

Chapter 17

A Qualitative Analysis of High School Level Vocational Education in the United States – Three Decades of Positive Change

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Abstract Historically plagued by concerns about the quality of the curriculum, instruction, vocational education teachers, and responsiveness to the needs of the workplace, the United States vocational education system has long suffered from negative perceptions among students, parents, school personnel, policymakers, and business and industry representatives. However, in the years since the publication of *The Unfinished Agenda* (National Commission on Secondary Vocational Education. *The unfinished agenda: the role of vocational education in the high school*. National Center for Research in Vocational Education, Columbus, 1984), a highly critical report authored by The National Commission on Secondary Vocational Education, the U.S. vocational education system has undergone many changes and reforms. Many of these changes have focused on the vocational education curriculum and have been directed at ensuring a supply of skilled labour to address the skills gap that exists between the abilities of workers and the needs of the workplace. Other changes have increased linkages to post-high school training to meet the needs for a more educated workforce. Additional efforts have focused on increasing school-business/industry collaboration, improving teacher quality and marketing the value of vocational education. Challenges still remain, including funding for vocational education, providing career awareness and guidance for students as they progress through school, and educating an increasingly diverse high school student population.

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1 Prologue

For most of the twentieth century, the Vocational Education¹ system at the secondary (K-12) level in the United States was seen as *second-rate* and as a dumping ground for students who were unmotivated, had behaviour problems, or who struggled academically. Policymakers, business and industry representatives, parents, and students continually questioned the effectiveness of Vocational Education programs.

In addition, during the 1980s and early 1990s, a multitude of education reports were published describing the poor performance of America's schools. *A Nation at Risk* was published in 1983 by the National Commission on Excellence in Education in response to the realisation that other countries were matching and surpassing the educational accomplishments of the United States. A bellwether report related to vocational education was published in 1984 by The National Commission on Secondary Vocational Education entitled *The Unfinished Agenda*. This highly critical report detailed a myriad of problems with the U.S. vocational education system, including the closure of vocational courses, little or no academic rigor in vocational programs, a lack of accountability and standards for instruction, poor teacher training, a shortage of postsecondary education options for high vocational education graduates, little business and industry involvement in vocational education, and a lack of access to vocational education for students with disabilities and limited-English students. In 1988, The William T. Grant Foundation, Commission on Work, Family and Citizenship, published *The Forgotten Half: Non-College Youth in America*, that examined the approximately 20 million 16–24 year-olds who do not pursue a college education. The report detailed the shrinking opportunities in the workforce for this group of individuals and suggested making available a better *first chance* that would emphasise improved schooling in general to give non-college youth better preparation for entering the workforce. *Workforce 2000*, published in 1991 (Boyett and Conn 1991) focused on social, economic, and political issues, as well as educational concerns, and emphasised the coming demographic changes in the United States workforce. The Secretary's Commission on Achieving Necessary Skills (SCANS) (1991) published *What Work Requires of Schools: A SCANS Report for America 2000*. This report defined skills that students needed to succeed in society. In 1994, the United States Department of Labor published *The National Assessment of Vocational Education*. The document acknowledged the poor labour market outcomes of high school graduates and proposed goals for a new system of workforce preparation.

¹ Author's note: Vocational education in the United States is now commonly known as career and technical education (CTE). The title career and technical education replaced vocational education, which was thought to have many negative perceptions among students, parents, educators and policyholders, and has been a barrier to students enrolling in these courses and programs. This name change officially occurred in 2006 via legislation but had been slowly implemented by states for almost a decade (Threeton 2007). For the purposes of this paper, however, the author will use the term Vocational Education, as it is the one most commonly used in international circles.

In response to these challenges, toward the end of the twentieth century, the secondary vocational education system began instituting several changes and reforms that began to focus on making itself more responsive to stakeholders, more flexible to meet student's needs and the needs of the workplace, more academically rigorous, and making vocational programming more attractive as an educational option to students, teachers, school personnel and parents.

