CAREER AND TECHNICAL EDUCATION TO CLOSE THE SKILLS GAP.

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ABSTRACT

Career and technical education could be an essential element in developing a work force capable of handling a new period in technical industries.

America was built on the back of blue collar workers pursuing highly skilled careers in ever changing fields. Everything from the railroads to the modern day textile industry wouldn't have been possible without jobs in the career technology positions. Before the years between 1776-1826 regular schooling consisted of classroom learning and core academic subjects. However during the period of time known as The Awakening, apprenticeships were incorporated into regular schooling as an opportunity for students to have a hands on learning experience in a real trade.

As time went on schools began to make this a regular part of the curriculum and bills were passed to support and further explore career and technical training. This set the foundation for modern CTE These courses are considered electives, not academic courses, but it may be time for America to consider these CTE courses as just as important if not more than regular required academic classes. Many people believe that career and technical education is nothing more than an elective with less important academic lessons than core subject, but despite these beliefs, career and technical education should be an essential and equal part of every school curriculum and deserves a more substantial amount of funding.

The first nationwide acceptance of CTE did not come until after the first world war when citizens needed workforce training in order to re-enter the working world. This mass acceptance and necessity for adults built the bridge into adult education. Although technical skills grounded in academics, workplace skills, and personal skills are the most important aspects of obtaining and performing a career at peak proficiency, there is an enormous deficiency in these areas nationally and globally. This is known as the Skills Gap. A survey conducted by the Manpower Group and reported by the Harvard Business Review says "35% of 38,000 employers reported difficulty filling jobs due to lack of available talent; in the US., 39% of employers did." (*Employers Aren't*) This is especially true for middle-skill jobs.

A prime example of the Skills Gap in the U.S. state of Colorado. Middle- skill jobs account for 50 percent of their labor market but only 40% of the state's workforce is properly trained to the level of proficiency required for the job (National Skills Coalition). A common solution to this problem is on the job training for new hires. This may sound like it would solve many issues but according to a Training Industry Report, in 2014 the annual training budgets for US. small businesses, each business having a minimum of 100 employees, was $308,000(Taylor, Tess). After all these costs, time training, and resources being poured into newly hired employees- they still don't meet the skill level and are terminated. This creates a cycle of hiring and firing costing small businesses time and money and halting them from expanding.

It's recommended by the Automatic Data Processing Incorporation that "Recruiting only the most skilled employees, retaining them for as long as possible and using performance reviews to identify training needs early on,"(*The Costs*). This would be extremely logical and practical, if there were enough skilled workers to fill the jobs. One of the goals of modern high school education is to prepare graduates to enter a work force and be ready to be a working member of society. If this effort was successful, every employee be

reasonably prepared to work on their day of hire. Schools are falling short in the industry expectations, but they have a good reason why.

Modern day career and technical education has become a national model for providing core academic skills, employability skills, and job specific skills for high school and postsecondary school. It's aimed towards educating students for a range of 16 career clusters and more than 79 pathways. CTE also features partnerships for students to obtain certifications and degrees. Not only does CTE teach students about academic subjects and creative thinking skills to adapt to new technologies and industry advances, but it keeps students in school. The average graduation rate for for students whose concentration is in CTE programs is 93% compared to the average freshman graduation rate of 80% nationally. As expected, 81% of dropouts say relevant, real-world learning opportunities would have kept them in high school (Association for Career and Technical Education). Overall CTE focused students have proven to be more successful in school and are doing their part to close the skills gap.

Opponents of career and technical education claim common core focuses on literacy and arithmetic standards making career and technical courses less important. The Common Core State Standards Initiative states that "Building on the best of existing state standards, the Common Core State Standards provide clear and consistent learning goals to help prepare students for college, career, and life. The standards clearly demonstrate what students are expected to learn at each grade level, so that every parent and teacher can understand and support their learning" ("*Preparing America's"*). These standards are encouraged to be incorporated into public education systems by the federal government and they focus mainly on those English and Math subjects. Technical education is not considered as important as these subjects by national standards that are set to prepare students for their future. Over all the students' primary focus should be on core subjects rather than vocational courses.

Advocates believe career and technical courses educate students on workplace skills and prepares them for future focused courses and jobs. Many jobs that industries are unable to fill are being taught in CTE making students ready to attain these occupancies after high school or college. "The skilled trades are the hardest jobs to fill in the United States, with recent data citing 1,019,000 jobs open in the trade, transportation and utilities sector and 315,000 jobs open in manufacturing" (About CTE). Students are not only learning career specific skills but experience each core academic standard throughout their coursework. In an engineer class a student could learn the advanced mathematical skills used to calculate the effectiveness of machinery. While using machinery the student learns physical science and summary reports exercise the student's english and social construct skills. Each core concept is executed through real life experience the student can relate to. It's received as a more sensible and useful skill than a regular science class. If the end goal of high school really is to prepare students for postsecondary and workforce life career technical educations should be considered a crucial part of their education.

Many believe CTE courses cause students to stray away from regular academics and not find core subjects as important or relevant. One paper reports that, "many affluent parents, and low-income parents who fear their child is being sold short, balk at technical education and assume it won't lead to college" (Push for Career-technical Education Meets Parent Resistance). It is commonly known that colleges focus in on students' grades in major subjects, English, science, social studies, and mathematics, while weighting vocational courses less. Those courses are also eligible for being ranked by student capability, as in honors, advanced placement, and exploratory. If students are distracted by career technical courses that won't lead to advancing their academic success there is no point in offering them to students.

