for 6 and 8 weeks respectively, also at TCMC. In 2012, REACH-HEI added King's College and Hazleton High School to its partnership list. At Hazleton, REACH-HEI created the Cyber-Science Program starting in 9th grade offering online coursework and bringing the students to the organization's state-of-the-art medical science building one Saturday per month. Program feedback by participants, parents, and faculty at regular intervals is an integral part of the continuous improvement process. The feedback allows for appropriate course correction at all phases of implementation.

As a result of REACH-HEI's nimble approach, eagerness to reach as many students as possible and willingness to 'pilot' different approaches, in three years REACH-HEI established:

- Three Academic Year Programs in three NEPA Counties (Monroe, Lackawanna and Luzerne) for economically disadvantaged students grades 9-12.

- Two 4-week Summer Enrichment Residential Programs for Economically Disadvantaged students in grade 10.
- One three-week Summer Enrichment Program for grades 10-11 in Wilkes-Barre.
- A six-week Summer Research Enrichment Program for economically disadvantaged undergraduate sophomores.
- An eight-week Summer Research Enrichment Program for economically disadvantaged pre-matriculate MD students.
- An innovative curriculum designed to increase science and math proficiencies. This included: expanding student understanding of careers in health, creating a structured mentoring program connecting students from all programs and geographic areas, exposing them to different careers in health; providing experience with wet labs, gross anatomy and simulation centers; and interactive online programs to support distance learning, maintain motivation and strengthen mentoring/tutoring capabilities.

REACH-HEI has proven to be successful:

- Structured and unstructured after school programs have served nearly 500 economically disadvantaged students, ranging from high school, undergraduate and pre-matriculate MD levels.
- More than 350 economically disadvantaged individuals at both high school and undergraduate levels have benefitted from this program.
- Approximately 86% of all students served are first-generation college, 72% are female, and more than 40% are African American or Latinos.
- All high school seniors and college undergraduates in the programs have graduated and all who applied have been admitted to universities or post-graduate programs, with 95% of REACH-HEI high school graduates pursuing health-related careers in fields such as psychology, social work, medicine, physical therapy, etc.
- 100% of the participants completed the program they started.
- High school seniors (2011 group) in REACH-HEI outperform their counterparts in SAT/ACT, scoring above state and national averages.
- 22 undergraduate and pre-matriculantes are currently in medical schools.
- Nearly 60 juniors and seniors currently in college plan to pursue medical education.
- More than 250 high school students (Grades 8-12) are currently planning to pursue a health career and attend a 4-year college.

SHINE

The Schools & Homes IN Education (SHINE) program is one of the after-school programs highlighted for its efforts in improving student academic achievement. This program is focused on the development of STEM (Science, Technology, Engineering, and Mathematics) skills in

today's youth. Students learn the fundamentals of science, technology, and math concepts by designing, building, and creating things. Students are engaged in Career Projects to reinforce academic skills and demonstrate real world application to why reading, mathematics, and science play a very crucial role in their future.

SHINE began in 2005 as a 21st Century After-School K-5 Program which has integrated activities that motivate, promote the careers of the future, and increase academic achievement. In January of 2010, the SHINE STEM Career Camp Pilot Project was created through a partnership between the Lehigh Carbon Community College (LCCC) SHINE 21st Century After-School program, the Carbon County Action Committee, and the LCCC Careers on the Move Program. Prior to the establishment of the Career Camp Pilot Project, the SHINE After-School program participants who've passed the fifth grade level were no longer eligible. This Pilot Program targets students in the 5th and 6th grades who no longer qualify as members for the program.

This program has evolved considerably due to the success of minor changes that have been made throughout the years. The curriculum is regarded as unique and innovative and may have been the first of its kind. The target students for this program were low-income academically at-risk students. These students are provided with rigorous academic activities to challenge themselves. After the success of the pilot program, in fall of 2011, the Carbon County Technical Institute, the LCCC SHINE 21st Century After-School Programs, and the LCCC Transportation Federal Grant implemented a five-week academy focusing on STEM designed for students in 6th through 8th grade.