The first major change was largely symbolic: changing the name of the discipline of Vocational Education to *career and technical* education. In 1998, the professional association for Vocational Education, the American Vocational Association, voted to change their name to the Association for Career and Technical Education, and individual states and their education departments began to follow, dropping the Vocational Education term in favour of career and technical education. This change was instituted largely to address the negative perceptions of the word *vocational* which, as stated previously, had a chequered past.

2 Impetus for Change

In the United States, running parallel with the need for programmatic change in the vocational education system, were many changes and shifts in the social, economic and educational environments of the country.

As the U.S. struggled to maintain their place as the leader in the global economy, the secondary (grades K-12) educational system continued to receive close scrutiny from stakeholders. International tests of student achievement, such as the Program for International Student Assessment (PISA) and The Trends in International Mathematics and Science Study (TIMSS) pointed out discrepancies in U.S. students' academic performance when compared to their international counterparts. These comparisons were actually the stimulus for the many reports and reforms of the 1980s and 1990s and the performance of U.S. students has not improved much in the years since.

For many years of the first two decades of the twenty-first century, the U.S. has had high levels of unemployment, yet in many technically-skilled occupations, there have been many unfilled jobs. This *skills gap* in the U.S. workforce is a result of many factors, including the rapid rate of technological change in the workplace, which has increased the education and skill requirements for many occupations. Many of the unfilled technical skill jobs are geographically specific, such as welders in Louisiana and North Dakota, where energy companies are thriving, nurses in California, and information technology workers in Florida. In some more economically prosperous states, education and training programs have strained to keep up with the need for skilled workers.

There is also a belief that there is a *skills mismatch* in the U.S. workforce. Many individuals simply do not have the specific skills and knowledge that the workplace wants and needs. In the U.S., as in many other countries, there is a social fixation on a university degree. Many students and parents believe the only path to a successful

career involves holding a baccalaureate degree. In many parts of the country, this has led to an oversupply of four-year College graduates, with degrees of little value to the workplace. It also has led to the phenomenon of college graduates heading back to school at their local community college, to obtain additional education, perhaps even an Associate degree (Koeppel 2012).

High levels of youth unemployment are also problematic. Over five million young people aged 16–24 are neither in school nor working (Sum 2012). In some parts of the U.S., the unemployment rate among 16–24-year-olds is more than twice the national unemployment rate. Some of the high unemployment rate can be tied to the high school dropout rate, which is a significant issue for U.S. schools, especially in urban/inner-city areas. Approximately 1.2 million students drop out of school each year (National Dropout Prevention Network 2015) and the needs of the workplace for more educated workers do not correlate with the knowledge level of a young person who does not obtain a high school diploma.

Many of these issues are intertwined and involve other variables. The performance of U.S. students on international tests has led policymakers in most states to require more academic courses for graduation and less elective choices such as vocational education courses. The U.S. population is more diverse now than at any point in its history, with many different types of learners with different needs, many of whom do not do well, or see value in a strictly academic environment. The number of high school dropouts in the U.S. each year is in excess of 500,000 (National Center for Educational Statistics 2013). Studies of these high school dropouts have shown many of them believe relevant, real-world learning opportunities would have kept them in high school (Bridgeland et al. 2006; Dianda 2008; National Dropout Prevention Network 2013). There has also been a marked increase in standardised testing of high school students. These tests have been criticised for taking too much time from classroom instruction and for placing undue stress on students.

3 A Brief Description of Secondary Vocational Education in the United States

Vocational education in the United States is defined as education at less than the baccalaureate level. As such, much of the programming occurs in the last two years of high school (grades 11–12) and the first two years of postsecondary schooling (typically at a community or technical college). This section will focus primarily on vocational education programming in grades 11–12, within the secondary education system. To visualise the entire U.S. educational system and where vocational education programming fits, the following graphic is provided (Fig. 17.1).