Supporters of CTE disagree and say it promotes core subject learning in a nontraditional setting and inspires a new love for learning through real world practices. The students find core concepts taught in their courses focused on their field more relevant. One article states "...engineering courses such as automotive design or computer-assisted design/drafting can improve academic achievement by making theoretical math and science concepts taught in traditional geometry and physical science courses more concrete and relatable, particularly to students who may not be academically inclined" (The Limits of Career and Technical Education). Seeing how other subjects translate into their careers can provoke students who fall behind in a particular subjects to work harder knowing these concepts exist in their future.

Additionally, applying these processes in class enforces further understanding of material. For instance, doing calculations in an engineering course multiple times gives the student an understanding of the topic a math class couldn't give to that student because it lacked the hands on experience and repetition provided by the engineering course. Overall, students in career and technical courses have the opportunities to increase their ability to apply themselves in core subject learning and see relevance in seemingly meaningless school work.

Adversaries argue that if a student does not already know what they wanted to do with their future, CTE courses might take up too much of their schedule or waste their time. High school students typically have eight blocks in a day. One block is allocated to lunch, and usually one for a study hall, that leaves six blocks available for academic classes. Some people believe that if career and technical courses were the center of their education and the student is undecided of their career path taking courses in multiple disciplines they won't go into would be a waste of their time. Vocational courses would do little to prepare a future teacher for the field if the student takes a double block computer class their sophomore year and ultimately be ineffective. All together students should have universal learning subjects that can be translated across all fields.

What these people don't see is students having access to introductory courses allows them to explore and find out what they want to do with their future and advance with into post secondary education. The first level of every program begins with an introductory course. These courses are only one semester or half of a year. At the end of each course students can decide if that subject sparked their interest and if they would lie to continue the path or begin a new one. Career and technical courses also include many workplace and technical skills grounded in academics that can translate through other fields and life situations. One lesson plan included in many courses is All Aspects of Industry. "All Aspects of Industry (AAOI) identifies nine concepts that are common across the spectrum of business and industry" (*All Aspects*). Some of these concepts include finance skills, management skills, and personal work habits. These are skills any employee can use in any work setting. So although a student may not follow the path they initially thought they might pursue they have still gained import skills and can rule out one path and begin discovering new ones while in high school rather than a postsecondary school where they might waste time and money on irrelevant classes.

Another argument claims career and technical education gets enough funding and doesn't deserve anymore than it already receives. The Carl D. Perkins Career and Technical Act of 2006 offers funding to vocational centers based on their population, graduation rate, amount of regular school funding and other related factors. The funding goes towards many necessary sources. This can include equipment, curriculum, books, and expansion. The main purpose is to improve the class, curriculum, and program in a way that students will better benefit from. The *News Gazette* reported this program majorly supports "multi year programs for adults and youth" and that "states must direct at least 85 percent of funds to secondary

and postsecondary institutions, which may include area career and technical education schools," ("*Federal Funding*"). So this multi-billion dollar budget is targeted directly at improving and funding technical programs in high schools and technology schools across every state. Due to these factors, many believe there is no reason to increase funding of a program that already has so much government funding poured into it.

On the other hand, supporters point out that this is an outdated act that has not increased with inflation over the last eleven years and fails to provide adequate equipment, and reduces the exposure students have to the most advanced technologies. The year 2006 was the last time the act was reevaluated. That was the same year the first iPhone was released. By 2008 the iPhone cost $399 for lowest amount of gigabytes offered (Hamblen, Matt). Fast forward almost ten years the lowest cost for the latest iphone is $999 (Apple, Inc.), over two and a half times the original cost. It can be inferred that other equipment and technologies have faced the same cost increase over the last decade.

Increased cost in standard equipment without increased funds means that students will not be able to have the same access to up-to-date and relevant workplace equipment and technologies that students with proper funding might have had. The fund has continued to give the same amount of money since 2006 even though the industry is no longer paying 2006 prices. Classrooms can't update basic equipment let alone find money for newly released technology like 3D printers, virtual reality, and innovative software. Students are expected to be fully prepared for their future in an industry they don't have the full access to. These are some of many flaws that have been found with the current state of the act and needs immediate improvement.

The solution is a stipend that increases with the cost of inflation over every year and reevaluation every five months that allows educators, industry leaders, and state representatives decide what is best for the students and future industry workers. There should be more studies and evaluations done to determine what classrooms truly need. The opinions of students and teachers should be included and industry leaders and small business owners should be consulted as well. These groups of people know better than anyone what is strong and what is lacking in the current workforce. They are the key to a more successful future of America's workforce and economy. When classrooms are fully funded, the nation can begin to expect more from the students and for its future.

Overall, CTE offers a unique and effective program that teaches students important life skills through an alternative style limited only by the funding programs are given. Students should be required to focus part of their high school career on CTE courses the same way they do with typical core subjects. Career and technology focused students prove to have higher academic success and graduation rates, and should be the expectation to all students. Finally, CTE deserves better funding to further prepare future industry leaders for the world they're stepping into. Although there may be a stigma against focusing on CTE in high school, taking the steps to make this a core subject can be a pivoting moment for the nation and start to form an even brighter, and more promising future for the next generation. When education is evaluated and taken seriously, America can really begin the new age of technology and industry.

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