The establishment of the SHINE program was not only beneficial for the K-8 students, but also the 9-12th grade students. The older students acted as tutors and mentors to meet requirements for their graduation project. This program, with the help of many, has offered opportunities to many children as well as their families.

The SHINE Middle School Career Academy is designed as a 36 week program based on state and national standards and focused on the development of STEM skills. The Career Academy is planned as a series of six week programs for 5-8th grade students and it is based on rigorous, hands-on, project based activities. The program is scheduled four days a week directly afterschool from 3:00-6:00pm during the school year at the Carbon Career and Technical Institute (CCTI) in Jim Thorpe. Students from five school districts (Jim Thorpe, Lehighon, Palmerton, Panther Valley, and Weatherly) and six feeder schools participate in this program. Former SHINE students are given priority with regards to enrollment. These students were enrolled in previous career programs and are classified as at-risk students.

Transportation is provided for the students from eligible districts in the program after school for the travel to LCCC. College education majors are employed as interns in the SHINE Career

Academy. This relationship is mutually beneficial to the student as well as the teacher who acquires 32 weeks of pre-service teacher laboratory experience that exposes these future teachers to STEM. Every 6-7 weeks, teachers are required to develop a different course of study to plan instruction and guide assessment. This is done because there are multiple Career Academies and the educators must structure the courses to encompass objectives, technical and academic standards, STEM skills and activities, performance tasks, industry vocabulary, and soft skills such as communication, cooperation, creativity, organizational skills, and leadership.

This program is primarily funded by the Cohort 6 Grant Award. The SHINE Career Academy was awarded \$211,200 per year for three years. This award is distributed among the program as necessary. The bulk of the award is used to provide meals, transportation, and learning utensils and resources for the participating students. In addition to that, the interns are provided compensation for their services. Though there is no concrete distribution chart for the funds, they are allocated as necessary.

The mission of the SHINE program is linking schools and homes in education to build a strong academic and social foundation. There are goals which allow the students and educators to fulfill the maximum potential of the program. These are improving academic performance, student behavior and attendance, increasing the knowledge of STEM, and facilitating family involvement in student learning and improve family literacy. In addition to that, the teachers are also benefitting. These young educators are the teachers of the future. Providing them with this experience can change the future.

This program is also meant to be as all-inclusive as possible. Students in the Career Academy will also have dinner with their fellow peers, receive remedial help and tutoring, physical education, education in the arts, and technical classroom experience. There are other programs which facilitate the mission of SHINE. For example, other components of this project include a Home Visitation program for Pre-K and Kindergarten students, a high school mentoring program, and an internship program for college students. These students who have been classified as at-risk students are given the ability and resources to success against the odds.

The success of the students was based on the performance goals and actual outcomes. The goals that were set wanted students to achieve 95% regular participation, and 99% of the students were promoted due to their regular participation. The participating students, based on the PSSA scores and Teacher Survey data, showed significant improvement in Reading and Math. The students that were enrolled in the Home Visitation program showed 100% improvement and 77% attained mastery. The program not only promotes high academic achievement that will enable students to be accepted into postsecondary institutions, but it provides participants the skills, habits, and mindset they will need to succeed college and

careers. By instilling these non-cognitive skills early on, students will be truly ready for postsecondary education.

Overall, according to the students who participated and their teachers, these students went above and beyond the goals that were anticipated. The SHINE Career Academy program is considered to be a Best Practice program in the Commonwealth. It was visited by the First Lady of Pennsylvania in association with the Open Doors Initiative and the U.S. Department of Education 21st Century Community Learning Centers (CCLC) Lessons Learned Guide Site Visit.

SHINE has been selected as one of the top 15 out of 11,000 21st Century Afterschool programs across the country that will be highlighted in the Lessons Learned Document, published by the United States Department of Education. The article will highlight the effectiveness of the SHINE program in the areas of career and technology using the STEM curriculum. This says much about the program. It has proven to be extremely successful.

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