Most secondary vocational education can be found in two types of facilities: comprehensive high schools and area vocational schools (now generally known as career centres). Comprehensive high schools offer a vast array of courses, including: university preparatory, basic academic, vocational, and remedial courses, in

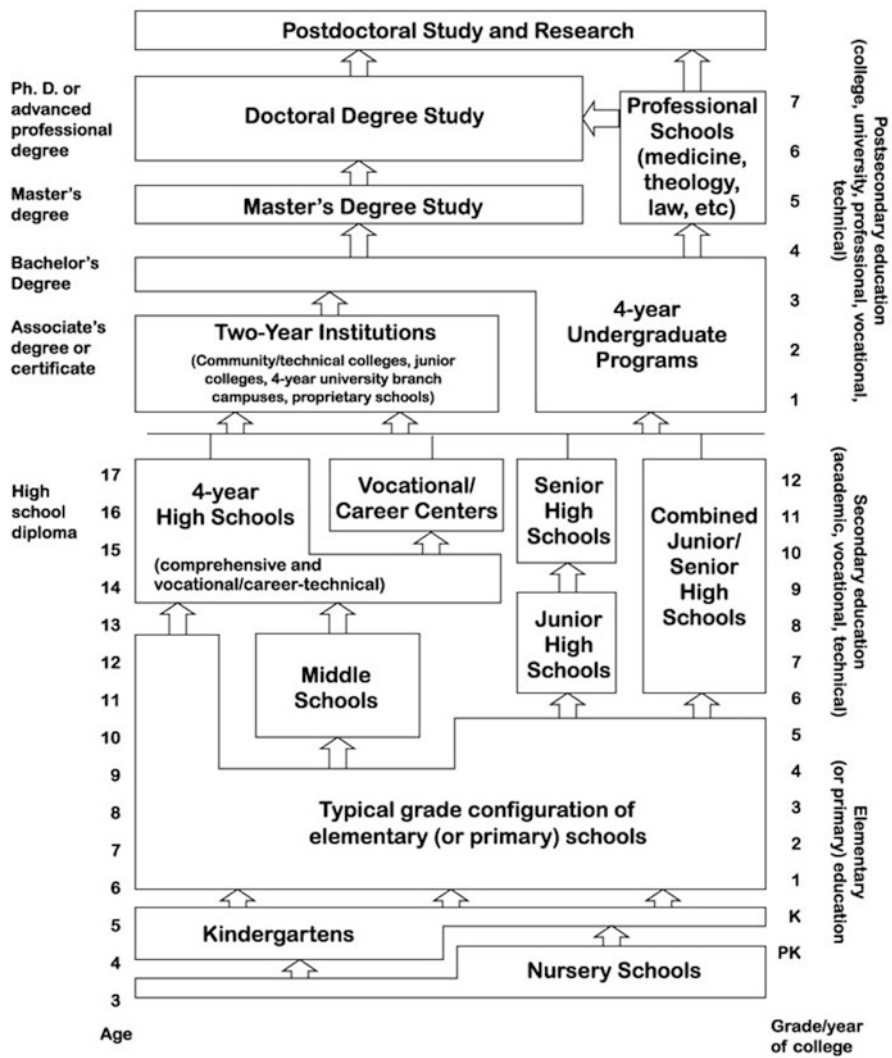


Fig. 17.1 The structure of education in the United States (Source: author's own compilation based on U.S. Department of Education, National Center for Education Statistics, Annual Reports Program; Zirkle 2011)

addition to courses and tutoring for students with special learning needs. Courses and programs in vocational education in these comprehensive high schools often reflect the communities in which they are found. For example, schools in rural areas may feature courses and programs in agricultural education and family and consumer sciences education, while schools in urban areas may feature programs related to business education, the health occupations, and marketing education. Some comprehensive high schools have designed career academies and schools

within a school focused on a specific vocational/career area or *cluster*. Career centres are designed specifically to offer vocational programming and are designed to serve students from a specified geographic area, from several comprehensive high schools. Students choose to attend the career centre. Economies of scale can be achieved, with many vocational programs offered, and courses that one comprehensive high school would find cost-prohibitive to provide can be offered to a large number of students over a larger geographic area. Students usually spend one-half of the school day in their vocational program area and the other half in academic classes such as math, language arts, and natural sciences.

In general, vocational education courses in comprehensive high schools are not focused on achieving high levels of student skill development, rather the classes are more introductory in nature. Typically classes are 45–55 min in length for either one semester ($\frac{1}{2}$ Carnegie credit) or one year (one Carnegie credit). In a school day, a vocational education course is perhaps one of six to eight courses a student may take daily (in addition to math, natural science, social science, and English, etc.). These vocational education courses are elective in nature, and are not generally required for graduation from high school.

In a career centre, classes/laboratories are two to three hours in length and focus on entry-level skill development and entry into postsecondary vocational training. One-half of the school day is spent in the vocational course; the other half is in academic classes to support the vocational area. This curriculum is followed for two years (grades 11 and 12) and students will complete 750–1,000 hours of instruction in the vocational area.

4 Areas of Study Within Vocational Education

In general, there have historically been six broad areas (fields of study) within vocational education. The first is agricultural education, which was one of the first three areas to be funded under the Smith-Hughes Act of 1917 (the first federal legislation written in support of vocational/career and technical education). A sampling of areas of study within agricultural education includes agricultural production, agricultural mechanics, animal science, horticulture, and landscape management. Technology impacts agriculture and therefore programs also exist in areas such as biotechnology and environmental sciences (Zirkle 2011). Business education includes programs in accounting, business administration and management, financial services and paralegal studies, along with information technology programs, such as interactive media, computer programming, and computer networking technology. Another of the first three areas of vocational education is family and consumer sciences education which contains programs that have a *family studies* orientation and may include courses and programs in subjects such as: personal development, resource management, life planning, nutrition, and wellness. Other family and consumer sciences education programs have more of a traditional vocational education focus and may include courses and programs in early childhood

education and care, fashion, clothing and interior design, culinary arts, and hospitality management. The growth in the health-care sector in the United States has resulted in a corresponding growth in the number and type of health occupations education courses and programs available to vocational education students. Many health care jobs that are in high demand in the workplace require less than a four-year degree. Specific programs offered in health occupations vocational education include areas such as dental assisting, emergency medical technician, nurse assisting and medical lab technician; many of these can be completed at the high school level, although some programs assume the student will continue their education post-high school to obtain further training. The fifth area of vocational education is marketing education and is the smallest of all the areas in terms of programs and actual students enrolled. The curriculum of marketing education focuses on how businesses plan, produce, price, distribute, and sell the many products and services demanded by consumers around the world (Marketing Education Association 2015) and includes courses in retail marketing and management, travel and tourism, entrepreneurship, and E-commerce. The final area is trade and industrial education; it is the last of the original program areas designated for funding by the Smith-Hughes Act. This area has the largest number of programs and contains many programs which have a long history in vocational education, such as automotive technology, carpentry, cosmetology, electrical trades and welding.

5 Pathways After Completion of High School Vocational Education

Historically, vocational education has been viewed as education for work, with students completing programs and entering directly into entry-level employment. For many vocational education students this is still the preferred pathway once they have completed high school and many do enter the workforce directly after school. However, many students delay entry into the workplace, primarily to pursue further education made possible by completion of a vocational program.

Many vocational education students go directly from high school to a community or technical college for additional education and training. These institutions offer short-term courses, one-year certificate programs, and Associate (two year) degrees in a variety of vocational-technical areas; therefore, this pathway is very common. Many high school vocational programs have articulation agreements with community and technical colleges, where students can actually earn some college credit in their high school vocational program. This provides them an opportunity to earn additional educational credentials (a certificate or degree) in a shorter period of time and also saves the student money on tuition costs.

Apprenticeship programs, mostly in the technical trades of construction, electrical, and graphic arts, are another option for vocational education students after high school. Modelled somewhat after the German system of apprenticeship, the United

States system currently has approximately 400,000 apprentices in programs across the country (U.S. Department of Labor 2015a). The apprenticeship approach includes on-the-job training under the supervision of experienced workers with connected classroom instruction. It is sponsored by employers, employer associations, or labour/management groups that can employ and train in an actual working environment.

For students desiring further vocational training after high school, the United States Armed Forces is an additional option. All of the branches of the military offer various vocational training programs and individuals can pursue vocational and technical licensing and certification while serving their country. The military also offers tuition assistance to service members after completion of their service through the federally funded GI Bill.

6 Funding of Vocational Education

Vocational education in the United States is an expensive undertaking. Equipment, supplies, and materials to appropriately structure courses and programs can be significant expenditures. In the United States, most elementary and secondary education is funded through local property taxes and from financial support from each state government. Vocational education has historically received financial support from the federal level through various legislative acts. The first, the Smith-Hughes Act of 1917, provided federal funding for vocational training in the areas of agriculture, trade and industry, and home economics. The funding provided salaries for teachers, supervisors, and directors of each area. In addition, the Smith-Hughes Act required state boards to draft plans relating to the use of funds, types of schools, equipment, courses of study, methods of instruction, teacher qualifications, supervisor qualifications, and plans for training teachers (Calhoun and Finch 1982). Various other legislative acts have built upon and revised various aspects of the Smith-Hughes Act. The current legislation, the Carl D. Perkins Career and Technical Education Improvement Act of 2006, provides 1.3 billion USD in federal support for vocational/career and technical education programs in all fifty states on an annual basis.

7 Vocational Education Teachers

There are approximately 239,000 vocational education teachers in the United States, according to the latest data from the United States Department of Labor (2015b). Vocational education teachers can become licensed in two ways: a traditional pathway that requires a university degree, such as a Bachelor of Science degree, and an alternative pathway that brings individuals into teaching directly from business and industry.

In the traditional pathway, students pursue a teaching degree and must complete other requirements as part of the degree, including:

- General/liberal arts education courses,
- Content preparation courses in the vocational subject to be taught,
- Teaching pedagogy courses,
- Field experiences (observation time in a school),
- Clinical practice (practice teaching under supervision),
- An exit test in the vocational content area,
- An exit test in teaching pedagogy.

After the degree is completed and all these requirements are met, the teacher can apply for a teaching licence from his/her state and begin applying for a teaching position. The growth in vocational programs in the U.S. is also expected to drive an increase in vocational teachers, with over 15,000 new teachers expected from 2015 to 2022, a growth increase of approximately 9 % (United States Department of Labor 2015).

With the alternative path, individuals wishing to become a vocational education teacher must meet specific education and work experience requirements. In general, minimum requirements include a high school diploma and three to five years of work experience in the subject to be taught. If the individual meets these requirements, the school can employ the teacher, and he/she can apply for a temporary licence. Then, while teaching, the teacher takes teaching pedagogy courses at a local university. These must be completed within a specified time frame, perhaps three to four years, at which time, the teacher is granted a full professional licence. All teachers, including vocational teachers, are also usually required to continue taking courses and other professional development activities throughout their teaching career.

The quality and preparation of vocational education teachers has long been criticised in a variety of reports and studies (Bruening et al. 2001; DeWitt 2010; Manley and Zinser 2012; U.S. Department of Education 1994). In some cases, individual state requirements for vocational teacher certification/licensure are very minimal compared to academic teachers. A national study found that requirements for the certification and licensure varied widely from state to state (Zirkle et al. 2007). This criticism has contributed to the negative perceptions of vocational education. Additionally, as with all areas of education in kindergarten through grade twelve (K-12) in the United States, vocational education teachers are not well paid and the occupation of teaching is not a prestigious one. These facts make it difficult to entice college/university students to become vocational education teachers, and to recruit qualified and talented individuals from industry to be vocational education teachers (Zirkle and Martin 2012).

8 Marked Areas of Change and Reform in the U.S. Vocational Education System

The aforementioned challenges faced by the U.S. vocational education system have prompted many changes and reforms that have resulted in significant improvements in the quality of courses and programs. This section will discuss these changes and reforms.

8.1 *Curricular Changes in Vocational Education*

As previously mentioned, vocational education has been described as education for work, where students entered directly into entry-level employment after completion of a high school program. However, the curricular mission of vocational education has been broadened considerably in the past three decades and this has resulted in many more options for students after program completion.

The view that vocational education was for students who were not academically inclined, or unmotivated, has been addressed through new curricular approaches, including the rigorous integration of academic disciplines into vocational education courses and programs. This approach recognises that academic subjects are intertwined with every occupation, and to be an excellent carpenter, nurse, or chef, one must possess academic skills and knowledge along with technical skill. The effectiveness of this approach has been demonstrated through studies involving the use of mathematics in vocational education programs (Stone et al. 2008) as well as literacy and vocational education (Park 2012).

Recognising that many students prefer to be active learners, project-based learning has become a common instructional method in vocational education courses and programs. These projects are often multidisciplinary, integrating multiple core academic areas. Project-based learning develops technical skills while incorporating rigorous academic content and focusing on skills needed by the workplace such as collaboration, communication and critical thinking. The academic preparation of vocational education students has been vastly improved upon, which better prepares them for the workplace of the twenty-first century.

While the United States Department of Labor, Bureau of Labor Statistics (2015) has never attempted to estimate the number of times people change careers in the course of their working lives, it is well-known that workers in the U.S. are likely to change jobs and even careers many times over the course of their working life. This has prompted vocational education curricula to move away from preparation for one specific career. The curriculum has been organised into *career clusters*, which are curricular frameworks in broad career areas, designed to prepare students to transition successfully from high school to postsecondary education and employment in a career area. The career cluster approach is built on the idea that students must continue their education after high school to become more broadly skilled. The

United States Department of Education has developed 16 of these clusters, including:

- Agriculture, Food & Natural Resources,
- Architecture & Construction,
- Arts, A/V Technology & Communications,
- Business Management & Administration,
- Education & Training,
- Finance,
- Government & Public Administration,
- Health Science,
- Hospitality & Tourism,
- Human Services,
- Information Technology,
- Law, Public Safety, Corrections & Security,
- Manufacturing,
- Marketing,
- Science, Technology, Engineering & Mathematics,
- Transportation, Distribution & Logistics.

The focus on further education also has led to more curricular improvements in vocational education. Improved ties to postsecondary education have been established, and vocational education now offers college preparatory courses and *dual credit* options in which students can earn both high school and college credit simultaneously and transfer these to postsecondary institutions via articulation agreements to provide for a seamless transition from high school to college. These agreements can also shorten the time it takes to earn an associate degree or additional industry certification.

8.2 Skilled Labour Needs and Industry Involvement

For many years, business and industry has been a critic of the product of the vocational education system: the students themselves. In large part, this criticism has come from the sidelines, as organisations across the country were reluctant to play a role in the education and training of students. This has slowly changed since the passage of the School-to-work Opportunities Act of 1994, which recognized the disconnect between the schools and the workplace, and that educators and employers must work together in a much more cooperative fashion (Zirkle 1995). The Act provided funding to develop work-based learning experiences involving employers, along with *connecting* activities designed to develop school-business partnerships. These connecting activities can include job shadowing, on-the-job training, and internships.

Even though the funding of the School-to-work Opportunities Act of 1994 was discontinued in 2000, vocational education has sought to utilize other funding

sources, including the Perkins Act, to continue efforts. This has led to many organisations, both large and small, to become involved with vocational education programming. Companies such as IBM, Microsoft, Oracle, and Cisco have designed their own curricula, professional development, and industry-recognized credentials. Professional Associations, including Automotive Manufacturing Technical Education Collaborative (AMTEC), The National Association of Home Builders, and the National Association of Manufacturers have created resources that allow vocational education programs to connect with employers' needs (National Association of State Directors of Career Technical Education Consortium 2014). The level of communication between schools and organisations has grown considerably in the past three decades.

These industry groups also provide advice and counsel to vocational education programs via participation on advisory committees, a requirement for programs to receive federal funding. Depending on their function, advisory committees may conduct activities in the following areas: curriculum and instruction, program review, recruitment and job placement, student organizations, staff development, community/public relations, resources, and legislation (Kerka 2002). Their participation brings valuable insight into vocational education programs and helps reduce the disconnect between schools and employers.

8.3 Improved Teacher Training

Successful vocational education programs have effective teachers who enhance student learning and provide opportunities for growth. States have taken steps to improve the quality of vocational education programs by developing alternative pathways for mid-career professionals to enter the teaching profession. These individuals can bring a wealth of work experiences into the vocational education classroom. Once employed, processes are in place to provide these individuals the opportunity to develop effective teaching skills. These processes have been developed to counter the claim that vocational education teachers are *less than* their academic teaching counterparts. Coursework, usually utilising universities, is focused on the unique needs of vocational education teachers, and includes courses/subjects such as:

- Teaching Methods,
- Curriculum Development,
- Instructional Strategies,
- Assessment of Student Performance,
- Learning Styles,
- Utilizing Technology in Instruction.

Universities with long traditions of providing vocational teacher preparation have developed pathways for this group to earn advanced degrees as part of their coursework. The Ohio State University and Pennsylvania State University both offer

options to earn bachelors and master's degrees while completing vocational teacher credentialing requirements (Zirkle 2014).

8.4 Vocational Education as an Integral Part of the High School Experience

The curricular changes mentioned previously are playing a large part in transforming the American high school. The 16 career clusters developed by the United States Department of Education have led to innovative approaches in delivering both academic and vocational education. The concept of career academies allows high schools to develop teams of teachers and students focused on a specific career pathway. Students can take academic courses related to the pathway, along with vocational courses designed to develop a broad set of knowledge and skills needed to be successful in the pathway. For many U.S. students, a common question is “*Why do I have to learn this?*” Academic subjects being taught within the context of careers helps to answer this question and make learning more relevant. The career academies are also likely to have dual credit and articulation agreements in place, to encourage students to continue their education after high school.

Interestingly, even with U.S. policymakers' obsession with requiring more academics (typically math and natural science) for graduation, this has not deterred students from taking vocational education courses in high school. For many years, the percentage of students who have taken at least one vocational education course in high school has remained steady at approximately 90 % (United States Department of Education 2009). Vocational education *concentrators*, those students taking three or more vocational education courses during high school, constitute 25 % of all high school students and in addition, this group has a high school graduation rate of 90 %, compared to an average U.S. graduation rate of 74.9 % (United States Department of Education 2010).

8.5 Recognising and Marketing the Value of Vocational Education

As previously mentioned, the image of vocational education in the U.S., as in other countries, has a tarnished history. The long-held perception that vocational education is not academically rigorous, only educates troubled students, and leads to dead-end employment still exists to a degree. However, the image is slowly changing, driven by several factors.

Many parents, educators, and policymakers have long believed that the pathway to success is with a university degree. Vocational education options have not typically been a consideration. However, the U.S. workplace's needs have been evolving.

A recent study projected 14 million job openings in the U.S. from 2008–2018 will go to individuals with an associate's degree or occupational certificate. Many of these jobs will be in technically skilled occupations, such as electricians, dental hygienists, paralegals and construction supervisors (Carnevale et al. 2012). These opportunities have a direct connection to high school vocational education programming and postsecondary educational options such as dual credit and articulation agreements. Many of these jobs will pay 35,000 to 75,000 USD annually, higher than many occupations traditionally associated with a bachelor's degree.

Additionally, many high school graduates accumulate significant debt while in pursuit of the baccalaureate degree. Many of these students graduate and are unable to find employment in a job market that currently requires a significant number of technically skilled workers. Some of these students find themselves back at a community or technical college post university graduation, taking classes to obtain skills employers want. This is a reflection of the disconnect between what American universities are producing and what the private sector and government needs. The vocational education pathway is less expensive, takes less time than the university pathway, and is targeted toward employment needs.

All of these events have begun to change the societal perceptions of vocational education. Students and parents are beginning to see that vocational education can offer another pathway to economic security in the U.S. workplace.

9 Remaining Challenges

As discussed in this chapter, many improvements have occurred in the vocational education system in the United States over the past three decades. These changes and reforms have materialised quickly, and were in many ways initiated by *The Unfinished Agenda* report published in 1984. As mentioned, the report was highly critical of the vocational education system, and pointed out many problems. The 30 or so years since have seen many improvements and much progress.

However, despite the improvements cited in this chapter, challenges to the vocational education system in the U.S. still remain and more work needs to be done. Many of these challenges are in the process of being addressed and will be corrected, while others are intractable and will take time and resources to fix.

Funding for high school vocational education in the U.S. has become very political in recent years. While no one disputes the need for a highly trained workforce, the process and policies to fund the education and training of young people has been hotly debated, as the U.S. political system seems to become more fragmented. Some state governors have begun developing initiatives to grow vocational education programs, especially in those states with strong agricultural, manufacturing and construction industries. For example, Ohio is developing vocational courses for middle and junior high school students (Young 2014), while Kansas' high school vocational education students qualify for free college tuition in approved technical courses offered at Kansas technical and community colleges. Quality vocational education

programs are expensive to offer, so the lack of funding will continue to be a barrier to program improvement.

The inability to have a collective national voice for vocational education points out the challenge with each individual state holding the responsibility for their own educational system (as required by the U.S. Constitution). Some states have invested heavily in vocational education, while others have not. As a result, vocational education programs across the country tend to vary in quality. Much of this is due to variables such as facilities, teacher quality, curriculum supports, and the like, but many of these are directly related to financial resources and governmental commitment.

Determining the goals and purposes of vocational education at the high school level is yet another challenge. Given the economic needs at the present time in the U.S., what should be the focus – preparation for work or preparation for further technical study? Or both? With limited financial and other resources, where should energies be directed? In addition, how should the effectiveness of either of these goals and purposes be assessed? Schools in the U.S. are supported in large part by individual property and income taxes, and public scrutiny of the performance of every educational program is ever-present.

Throughout the U.S. educational system at all levels, career exploration and guidance is minimal. Some of this is attributable to a lack of career guidance training for counsellors, teachers and school administrators; however, the aforementioned focus on *everyone is going to the university* has put career exploration at a low priority level in U.S. high schools, and has *pushed off* career choices to the late teens and early twenties. This has resulted in scores of young adults in the U.S. with unclear professional goals, which for many in U.S. universities, has resulted in changes of study major, delayed graduation, and tuition debt.

The demographic composition of U.S. society and the workforce has changed considerably in the past 25 years and will continue to diversify. This diversity will also affect the educational system, as larger numbers of younger Americans are ethnic minorities. Individuals with English as their second language will also present challenges to individual schools, as will students with disabilities and other special learning needs. Vocational education programs, with specialised laboratories, equipment, and materials, will have to find ways to meet these individual's needs.

Finally, the negative image and public perception of vocational education, while improving, still pervades the thinking of many students, parents and policymakers. Even though the perception is outdated and inaccurate, it is perhaps still the largest barrier to vocational education being fully embraced in U.S. society. However, as illustrated by this chapter, significant progress has been made on changing the image and public perception of vocational education.

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